



EV & Battery Manufacturing

Enabling Smarter Testing, Inspection, and
Production from EV Components to Battery Packs

ADVANTECH

Enabling an Intelligent Planet

IoT Automation iFactory Sector
2026

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EV & Battery Manufacturing is Becoming More Complex

The EV and battery industries are expanding rapidly, driving growing demand for advanced testing, validation, and measurement technologies. As vehicle architectures and battery systems become more complex, manufacturers must ensure safety, reliability, performance, and consistent product quality throughout development and production.

From battery cells and power electronics to automotive electronic control units (ECUs) and complete vehicle systems, EV manufacturing requires accurate, data-driven testing across multiple stages. Reliable test and measurement platforms are essential for accelerating validation, improving quality, and supporting increasingly complex EV applications.



Increasing System Complexity

More electronics, sensors, software, power electronics and interconnected control systems.



High Precision Requirements

Greater demand for synchronized measurement, inspection accuracy and traceability.



Flexible & Scalable Production

Production lines must support new battery formats, processes and changing capacity requirements.



Smarter Validation & Automation

Simulation, HIL, AI inspection and data-driven automation are increasingly important.

From EV Component Testing to Battery Manufacturing



Advantech Integrated Solutions



Integrated Solutions Across EV Testing & Battery Manufacturing

From data acquisition and real-time control to machine vision, edge AI, and industrial connectivity, Advantech provides integrated technologies for EV validation and battery production.



Test & Validation

DAQ, HIL, and vehicle communication for accurate component validation.



Automation & Control

Industrial control and flexible I/O for production equipment and assembly.



Vision & Edge AI

Machine vision and AI computing for inspection and defect detection.



Connectivity & Monitoring

Industrial networking and equipment monitoring for connected production operations.

EV & Battery Manufacturing

Built for Industrial Deployment

Reliable Operation | Flexible Integration | Long-Term Availability | Global Support

EV Component Test & Validation

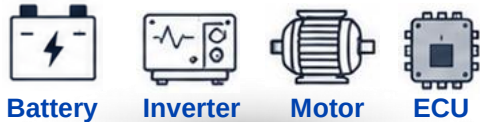
- Architecture
- Solutions
- Case Studies

EV Test & Validation Architecture

An integrated architecture for accurate measurement, real-time control, and intelligent analysis across EV component testing.

1

Device Under Test



EV components and sensors generate electrical, mechanical and environmental signals.

2

Data Acquisition & Communication



High-speed, multi-channel synchronized acquisition.

3

Real-Time Control & HIL



Enable HIL testing and real-time control for accurate validation.

4

Test Software & Analysis



DAQNavi Monitoring Data Logging Analysis

Visualization, analysis, and reporting for actionable insights.

Driving Precision in EV Testing

High Accuracy & Synchronization | Real-Time Control & Safety | Flexible Integration & Scalability | Long-Term Availability & Reliability

Use Case Scenario

Smart EV Manufacturing Solution



Customer Challenges

- Low level of automation integration
- High computing performance requirements
- Demand for scalable industrial control and visualization

Solution Benefits

- High-performance PLCs control with intuitive HMI operation
- Flexible I/O expansion for sensors, actuators, and communication modules
- Integrated server, panel PC, and industrial Ethernet switch for reliable connectivity

Recommended Products



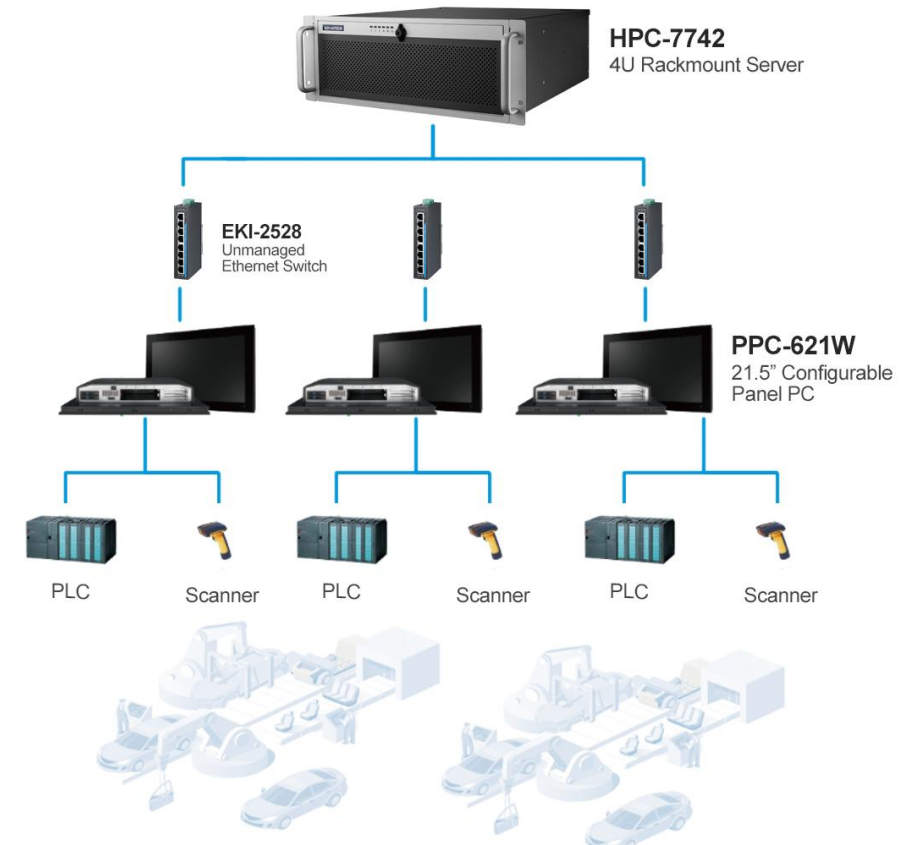
HPC-7442
4U Rackmount Server



PPC-621W
21.5\"/>

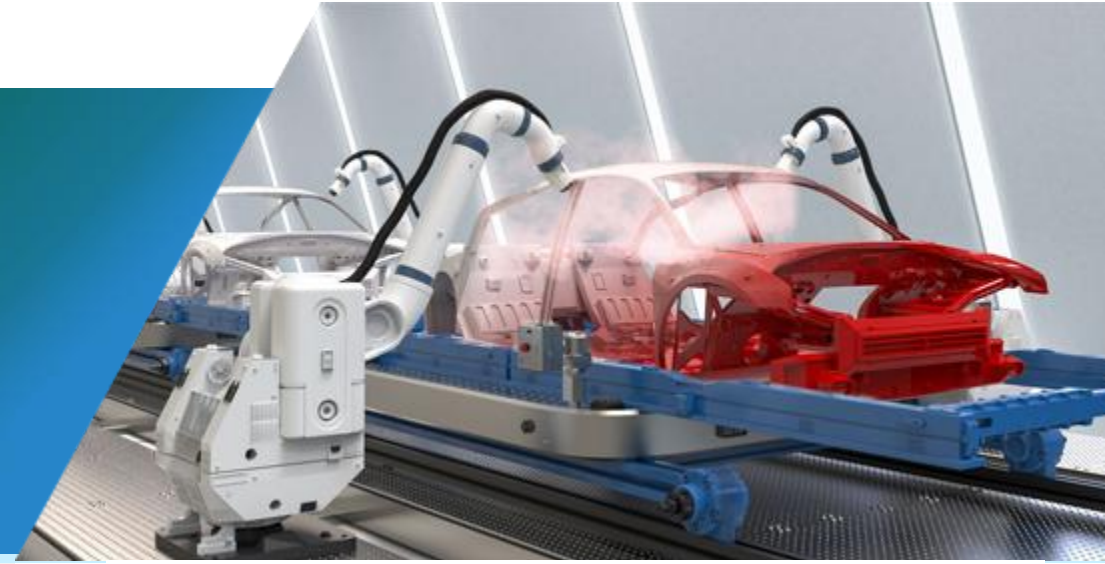


EKI-2528
Unmanaged Ethernet Switch



Use Case Scenario

Paint Shop Monitoring Solution



Customer Challenges

- Harsh environments require reliable industrial-grade sensors
- Critical equipment needs continuous condition monitoring
- Extensive cabling increases deployment cost and complexity

Solution Benefits

- Fanless edge computing enables reliable monitoring in harsh environments
- LoRaWAN sensors provide stable wireless connectivity with less cabling
- Scalable architecture supports distributed equipment monitoring

Recommended Products



MIC-770 V3
Compact Fanless System



WISE-4610+ S614+ S617
LoRaWAN IoT Wireless Modular I/O



Use Case Scenario

Injection Molding Equipment Monitoring Solution



Customer Challenges

- Monitor multiple machines across the production floor
- Gain real-time visibility into equipment status
- Detect and respond to abnormalities quickly

Solution Benefits

- Wireless sensors enable fast, flexible equipment monitoring
- LoRaWAN ensures reliable data transmission with minimal wiring
- Real-time insights improve maintenance efficiency and equipment uptimes

Recommended Products



WISE-6610 V2
Industrial LoRaWAN Gateway



WISE-2410
Industrial LoRaWAN Vibration Sensor



EVA-2000 Series
LoRaWAN Wireless Sensor



Use Case Scenario

EV Component Line Digitalization



Customer Challenges

- Legacy operating systems hinder equipment modernization
- Existing production assets require a scalable digital upgrade
- Production lines need greater flexibility and operational stability

Solution Benefits

- Modular control with support for major industrial protocols
- Built-in redundancy for reliable, flexible PLC operation
- Scalable platform for OS upgrades, vision integration, and future expansion

Recommended Products

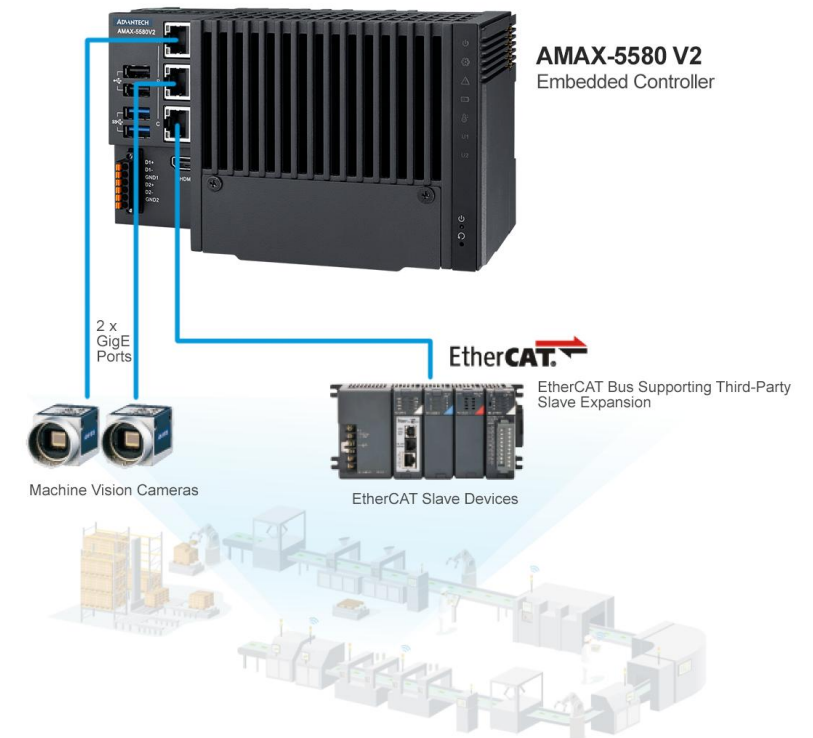


AMAX-5580 V2
Embedded Controller



AMAX-5000 Series
EtherCAT Slice I/O

Windows 10 Windows 11



Power Analyzer for EV Testing

Advantech enables synchronized multi-signal acquisition and control for EV powertrain performance validation during development and testing.



Challenges

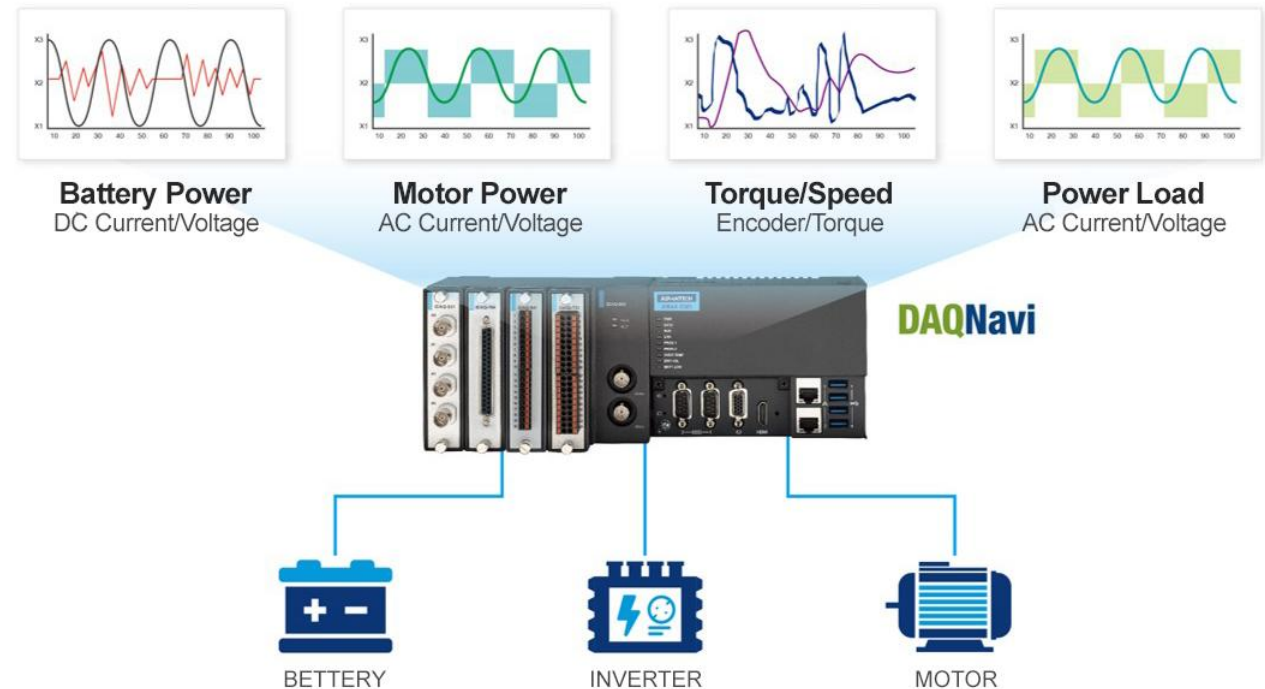
- Measure DC and AC voltage/current across the battery, inverter, and motor
- Capture torque and encoder signals from the motor and load
- Synchronize electrical and mechanical data for accurate power analysis

Solution

- High-speed DAQ and encoder signal acquisition
- Synchronized multi-signal measurement and control
- AMAX-5580 + DAQNavi enable integrated test execution and data analysis

Value

- Accurate powertrain performance validation
- Synchronized multi-signal measurement
- Reduced system integration effort



EV Motor and Control Test System

Advantech enables synchronized multi-signal acquisition and real-time control for EV motor performance validation during development and testing.



Challenges

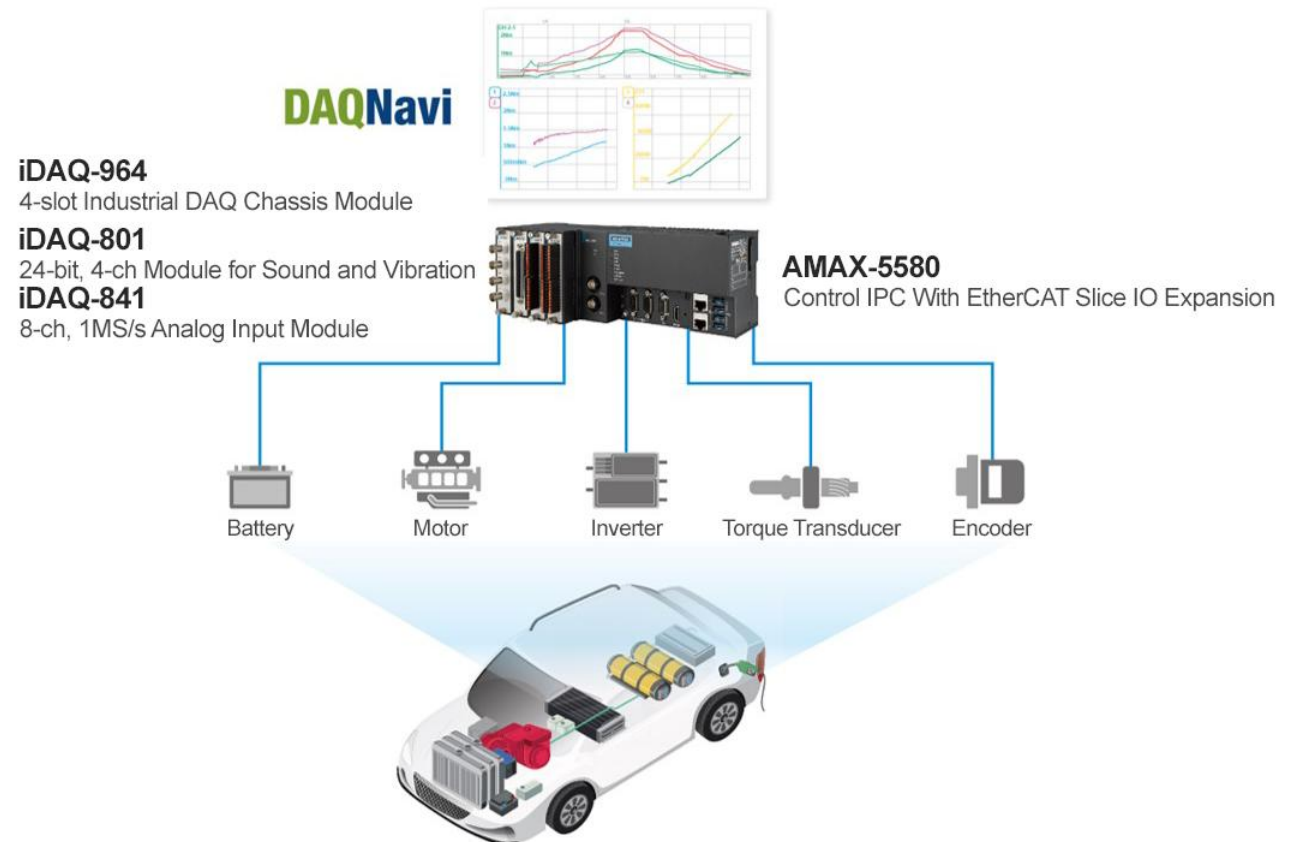
- Measure torque, speed, voltage, current and vibration
- Capture encoder signals for motor speed measurement
- Synchronize multi-signal data for accurate analysis

Solution

- High-speed high-resolution data acquisition with iDAQ
- AMAX-5580 + iDAQ-964 support gearbox loading and shifting control
- DAQNavi/SDK enables synchronized data logging and real-time monitoring

Value

- Accurate motor efficiency evaluation
- Synchronized electrical and mechanical analysis
- Flexible testing across load conditions



EV Test & Validation Case Study

Cost-Effective Audio Extraction Solution for Vehicle NVH Testing

Advantech enables multi-channel synchronized audio acquisition and embedded processing for accurate vehicle NVH analysis across EV applications



Challenges

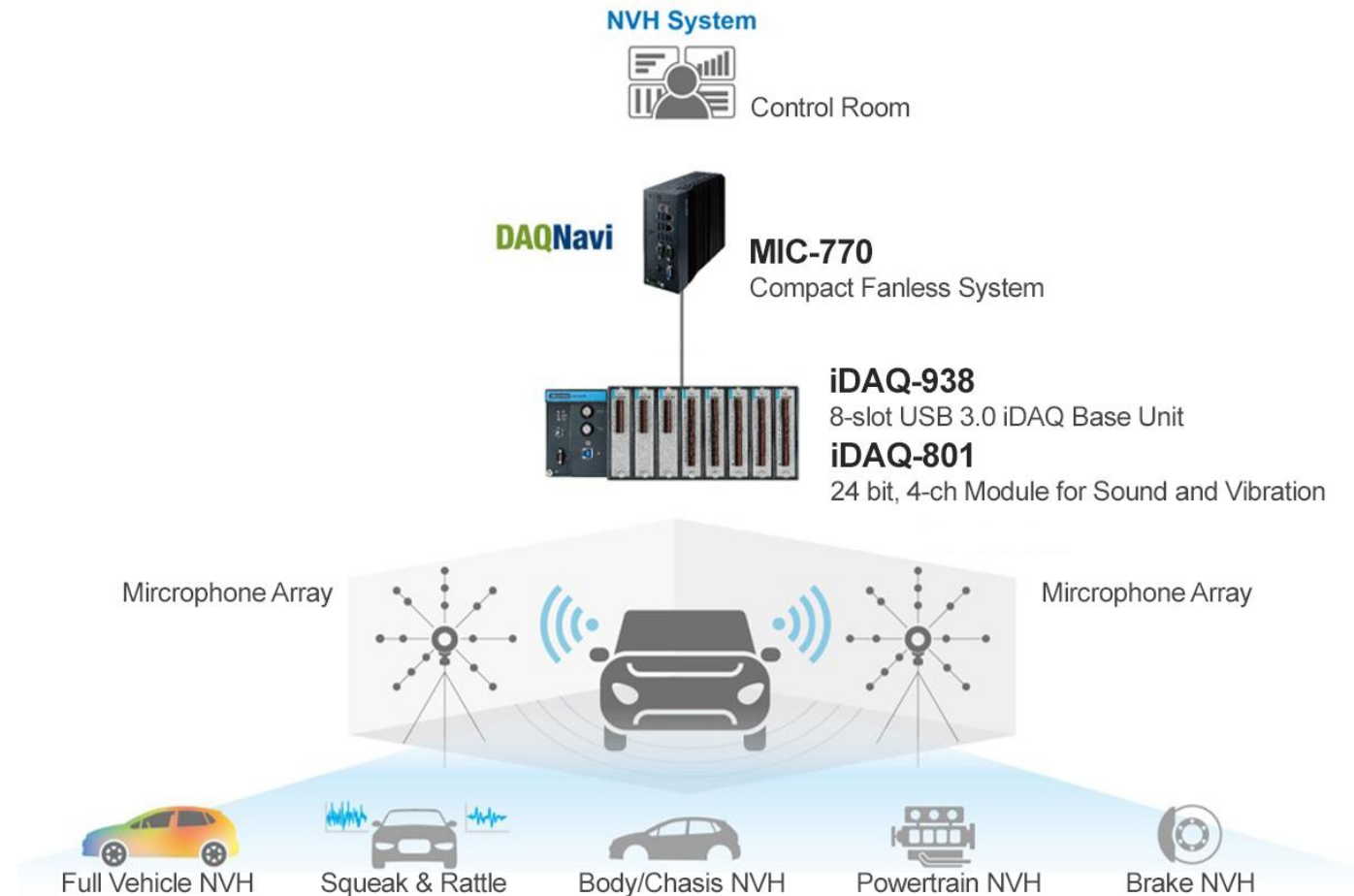
- Capture multi-channel microphone signals for NVH analysis
- Identify noise sources from the sound field
- Support 16, 24, or 32-channel synchronized acquisition

Solution

- iDAQ-974/938 provide flexible multi-channel DAQ expansion
- MIC-770 enables embedded processing and real-time monitoring
- DAQNavi/SDK supports multi-language development and system integration

Value

- Accurate sound field analysis
- Scalable multi-channel NVH testing
- Lower system integration cost



High-Pressure Cylinder Test for Airbag Inflation

Advantech enables high-speed pressure and flow data acquisition for reliable airbag inflator validation and endurance testing



Challenges

- Perform continuous pressure cycling for fatigue testing
- Monitor high-speed pressure and flow changes
- Calculate pressure curves and relative pressure in real time

Solution

- IPC240 with PCIE-1810 enable high-speed pressure and flow data acquisition
- Continuous data acquisition supports up to 10,000 fatigue-test cycles
- Integrated control and measurement improve test efficiency and reliability

Value

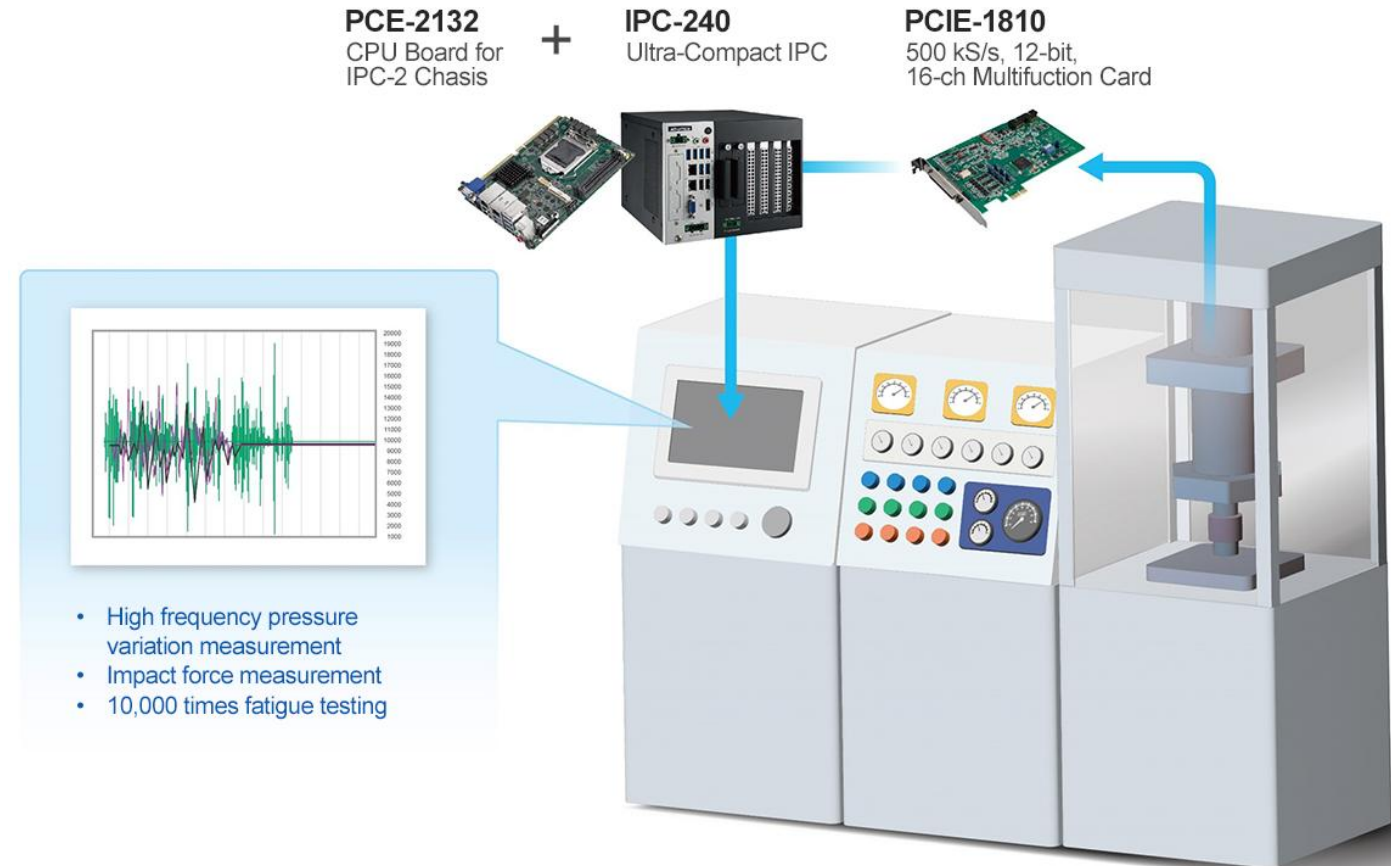
- Reliable inflator validation
- Accurate pressure trend analysis
- Improved test efficiency

PCE-2132
CPU Board for
IPC-2 Chasis



IPC-240
Ultra-Compact IPC

PCIE-1810
500 kS/s, 12-bit,
16-ch Multifunction Card



EV Test & Validation Case Study

Vehicle Shock Absorber Automatic Test System

Advantech enables synchronized force, displacement, and pressure measurement for automated shock absorber performance and durability testing.



Challenges

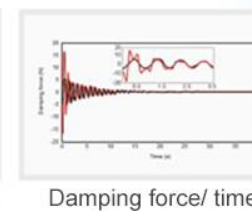
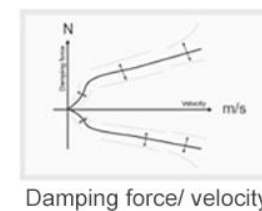
- Measure damping force, speed and displacement
- Capture pressure signals and dynamometer curves
- Maintain repeatable measurement across automated test cycles

Solution

- PCIE-1816H enables high-speed, 16-bit synchronized data acquisition
- Capture force, displacement, and pressure signals with high accuracy
- IPC-240 supports reliable computing for continuous automated test

Value

- Accurate damping performance analysis
- Improved test repeatability
- Faster automated test cycles



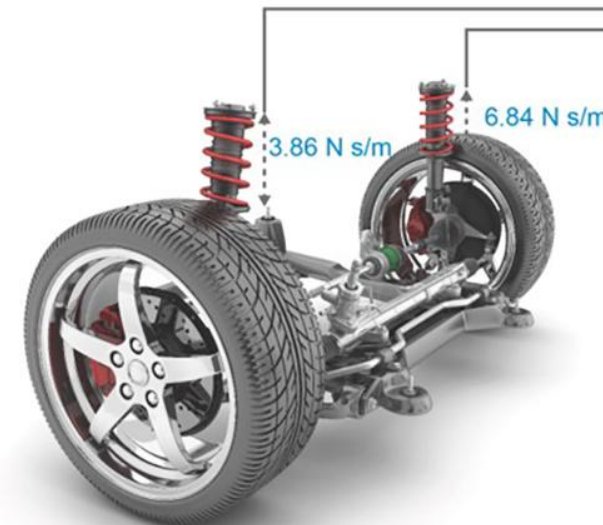
FPM-721W
Industrial Monitor with
PCT Touch



PCIE-1816H
5 MS/s, 16-bit, 16-ch
Multifunction Card



IPC-240
Compact Industrial
Computer System



PCE-2132
CPU Board for
IPC-2 Series Chassis

EV Test & Validation Case Study

Anti-Lock Braking System (ABS) Test System

Advantech provides synchronized data acquisition and encoder measurement for reliable ABS performance and endurance testing



Challenges

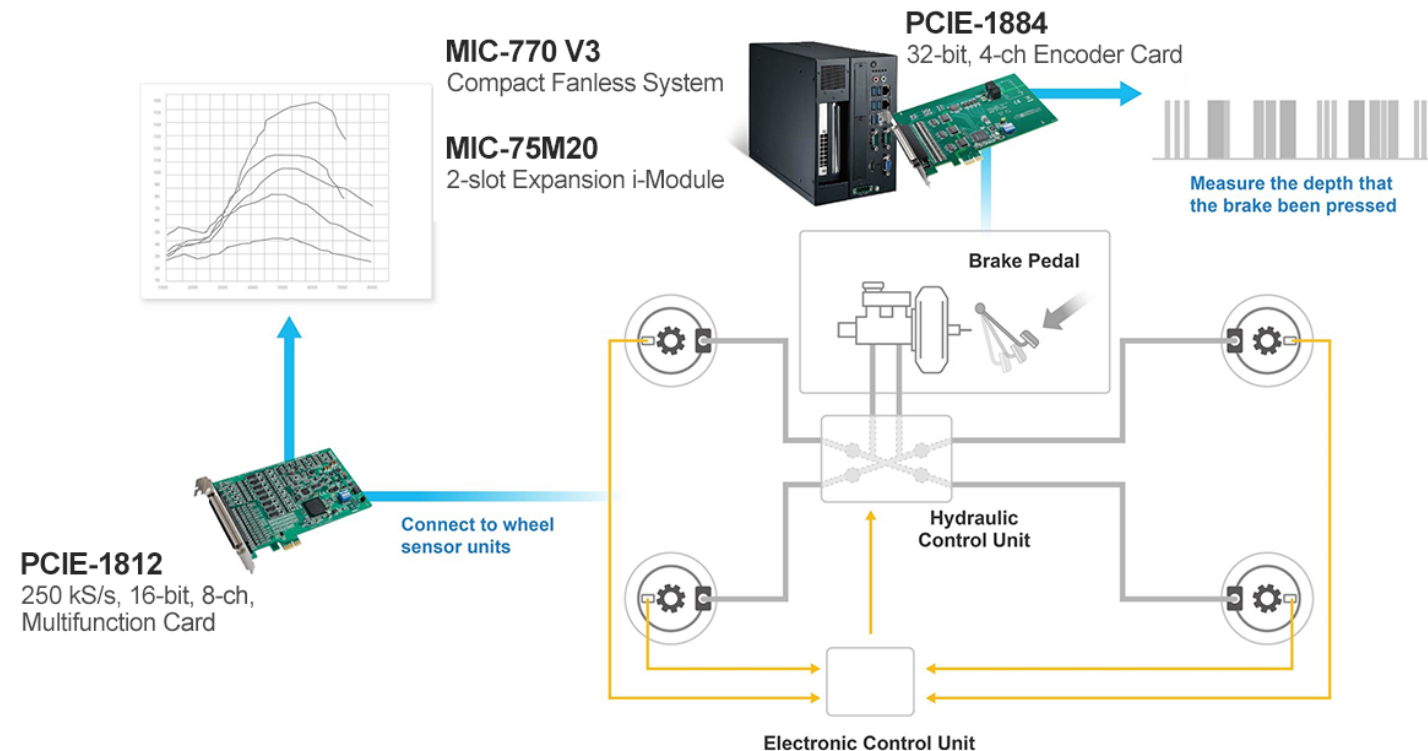
- Support continuous brake endurance testing
- Measure pedal stroke and wheel speed accurately
- Maintain stable operation across multiple test signals and scenarios

Solution

- PCIE-1812 provides high-speed, 16-bit synchronized data acquisition
- PCIE-1884 captures encoder signals for pedal stroke and wheel speed
- Expandable industrial computing supports continuous multi-signal testing

Value

- Accurate brake performance validation
- Reliable pedal and wheel speed measurement
- Stable long-duration testing



EV Test & Validation Case Study

Automotive Wheel Cornering Fatigue Test System

Advantech enables real-time load measurement and automated control for reliable automotive wheel durability and fatigue testing



Challenges

- Reproduce complex wheel loads consistency
- Support stable operation during long-cycle fatigue testing
- Capture multiple measurement and control signals in real time

Solution

- PCIe-1812 provides high-speed, 16-bit synchronized data acquisition
- Integrated DI/DO, counters, timers, and encoder functions support motion control and measurement
- Expandable industrial computing enables reliable automated test operation

Value

- Reliable wheel durability validation
- Consistent long-cycle fatigue testing
- Real-time load monitoring



EV Test & Validation Case Study

Vehicle Body Control Module (BCM) Test System

Advantech enables functional validation and CAN FD communication testing for automotive body control modules under simulated vehicle operating conditions.



Learn More



Challenges

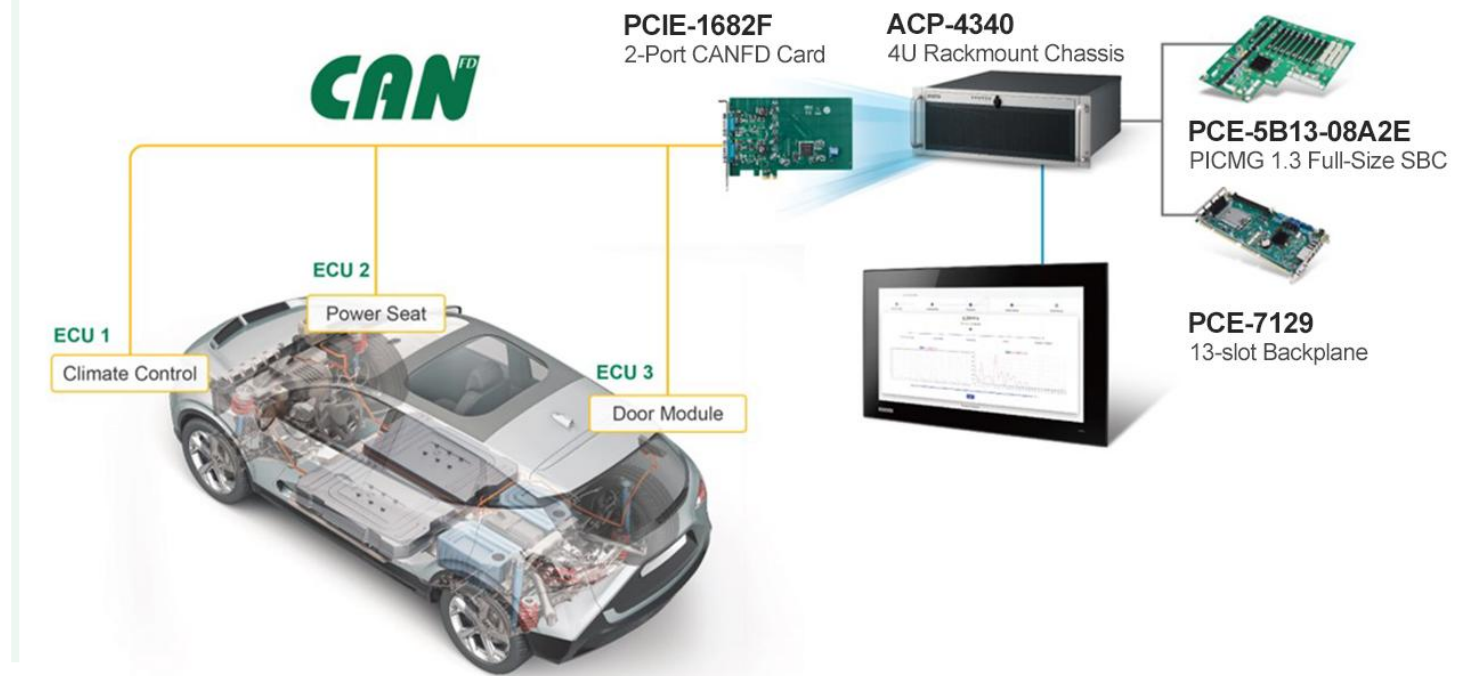
- Support manual and automated BCM functional testing
- Simulate vehicle loads and ignition states
- Validate body control functions across multiple electronic devices
- Support reliable CAN FD communication during testing

Solution

- PCIE-1682F provides high-speed dual-channel CAN FD communication
- Supports reliable signal transmission up to 8 Mbps
- Enables reliable communication between the host system and automotive ECUs

Value

- Reliable BCM functional validation
- High-speed CAN FD communication
- Flexible multi-ECU testing



Battery Manufacturing

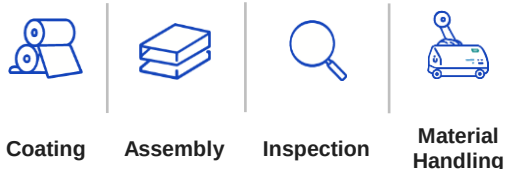
- Architecture
- Solutions
- Case Studies

Battery Manufacturing Architecture

An integrated architecture that connects equipment, automation, inspection, and data for intelligent, efficient, and scalable battery production.

1

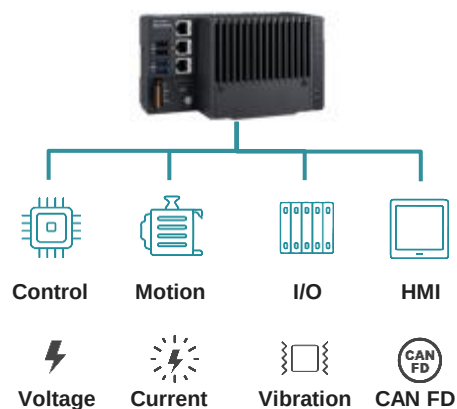
Production Equipment & Processes



Core production processes in battery manufacturing.

2

Automation & Machine Control



Reliable automation and control for stable and precise operations.

3

Vision & AI Inspection



Enable HIL testing and real-time control for accurate validation.

4

Connectivity, Monitoring & Production Data



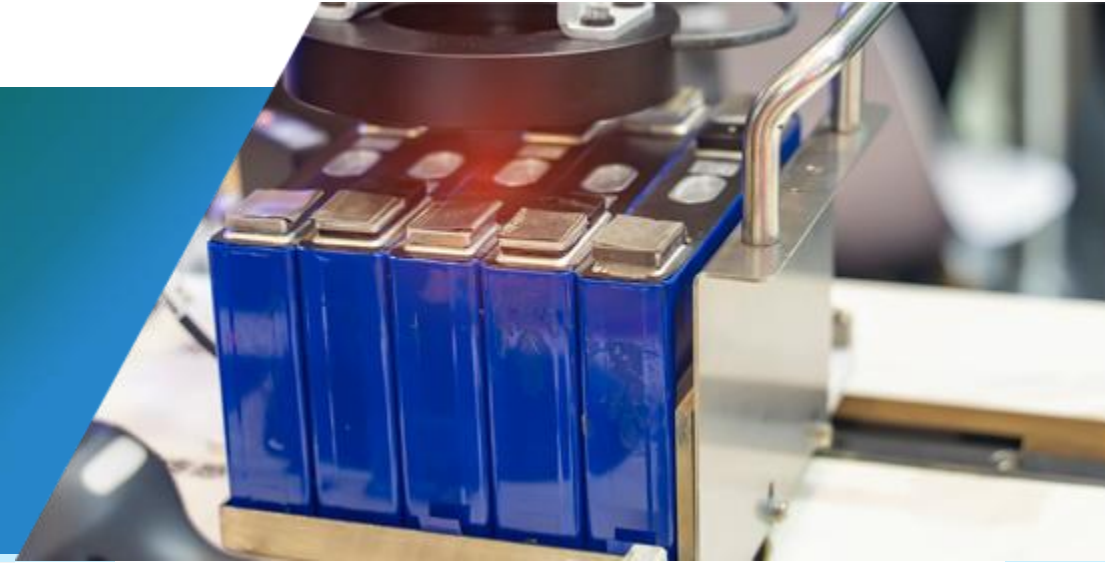
Connect equipment, inspection, and production data for real-time visibility, traceability, and faster response.

Enabling Smarter Battery Manufacturing

Higher Quality | Production Visibility | Flexible Integration | Faster Issue Response

Use Case Scenario

Battery Coating AOI Inspection Solution



Customer Challenges

- Limited inspection performance
- Difficult system upgrades and expansion
- Rapid hardware obsolescence

Solution Benefits

- Flexible CTOS configuration for diverse inspection needs
- Industrial-grade design with 1 Grms vibration and 10G shock resistance
- Remote power control simplifies maintenance
- Global support enables scalable deployment

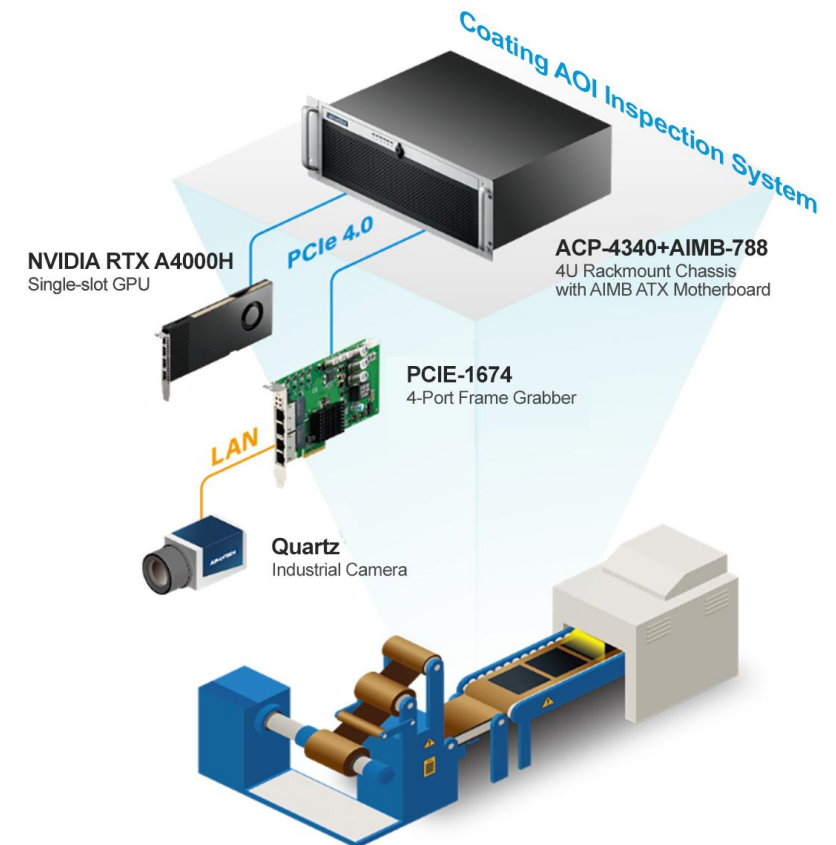
Recommended Products



ACP-4340
4U Rackmount Chassis



PCIE-1674
4-Port Frame Grabber



Use Case Scenario

Vision and Motion Control Integration Solution



Customer Challenges

- Low production efficiency
- Inconsistent product quality
- Growing pressure to reduce engineering and upgrade costs

Solution Benefits

- Integrated vision and motion control reduces system complexity
- High-speed communication improves real-time coordination and throughput
- Complete hardware platform accelerates integration and deployment

Recommended Products



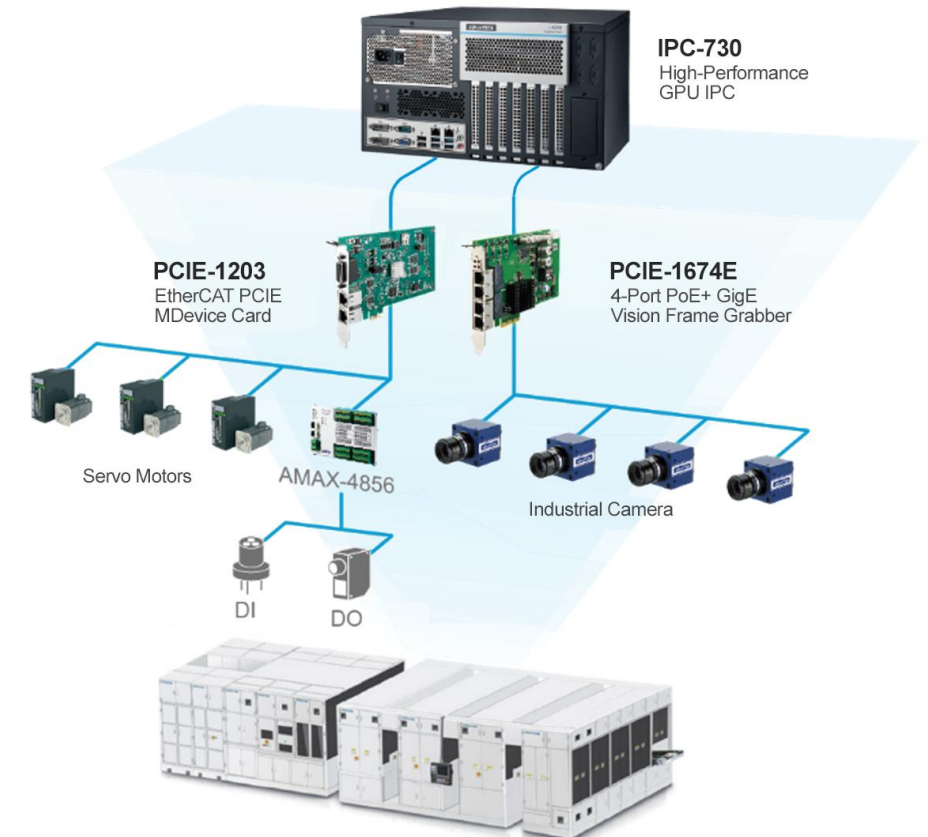
IPC-730
High-Performance GPU IPC



PCIE-1203
EtherCAT PCIE MDevice Card



AMAX-4856
EtherCAT Remote I/O Module



Use Case Scenario

Chemical Composition Testing Solution



Customer Challenges

- Insufficient system stability
- Slow after-sales response
- Unstable product availability

Solution Benefits

- Broad Intel® processor support enables flexible configuration and seamless upgrades
- Industrial-grade components ensure reliable long-term operation
- Global service coverage enables faster technical support and issue resolution

Recommended Products



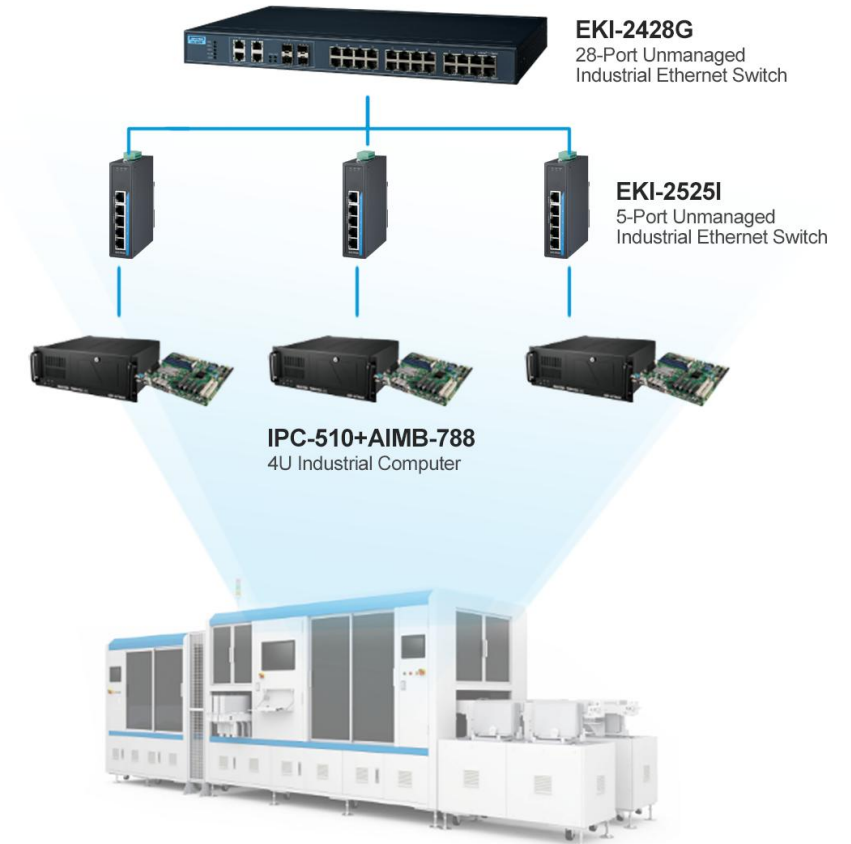
IPC-510+AIMB-788
4U Industrial Computer



EKI-2525I
5-Port Industrial Ethernet Switch

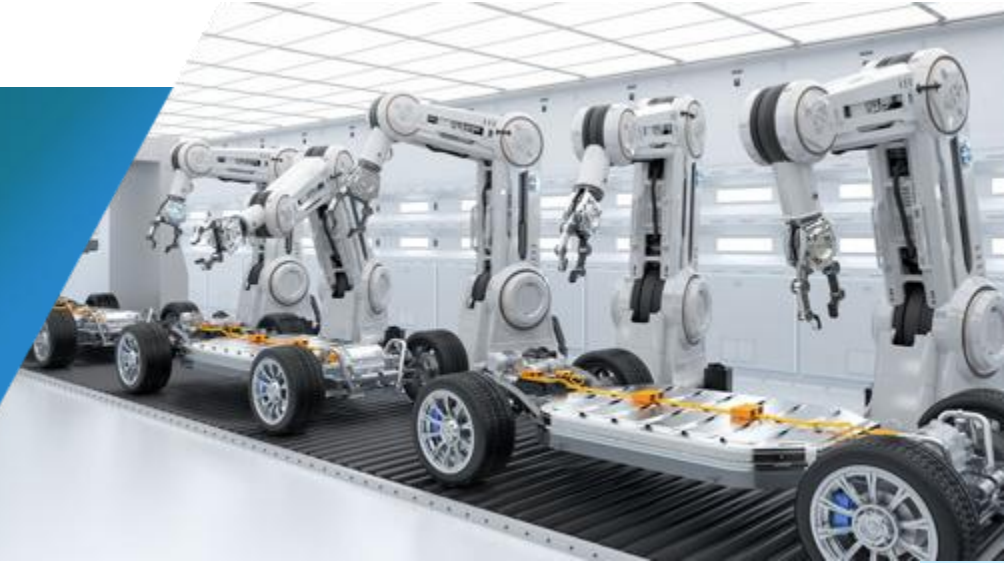


EKI-2428G
28-Port Unmanaged Industrial Ethernet Switch



Use Case Scenario

Battery Module & Pack Assembly Solution



Customer Challenges

- Unstable coordination across production equipment
- Limited real-time production visibility
- Inefficient production data management

Solution Benefits

- **PPC panel PCs** enable shop-floor operation, barcode data collection, and MES integration
- **Industrial Ethernet switches** provide reliable connectivity across production equipment
- **Industrial servers** centralize production data for MES monitoring and management

Recommended Products



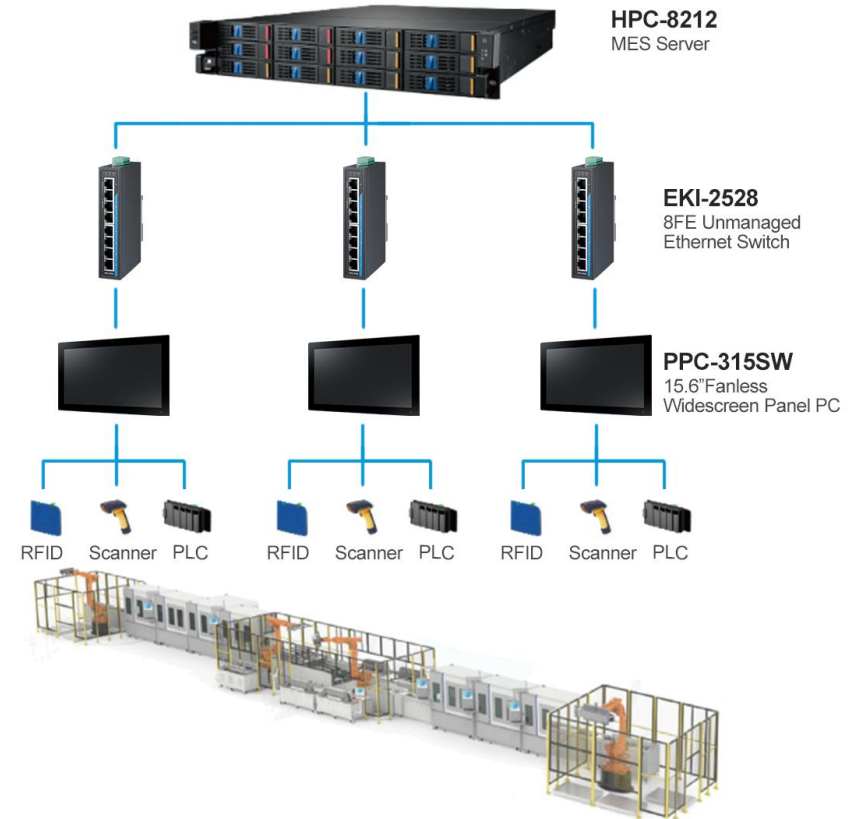
PPC-315SW
15.6" Fanless Widescreen
Panel PC



EKI-2528
8FE Unmanaged Ethernet Switch

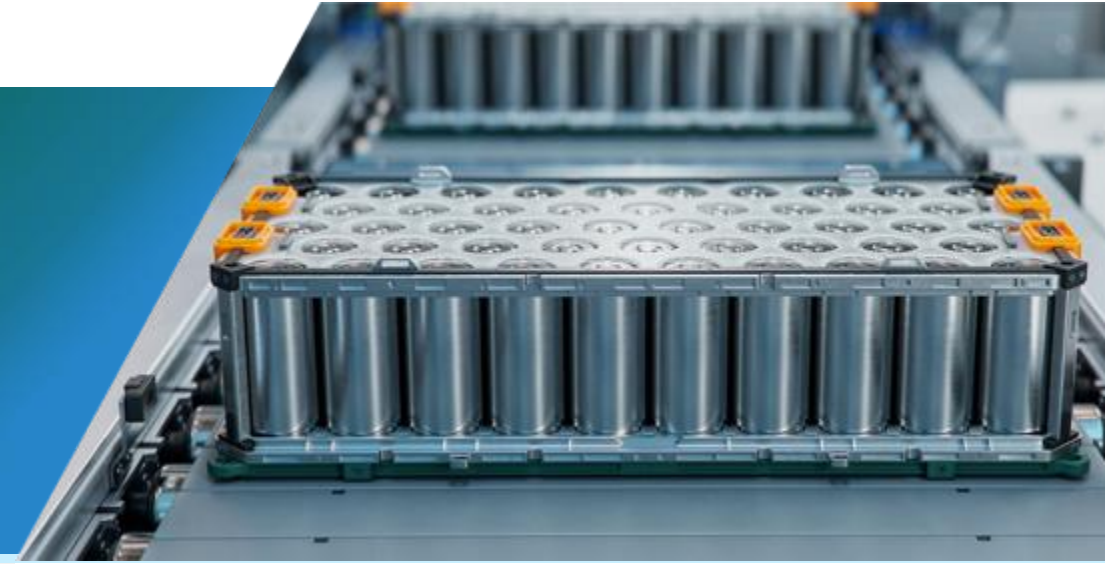


HPC-8212
2U Storage Chassis



Use Case Scenario

Battery Pack CT Inspection Solution



Customer Challenges

- Higher inspection throughput
- High-speed data processing
- Safety and certification requirements

Solution Benefits

- **Dual PCs** separate scanning and image reconstruction workloads
- AIMB-788E supports flexible PCIe expansion for vision, motion, and GPU cards
- **Industrial-grade platforms** support reliable operation and global deployment

Recommended Products



IPC-510
4U Rackmount Industrial Chassis



AIMB-788E
ATX Industrial Motherboard

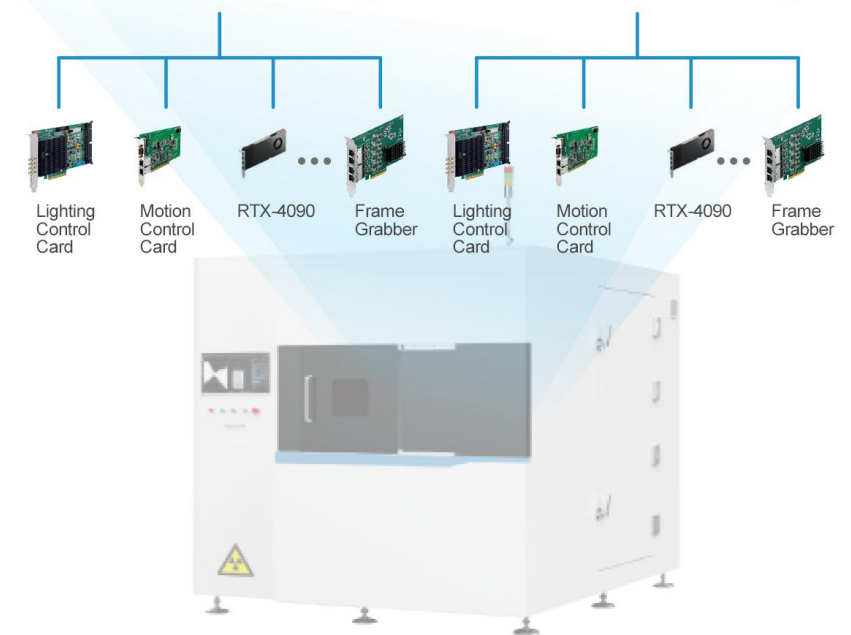
CT Scanning Process

IPC-510+AIMB-788E
4U Industrial Computer



Data Reconstruction

IPC-510+AIMB-788E
4U Industrial Computer



Use Case Scenario

AI Defect Inspection Solution for Battery Equipment



Customer Challenges

- High GPU computing demand
- Limited inspection system flexibility
- Need for greater system stability

Solution Benefits

- **Industrial Edge AI server** supports 24/7 defect inspection workloads
- **Flexible CPU, memory, and PCIe expansion** supports high-speed vision processing
- **Front-access I/O and compact design** simplify on-site deployment
- **PCIE-1103 frame grabber** expands machine vision connectivity

Recommended Products



HPC-7420+ASMB-807
4U Industrial Edge AI Server



PCIE-1130
4-Port Frame Grabber

HPC-7485+ASMB-977
4U Industrial Edge AI Server



Battery Manufacturing Case Study

Battery Management System (BMS) HiL testing for Electric Vehicle

Advantech enables real-time BMS HiL testing with multi-signal simulation, data acquisition, and CAN FD communication for battery system validation



Challenges

- Simulate battery charging, discharging, and lifecycle conditions
- Acquire temperature, humidity, and CAN signals in real time
- Validate BCU/BMU control logic and battery pack balancing

Solution

- Industrial computing supports real-time HiL control and scalable I/O
- Multi-channel DAQ enables battery signal simulation and acquisition
- CAN FD communication supports closed-loop BMS validation

Value

- Reliable BMS control validation
- Real-time closed-loop testing
- Flexible multi-signal simulation

Signal Conditioning Modules

ADAM-3010 Series
Current-to-Voltage Converter

Rackmount IPC Systems

ACP-4340
4U Rackmount Chassis

PCE-5133
PICMG 1.3 Full-Size SBC

PCE-5B13-03
13-slot BP for 14-slot chassis

PCIe I/O Card & CANFD Card

PCIE-1805
1MS/s, 16-bit, 32-ch Analog Input

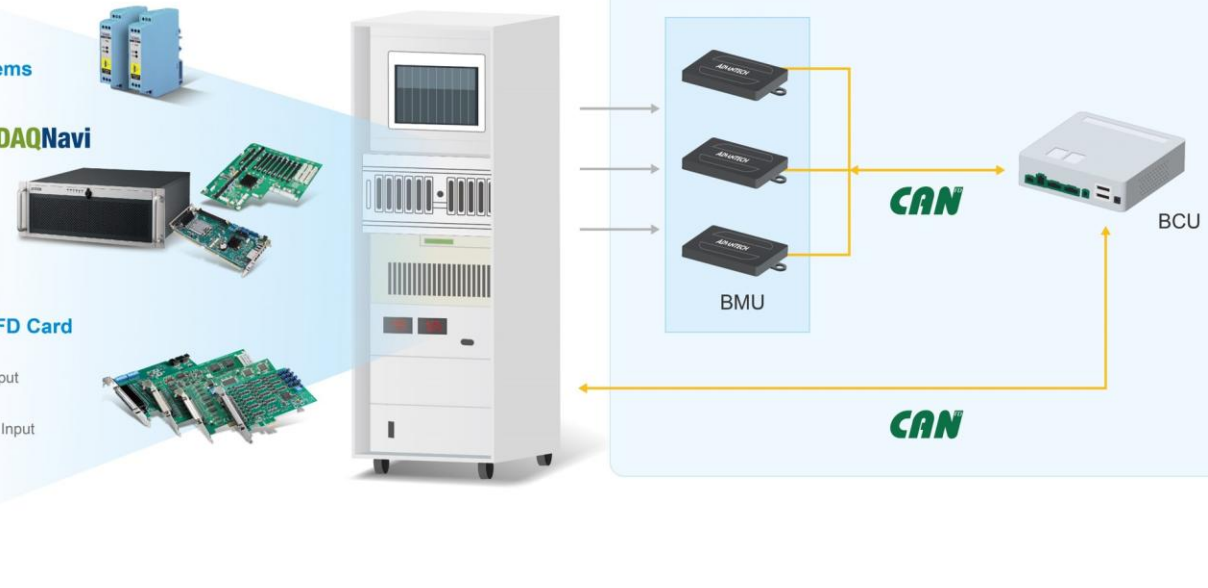
PCI-1747U
250 kS/s, 16-bit, 64-ch Analog Input

PCI-1780U
8-ch, 16-bit Counter/Timer

PCIE-1753
96-ch Digital I/O

PCIE-1682F
2-Port CANFD

DAQNavi



Battery Manufacturing Case Study

AI-Enabled AOI system for Secondary Battery Manufacturing

Advantech combines high-performance computing, GPU acceleration, and image acquisition for fast, compact AI inspection in battery manufacturing



Learn More



Challenges

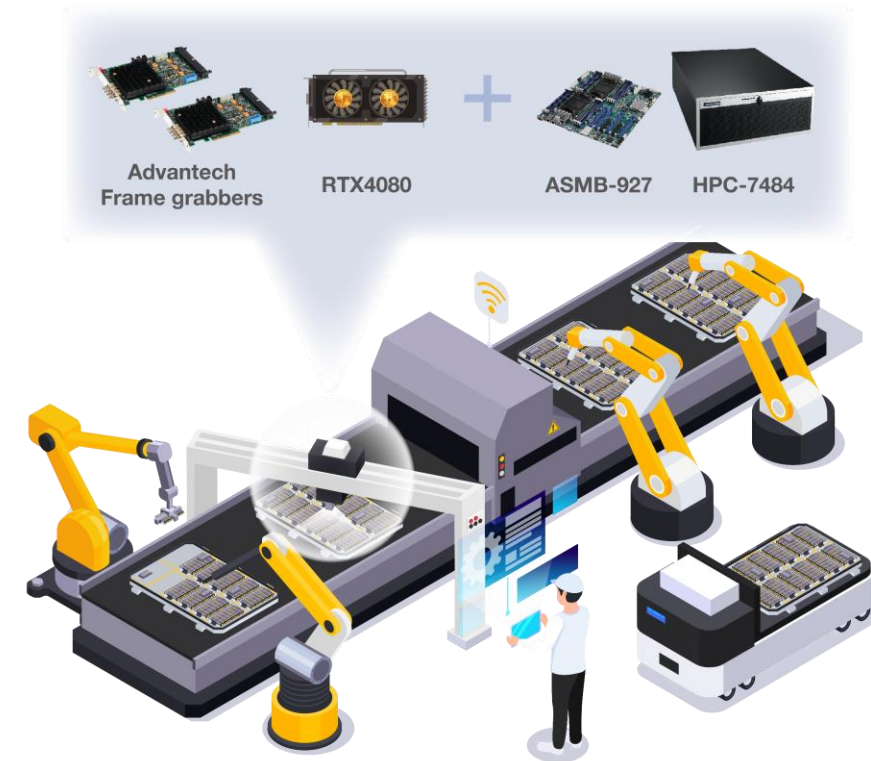
- Process high-resolution inspection images at high speed
- Reduce system footprint and hardware complexity
- Integrate GPU computing and image acquisition reliably

Solution

- **HPC-7484 + ASMB-927** integrate GPU and image acquisition in one platform
- High-performance computing accelerates AI inspection
- Optimized thermal and expansion design supports reliable deployment

Value

- Faster AI inspection
- Compact system integration
- Reliable high-resolution image processing



Battery Manufacturing Case Study

Industrial Wi-Fi for RGV Automation in EV Battery Manufacturing

Advantech industrial Wi-Fi and Ethernet connectivity enable reliable RGV communication and fast roaming for automated material handling in battery production.



Learn More



Challenges

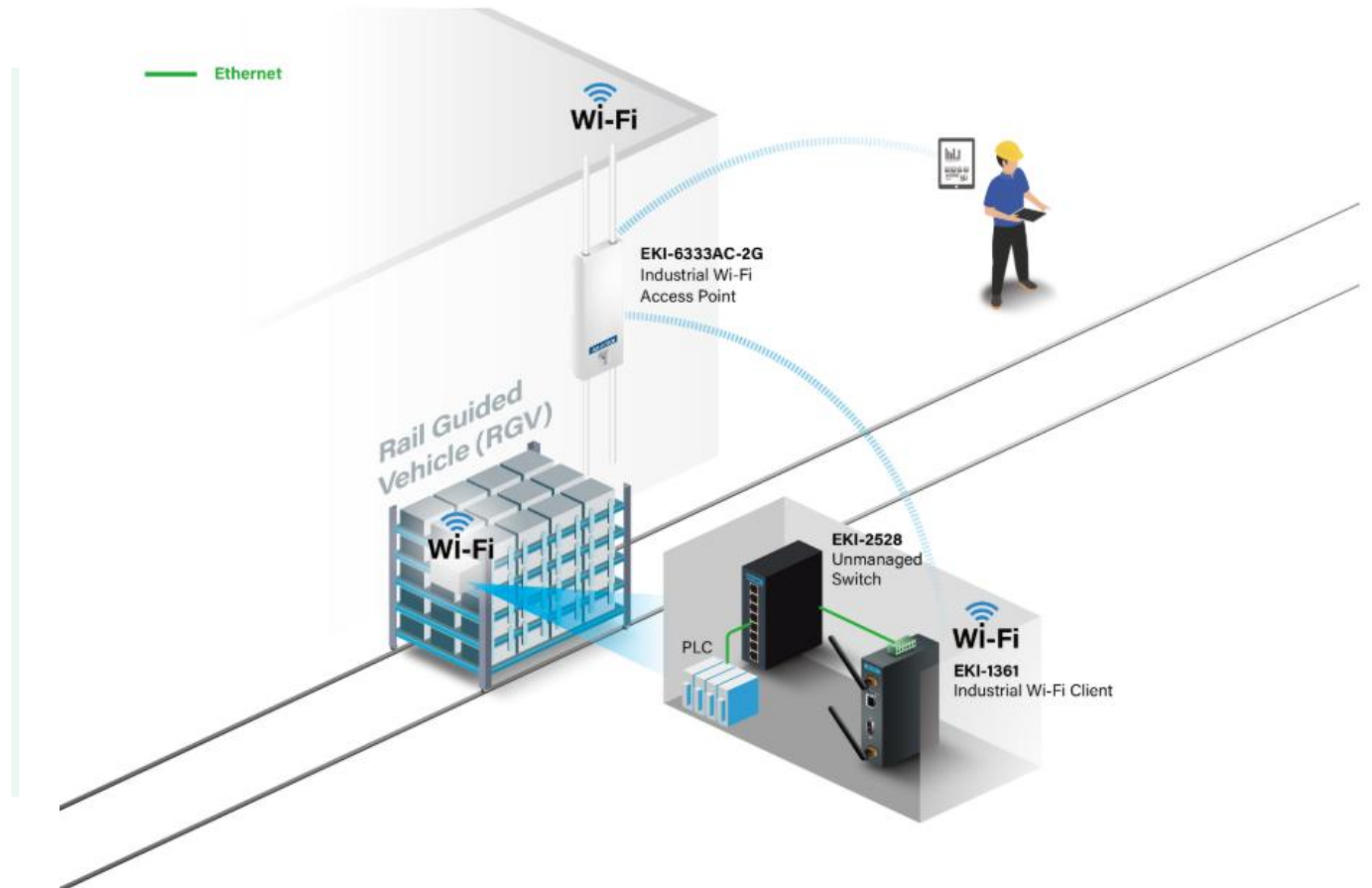
- Maintain reliable wireless communication in high-interference factory environments
- Support seamless roaming for moving RGVs
- Integrate existing PLC systems across multiple production lines

Solution

- **EKI-1361** connects RGV controllers to industrial Wi-Fi
- **EKI-6333AC-2G** enables stable dual-band coverage and fast roaming
- **EKI-2528** provides reliable wired network connectivity

Value

- Reliable RGV connectivity
- Seamless roaming across production lines
- More efficient material handling





Advantech Solutions & Resources

- Product Portfolio for EV & Battery Manufacturing
- Advantech Introduction
- Why Advantech
- Explore More Resources

Advantech Portfolio at a Glance

Explore how Advantech's product portfolio supports key EV testing and battery manufacturing applications.

Portfolio	 EV Test & Validation	 Machine Automation	 Quality Inspection	 Equipment Monitoring	 Connected Production
Test & Measurement Solutions	●	●	—	●	—
Computing, Control & Vision Platforms	●	●	●	●	●
Connectivity & Monitoring Solutions	—	●	—	●	●

Core Solution for EV Testing & Battery Manufacturing



Data Acquisition (DAQ) Solutions

High-speed, high-accuracy acquisition for EV testing and industrial measurement



125MS/s



26-bit



128 channels



Synchronized acquisition

DAQNavi Free DAQ SDK Tool

Modular DAQ



DAQ Cards



CAN FD Communication

For BMS, ECU & BCM testing



PCIE-1682F

- ✓ 2 Channels
- ✓ Up to 8 Mbps
- ✓ 2,500 VDC Isolation



Industrial Connectivity & Monitoring Solutions

For connected battery production and equipment monitoring



Switches

Industrial Ethernet
Industrial Wireless
Condition Monitoring



Industrial Computing, Control & Vision Platforms

For EV test systems, battery equipment, and machine vision inspection



AMAX-5580 V2
Real-Time Control
EtherCAT + Slice I/O



IPC-240
Compact Expansion
PCIe/PCI Expansion



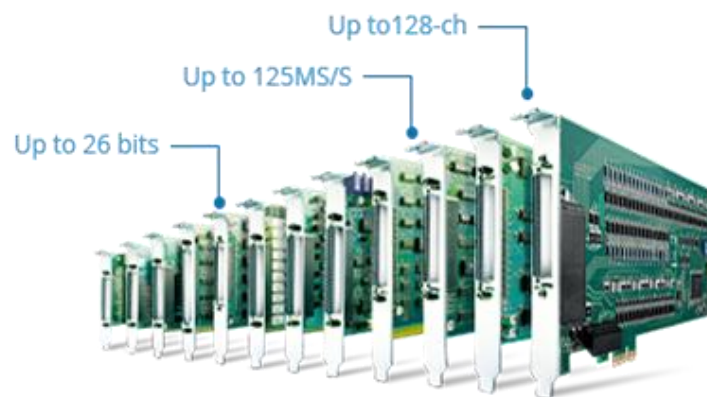
ACP-4340
High-Density Rackmount
Multi-Card Expansion



MIC-770 V3
Modular Fanless Computing
Flexible I/O Expansion

High-Performance DAQ Cards

Advantech delivers integrated PC-based test and measurement solutions for industrial monitoring, control, data acquisition, and automated testing. Its comprehensive PCIe data acquisition portfolio supports diverse measurement requirements, including voltage, current, and vibration. Combined with DAQNav software and drivers, Advantech simplifies application development and system integration, enabling accurate, reliable, and scalable test and measurement systems.



Full Spectrum of DAQ Cards with Best-in-Class Performance

- High-Speed: Sampling rate up to 125 MS/s
- High-Accuracy: Resolution up to 26 bits
- High-Density: Up to 128-ch in one card
- Synchronization: Simultaneous acquisition



Superior Measurement Quality for Domain-Focus Applications

- Sound and Vibration – Built-in IEPE function
- Strain, Pressure, and Force – Supports bridge input
- Position, Surface, and Round Measurement – Encoder synchronized with analog input



Free DAQ SDK Tool to Shorten Development Times

- Latest operating system support: Win7, Win10/11, and Linux
- Supports multiple programming languages: compatible with C#, Python, .NET, C and LabVIEW
- Guaranteed reliable execution for multi-thread programming

DAQ Cards Product Highlight

DAQ Cards Product Highlight



PCIE-1812

250 kS/s, 16-bit, 8-ch, Simultaneous Sampling, Multifunction PCIE Card



PCIE-1810

500 kS/s, 12-bit, 16-ch Multifunction PCIE Card



PCIE-1816H

5 MS/s, 16-bit, 16-ch Multifunction PCIE Card



PCIE-1753

96-ch Digital I/O PCIE Card

Analog Input



PCIE-1805

1MS/s, 16-bit, 32-ch Analog Input PCIE Card



PCI-1747U

250 kS/s, 16-bit, 64-ch Analog Input Universal PCI Card



PCI-1780U

8-ch, 16-bit Counter/Timer Universal PCI Card



PCIE-1884

32-bit, 4-ch Encoder/Counter with Preload Position Compare FIFO PCIE Card

Counter

Modular DAQ System

iDAQ series is a modular, high-speed DAQ platform built for edge applications, combining compact, rugged design with scalable, synchronized mixed-signal acquisition. With flexible communication interfaces and DAQNavi SDK support, it simplifies system integration and deployment across demanding industrial measurement applications.



Full Spectrum of DAQ Cards with Best-in-Class Performance



- **Unified Modules:** Various iDAQ modules integrated into a single virtual device with simplified control
- **High Resolution:** Up to 24-bit
- **High Speed:** Up to 1 MS/s per channel
- **Sensor-Specific Modules:** Designed for sound, vibration, strain, and load measurements

Rugged, Compact Design for Harsh Environments



- **Compact Size:** 100 mm (H) × 178 mm (W); 278 mm (W) with AMAX-5580 Edge Controller
- **Wide Temperature Range:** -40 to 70°C (USB series: -20 to 60°C)
- **Aluminum Alloy Enclosure:** Enhances noise shielding and EMI protection
- **DB15 Connector:** Vibration-resistant; tested to 5 Grms random vibration and 30 G shock

Easy Scalability and Expandability for Future Growth



- **Hot-Swappable I/O Modules:** Flexibly insert into the chassis to quickly build custom systems
- **Variety of Base Units:** USB, Ethernet, and standalone options with multiple slot configurations for easy expansion
- **Configuration Files:** Simplify duplication of acquisition parameters
- **Clock and Trigger Sync:** Achieved through backplane

Free and Easy-to-Use SDK for All Tasks and Devices

- **Intuitive Setup:** Easy device configuration with graphical interfaces and predefined profiles
- **Language & Language Support:** Compatible with C#, Python, .NET, C and LabVIEW
- **Real-Time Tools:** Utilities for fast data acquisition and analysis
- **Device Flexibility:** Works with a wide range of Advantech DAQ devices



Modular DAQ System Product Highlight

iDAQ Base Unit



iDAQ-938

8-slot USB 3.0 iDAQ Base Unit

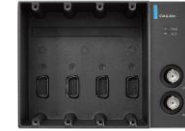
- 8 iDAQ slots
- USB 3.0 SuperSpeed
- Wide range power input
- LED status indicators
- Physical ID switch for multiple module identification
- 2 programmable function pin for timing signal (trigger, clock) input/output



iDAQ-974

4-slot GbE Industrial DAQ Chassis

- 4 x iDAQ slots
- Giga-bit Ethernet data interface, supporting daisy chain
- Wide range power input
- LED status indicators
- Physical ID switch for multiple module identification
- 2 x programmable function pins for timing signals (trigger, clock) input/output



iDAQ-964

4-slot Industrial DAQ Chassis Module for AMAX-5000

- LED status indicators
- 4 iDAQ slots
- PCIe interface connecting to AMAX-5000 series controllers
- 2 programmable function pin for timing signal (trigger, clock) input/output

iDAQ Module



iDAQ-784

4-ch, 32-bit Encoder Counter/Timer iDAQ Module

- 4x 32-bit encoder/counter
- Built-in digital filter
- Programmable trigger output (preload FIFO) for position comparison
- Compare output as trigger or conversion clock to iDAQ modules via iDAQ chassis
- Support encoder modes: Quadrature (X1, X2, X4), Two-pulse (CW/CCW), Pulse-direction (Signed Pulse)
- Buffered acquisition synchronized with other iDAQ modules



iDAQ-801

256kS/s/ch, 24-bit, 4-ch iDAQ Module for Sound and Vibration

- Hot-swappable in iDAQ system
- 4-ch simultaneous sampling up to 256kS/s
- 24-bit resolution
- Direct IEPE supply
- Anti-aliasing filter equipped
- High gain up to $\pm 187.5\text{mV}$ input range



iDAQ-841

8-ch, 16-bit, 1MS/s/ch Analog Input iDAQ Module

- 8-ch simultaneous sampling up to 1 MS/s
- 16-bit resolution
- Software selectable low-pass filter
- Wide input range up to 40 Vpp ($\pm 20\text{ V}$ range)
- Support both voltage and current measurement

DAQNavi/SDK Software Development Kit



DAQNavi SDK is an all-in-one toolkit for Advantech DAQ devices, integrating drivers, APIs, utilities, and CUDA support to accelerate application development across Windows and Linux.



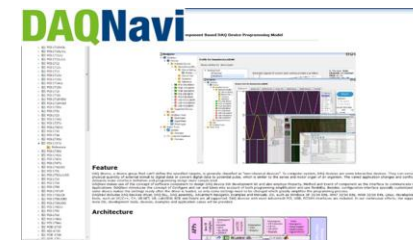
All-in-One DAQ Development Toolkit

Combines drivers, APIs, sample code, and documentation to streamline DAQ application development and shorten integration time.



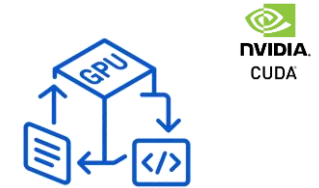
Cross-Platform and Multi-Language Support

Supports Windows 7, 10, and 11 and Linux, with C, C++, Qt, C#, VB.NET, Python, Java, MATLAB, and LabVIEW.



Comprehensive Development Utilities

Provides Navigator for GUI-based configuration and testing, plus DNDEV for command-line firmware updates, calibration, information queries, and remote device scanning.

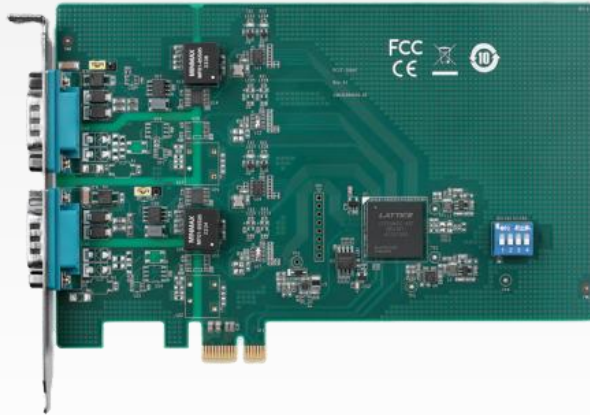


CUDA-Integrated Workflow

Integrates CUDA support with DAQ drivers and SDKs, simplifying GPU-accelerated signal processing development with minimal coding effort.

Advantech's CAN FD Communication Card

DAQ Cards Product Highlight



PCIE-1682F

2-Port CAN FD Bus PCIE Card with Isolation Protection

- PCIe bus specification 1.2 compliant
- 2 x Independent CAN ports
- Up to 8 Mbps transmission speeds
- 40 MHz CAN FD controller frequency
- Optical isolation protection of 2,500 VDC
- Transmit/Receive status LED indicators

Specification

General

Bus Type	PCI Express V1.2
Certification	CE, FCC
Connectors	2 x DB9, male
Ports	2
Power Consumption	3.3 V @ 630 mA (typical)

Communication

CAN FD Controller	Microchip MCP2518FDT-H
CAN FD Transceiver	TI TCAN1057AVDRQ1
Signal Support	CAN_H, CAN_L
Protocol	CAN 2.0 A/B, CAN FD
Data Transfer Rate	Programmable up to 8 Mbps
CAN Frequency	40MHz

Protection

Isolation Protection	2,500 VDC
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Industrial Connectivity & Monitoring Solutions



As industrial automation advances, factories and equipment manufacturers face growing demands on their network infrastructure. While managed switches offer advanced control and network visibility, the need for reliable, easy-to-deploy solutions also remains strong - especially on the edge. Unmanaged switches continue to play a vital role in delivering essential connectivity for machines, PLCs, and sensors - without the overhead of configuration or monitoring. Together, managed and unmanaged switches address different networking needs across modern industrial applications. But deploying the right solution effectively in modern industrial environments isn't without challenges.



Complex and Diverse Network Setups

As smart factory systems grow, the number of devices like PLCs and sensors increases. Network setups become more complex, making switch deployment and wiring more difficult.



Demand for Plug-and-Play Reliability

Many users in the field are not network experts. They require devices that work out of the box with minimal setup while offering stable and reliable connections.



Harsh Industrial Environments

Heat, dust, oil, and vibration in factory settings demand rugged, durable switches that can maintain performance under stress.

Industrial Connectivity Product Highlight

Unmanaged Switches



EKI-2716EI-SL
16-port Fast Ethernet
Unmanaged Switch

- 16-port compact slim design
- DIP Switch Configuration: QoS/BSP/VLAN
- EMC Level 3, redundant power
- -40 ~ 75°C wide temperature range



EKI-2528NI
8-port PROFINET Unmanaged
Ethernet Switch

- PROFINET Conformance Class A
- EMC Level 4 protection
- Enhanced traffic prioritization for automation protocols
- Compact size with DIN-rail/Wall mount



EKI-2705LX
5-port 2.5GbE Unmanaged
Switch

- 5 x 2.5GbE ports with auto MDI/MDIX
- Slim DIN-rail design
- Redundant 12-60VDC power input
- Supports jumbo frame transmission up to 12k

Managed Switches



EKI-5710E-2FI
8FE + 2 SFP Gigabit Managed
Switch

- Certified to IEC 62443-4-2 SL2
- Redundancy: X-Ring Pro (ultra-high-speed recovery time, <20 ms), RSTP/STP (802.1w/1D)
- IXM function for fast deployment
- Compact size and easy installation



EKI-8712G-4XFI
L3 8GE + 4 10G SFP+ Managed
Switch

- 8 x Gigabit Ethernet ports + 4 x SFP+ ports
- L3 function: Static route, NAT
- Redundancy: X-Ring Pro (ultra-high-speed recovery time, <20 ms), RSTP/STP (802.1w/1D)
- IXM function for fast deployment
- Dual 12 ~ 48 VDC power input and 1 x relay output



EKI-8528-4XF
L3 Modular Managed Switch

- Certified to IEC 62443-4-2 SL2
- 3 x 8 Gigabit ports module slots + 4 x 10G SFP+ ports
- Dual power input options for 110/220V AC or 24-48V DC power module
- L3 functions: RIP v1/v2, OSPF, VRRP, PIM and NAT
- Fully layer 2 and TSN-enabled functions
- Redundancy: X-Ring Pro (< 20ms @250units), X-Chain

Edge Controller

Advantech's Compact EtherCAT Controller and Slice I/O - designed with the smallest programmable automation controller (PAC) in the Core i class processor, modular I/O, and a PCIe communication interface. It integrates gateway, motion control, I/O data acquisition, fieldbus, machine vision, and device networking into one control platform, which provides users with a solution that is both easy to integrate and easily scalable.



Compact Size, Save Your Space

Advantech AMAX-5000 is the industry's smallest and faster open platform. Its compact form factor with a height of 10 cm and slice I/O modules are all mounted on standard DIN rails, eliminating the need for additional drilling or mechanism while installing in the equipment control cabinet. This not only saves the space occupied but also allows the industrial equipment to be integrated across the boundary



High-Speed Processing, Boost Up Your Machine

Advantech AMAX-5580 V2 is equipped with 13th Gen Intel® Core™ Processor. The controller's left and right sides are designed with standard PCI Express high-speed interface and EtherCAT communication protocol which provides up to 100 Mbps transmission speed. It can greatly improve the immediacy and accuracy of Advantech AMAX-5580 V2 for transferring and processing big data

Flexible Expansion, Meet Your Needs



Advantech AMAX-5000's modular EtherCAT I/O and PCI Express interface design provides users with the ability to select specific I/O and communication modules to perform data acquisition, control and transmission. Meet the actual needs while retaining the scalability, accurate matching, no extra equipment waste

Highly Integrated, Cross Your Border



Advantech AMAX-5000 integrates traditional PLC and PC applications. It provides communication, high-speed data acquisition, control, data storage and computing functions in a single platform. Besides, it can be integrated with third-party software, making it easier for industrial equipment manufacturers to develop cross border OT to IT IoT applications

High-Performance Fanless Modular IPC



MIC-770 V3

High-Performance Fanless Modular IPC
with 12th/13th/14th Gen Intel® Core™ i
CPU Socket (LGA 1700)

Ruggedized Industrial Design



Fanless
& Compact



Wide operating
temperature

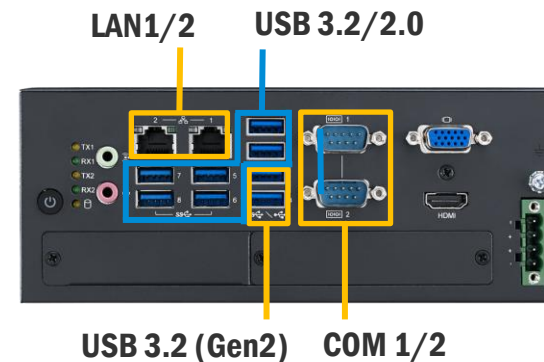


Wide DC
input range



Vibration/shock
protection

Rich I/O Connectivity



- Supports 2 x GigaLAN for Ethernet connection
- Supports 2 x USB 3.2 (Gen2) and 6 x USB 3.2 (Gen1)
- Supports 2 x RS-232/422/485 and 4 x RS232 serial ports (optional)

Modular Design



- Supports i-Modules for flexible expansion with frame grabbers, communication cards, and GPU cards.
- Supports Flex I/O and iDoor technology

4U Rackmount Chassis with ATX Motherboard



ACP-4340 + AIMB-788

4U Rackmount Chassis with 12th/13th/14th
Gen. Intel® Core™ i9/i7/i5/i3 ATX
Motherboard

Up-to-date Intel CPU Support

- Supports 12/13/14th Gen & Intel® Core™ Processor Series 2
- Up to 24 cores and 32 threads
- Four DIMM sockets up to 128 GB DDR4 3200



Higher Scalability



ACP-4340

- M.2: PCIe x4 M-key 2280 type NVMe storage
- 2 x USB 3.2 Gen 2: 10 Gbps
- DP/HDMI: 4K UHD resolution

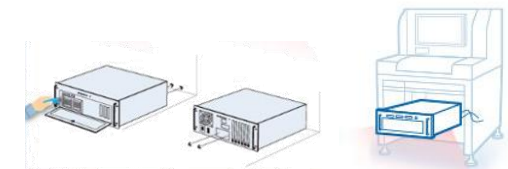


AIMB-788

- Premium 4U chassis with self-diagnosis capabilities
- 4 x hot-swappable 3.5"/2.5" storage trays

Design for Machine Automation & Smart Factory

- Lockable door for enhanced security
- Supports cabinet and rack mounting
- Front or rear I/O for easy cabling



Compact IPC



IPC-240

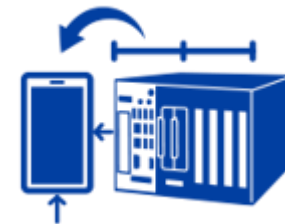
Compact IPC for
Industrial Equipment Manufacturing

10 Year Longevity



Minimize re-qualification
efforts and enhance the
stability of long-term
supply

Small Form Factor



Compact design greatly
reduces installation space

High CPU Performance



Intel® Core™ processors
(12/13/14th Gen.), ideal
for edge computing &
compact controller

Flexible Expansions for Enhanced Functionality

Flexible PCIe/PCI expansion slots support full-height PCIe/PCI cards for machine control, vision applications, and AI-powered automated optical inspection (AOI)



Compact IPC

+



GPU Cards

+



Machine Vision

=



Edge AI IPC

ADVANTECH

Enabling an Intelligent Planet

Est. 1983

Headquarters: Taipei, Taiwan

Edge Computing and AI-Powered WISE Solutions

iFactory, Energy & Utilities,
Intelligent System & AMR,
iHealthcare, iCity Services
& iRetail



\$9.2B

MARKET
CAP (USD)
(Feb., 2026)



HONORS & AWARDS

- No.4 in Best Taiwan Global Brands
- Top 5% S&P Global CSA Score
- No.9 in Top 100 Industrial IoT Companies
- Red Dot Product Design Award
- iF Product Design Award

Interbrand

S&P Global



WORLD'S LARGEST IPC COMPANY

Advantech IPC WW Market Share

● Advantech ● Other IPC Companies

Source: OMDIA – Market Share estimates for Industrial PCs: World, 2025 Edition



\$2.27B

2025
REVENUE
(USD)

KEY ECO-SYSTEM PARTNERS

intel.

Microsoft



micron

AMD

Canonical
Ubuntu

TEXAS
INSTRUMENTS

arm

NXP

Qualcomm

MEDIATEK

and more...

QUALITY SYSTEMS IN PLACE

- ISO 9001
- ISO 27001
- ISO 14001
- TL9000
- ISO 17025
- ISO 45001
- ISO 13485
- IECEX QAR
- ISO 14064
- AS 9100
- SONY GP
- ISO 50001

1.8 MILLION+ sq. ft.

MANUFACTURING PLANTS

Linkou, Taiwan



- 10 SMT, 13 system line
- Engineering sample services
- Complex product lines
- Flexible & quick production

Kunshan, China



- 12 SMT lines, 15 system lines, 6 chassis lines
- Chassis design & production
- Mature product lines
- Cost-effective production



Nogata, Japan

- 4 SMT lines, 1 system line
- Japan design center, CTOS service, logistics center, repair center

WORLDWIDE OFFICES



Manufacturing 3
On-site service 6
Design centers 11
Repair centers 15
CTOS centers 17
Logistics centers 20

More than 90 offices globally!

9400+

EMPLOYEES



Why Advantech for EV & Battery Manufacturing

Industrial-grade capabilities and global support for EV testing and battery manufacturing applications.



Industrial Reliability

Industrial-grade solutions for demanding test and production environments



Long-Term Availability

Long product life cycles help reduce redesign and requalification efforts



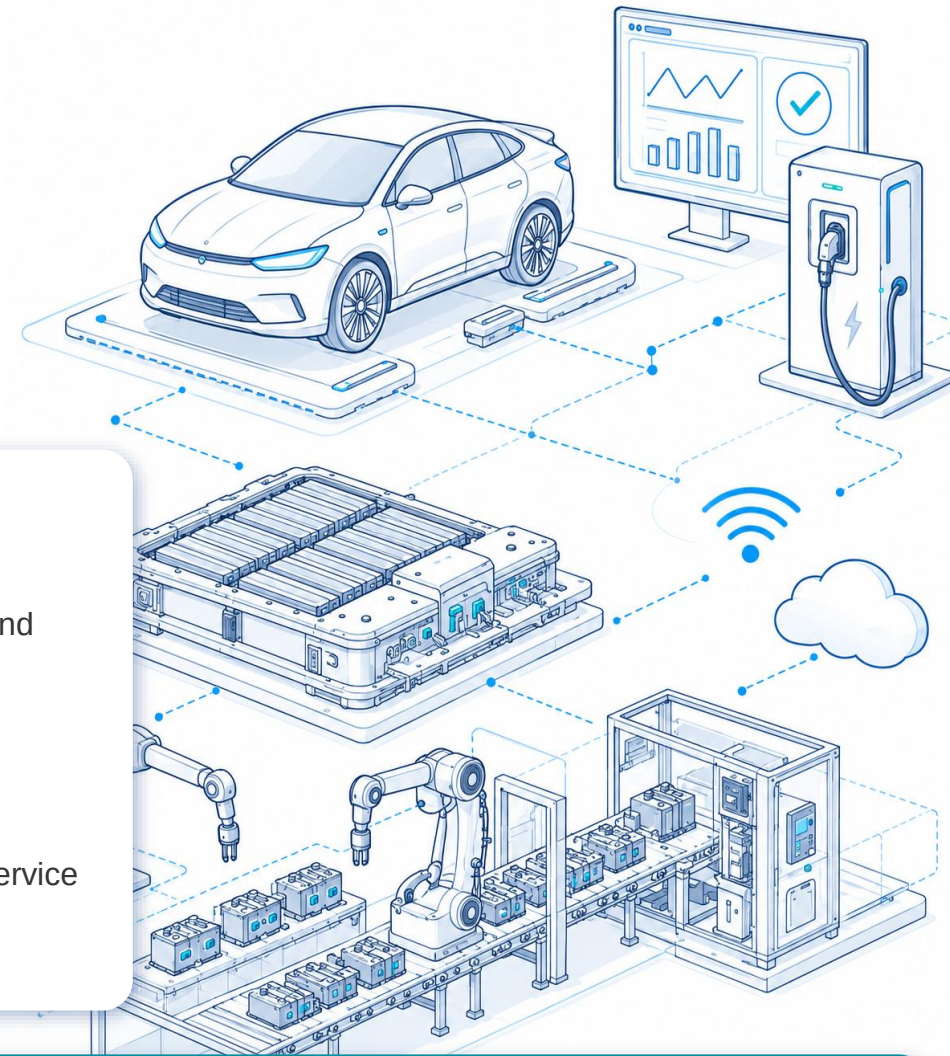
Flexible Integration

Computing, control, DAQ, vision, and connectivity for diverse system requirements



Global Support

Worldwide technical support and service for multi-region deployment



From EV component validation to battery production, Advantech provides the industrial-grade building blocks needed to integrate, deploy, and maintain reliable systems.

Explore More EV & Battery Manufacturing Resources

Featured Resources



iDAQ Series — Modular DAQ System

Modular DAQ for diverse test and measurement application

 [Learn More](#)



PC-Based Test & Measurement with High-Speed DAQ

Learn how high-speed DAQ supports demanding measurement applications

 [Learn More](#)



Common DAQNav SDK Development

Build and integrate DAQ applications with DAQNav SDK

 [Learn More](#)

Product Selection Guide / Modular DAQ Section Guide



Modular DAQ Section Guide

Compare modular DAQ and embedded cards, and explore scalable deployment, flexible I/O and easier system integration

 [Download Now](#)



Analog I/O Card Selection Guide

Learn how to test Advantech AIO cards with PCI/PCIe interfaces

 [Learn More](#)



Digital I/O Card Selection Guide

Learn how to test Advantech DIO cards with PCI/PCIe interfaces

 [Learn More](#)



PCI-1700 & PCIe-1800 Series Overview

Learn how to test Advantech AIO cards with PCI/PCIe interfaces

 [Learn More](#)

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Kaohsiung	886-7-392-3600

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Singapore	65-6442-1000

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Penang	60-4-537-9188

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Hochiminh	84-28-3836-5856

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Pune	91-94-2260-2349

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Breda	31-76-523-3100

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Düsseldorf	49-2103-97-855-0

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Milan	39-02-9544-961

UK	
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London	44-0-870-493-1433

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Sweden	
Stockholm	46-0-864-60-500

Poland	
Warsaw	48-22-31-51-100

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Moscow	8-800-555-01-50
St. Petersburg	8-812-332-57-27
	8-921-575-13-59

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Ústí nad Orlicí	420-465-524-421

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Galway	353-91-792444

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Chicago	1-888-576-9668
Cincinnati	1-513-742-8895
Irvine	1-949-420-2500
Milpitas	1-408-519-3898
Ottawa	1-815-433-5100

Brazil	
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São Paulo	55-11-5592-5367

Mexico	
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Mexico City	52-55-6275-2777

ADVANTECH

Enabling an Intelligent Planet

www.advantech.com

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