Maximizing Auto Part Productivity with Advanced Intelligent Systems

Test and Measurement Technology for Quality Assurance

- Automobile Industry Overview
- Core Technologies
- Applications
- Complete Product Lineup

ADVANTECH

Enabling an Intelligent Planet

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Industry Overview

Identifying and Seizing High-Growth Opportunities

In 2014, approximately 71 million automobiles were sold worldwide, an increase of 3.4% from 2013. IHS, an international research organization for authoritative reference content, has boldly predicted that the global automobile market will maintain this trend of stable growth until 2018, by which time, annual global automobile sales could reach as high as 100 million units. In recent years, despite the European economy facing numerous challenges with the potential to impact sales, increased demand for household vehicles in other developing and emerging regions, such as China, India, and Eastern Europe, continues to drive strong growth in the automobile market.

Automobile manufacturers are keen to expand their share of the increasingly affluent Asian market, where sales of passenger vehicles have doubled in the last 7 years. In Malaysia, Indonesia, and India, automobile sales figures have shown consistent growth. In China, the enormous demand for automobiles resulting from rising per capita income has increased sales of passenger vehicles by 200% since 2010, reaching a staggering 23 million units. China has also become the number one producer of light-duty vehicles. Additionally, the steady decline in oil prices during 2014 yielded a positive, if short-term, impact on the automotive market. Lower oil prices also stimulated vehicle sales in mature markets like the United States, enabling automobile manufacturers to achieve record growth in the second half of 2014. Considering all the relevant factors, the global automotive industry should be able to maintain a steady growth trend over the next 5 to 10 years.

The Challenges of Globalization

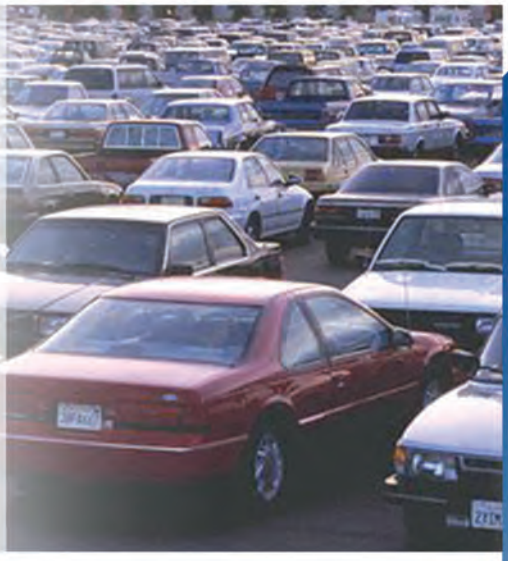
To increase revenue, vehicle manufacturers are striving to sell competitively priced high-quality products in the global market, while also developing domestic markets. With the ongoing advancements in manufacturing technologies and automobile development, major automotive brands have accumulated considerable technological capabilities to compete with international automobile manufacturers. However, increasingly high tariff barriers and stringent environmental regulations continue to pose substantial challenges for automobile manufacturers.

As environmental awareness soars, carbon emission limits have become a key factor that determines whether a vehicle can be sold in the global market. The tire labeling regulations implemented by the European Union in 2012 provide an example of manufacturing and grading standards that relate to vehicle carbon emissions. The countries of Japan, South Korea, and the United States have also implemented a similar tire grading system. In response to this trend, part and component suppliers for leading automobile manufacturers must adopt more comprehensive high-precision production, design, and testing equipment to ensure that products comply with relevant regulations.

Industrial Equipment Upgrades are Critical

In recent years, malfunctioning components have led to high-profile accidents and safety risks, resulting in numerous large-scale product recalls by automobile manufacturers. Massive product recalls significantly affect a company's bottom line and may even cause future losses by damaging the brand value. The implementation of high-precision production and assembly equipment can prevent such losses. The modernization and automation of plant equipment are critical advancements that automobile manufacturers and component suppliers must wholeheartedly pursue. Parts built using precision machinery are significantly more reliable than those made using more traditional processes. Advantech's industrial I/O cards are the keys to such technological enhancements. From flexible plug-and-play USB data expansion/acquisition modules to high-efficiency, high-precision PCI and PCIE cards, Advantech's quality products and comprehensive product line can provide solutions for all application demands.

Smart Manufacturing Increases Competitive Advantages



Since Germany proposed the Industry 4.0 concept in 2012, smart factories have become a popular topic for manufacturers worldwide. Through the integration of information and realization of the Internet of Things, all the machinery, equipment, and components in factories of the future will be able to instantly exchange information or even control each other, significantly upgrading production efficiency, speed, and flexibility. For the automobile industry, future developments will continue in pursuit of intelligent solutions, electrification, lightweight products, and modularization. Meanwhile, the ratio of common components shared by various automobile manufacturers will gradually increase.

With upgrades in production technology, high-quality parts and components developed by one manufacturer will have a high likelihood of being adopted by other automobile brands. Consequently, the potential business opportunities for part manufacturers are no longer limited to local automobile producers. Part manufacturers can expand internationally, benefit economically from the global market, and further reduce production costs while achieving higher profits. Advantech has responded quickly to recent trends, becoming one of the first manufacturers to embrace the Internet of Things. By providing comprehensive field-side product solutions, including data acquisition modules, boards, and high-performance computing platforms as well as SCADA software (WebAccess) for control terminals, Advantech is taking active steps to welcome in the new industrial era and substantially assist its partners with realizing smart manufacturing.

Advantech Product Solutions and Opportunities

DAQNavi Data Acquisition Driver and Software Development Package

An automobile contains approximately 8,000 components, whose manufacturing processes differ according to the vehicle type and application. Therefore, such components require vastly different product safety tests. Advantech's next-generation data acquisition driver and software development package, DAQNavi, is designed to handle the unique aspects of testing, measurement, and development operations. For example, DAQNavi supports multiple programming languages and operating systems, can be used under multi-threaded and multi-core execution environments, and features an easy-to-operate interface. This enables test system developers to focus on their areas of expertise without worrying about system-related programs and cross-platform compatibility issues. This free software package contains device drivers and a complete SDK that includes libraries, sample codes, and general programs, enabling developers to customize programs according to specific manufacturing processes.

DAQNavi

Industrial Computers

Advantech produces a full range of industrial computers for diverse applications in the automation field. By offering extensive system integration services, including customization, integration, validation, and certification, Advantech demonstrates its commitment to providing customers with all-in-one solutions and rugged systems that maximize their capabilities and productivity.

High-Performance Instrument Cards

Advantech's new generation of instrument cards can provide either a 500-MHz data acquisition rate or 24-bit ultra-high resolution measurement functions. The ultra-high-speed 500-MHz data acquisition card integrates four channels and features 2 GB of built-in memory. The 500M Hz sampling rate enables the card to process up to 1 GB per second. The 24-bit ultra-high resolution card can be used to measure subtle vibrations and sound frequencies via integrated piezoelectric sensors (4/20mA) to provide accurate data for producing vehicle safety-related precision parts, such as gearboxes and engines. The two cards possess analog signal trigger functions, essential for routine machine inspections and real-time data acquisition, and significantly shorten the signal analysis period.

Portable USB Data Acquisition Module

The USB-4700 Series DAQ module is compact, easy to carry, and features a USB plug-and-play interface. With just a notebook computer, production line engineers can collect data from each workstation at any time. The process is fast and convenient and not constrained by environment. During product design validation, the module can also be used as secondary measurement equipment to enhance the accuracy of test measurements.

Palm-sized Data Acquisition Computers

Advantech's MIC-1800 series, MIC-1810 and MIC-1816, are the industrial embedded computers and data acquisition module Integrated into a PC-based control platform. In order to make MIC-1800 series lean and compact, Advantech downsized and refined the traditional embedded computer. The MIC-1800 series was made palm-sized by removing some unnecessary system functions and adopting a fanless design. The built-in terminal block enables direct connection with the sensor signal line, which saves space and eliminates some wiring. The adopted DIN-rail mounting makes it compatible in the distribution boxes or control cabinets of all kinds of machines. Anti-vibration and anti-dirt features maintain system stability even in harsh environments. Moreover, MIC-1800 series with multiple I/O channels acquires electrical signals for real-time monitoring through analog input channels; it controls workpiece motion via digital input and output channels, and uploads machine information to the Cloud via the Ethernet port for remote monitoring.

PCIE/PCI Data Acquisition Cards

Advantech produces comprehensive digital and analog I/O solutions in both PCIE and PCI interface formats, and its products can support many of the sensors and platforms used in manufacturing and testing automobile parts. Regarding digital I/O cards, Advantech provides complete solutions that range from TTL, isolated signal circuits, to relay modules, with a variable number of signal channels (16 to 128). The analog I/O series provides acquisition modules with up to 32 channels. Synchronous cards with a 500MHz sampling rate and multifunction cards with digital I/O provide reliable data acquisition capabilities for diverse applications, such as high-pressure cylinder testing for airbag inflation.

Case Studies

Automobile Brake Testing System

Project Description

The braking system plays a pivotal role in driving safety. Therefore, products related to braking are subjected to extremely high intensity and rigorous tests during the brake component production process in order to ensure normal function under all conditions. With advanced automobile brake detection devices as well as precision measurement and sensing technologies, automobile brake test platforms can perform brake equipment tests for a variety of vehicle types. All of the test methods are controlled and inspected using torque sensors and servo motors. For these tasks, the analog and digital mass data acquisition cards adopted by Advantech's industrial computers can seamlessly link the actual on-site data with the standard data. This system uses a PC-based structure and applies data acquisition and signal processing, industrial control and automation as well as database and computer monitoring techniques.

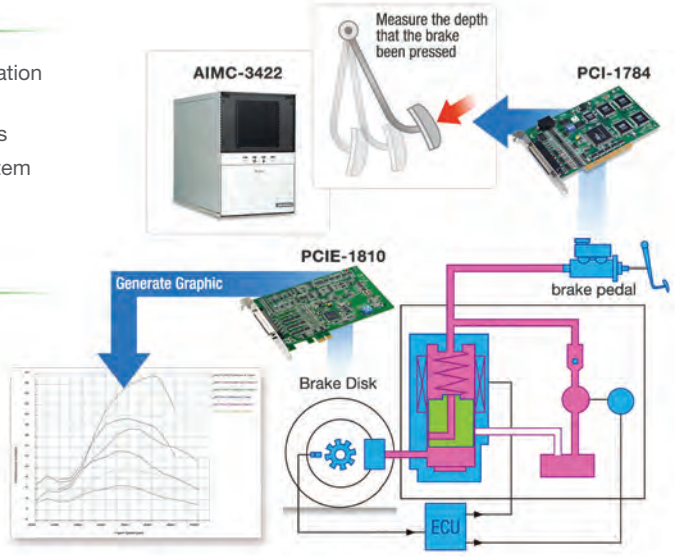
System Requirements

1 · The industrial computer must withstand 8 hours of continuous operation without stopping in order to perform brake fatigue tests

2 · Compact, space-saving, industrial computer system with 2 PCI slots

3 · System hardware stability is essential because the brake safety system must satisfy strict national standards

4 · Multiple parameter batch sets for use under multiple conditions



System Functionality

This testing system examines the brake capacity efficiency by measuring the brake pedal's stepping stroke and the corresponding brake force. The 800 KS/s high-speed sampling capability and the 12-bit ultra-high resolution can enable the PCIE-1810 to accurately capture the brake resistance of the tires, while the PCI-1784 count card can synchronously record the stepping stroke of the brake pedal. In conjunction, they plot an intensity diagram that illustrates the amount of force applied to the tire for each unit of stepping stroke applied to the brake pedal, and thereby analyze braking systemactuation efficiency.

Vehicle Shock Absorber Automatic Test System

Project Description

The shock absorber suspension system is a critical component of a car, and its performance directly affects the car's handling safety and comfort. Shock absorber malfunctions can affect an automobile's stability and also have a direct and critical impact on the active safety of the vehicle. Therefore, the operational status of the absorber is absolutely essential to driving safety. This system can test the damping features and power characteristics of shock absorbers, reducing the shock absorber test cycles and improving efficiency.

System Requirements

1 · The sine and cosine noise wave generators have been designed to test the damping, speed, and displacement characteristics of the automobile shock absorbers

2 · It uses simulated signal fitting, differentiation, and filtering processes to observe the dynamometer and speed curves

3 · Damping force signals are monitored and spectrum analysis is performed in order to determine whether the shock absorber passes the test

4 · Data storage and replay functions

System Functionality

1 · The 500K/S sampling rate and 16-bit resolution of the PCIE-1816 data acquisition card can accurately collect the damping force changes captured by the pull/pressure force sensors. In addition, the absorber's displacement variations can be changed into voltage signals through the differential transformer displacement sensors, and finally collected.

2 · MIC-7700 is a fanless box PC; its 3G seismic resistance capacity can fully adapt to the rocking motions produced by the shock-absorber testing machine's operations.

Tire Fatigue Performance Test System

Project Description

Fatigue breakdown is the primary failure method for car wheels and is directly related to passenger safety. The bending fatigue strength is an important parameter used to describe this condition. In this case sample, the microprocessor-controlled car wheel bending fatigue automatic test system is used to achieve real time monitoring, control, and display while maintaining the stability of the bending moment during the test process. The testing machine determines whether the wheel has passed the test by monitoring the changes to rotation numbers, and issues an alarm due to wheel fatigue before a breakdown occurs. Wheels are one of the most critical core components of a car and directly affect the safety and comfort level of the car. The process used to manufacture wheels includes casting, stamping, forming, welding, and anti-corrosion treatment. The requirements for each process are extremely stringent. From the perspective of actual operation, the force absorbent surfaces of a car's wheels are extremely complex when the car is being driven. In addition to the support, lateral bending moment, and driving forces, as the wheels rotate and withstand friction, the temperature and pressure can also change at any time. Therefore, the fundamental issue of the wheel design and manufacturing process is to ensure that the fatigue lifespan can satisfy the application and performance requirements.

System Requirements

Typically, wheel fatigue lifespan tests and inspections include two aspects: The wheel radial fatigue test, which primarily inspects the comprehensive strength of the entire wheel, and the wheel bending fatigue test, which examines the wheel spoke and weld strengths. At present, the domestic automobile industry mostly uses imported hydraulic servo fatigue testing machines to perform tests on finished tire products. However, despite their high test accuracy, these machines are bulky and expensive, the tires being tested are hard to install during the testing process, and they lack test speed efficiency. Therefore, it is absolutely necessary to produce a highly efficient, affordable, and easy to install platform that does not sacrifice the accuracy of the test results for the manufacturers.

1 · Range of the primary wheel shaft rotation speed test: 40 to 400 rotations/minute.

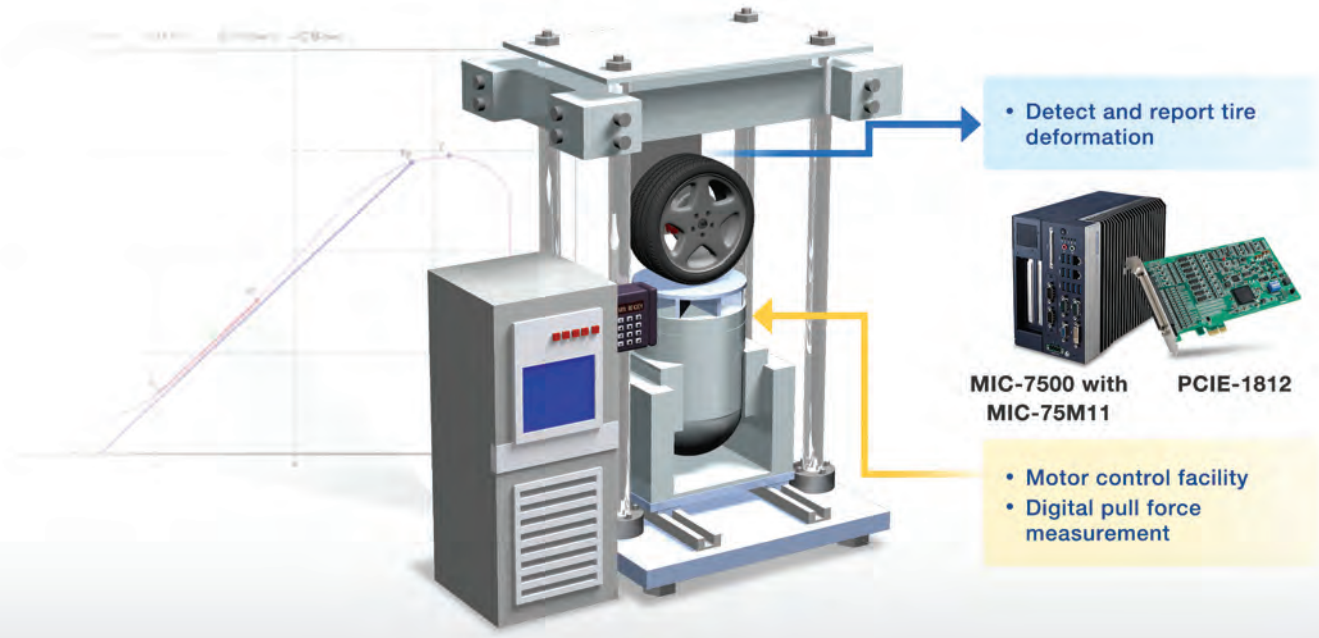
2 · Pressure load test range: 0 to 70 kN.

3 · Highly efficient, anti-vibration computing platform.

4 · Machine layout is reasonable, compact, and easy to maintain.

System Functionality

Because this testing system must be operated over long periods of time and the wheel being tested will continue to rotate while the pressurized tests are being performed during the wheel testing process, machine vibrations end up as one of the factors that must be overcome. Therefore, Advantech's MIC-7500 , equipped with 6th generation Intel® Core™ i processor and innovatively modular design, is suited for such systems. This fanless industrial PC has an integrated design that can be compatible with different expansion modules. The compact structural design of this system can also resolve the bulky and inconvenient installation problems accompanying the traditional machines. The PCIE-1812 simultaneous sampling multifunction data acquisition board, with a 250 kS/s sampling rate, 16-bit high resolution AI channels and 32-bit counter/ timer/ encoder channels can fully satisfy the wheel rotation speed and pressurized force measurement requirements.



Case Studies

High-Speed Data Acquisition Clutch Performance Test System

Project Description

For those vehicles so fitted, the clutch pedal is an important component of the power train, and directly affects the performance of the vehicle. The industry standard QC/T 27-2004 is typically used to assess the overall function as well as clutch durability and reliability characteristics. The price, however, for the equipment needed to perform these tests is high, because of the high accuracy requirements and the ultra-stringent data reliability standards. Maintenance for such high precision equipment is also difficult. The challenge was for a portable, low-cost clutch analysis system that could be used in real-life test environments. This system would need to measure and analyze clutch pedal mechanics and location characteristics, time-domain characteristics, and separation actions, thus resolving the shortcomings of the traditional systems that can only perform the tests based on the independent parameters of the clutch or the pedal. A high-speed USB data acquisition module was required in order to perform high-precision tests, and simultaneous multi-parameter test capabilities were required in order to significantly improve test efficiency.

System Requirements

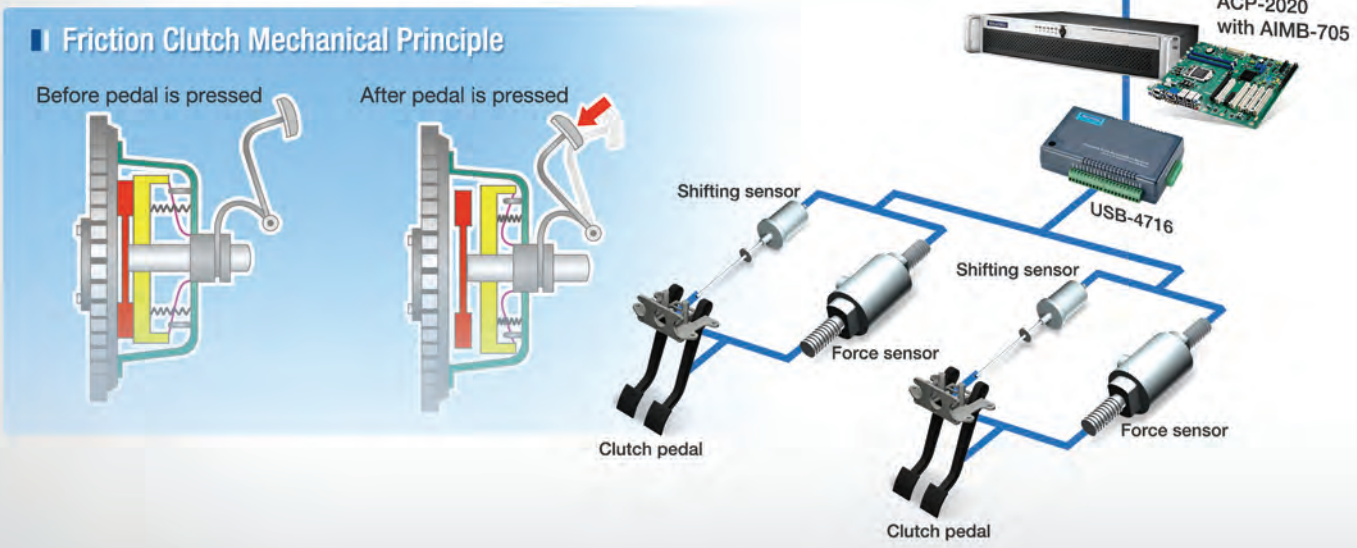
In terms of the clutch characteristic detection test, we use a variety of parameters to analyze the power transmission performance of the clutch pedal being tested, and evaluate whether the pedal complies with the production standards. To maximize ease of installation and removal as well as the convenience of system construction, this system uses Advantech's USB series high-speed data acquisition module to record the data collected by the pressure and displacement sensors in real-time; the data is used as the basis to analyze the following seven key areas:

1 · Maximum resistance during the pedal stroke process.
2 · Maximum pedal stroke.
3 · Free pedal stroke.
4 · Clutch contact point.
5 · Clutch synchronization point.
6 · Pedal force hysteresis.
7 · System efficiency.

System Functionality

For this project, the USB-4716 data acquisition module was equipped with 16 route 16-bit simulated volume input channels and 8 route DIO channels for a sampling rate of up to 200Ks/S, far higher than the required 100Ks/S. All data was collected using ACP-2020, a 2U rackmount chassis, and AIMB-705, a 6th/7th generation Intel® Core™ i motherboard, to enable data analysis. FPM-7211W was also deployed for visualization and monitoring.

This USB test system can provide substantial data to support clutch design improvements and is a breakthrough from previous models that could only test the characteristic parameters of a single clutch or pedal. This system boasts real-time responses, high scalability, and comprehensive functions. Additionally, the convenience of plug-and-play makes this system a highly flexible product design tool for clutch or transmission manufacturers.



Automobile Transmission Test System

Project Description

A vehicle's actual application conditions, such as startup, idle park, low speed or high speed driving, acceleration, deceleration, climbing, and reversing are extremely complex. They require the driving force and speed to change over a large range–a larger range, in fact, than the piston engines that are widely adopted at present are capable of. In order to adapt to the constantly changing conditions and to enable the engine to work within its capabilities (and at higher power with lower fuel consumption), a gearbox, or transmission, is added to the power train. The transmission is one of the highest-tech components of a vehicle. And computerized transmission testing aims to simulate actual car operating conditions while still on the production line, to test a number of parameters.

System Requirements

At present, the automotive transmission detection scheme primarily involves using a generator analog engine and generator analog load methods to achieve online testing functions. The specific procedures are as follows: Two AC motors simulate vehicle conditions and detect the transmission's integrated indicators online. During each stage of the shift change process, the load capacity can be used to monitor the system's operating parameters and plot out the system performance curve in real time. A robotic arm automatically completes different gear shift actions for different types of transmissions. Operating parameters are recorded immediately, providing real-time monitoring for temperature, speed, torque, and current, and providing automatic alarm and analyses if faults are encountered. The core of the control setup is the computers. The control software manages system processes, task allocation, instruction transmission, fault detection, etc., according to the field data and current operating conditions.

The automobile transmission detection system requirements were follows:

1 · The machine will remain in a long-term vibrating state because of the engine running tests. Therefore, the computer must have an excellent shock resistance platform.

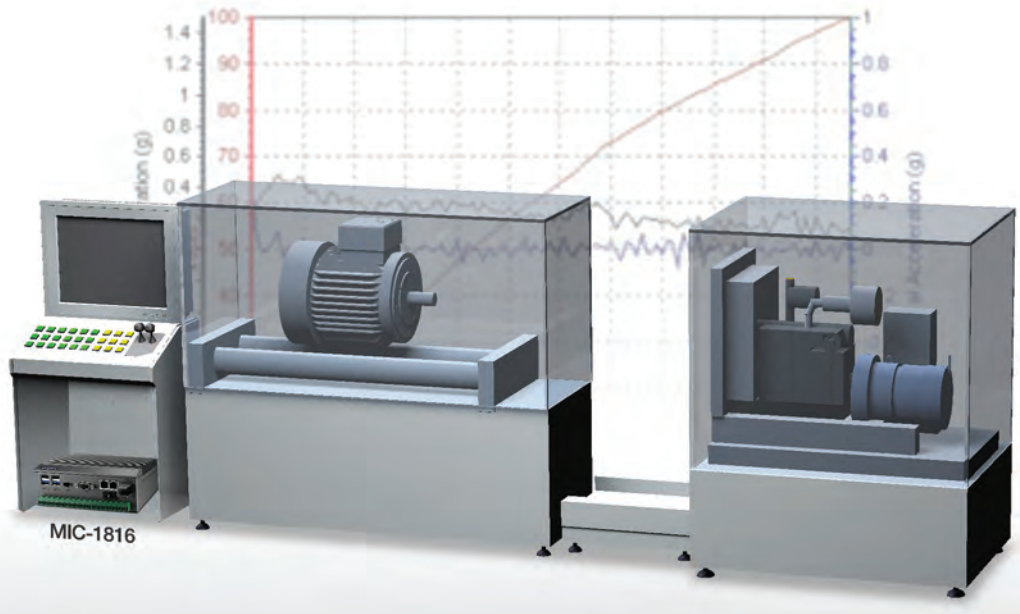
2 · High I/O expansion flexibility.

3 · Must be able to achieve instant control of the temperature, rotation speed, torque, noise, speed, and other status parameters.

4 · The system must be able to adapt to the plant's stringent requirements such as vibration, oil, dust, and continuous production.

System Functionality

The system adopts Advantech's rugged modular industrial computer, MIC-1816, which features an integrated, high-speed, multifunction data acquisition module, 16-bit high-resolution, and 1 MS/s ultra-high sampling rate that fully captures transmission operating parameters. Data such as temperature, rotation speed, torque, and noise are instantly displayed by the FPM-2150 industrial-grade touch screen display in the control room. In addition, MIC-1816 is used to output the control parameters for gearbox loading, shift, and other operations. Meanwhile, the WebAccess configuration software can perform data logging and real-time monitoring on the operations of the entire test system, and can perform automatic alarm and analyses if faults are encountered.



Case Studies

High-Pressure Cylinder Test for Airbag Inflation

Project Description

The basic idea of airbags is that when a car is involved in a collision, steel cylinders filled with highly compressed gas rapidly inflate airbags in the center of the steering wheel, the dashboard, and sometimes other places, to cushion driver and passengers, reducing and preventing injuries. A high quality automotive airbag system cannot ignore the quality of the reservoir cylinders, because if a cylinder were to burst, the high velocity gas might project cylinder fragments into the surrounding areas as well as people and cause significant injuries. Nations worldwide have currently established standards associated with the manufacture, quality, and testing of these high-pressure cylinders. Therefore, it is now absolutely necessary to use a professional airbag high-pressure steel cylinder testing machine during the production process to conduct the relevant tests for the cylinders in order to ensure their quality and safety.

System Requirements

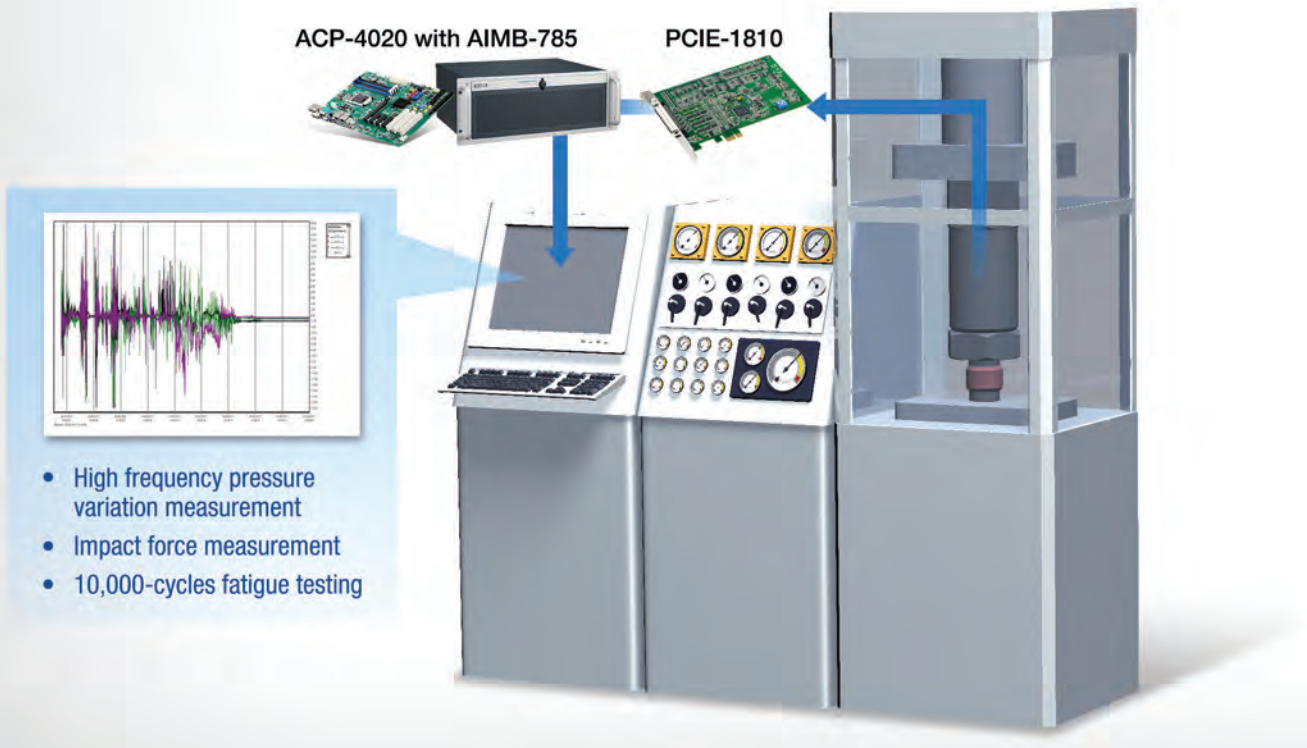
The various types of steel cylinders must undergo the relevant cylinder verification tests during the manufacturing process. Among them, the two most important are the fatigue and burst tests.

1 · The fatigue test must be able to conduct continuous tests by automatically adding and reducing pressure by preconfigured amounts.

2 · The system must be able to record the testing data and calculate the relative pressure and time curves.

System Functionality

Advantech provided a series of products to perform high-speed pressure and flow volume measurements as well as equipment control for this application case. In Advantech's industrial-grade 4U rackmount IPC ACP-4020 chassis with AIMB-785, the 6th/7th generation Intel® Core™ i motherboard was used in combination with the PCIE-1810 to perform rapid data acquisition, with instant display of collected information on the human-machine interface, along with analyses, recording, report generation, etc. In order to obtain accurate pressure data based on customer requirements, the PCIE-1810 in the industrial-grade computer was a high-speed analog input card that captured the changing pressure signals rapidly and continuously. Its 500Ks/S high-speed sampling rate and 12-bit high resolution performed rapid data acquisition 100 times faster than that of a PLC. When the test machine performs a pressurization and decompression fatigue test 10,000 times on a steel cylinder, the PCIE-1810 operates at a sampling rate of ten thousand times per second. This significantly enhanced sampling rate captures the changing pressure signals rapidly and continuously, thereby resolving the customers' PC/PLC data distortion problems.



Vehicle Body Control Module Test System

Project Description

As automotive technologies progress, an increasingly wide range of vehicle equipment must be controlled while driving through either the central console or the steering wheel. To ensure that all this equipment performs normally under dynamic conditions while the vehicle is in motion, rigorous tests are required during the production phase to ensure the reliability of switches and overall actuation accuracies of the system. Fundamental test protocols for this system included: wipers, door locks, windows, interior and exterior lighting, horn, meters, safety equipment, anti-theft, vehicle stability assist system, etc. Because the standardized CAN bus protocol was adopted for the control units of the various body parts, Advantech provided the PCIE-1680 communication card that fully supports the CAN bus protocol to perform all the control tests for this field.

System Requirements

1 · Manual tests: Use manual operation buttons to perform the tests for the various switches and variables.

2 · Automatic function tests: Use the computer to control the various appliances and perform the automatic tests for the various switches and variables. No human intervention is needed, resulting in improved testing efficiency.

3 · Add the simulated loads and actual loads to perform the tests.

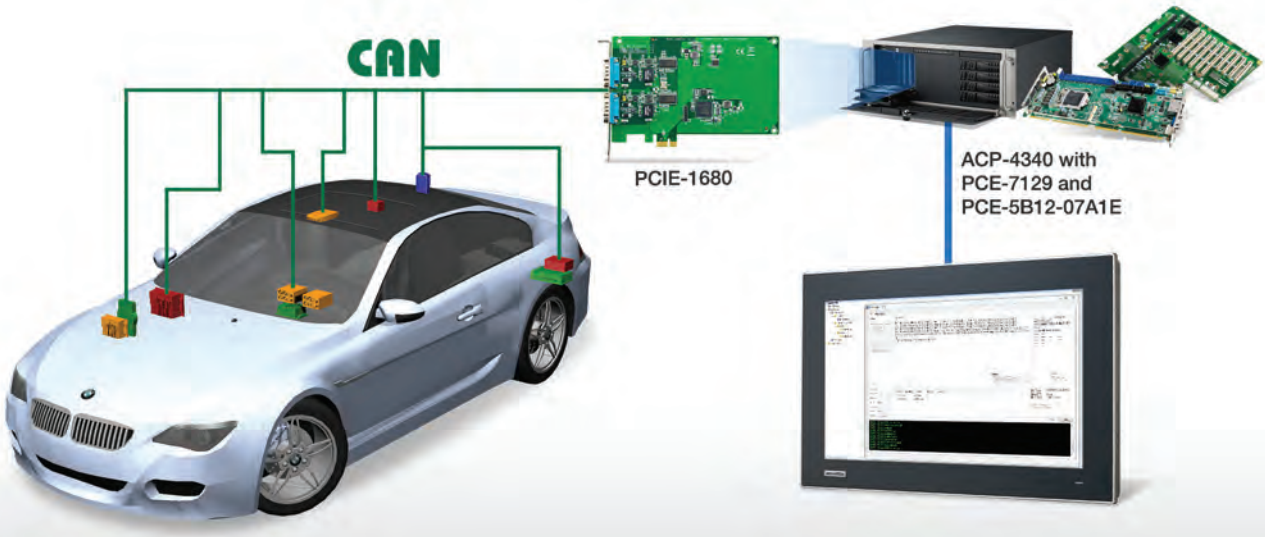
4 · Each sub-function test must be able to be performed under any and all of the various ignition states.

5 · During the test, a CAN bus can be used to diagnose the vehicle body controller configuration data to perform tests on the various functional configuration items.

System Functionality

Advantech's industrial 4U rackmount IPC and the PCIE-1680 dual channel CAN bus communication card were adopted. This card has high speed transmission efficiency of up to 1 Mbps and can play the role of a signal transmitter for vehicle body equipment test systems that pursue zero start/stop delays. Signal isolation protection was also adopted for a control element system that has complex wiring and a variety of start/stop arrangement combinations in order to provide undisturbed signal transmission, prevent operation errors, and improve system stability. This test system used the primary CAN bus channel to perform signal communications between the host and the control elements, to simulate the configuration of a finished vehicle, to perform single/multiple device on/off switch load tests through control signals transmitted from the central machine, and then used the ICOMNavi software to perform data communicating and reliability analyses.

- Lighting system load simulation (turn signals, front fog lights, headlights, brake lights, etc.). Windows, wipers, door locks, and other loads
- The automobile meter test integrates a variety of vehicle buses. Its standard configuration is the CAN bus with the scalable FlexRay and LIN bus both available when needed by the test.
- Channel composite applications
- Provide specialized testing interfaces



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AIMC-3422

Micro Computer, Intel® Core™ i7/i5/i3 CPU, H110, 4 Expansions: 2PCI/2PCIe, 300W 80Plus PSU

Features

- Intel® H110 Platform
- Intel® 6th/7th gen Core™ i7/i5/i3 CPU (LGA1151)
- Two PCIe (x16/x1) & Two PCI Expansion Slots
- Compact & Rich I/O Configuration
- One Internal 3.5” SATA HDD bays with shock-resistant
- Optional front removable 2.5’ HDD bay
- VGA/2 GbE LAN/2 USB2.0/1 USB3.0/2 COM

OS Support Windows 10 Windows 8.1 Windows 7

MIC-7700Q + MIC-75M40

Intel 6th/7th Core I Processor Socket Fanless with 4 PCIe Expansion i-module system

Features

- Intel Q170 Platform
- Intel 6th/7th gen Core I Socket type CPU (LGA1151)
- Support VGA & DVI (Tri-display by optional cable)
- Support 2 Giga LAN and 8xUSB
- Support 6 COM
- Support 2 Giga LAN & Isolation COM & 32bit GPIO module
- Support 2.5” SATA HDD bay/1 mSATA/1 CFast
- Support i-door
- Three PCIe 4/ One PCIe 8

OS Support Windows 10 Windows 8.1 Windows 7

MIC-7500 with i-Module

6th Generation Intel® Core™ i Processor Compact Fanless System

Features

- Support 6th Generation Intel® Core™ i7/i5/i3 BGA type CPU with Intel® QM170 PCH
- Support VGA & DVI
- Support 1 x 2.5” HDD/1 x CFast slot/1 x mSATA
- Support 2 Giga LAN and 8x USB 3.0
- Support 2 x RS-232/422/485 Serial & 2 x RS-232 (2 x RS-232 expansion by cable)
- Support Isolation COM module & 32bit GPIO module

OS Support Windows 10 Windows 8.1 Windows 7

ACP-2020 with AIMB-705

6th/7th Generation Intel® Core™ i 2U Rackmount System with up to 3 Expansions

ACP-2020

- 398 mm short depth 2U rackmount chassis
- Four 2.5” drive bays, two of them can be converted to hot-swap drive bays with optional mobile rack
- Supports 80 Plus, single 350W or 500W redundant power supply
- Dual front USB 3.0 ports
- Front-accessible system fan without opening top cover for easy maintenance
- Built-in Intelligent System Module enabling whole system fan control and remote manageability

AIMB-705

- 6th/7th Generation Intel® Core™ i7/i5/i3/Celeron/Pentium processor with H110 chipset
- Dual channel (Non-ECC) DDR4 1866/2133 up to 32GB
- Support VGA and DVI display
- Support SATA3.0, USB3.0, dual GbEs

OS Support Windows 8.1 Windows 8 Windows 7

ACP-4020 with AIMB-785

6th/7th Generation Intel® Core™ i 4U Rackmount System with up to 7 Expansions

ACP-4020

- 348 mm short depth 4U rackmount chassis
- One internal 2.5”, and two 3.5” drive bays that can be converted to hot-swap drive bays with optional mobile rack
- Dual front USB 3.0 ports
- Front-accessible system fan without opening top cover for easy maintenance
- Built-in Intelligent System Module enabling whole system fan control and remote manageability

AIMB-785

- 6th/7th Generation Intel® Core™ i7/i5/i3/Celeron/Pentium processor with Q170 chipset
- Dual channel (Non-ECC) DDR4 1866/2133 up to 64GB
- Supports triple display 1x VGA, 2 x DVI-D
- Supports SATA3.0 RAID 0, 1, 5, 10, USB 3.0, dual GbEs

OS Support Windows 8.1 Windows 8 Windows 7

ACP-4340 with PCE-7129 and PCE-5B12-07A1E

6th Generation Intel® Core™ i 4U Rackmount System with up to 11 Expansions

ACP-4340

- Scalable 4U rackmount chassis
- One internal 2.5”, four hot-swap drive bays compatible with 2.5” and 3.5” HDD/SSD.
- Dual front USB 3.0 ports
- Front-accessible system fan without opening top cover for easy maintenance
- Built-in Intelligent System Module enabling whole system fan control and remote manageability

PCE-5B12-07A1E

- PICMG 1.3 BP for 14-slot chassis
- PCI slot: Seven 32/33
  PCIe slot: One x16; Three x 4

PCE-7129

- Intel® Xeon E3-1200v5 series, Core™ i7/i5/i3 /Celeron/Pentium processors with C236 chipset
- Dual Channel (ECC/Non-ECC) DDR4 1866/2133 up to 32 GB
- Supports triple display 1 x VGA, 2 x DVI-D
- Supports M.2, USB 3.0, SATA3.0, RAID 0, 1, 5, 10, dual GbEs

OS Support Windows 8.1 Windows 8 Windows 7

DAQ Integration Platforms

MIC-1800 A Palm-sized Data Acquisition Computer for Space-limited Applications

Compact

The MIC-1800 series is a palm-size, fanless DAQ embedded system that occupies only 165 x 130 x 59 mm, for easy in-cabinet placement.

Integrated

All the analog input, analog output, digital input, and digital output functions are integrated into each unit in the MIC-1800 series.

Convenient

The built-in wiring terminals facilitate the operations without using any wiring cables or terminal boards.

Software support

Advantech provides a free software development kit to help customer develop application easily.

Space Saving

Cost Saving

MIC-1810

12-bit, 500 KS/s, 12-ch DAQ platform with Core™ i3/ Celeron® processer

Features

- 16 analog inputs, up to 500 kS/s, 12-bit resolution
- 2 analog outputs, up to 500 kS/s, 12-bit resolution
- Support for digital trigger and analog trigger
- 24 programmable digital I/O lines
- Two 32-bit programmable counter/timers
- Onboard FIFO memory (4k samples)
- 2 x RS-232 ports
- 2 x 10/100/1000 Base-T RJ-45 LAN ports
- 2 x USB 2.0 and 2 x USB 3.0 ports
- MIC-1810-S4A1E
  — Intel® Celeron® 1047UE Processer, 1.4GHz
- MIC-1810-S6A1E
  — Intel® Core™ i3-3217UE Processor, 1.6GHz

Ordering Information

- MIC-1810-S4A1E — Data Acquisition Computer with Intel® Celeron® 1047UE processer
- MIC-1810-S6A1E — Data Acquisition Computer with Intel® Core™ i3-3217UE processer

Accessories

- 1700001714 — Power Cord BSMI 3P 7A 125V 18AWG 180CM
- 1702002600 — Power Cord 3P UL/CSA(USA) 125V 10A 1.83M 180D
- 1700023535-01 — Power Cord CCC 3P 16A 250V 183cm
- 1960077844N001 — Table Mount (W x L: 130 x 175 mm)
- 2070014966 — Image WES7P MIC-1810 64bit

OS Support Windows 10 Windows 8.1 Windows 7

MIC-1816

16-bit, 1MS/s, 16-ch DAQ platform with Core™ i3/ Celeron® processer

Features

- 16 analog inputs, up to 1 MS/s, 16-bit resolution
- 2 analog outputs, up to 3 MS/s, 16-bit resolution
- Support for digital trigger and analog trigger
- 24 programmable digital I/O lines
- Two 32-bit programmable counter/timers
- Onboard FIFO memory (4k samples)
- 2 x RS-232 ports
- 2 x 10/100/1000 Base-T RJ-45 LAN ports
- 2 x USB 2.0 and 2 x USB 3.0 ports
- MIC-1816-S4A1E
  — Intel® Celeron® 1047UE Processer, 1.4GHz
- MIC-1816-S6A1E
  — Intel® Core™ i3-3217UE Processor, 1.6GHz

Ordering Information

- MIC-1816-S4A1E — Data Acquisition Computer with Intel® Celeron® 1047UE processer
- MIC-1816-S6A1E — Data Acquisition Computer with Intel® Core™ i3-3217UE processer

Accessories

- 1700001714 — Power Cord BSMI 3P 7A 125V 18AWG 180CM
- 1702002600 — Power Cord 3P UL/CSA(USA) 125V 10A 1.83M 180D
- 1700023535-01 — Power Cord CCC 3P 16A 250V 183cm
- 1960077844N001 — Table Mount (W x L: 130 x 175 mm)
- 2070015202 — Image WES7P MIC-1816 64 bit

OS Support Windows 10 Windows 8.1 Windows 7

PCI/PCI Express Card

Extensive PCI/PCIE DAQ Card Range Satisfies all Equipment Testing and Measurement Demands

New Generation Interface for DAQ: PCI Express

PCI Express is a computer expansion bus standard designed to replace the older PCI bus standards. The PCI Special Interest Group (PCI-SIG) preserved and developed the PCI specification specification to become the new standard PCI Express from 2003. PCI Express delivers 30 times the bandwidth of PCI bus, with a per-lane data rate of 250 MB/s and a transfer rate of 2.5 GT/s. This new generation interface features high speed point-to-point architecture, high throughput performance, software backward compatibility, I/O simplification, etc. Following this technology trend, Advantech offers a series of PCI Express data acquisition cards with the same development software as PCI cards, to make it easy to satisfy different automation needs.

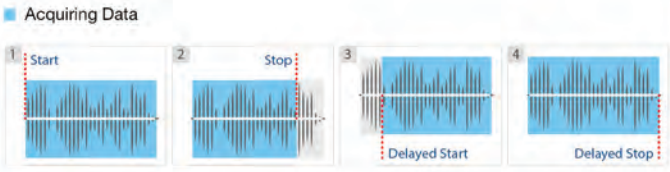
Key Features

Analog Output with Waveform Generator

Waveform generators produce large, complex analog waveforms either sequentially or using real-time streaming.

Analog Input with Flexible Trigger Option

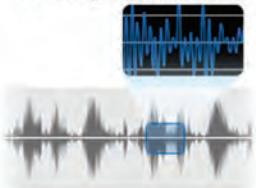
PCIE-1800 series supports both analog and digital triggers, with four trigger modes: start, delayed start, stop, and delayed stop; for a variety of applications.



500 MS/s digitizer with 2G memory

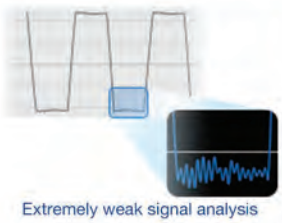
PCIE-1840

Precise signal capture / record



24-bit resolution for dynamic signal acquisition

PCIE-1802 / 1802L



Extremely weak signal analysis

Combined rich analog and digital I/O channel

PCIE-1810 / PCIE-1812 / PCIE-1816

PCIE-1810

800 KS/s, 12-bit, 16-ch PCI Express Multifunction Card

Features

- 16 analog inputs, up to 800 KS/s, 12-bit resolution
- 2 analog outputs, up to 500 KS/s, 12-bit resolution
- Support for digital trigger and analog trigger (AI only)
- 24 programmable digital I/O lines
- Two 32-bit programmable counter/timers
- Onboard FIFO memory (4 K samples)
- Automatic channel/ gain scanning
- LabVIEW driver support

Ordering Information

- PCIE-1810-AE 800 KS/s, 12-bit Multifunction Card

Accessories

- PCL-10168H-1E 68-pin SCSI shielded cable with noise rejection (1 m)
- PCL-10168H-2E 68-pin SCSI shielded cable with noise rejection (2 m)
- PCL-10168-1E 68-pin SCSI shielded cable (1 m)
- PCL-10168-2E 68-pin SCSI shielded cable (2 m)
- ADAM-3968-AE 68-pin DIN-rail SCSI wiring board

OS Support Windows 10 Windows 8.1 Windows 8 Windows 7

PCIE-1816/H

1 MS/s, 16-bit, 16-ch PCI Express Multifunction DAQ Card

Features

- 16 analog inputs, up to 1 MS/ 5MSPS, 16-bit resolution
- 2 analog outputs, up to 3 MS/s, 16-bit resolution
- Support for digital trigger and analog trigger (AI only)
- 24 programmable digital I/O lines
- Two 32-bit programmable counter/timers
- Onboard FIFO memory (4 K samples)
- Automatic channel/ gain scanning
- LabVIEW driver support

Ordering Information

- PCIE-1816-AE 1 MS/s, 16-bit multifunction card
- PCIE-1816H-AE 5 MS/s, 16-bit multifunction card

Accessories

- PCL-10168H-1E 68-pin SCSI shielded cable with noise rejection (1 m)
- PCL-10168H-2E 68-pin SCSI shielded cable with noise rejection (2 m)
- PCL-10168-1E 68-pin SCSI shielded cable (1 m)
- PCL-10168-2E 68-pin SCSI shielded cable (2 m)
- ADAM-3968-AE 68-pin DIN-rail SCSI wiring board

OS Support Windows 10 Windows 8.1 Windows 8 Windows 7

PCIE-1812

250 kS/s, 16-bit, 8-ch, Simultaneous Sampling Multifunction PCI Express DAQ Card

Features

- 8 differential simultaneous sampling analog inputs, up to 250 kS/s, 16-bit resolution
- 2 analog outputs, up to 3 MS/s, 16-bit resolution
- 2 analog triggers and 2 digital triggers for AI/O
- 32 programmable DI/Os with interrupt functions
- Four 32-bit programmable counters/ timers/ encoders
- LabVIEW driver support

Ordering Information

- PCIE-1812-AE 250 kS/s, 16-bit, 8-ch simultaneous sampling multifunction card

Accessories

- PCL-101100R-1E 100-pin SCSI shielded cable, Female to Male, (1 m)
- PCL-101100R-2E 100-pin SCSI shielded cable, Female to Male, (2 m)
- ADAM-39100-AE ADAM-39100-AE 100-pin DIN-rail SCSI wiring board

OS Support Windows 10 Windows 8.1 Windows 8 Windows 7

PCI/PCI Express Cards

PCI-1710U/UL/HGU

100 kS/s, 12-bit, 16-ch PCI Multifunction Card

Features

- 16 single-ended/8 differential 12-bit analog inputs at 100 kS/s
- 12-bit dual-channel analog outputs with static updates (for PCI-1710 and PCI-1710HGU only)
- 5 V/TTL DI/O (16 inputs and 16 outputs)
- 16-bit single-channel counter, up to 10 MHz
- Supports event counting and pulse train output

LabVIEW driver support

OS Support Windows 10 Windows 8.1 Windows 8 Windows 7

Ordering Information

PCI-1710U-DE	100 kS/s, 12-bit multifunction card
PCI-1710UL-DE	100 kS/s, 12-bit multifunction w/o AO
PCI-1710HGU-DE	100 kS/s, 12-bit high-gain multifunction card (for precise small-signal measurements)
PCLD-8710-AE	DIN-rail wiring board with CJC
PCL-10168-1E/2E	68-pin SCSI shielded cable (1/2 m)
ADAM-3968-AE	68-pin DIN-rail SCSI wiring board

PCI-1716/L

250 kS/s, 16-bit, 16-ch PCI Multifunction Card

Features

- 16 single-ended/8 differential 16-bit analog inputs at 250 kS/s
- 16-bit, 2-ch analog outputs with static updates (PCI-1716 only)
- 5 V/TTL DI/O (16 inputs and 16 outputs)
- 16-bit, single-channel counter, up to 10 MHz
- Supports event counting and pulse train output
- LabVIEW driver support

OS Support Windows 10 Windows 8.1 Windows 8 Windows 7

Ordering Information

PCI-1716-AE	250 kS/s, 16-bit multifunction card
PCI-1716L-AE	250 kS/s, 16-bit multifunction card without analog output
PCLD-8710-AE	DIN-rail wiring board with CJC
PCL-10168-1E/2E	68-pin SCSI shielded cable (1/2 m)
ADAM-3968-AE	68-pin DIN-rail SCSI wiring board
PCLD-8810I-AE	DIN-rail wiring board with CJC
PCLD-8811-AE	Low pass filter board

PCIE-1730/H

32-ch TTL and 32-ch Isolated Digital I/O PCIe card with digital filter and interrupt function

Features

- 32-ch isolated DI/O (16-ch digital input, 16-ch digital output)
- 32-ch TTL DI/O (16-ch digital input, 16-ch digital output)

High output driving capacity

- Interrupt handling capability
- Selectable Digital filter time
- D-type connector for isolated input and output channels
- High-voltage isolation on output channels (2,500 V_{DC})

OS Support Windows 10 Windows 8.1 Windows 8 Windows 7 Linux

Ordering Information

PCIE-1730-AE	32-ch TTL and 32-ch Isolated Digital I/O PCIe Card
PCIE-1730H-AE	32-ch TTL and 32-ch Isolated Digital I/O w/ digital filter and interrupt
PCL-10120-1E/2E	20-pin flat cable, 1/2 m
ADAM-3920-AE	20-pin DIN rail flat cable wiring board
PCLD-782-BE	16-ch isolated DI board w/1 m, 20-pin flat cable
PCLD-785-BE	16-ch relay board w/1 m, 20-pin flat cable
ADAM-3937-BE	DB37 DIN rail wiring board
PCL-10137-1E/2E/3E	DB37 cable, 1/2/3 m

PCIE-1756/H, PCI-1756

64-ch Isolated Digital Input/Output PCI Express/PCI Card

Features

- Wide input (10 ~ 30 VDC) and output (5 ~ 40 VDC) ranges
- High sink current on isolated output channels (500mA max./ch)
- Supports pattern match and change of status DI interrupts
- High over-voltage protection (70 VDC)
- 2,500 VDC isolation protection
- LabVIEW driver support

Ordering Information

• PCI-1756-AE	64-ch isolated digital I/O PCI card
• PCIE-1756-AE	64-ch isolated digital I/O PCI express card
• PCIE-1756H-AE	64-ch isolated digital I/O PCI express w/ digital filter and and interrupt
• PCL-10250-1E/2E	100-pin SCSI to 2 x 50-pin SCSI cable, 1/2 m
• ADAM-3951-BE	50-pin DIN rail wiring board w/ LED indicators
• PCL-101100M-3E	100-pin SCSI to 100-pin SCSI cable, 3 m
• ADAM-39100-BE	100-pin DIN rail wiring board

OS Support Windows 10 Windows 8.1 Windows 8 Windows 7

PCI-1760U

8-ch Relay and 8-ch Isolated Digital Input Universal PCI Card with 10-ch Counter/Timer

Features

- 2 x Form C and 6 x Form A relay channels
- Contact rating of 1 A @ 125 VAC, 2 A @ 30 VDC
- LED indicators show activated relays
- Programmable DI filter
- 2,500 VDC isolation protection for DI
- DI supports both wet and dry contact
- Supports pattern match and change of status interrupt for DI
- 16-bit, 8-ch counter at up to 500 Hz for event counting
- 2-ch PWM output
- LabVIEW driver support

Ordering Information

• PCI-1760U-BE	8-ch relay and 8-ch isolated DI PCI card
• ADAM-3937-BE	DB37 DIN rail wiring board
• PCL-10137-1E/2E/3E	DB37 cable, 1/2/3 m

OS Support Windows 10 Windows 8.1 Windows 8 Windows 7

PCI-1784

4-ch, 32-bit Encoder Counter Universal PCI Card with 8-ch Isolated Digital I/O

Features

- 4 x 32-bit encoder counters
- Supports single-ended and differential inputs
- Quadrature (x1, x2, x4), pulse/direction, and up/down counting modes
- 2,500 VDC optical isolation protection
- 4-stage digital filter with selectable sampling rate
- 8-bit timer with wide range time-base selector on board
- Multiple interrupt sources for precision application
- 4 x isolated digital inputs and 4 x isolated digital outputs
- Board ID™ switch
- LabVIEW driver support

Ordering Information

• PCI-1784U-AE	4-ch encoder counter universal PCI card
• PCL-10137H-3E	High-speed DB37 cable (3 m)
• ADAM-3937-BE	DB37 DIN-rail wiring board

OS Support Windows 10 Windows 8.1 Windows 8 Windows 7 Linux

Advantech USB DAQ Modules

Portable, Robust, and Versatile USB DAQ Modules

Advantech's USB DAQ modules are known for their user-friendly design and ability to replace traditional serial and parallel devices as they eliminate the need for external power and allow hot swapping. Through the Advantech USB DAQ series, users can easily upgrade their computing platforms with cutting edge technologies and realize cost-effective maintenance while allowing the data acquisition devices to operate as usual. By adding industrial-grade features, including lockable cables, multiple mounting methods and advanced detection functions, Advantech's USB data acquisition devices are a great fit for any industrial need.

Key Feature

Lockable USB Cable

Reliable connections are critical to automation control and online production. While the standard USB cable is designed for convenience, Advantech provides lockable USB cables to prevent them from being unplugged accidentally.

High-Speed Data Transfer Rate

Advanced data acquisition functions can be realized, with up to 200 kS/s sampling rate, 16-bit resolution, 16-ch analog input, and 48-ch digital I/O specifications. Interrupt, event counter, and pulse width modulation (PWM) functions are also available on Advantech's USB data acquisition modules.

Detachable Screw Terminal with On-Module Pin Assignment Index

Saving space & money are the main benefits of using detachable screw terminals. Budgets can be saved by not having to buy additional cables and/or wiring boards, and extra space can be saved as well. Furthermore, Advantech's on-module pin assignment simplifies maintenance efforts and reduces incorrect connections that can cause damage to the system.

USB-4711A

150 kS/s, 12-bit, 16-ch Multifunction USB Module

Features

- 16 single-ended/8 differential 12-bit analog inputs at 150 kS/s
- 12-bit, 2-ch analog output with static updates
- 5 V/TTL DI/O (8 inputs and 8 outputs)
- 32-bit, single-channel counter, up to 1 kHz
- Supports event counting and frequency measurements
- 1 x lockable USB cable for connection security
- LabVIEW driver support

Ordering Information

- USB-4711A-AE 150 kS/s, 12-bit, 16-ch multifunction USB module
- 1960004544 Wall mount bracket
- 1960005788 VESA mount bracket

OS Support Windows 8.1 Windows 8 Windows 7 Windows XP Professional

USB-4716

200 kS/s, 16-bit, 16-ch Multifunction USB Module

Features

- 16 single-ended/8 differential 16-bit analog inputs at 200 kS/s
- 16-bit, 2-ch analog output with static updates
- 5 V/TTL DI/O (8 inputs and 8 outputs)
- 32-bit, single-channel counter, up to 1 kHz
- Supports event counting and frequency measurements
- 1 x lockable USB cable for connection security
- LabVIEW driver support

Ordering Information

- USB-4716-AE 200 kS/s, 16-bit, 16-ch multifunction USB module
- 1960005788 Wall mount bracket
- 1960005788 VESA mount bracket

OS Support Windows 8.1 Windows 8 Windows 7 Windows XP Professional Linux

USB-4718

8-ch Thermocouple Input USB Module with 8-ch Isolated Digital Input

Features

- 8 x 16-bit differential analog inputs at 10 S/s
- Supports voltage, current, and thermocouple inputs
- 8-ch isolated digital inputs and 8-ch isolated digital outputs
- 2,500 VDC optical isolation protection
- 1 x lockable USB cable for connection security
- LabVIEW driver support

Ordering Information

- USB-4718-AE 8-ch thermocouple input USB module
- 1960004544 Wall mount bracket
- 1960005788 VESA mount bracket

OS Support Windows 8.1 Windows 8 Windows 7 Windows XP Professional

USB Modules

USB-4750

32-ch Isolated Digital I/O USB Module

Features

- 16-ch isolated digital inputs and 16-ch isolated digital outputs
- Isolated DO current (100 mA max./channel, 1.1 A max./total)
- Supports DI interrupt
- 32-bit, 2-ch isolated counter, up to 8 MHz
- Supports event counting and frequency measurements
- 2,500 VDC isolation protection
- LabVIEW driver support

OS Support Windows 8.1 Windows 8 Windows 7 Windows XP Professional

Ordering Information

- USB-4750-BE 32-ch isolated digital I/O USB module
- 1960004544 Wall mount bracket
- 1960005788 VESA mount bracket

USB-4751/L

48/24-ch Digital I/O USB Module

Features

- USB-4751L: 24-ch TTL DI/O
  USB-4751: 48-ch TTL DO
- Supports both dry and wet contact
- Supports DI interrupt
- 32-bit, 2-ch counter, up to 8 MHz
- Supports event counting, frequency measurements, pulse train, and PWM output
- 1 x lockable USB cable for connection security
- LabVIEW driver support

OS Support Windows 8.1 Windows 8 Windows 7 Windows XP Professional Linux

Ordering Information

- USB-4751-AE 48-ch digital I/O USB module
- USB-4751L-AE 24-ch digital I/O USB module
- 1960004544 Wall mount bracket
- 1960005788 VESA mount bracket

USB-4761

8-ch Relay and 8-ch Isolated Digital Input USB Module

Features

- LED indicators show activated relays
- 8 x Form C relays
- Contact rating of 0.25 A @ 250 VAC, 2 A @ 30 VDC
- 8-ch isolated DI with 5 ~ 30 VDC range
- Supports DI interrupt
- 2,500 VDC protection for isolated digital input channels
- 1 x lockable USB cable for connection security
- LabVIEW driver support

OS Support Windows 8.1 Windows 8 Windows 7 Windows XP Professional

Ordering Information

- USB-4761-BE 8-ch relay and 8-ch isolated digital input USB module
- 1960004544 Wall mount bracket
- 1960005788 VESA mount bracket

USB-4620/USB-4622

5-Port Full-Speed Isolated USB 2.0 Hub / 5-Port Full-Speed High Speed USB 2.0 Hub

Features

- 5 x downstream USB 2.0 ports
- Compatible with USB 2.0 (full speed), 1.1, and 1.0
- Up to 12 Mbps data transfer rate
- 3,000 VDC isolation protection for every downstream port
- Suitable for DIN-rail mounting
- 1 x lockable USB cable
- 10 ~ 30 VDC power input (power adapter not included)

Ordering Information

• USB-4620-AE	5-port full-speed isolated USB 2.0 hub
• USB-4622-CE	5-Port Full-Speed High Speed USB 2.0 Hub
• 96PS-A40WDIN	DIN-rail power supply
• 1960004544	Wall mount bracket
• 1960005788	VESA mount bracket
• USB-LOCKCABLE-AE	Lockable USB 2.0 cable (1.8 m) with screw kit

OS Support Windows 8.1 Windows 8 Windows 7 Windows xp Professional

USB-4630

4-Port SuperSpeed Isolated USB 3.0 Hub

Features

- 2,500 VDC voltage isolation for upstream ports
- 4 x downstream SuperSpeed USB 3.0 ports
- Compatible with 10 ~ 30 V DC external power or USB bus power
- Suitable for DIN-rail mounting
- LED indicators show power status and downstream port speed
- 1 x lockable USB 3.0 cable
- Data transfer rate of up to 5 Gbps
- Compatible with SuperSpeed USB 3.0

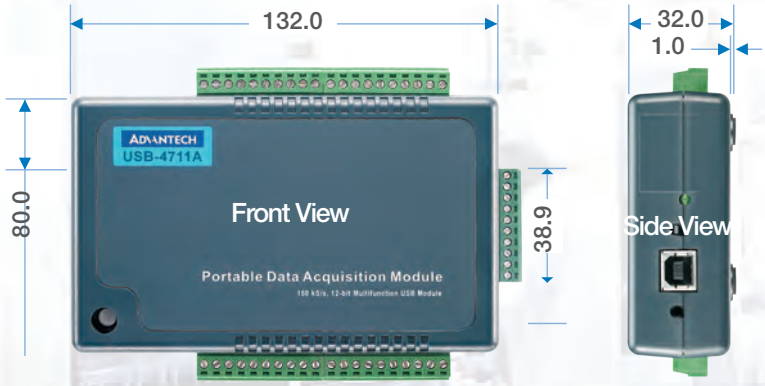
Ordering Information

• USB-4630-AE	4-port SuperSpeed isolated USB 3.0 hub
• 96PS-A40WDIN	DIN-rail power supply
• 1960004544	Wall mount bracket
• 1960005788	VESA mount bracket

OS Support Windows 8.1 Windows 8 Windows 7 Windows xp Professional Linux

Dimensions

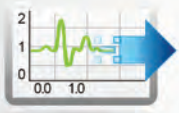
Unit: mm



Ultra-High Performance PCI Express Instrument Cards

Powerful PCI Express Multifunction Data Acquisition Card

Advantech produces multifunction DAQ cards that combine high-performance signal measurements, arbitary wave generation, digital i/O, and counter functions. All DAQ cards are equipped with both a digital trigger and a high-resolution analog trigger that enable users to easily and flexibly define when to start or stop data acquisition.



Waveform Generator

16-bit Analog Trigger

Double Clock

500kS/1MS Sample Rate

Automatic Calibration

PCI Express Dynamic Signal Analyzer

PCIE-1802 provides highly precise 24-bit resolution and is the ideal solution for sound, audio, and vibration measurement, as well as machine monitoring. The high-density 8-channel analog inputs can be directly connected to IEPE and TEDS sensors, and conduct simultaneous data acquisition at a sampling rate of 256 kS/s with an anti-alias filter.

PCIE-1802/L

24-bit, 8-ch/ 4-ch PCI Express Dynamic Signal Analyzer

Features

- 24-bit, 8-ch/ 4-ch simultaneous analog inputs, 216 kS/s per channel
- 6 gains settings with ±0.2 to ±10 V input ranges
- Supports IEPE smart sensors
- Channel-specific configurable 0 ~ 10 mA excitation settings
- Channel-specific configurable AC/DC coupling settings
- Digital and analog triggers (24-bit)
- Anti-aliasing filter
- Onboard FIFO size (4096 samples)
- DC offset null adjustment
- 5 V/TTL DI/O (1 input and 1 output)
- LabVIEW driver support

OS Support Windows 8.1 Windows 8 Windows 7 Windows XP Professional

Ordering Information

• PCIE-1802L-AE	4-ch, 216 kS/s, 24-bit dynamic signal
• PCIE-1802-AE	8-ch, 216 kS/s, 24-bit dynamic signal analyzer card
• PCLD-8840-AE	20-pin DIN-rail HDMI cable wiring board for PCIE-1802 and PCIE-1840
• PCL-108BNC-50E	Mini SCSI to 8-BNC cable
• PCL-10119-1E	HDMI cable

High-Speed PCI Express Digitizer

The PCIE-1840 can perform extremely high speed measurement with 16-bit high resolution. Its four channels can all acquire signals with 125 MS/s sampling rate, or user can cascade all channels to single channel, that sampling rate can rise up to 500 MS/s. With its re-trigger function and time-stamped ability, user can get relative timing information when performing measurement.

With Advantech's 8TB disk array system, 2 hours of continuous 1GB/s data storage can be achieved.

PCIE-1840/L

4-ch 16-bit 125 MSPS/ 80 MSPS High Speed PCI Express Digitizer

Features

- 16-bit, 4-ch simultaneous analog outputs, 125 MSPS/ 80 MSPS per channel
- Cascade channels enable higher sampling rates, 250 MS/s (2 channels) and 500 MS/s (single channel only)
- Non-stop data streaming capabilities
- 2 GB of on-board memory
- On-board anti-aliasing filter
- Selectable input impedance (1 M or 50 Ohm)
- LabVIEW driver support

OS Support Windows 8.1 Windows 8 Windows 7 Windows XP Professional

Ordering Information

• PCIE-1840-AE	125 MS/s, 16-bit, 4-ch high-speed PCI express digitizer
• PCIE-1840L-AE	80 MS/s, 16-bit, 4-ch high-speed PCI express digitizer
• PCLD-8840-AE	20-pin DIN-rail HDMI cable wiring board for PCIE-1802 and PCIE-1840
• PCL-10119-1E	HDMI cable

PCIE-1813

38.4 kS/s, 26-bit, 4-ch, Simultaneous Sampling, Universal Bridge Input, Multi-function PCI Express Card

Features

- 4 simultaneous sampling analog inputs, up to 38.4 kS/s, 26-bit resolution
- Full, half, and quarter-bridge sensor input with built-in anti-aliasing filter
- 2 analog outputs, up to 3 MS/s, 16-bit resolution
- Four 32-bit programmable encoder counters/ timers/ encoder counters
- 32 programmable DI/Os with interrupt functions
- Board ID switch
- Full auto-calibration
- Support for Microsoft Windows 10, 8 and 7

OS Support Windows 10 Windows 8.1 Windows 8 Windows 7

Ordering Information

• PCIE-1813-AE	38.4 kS/s, 26-bit, 4-ch, Simultaneous Sampling, Universal Bridge Input, Multi-function PCI Express Card
• PCL-101100R-1E	SCSI-100 Shielded Cable Pin to Centronic, (1 m)
• PCL-101100R-2E	SCSI-100 Shielded Cable Pin to Centronic, (2 m)
• ADAM-39100-BE	100-pin DIN-rail SCSI wiring board

Regional Service & Customization Centers

China	Kunshan 86-512-5777-5666	**Taiwan**	Taipei 886-2-2792-7818	**Netherlands**	Eindhoven 31-40-267-7000	**Poland**	Warsaw 00800-2426-8080	**USA**	Milpitas, CA 1-408-519-3898

Worldwide Offices

Greater China

China

Toll Free	800-810-0345
Beijing	86-10-6298-4346
Shanghai	86-21-3632-1616
Shenzhen	86-755-8212-4222
Chengdu	86-28-8545-0198
Hong Kong	852-2720-5118

Taiwan

Toll Free	0800-777-111
Neihu	886-2-2792-7818
Xindian	886-2-2218-4567
Taichung	886-4-2329-0371
Kaohsiung	886-7-229-3600

Middle East and Africa

Israel	072-2410527

Asia

Japan

Toll Free	0800-500-1055
Tokyo	81-3-6802-1021
Osaka	81-6-6267-1887
Nagoya	81-0800-500-1055

Korea

Toll Free	080-363-9494
Seoul	82-2-3663-9494

Singapore

Singapore	65-6442-1000

Malaysia

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

Thailand

Bangkok	66-2-248-3140

India

Bangalore	91-80-2545-0206
Pune	91-20-3948-2075

Indonesia

Jakarta	62-21-751-1939

Australia

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

Europe

Germany

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Munich	49-89-12599-0
Düsseldorf	49-2103-97-855-0

France

Paris	33-1-4119-4666

Italy

Milano	39-02-9544-961

Benelux & Nordics

Breda	31-76-523-3100

UK

Newcastle	44-0-191-262-4844
London	44-0-870-493-1433

Poland

Warsaw	48-22-31-51-100

Russia

Moscow	8-800-555-01-50
St. Petersburg	8-800-555-81-20

Czech Republic

Ústí nad Orlicí	420-465-521-020

Ireland

Oranmore	353-91-792444

Americas

North America

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Cincinnati	1-513-742-8895
Milpitas	1-408-519-3898
Irvine	1-949-420-2500
Ottawa	1-815-434-8731

Brazil

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

Mexico

Toll Free	1-800-467-2415
Mexico City	52-55-6275-2727

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