Advantech Machine Automation Solutions: IC Wafer Prober and Tester

Location: **Taiwan**

Background

Wafer testing is a crucial step performed during semiconductor device fabrication. It is performed by a piece of testing equipment called a wafer prober. The process of wafer testing can be referred to in several ways: Wafer Final Test (WFT), Electronic Die Sort (EDS) and Circuit Probe (CP) are common.

This project demanded advanced data acquisition devices to activate wafers and measure their electronic characteristics. Advantech's solution included a high sampling rate, individual analog input cards, and a convenient software development kit that satisfied technical requirements.This comprehensive solution effectively controlled costs and shortened development time for IC wafer testing machines.

System Requirements

The customer required precise, accurate measurements for electrical characteristics on the wafer prober. To achieve this goal, the amount of peripheral limited switches/devices need to be controlled in time to precise positions. The tester needed analog outputs with 16-bit resolution to activate wafers and individual 8-ch analog inputs with a simultaneous 250KS/s sampling rate to accurately measure the electrical characteristics of the wafers.

Project Implementation

PCIE-1812

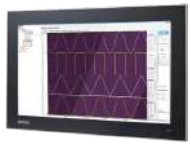
250 kS/s, 16-bit, 8-ch, Simultaneous Sampling Multi-function PCIE DAQ Card

PCIE-1824

16-bit ,32/16-ch Analog Output PCI Express Card

PCIE-1753

96-ch Digital I/O PCI Express Card



DAQNavi/SDK

DAQ Software Development Kit

ACP-4340

4U Rackmount Chassis

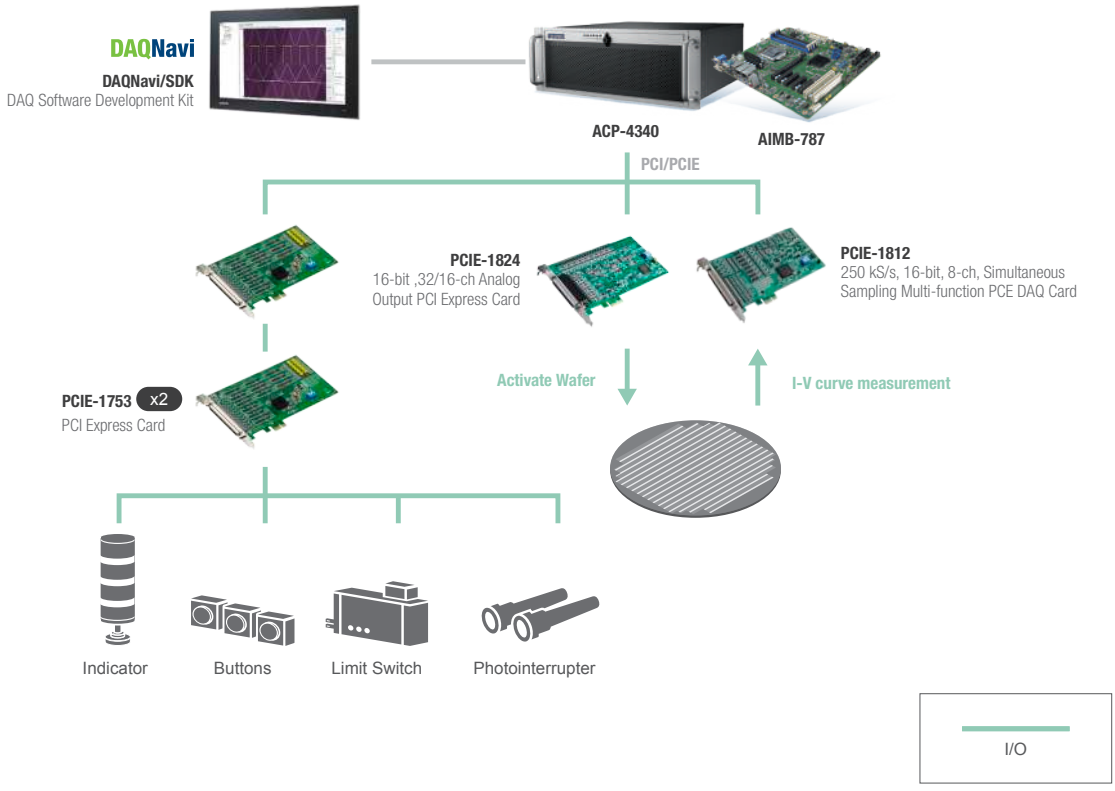
AIMB-787

Industrial ATX Motherboards | 10th Gen Intel® Core™ i9/i7/i5/ i3/Pentium®/Celeron® ATX

System Description

PCIE-1753 controls up to 96 peripheral limited switches/ devices in time, while the high-density DIO card satisfies precise position requirements. PCIE-1812 and PCIE-1824 meet wafer tester needs for analog output to activate and accurately measure electrical characteristics. PCIE-1824 offers high-density analog output channels which can activate up to 16-point to be measured on the wafer. After wafer activation, PCIE-1812 can simultaneously measure eight-point electrical characteristics of the wafer in a short time span. With Advantech comprehensive solutions, customers can easily build up a wafer prober/ tester machine.

System Diagram



Why Advantech?

Advantech's DAQ series with the software development kit, DAQNavi, satisfies customer requirements for building a data acquisition (DAQ) and control/ test system that actually does what customers want