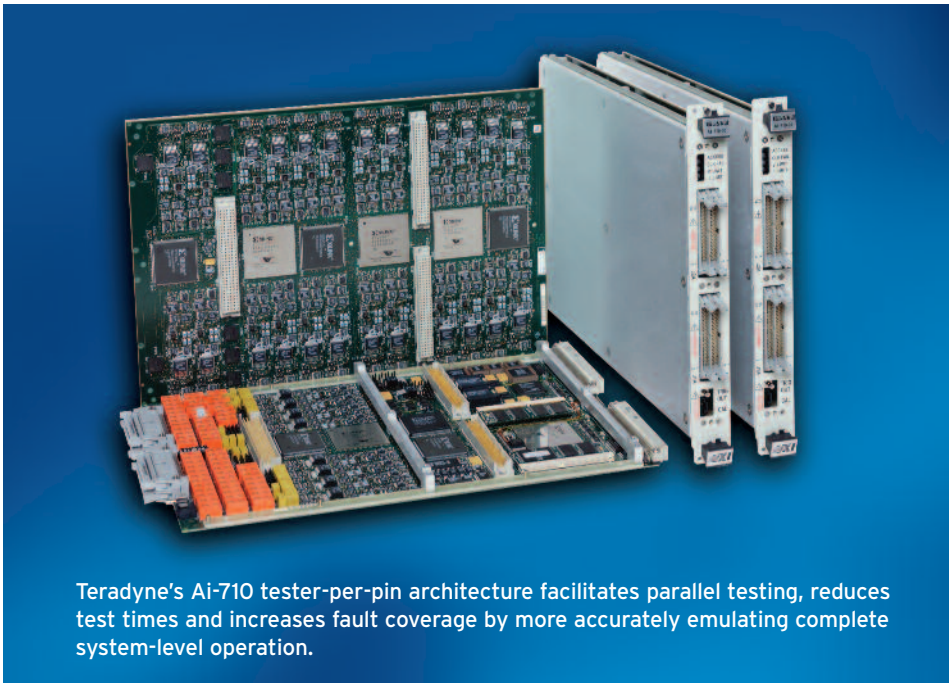
Ai-710 Analog Test Instrument Subsystem

High-Density VXI C-Size Options for Parallel Analog Test

KEY FEATURES

- ***Tester-per-pin Architecture*** *simplifies Interface Test Adapter (ITA) design by combining active stimulus and measurement capabilities on each of the 32 channels*
- ***High-density Functionality*** *with six independent instruments per channel enables high-throughput of complex mixed-signal LRU testing*
- ***Commercial Off-the-shelf (COTS) Architecture*** *– flexibility, configurability, high reliability, and lower acquisition and life-cycle costs*
- ***Parallel Test*** *capability facilitates operational test for higher throughput and quality of test*



Teradyne's Ai-710 tester-per-pin architecture facilitates parallel testing, reduces test times and increases fault coverage by more accurately emulating complete system-level operation.

Teradyne's Ai-710 offers a high-density, analog test subsystem in single C-size VXI module. Now VXI system integrators can build test equipment for advanced mixed-signal testing using Teradyne's revolutionary tester-per-pin architecture. The Ai-710 offers Teradyne's innovative capabilities for analog functional test in a physically compact format. It combines superior performance with all the advantages of a standard COTS architecture — flexibility, configurability, high reliability, and lower acquisition and life-cycle costs.

The functional test capabilities provided by this Teradyne technology are field-proven in a wide range of commercial and mil/aero applications. Teradyne high performance instruments have been integrated into test equipment supplied to the U.S. Department of Defense, all branches of the armed forces, as well as third-party test systems.

Tester-Per-Pin Architecture

Teradyne's Ai-710 Analog Test Subsystem is the industry's first mixed-signal subsystem on a card designed specifically to address the requirements for real-time signal simulation at functional test.

Each channel has 6 independent instruments behind each test pin. Each instrument can be activated at will, and is connected through a unique system triggering scheme. The test system configuration can now be determined by how many individual Ai-710 VXI C-size cards are placed within a test system design. Each Ai-710 card contains 32 independent channels for a total of 192 instruments in a single VXI C-size slot.

Parallel System Signal Simulation

You can now achieve real-time signal emulation in a full system functional transfer utilizing the parallel nature of a test system designed with the Ai-710 as its analog core. Many changes in test technology had to take place in order for this breakthrough to occur.

Incredible advances in packaging technologies for analog components have led to huge integration benefits for both DACs and ADCs. Integrated mixed-signal functionality, such as 32-bit sine wave generation, now costs much less and comes in very small packages. New low-voltage mixed-signal manufacturing processes have provided a step function change in analog designs.

The result is a highly integrated analog testing subsystem architecture that provides tester-per-pin resources and matrix-free test system designs.

Each Analog Channel is Packed with Functionality

Every one of the 32 channels on the Ai-710 Analog Test Instrument is a testing subsystem in itself because each channel consists of six independent test resources that provide stimulus and measurement capabilities.

Function Generator
Provides all standard waveforms, including sine, square, triangle wave at speeds up to 5 MHz.

Arbitrary Waveform Generator
Provides both complex waveforms and a digital test mode capability up to 1 MHz.

Digitizer
Every channel has 2 Megasamples of memory for data capture and analysis at a rate up to 1 MS/s. Use this in normal testing, diagnostics, and debug.

DMM
Full featured 12-bit DMM with DC/AC voltage and current measure capabilities.

Limit Detector
Dual threshold detector useful for peak signal and glitch detection across the full 200 volts measurement range.

Timer Counter
The Timer/Counter measures frequency and pulse widths and provides triggers for start and stop between channels at speeds up to 10 MHz.

Every Channel Has Phase Synchronous Operation

One of the unique architectural advantages designed into the Ai-710 is full inter-channel triggering capabilities. Each channel can share trigger events with every other channel, providing a high reliability triggering mechanism useful across a wide variety of applications. The Ai-710 VXI*plug&play* software driver supports a soft front panel and programming interface for Windows 2000™/Windows XP™ applications development environments (ADEs). The soft front panel provides interactive, graphical instrument control for access to all applications level instrument functions. Every instrument on every channel can be accessed for "bench top" testing and program debug. The Applications Programming Interface provides programmatic access to the Ai-710 hardware and supports the popular ADEs, including National Instruments LabWindows/LabVIEW™, Agilent VEE™, and Microsoft® Visual Studio.

Faster Programming and Debugging

Rapid test program development starts with the Ai-710 full featured software driver and intuitive graphical user interface. Given the complexity of today's mixed signal test requirements, fast program development and quick response to hardware changes are a critical factor in any project's success. The Ai-710 gives system integrators the means to reduce product cost and to better meet the challenges of today's functional test environments.

Industry Standard Format, Breakthrough Architecture

The Ai-710 is fully compliant with C-size VXI standard (IEEE Std 1155-1992) interface specifications. The VXI bus supports external communications, including synchronization and triggering for precise digital testing.

Teradyne is proud of its long history of providing test and inspection equipment, software and support to meet the most demanding specifications for all of our customers. Teradyne has applied 40 years of experience in the electronics test industry to ensure the reliability of the Ai-710 and minimize support costs:

- Shake and vibration testing and electrical stress testing ensure that the Ai-710 Series is rugged enough for shipboard or mobile environments.
- Rigorous reliability testing maximizes Mean Time Between Failures (MTBF), and high-density packaging reduces the number of components and interconnections. Self-test software efficiently verifies hardware performance using only internal resources.

On-board calibration hardware and software in the Ai-710 Driver and SFP package make it easy to ensure your system remains in calibration. Instrument calibration can be performed semi-automatically in the field by connecting NIST-traceable instrument standards to a Ai-710 front-panel connector.

Worldwide Support for Ai-710 Hardware and Software

A leading supplier of COTS test equipment for mil/aero applications,Teradyne has extensive experience in providing integrated hardware and software support to customers worldwide. Teradyne support services include:

- 24-hour repair-and-return of defective parts.
- Access to ATD customer telephone assistance.
- Comprehensive training and documentation.
- Expert field applications team for on-site support.

Teradyne's Worldwide Service and Support

A dedicated, worldwide network of customer service and support professionals stands behind every Teradyne product. Teradyne offers an extensive network of regional support and training centers around the world. A full spectrum of services and software support programs also extend beyond the expiration of your original warranty. Visit our Web site at: http://www.teradyne.com/atd

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