

Universal Test System

All-Purpose – Mixed Signal – Functional Test Platform



- **National Instruments PXI Platform**
 - Dual Core controller
 - 6.5 digit DMM
 - 64 Channel 300V multiplexer
 - 32 Channel 24V digital IO
 - 16 Analog Inputs
 - 2 Analog Outputs
 - Triple output programmable power supply
- **5VDC, 24VDC, 110VAC Power**
- **National Instruments LabVIEW and TestStand**
- **12 Block IO mass interconnect fixture interface**
- **Interchangeable custom fixtures**
 - Bed-of-nails or cable style
 - Safety Interlock
 - Electronically keyed

Overview

Bloomy Controls' Universal Test System is a modular Platform for mixed-signal functional testing across a wide range of industries including electronics, semiconductor, alternative energy and medical devices. The Universal Test System platform can be modified to adapt to specific test needs providing the flexibility for testing a product throughout its lifecycle; from circuit board to sub assembly testing, all the way to final product testing.

The systems modularity is derived from using National Instruments' PXI platform, a mass-interconnect fixture interface, LabVIEW, and TestStand providing scalability and reuse at a system level instead of a component level. The Universal Test System allows for rapid test development and is ideal for R&D, internal manufacturing, and for use by contract manufacturers.

Benefits

REDUCE OVERALL DEVELOPMENT TIME

The Universal Test System platform leverages commercial off the shelf hardware and standard Bloomy designs allowing a high performance test system to be delivered in about half the time an average functional test system would take. Utilizing an open architecture reduces test development time for new products; a new test fixture must be developed for the mass interconnect instead of another complete system.

REDUCE OVERALL SYSTEM COST

The initial system cost is reduced because Bloomy Controls has completed the design and documentation of the Universal Test System allowing the savings to be passed on. The ongoing cost is dramatically reduced because the base system can be reused. The only new costs for developing a test station for a new product is associated with the fixture and software development time.



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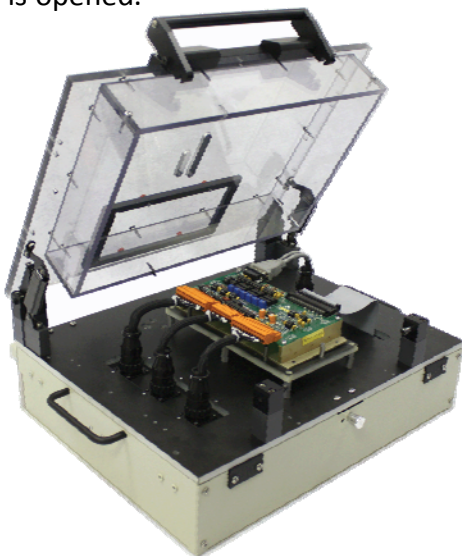
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Mass Interconnect

The Universal Test System Platform is available with several options for mass interconnects depending on the final system specifications. The available interfaces are provided by Everett Charles, Mac Panel, or Virginia Panel. These are all industry leading commercial interfaces providing high density (over 2000 connections), compact, reliable, low cost interfaces to the Interface Test Adapter (ITA) or Test Fixtures. The electro-mechanical connections accommodate power, digital and analog signals, and coax pins ensuring all test needs are supported. The mass interconnect allows for maximum system flexibility by accommodating as many fixtures as needed.

Test Fixtures

One or more test fixtures can be developed that connect to the Universal Test System through the mass interconnect. Depending on the test requirements fixtures can be cabled or bed-of-nails style. Each fixture is electronically keyed so that the test system can automatically detect the fixture and select the appropriate test sequence. Safety interlocks are included to cut high voltage power when the fixture is opened.



Software

The standard test software is developed using commercial standard and industry leading software development environments; National Instruments' TestStand as the test executive with individual test steps written in LabVIEW. TestStand supports many development languages such as C, C++, LabWindows/CVI, .NET, and ActiveX allowing existing source code to be reused and preserve previous software investments.

TestStand test sequences will be developed for each fixture and device-type, but development time is greatly reduced by re-using a library of prewritten modules. A simple, intuitive user interface allows an operator to select a test sequence, enter a serial number, and monitor test execution.

Data Management / Reporting

There are many options for test data results; the Universal Test System standard reporting options are HTML, XML, ATML, or a simple ASCII text file. These files will display product information such as part number and serial number along with the test data which was used to determine a units pass/fail status.

There are also options to store all information in a SQL relational database such as Microsoft SQL Server or Oracle. The data in the database could encompass all device test criteria, system users and privileges, test results, and other required information to support test functionality. Systems can also be equipped with database caching, allowing continued operation even while not connected to a network. Once the system reestablishes a network connection it will download the latest system information and upload any test data which was saved during the time the system was offline.



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Once the data has been stored to the database, reporting and statistical process control data can be retrieved to provide real-time or historical information. A reporting option is available which interfaces with relational databases such as Oracle or Microsoft SQL Server to provide the following:

- Real-Time Manufacturing Data Monitoring through live published web pages
- Custom Reporting for capability statistics, and trending through Pareto charts, X-bar and range, X-bar and sigma, Histograms, and other standard SPC charts
- Notification functionality to email reports on a specific day, or interval, or if a part of a system process is outside of its limits
- Set system alerts and receive an email if one is reached

System Self-Test

The Universal Test System self-test option provides operational assurance and performance of the overall test system giving confidence that the customer product is being tested on a reliable test system. The self-test uses a fully automated application along with an accompanying test fixture to perform a full scan of the test system instrumentation. The self-test fixture internally connects the stimulus instruments to the measurement instruments to provide full system test coverage. The application provides automatic fault detection and will isolate the faulty instrument for repair.

System Calibration

The Universal Test System documentation will provide calibration instructions for all system assets which require a formal calibration procedure (e.g. power supplies, DMM, etc.)

System Validation / Verification

A standard system validation and verification will be performed in accordance with the system acceptance test to ensure the instrumentation is connected to the mass interconnect as described in the electrical diagram. A similar verification and validation is completed on the test fixtures which are ordered with the Universal Test System.

In depth validation and verification plans can be developed to meet needed FDA or Mil/Aero specifications if it is required for the system.

Pricing and Delivery

Exact pricing will depend on the specific configuration, but a basic Universal Test System with standard components costs about \$39k. Fixtures start at \$12k including basic test sequence development. A standard system can be delivered between 5 and 6 weeks after receipt of order.

Please contact Bloomy Controls to request a quote for your test system.

www.bloomy.com

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Base System Specifications

Computer System and Software

- NI 8-slot PXI Chassis
- NI PXI-8106 2.16GHz Dual-Core Processor
 - 1GB Dual-channel 667MHz DDR2 RAM
 - 10/100/1000 Ethernet
 - 4 Hi-Speed USB ports
 - Integrated hard drive, GPIB, Serial I/O
- 17" LCD Monitor
- Rack-mount keyboard, touchpad
- Windows XP operating system
- TestStand run-time license
- Instrument drivers and soft front panels

Standard Instrumentation

- **NI PXI-4065 DMM**
 - 6 ½ - digit measurement capabilities
 - AC/DC Voltage, AC/DC Current, 2 or 4 wire resistance, diode test
 - +/- 300VDC/Vrms isolation
- **NI PXI-2527 Multiplexer**
 - 64x1 – 1-wire, 32x1 – 2wire configurations
 - 140 cycles / sec
 - Hardware triggering operation
 - Up to 2A switching / 2A carrying current
 - Up to 300VDC / 300VAC, CAT I
- **NI PXI-6221 Multifunction I/O Module**
 - 16 Analog Inputs: 16-Bit, 250 kS/s
 - Programmable input range (± 10 , ± 5 , ± 1 , ± 0.2 V) per channel
 - 2 Analog Outputs: 16-Bit, 833 kS/s, +/- 10V
 - 24 Digital I/O, 8 hardware timed at 1MHz
 - 2 Counters/Timers: 32-bit, 80MHz
- **NI PXI-6514 Industrial Digital I/O**
 - 32 Outputs: bank-isolated, +/-30 VDC, 350mA
 - 32 Inputs: bank-isolated sink/source, +/-30VDC
 - Programmable power-up states, watchdogs, change detection, programmable input filters
- **NI PXI-4110 Triple-Output DC Power Supply**
 - 3 independent DC power supplies – 0 to 6V, 0 to 20V, and 0 to -20V
 - All channels capable of delivering up to 1A
 - 16-bit voltage setpoint and readback
- **Standard System Power Supplies**
 - 5VDC @ 2A, 24VDC @ 2A
 - 110VAC @ 5A
 - Power Supplies are interlocked with mass interconnect to ensure power safety

Mass Interconnect

- Standard Everett Charles 12 block interface
 - optional: Virginia Panel mass interconnect*
 - optional: Mac Panel Scout mass interconnect*
 - optional: 24 block interface*
- Configurable for more than 2000 contacts
- Interface blocks for low and high power

System Power

- Standard 110VAC @ 60Hz, 15A input
- An optional UPS can be installed for International Operations
- Station Control – System On/Off, Emergency Stop

System Dimensions

- Standard 19" rack for mounting equipment
 - 36" H x 21" W x 31" D
- Monitor Arm
 - 16" H, 20" extension capability

Optional Instruments

Optional additional instrumentation include, but not limited to:

- PXI chassis – 14 or 18 slot, PXI express for high bandwidth
- PXI controller – PXI express, increased memory
- Monitor – touch panel, larger monitor
- System Uninterrupted Power Supply
- High resolution and accuracy DMM
- High Density Switch Matrix
- LCR Meter
- Source Measurement Unit (SMU)
- Up to 850W, 600VDC Power Supplies
- AC Power Supplies
- Electronic Loads
- Arbitrary Analog and Digital Waveform Generators
- Oscilloscope / Waveform Digitizer
- Additional I/O Modules
- Flash Memory Programming

Optional System Features

Optional additional features include, but not limited to:

- Self-Test Fixture and Application
- Custom Data Reports
- Data Management System
- Database Integration
- Statistical Process Control

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