

Power-Max Overview

The Power-Max is a configurable multi-channel power distribution and DI/DO test fixture. Capabilities include AC and DC voltage measurements, Ohm measurements, troubleshooting capabilities, and self-diagnostic routines. The testing program is intuitive and user-friendly, with user management, configuration utilities, high and low level testing, and data review.



Features

Channel Count: The SCXI back plane is populated with up to 4 SCXI-1127 High Power Modules as required by the testing requirements. A single SCXI-1127 Module can handle up to 30 paired channels for testing. Two channels are reserved for the self-diagnostic capability. The basic configuration comes with two modules allowing for 60-paired channels of testing.

OHM Checking: the feature allows for power channels to be ohm checked in an un-powered state prior to turning on power to the unit under test (UUT). Detecting ohm check faults allows for defects to be corrected before power-up, preventing component damage.

AC, DC voltage testing, checks voltages to acceptable ranges as defined by the test configuration. This feature verifies that power distribution integrity and continuity are present in UUT's prior to integration into large systems.

DI/DO testing verifies the output and input signals meet acceptable defined voltage levels. The feature also allows monitoring of state toggles to verify controllers and I/O modules are working properly.

GFCI Manual checking. This feature utilizes a UL rated manual GFCI tester that allows for a manual current adjustment to set leak current triggers. This feature is included in the basic tester configuration.

Tester Interface: The basic Power Max fixture interface has 8 37Pin male bulkhead CPC connectors. Then cable set must be of a custom design to interface to the customers product. A 110VAC power outlet is available to provide UUT power



Troubleshooting: When certain failures occur, the PowerMax system can access a troubleshooting feature that provides the user information useful in detecting the fault and fixing the defect. The feature allows for a manual retest of the faulty step and troubleshooting data that is derived from data input into then configuration file. Then customer is required to build the troubleshooting database in an excel format as part of the overall configuration file. The PowerMax is capable of powering any UUT using 110V and 208V3PH in the base configuration.

Reporting: PowerMax can print a certificate of conformance report for each test to a network printer. PowerMax can also print the raw data file. PowerMax also has the ability to log the test data to an online quality database if required.

Technical Specifications

Controller and Test Rack

8U Advantek industrial computer enclosure
Intel PIII 750Mhz, 128Ram, 30GiG HD, Network Card, Matrox G450 Video Adapter
Flatpanel monitor, Keyboard and Mouse
Enclosure Size 24W X 24D X 36H
110VAC or 208Vac,
EMO, contactor, Circuit Breaker

Channel Switching

National Instruments SCXI-2000 switching chassis with 4 available slots for modules
National Instruments SCXI-1127 high voltage matrix multiplexer modules.

- Maximum number of channels – 30 per module (2-wire mode.)
- Max allowed voltage - 300VDC, 300Vrms.
- Max switching capacity (resistive load) – 200mA at 250Vrms, 0.5A at 125Vrms, 1A at 30VDC.

National Instruments high voltage analog Backplane (HVAB) for the SCXI-2000.

- Expands switching matrix and signal routing throughout SCXI chassis to all slots.

Measuring Equipment

Agilent 34401A digital multimeter with GPIB interface Board and Cable

DC Voltage

- Accuracy - ± 0.0015 of reading, 0.0004 of range.
- Input resistance 0.1, 1, 10V ranges – 10M Ω to 10G Ω :100V, 1000V ranges – 10M Ω $\pm 1\%$.
- Input bias current <30pA.

AC Voltage

- Accuracy - $\pm .04$ of reading, .02 of range.
- Input impedance 1M Ω $\pm 2\%$ in parallel with 100pF.

Resistance

- Accuracy - $\pm .002$ of reading, .0005 of range.
- Max lead resistance – 10% or range per lead for 100 to 1k Ω ranges. 1k Ω per lead on all other ranges.

Price

Basic System:	\$21,850
Test enclosure, Controller, DVM, Multiplexer, Software 60 Channel SCXI capacity Generic Interface with eight 37 pin male CPC connectors Power cable	
Customized cable harness:	Requires Quote
Upgrade to 120 Channel capacity:	\$2800
Upgrade Options:	Requires Quote
Add a second SCXI chassis	Increase CPU performance
Increase enclosure size	Spare UUT cables
Add a touch-screen panel	Barcode laser reader
Add a rack-mount keyboard	Additional software features
Add a Rack-mount monitor	Convert to NI CVI software platform
Onboard laser printer	Convert to NI Test Stand software platform
Add a Webcam, mic, & speaker	Convert to a NI PXI based back plane
Spare test cables	

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Power-Max Software Description

Platform

- Windows 2000 operating system
- Labview 6.0 Application

User Accounts

- Login/Logout.
- Privilege levels and a management interface.

UUT Information

- UUT Type and UUT serial number entry.
- Automatically loads default test configuration for selected UUT type.

Configuration File Selection

- Microsoft Excel 2000 format.
- Individual named worksheets for onscreen instructions and individual tests .



- Switching operations set through simple high and low level software commands.
- Pass/Fail Limits set in file.

Automatic Testing

- One button operation – select Auto Test and follow setup instructions to test.
- Abort and Pause functions.
- Onscreen Pass/Fail indicators, test log, and overall test time monitor.
- Test report generated at completion with the following fields.
 1. UUT type.
 2. UUT serial number.
 3. Overall result.
 4. Operator information.
 5. Date and Time
 6. Configuration filename.
 7. Line by line test results.
- Quality database logging at test completion.

Manual Testing

- Select an individual configuration file line to test.
- Troubleshooting utilities launched when fault tree elements are known.
- Abort Function.
- Onscreen Pass/Fail indicators and test log.

Data Analysis

- Review and print saved test information.

Fixture Self Diagnostics

- Verifies the functionality of the Power-Max in a simple self-test routine.