

Model HP-1 High Voltage Test System

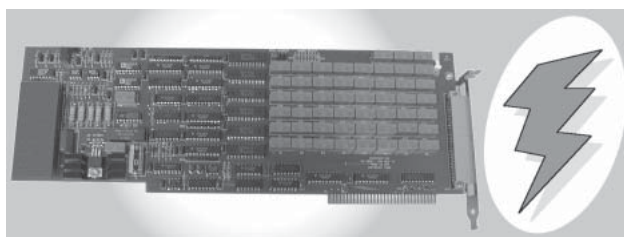
Product Features

- High-Voltage Breakdown Measurements
- High-Voltage Leakage Measurements
- Low and High-Voltage Continuity Measurements
- Resistance Measurements

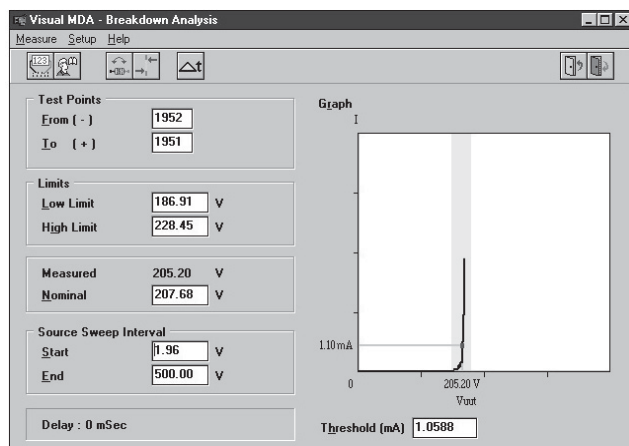
Applications

- **Cables and Circuit Assemblies Testing**
- **Breakdown and Leakage Testing**
- **Protection Device Testing**

The CheckSum Model HP-1 is used to test cables, harnesses and circuit assemblies for continuity and high-voltage leakage and breakdown. Protection devices on circuit assemblies can also be tested. The Model HP-1 can make measurements for continuity using as low as a 1K Ω threshold, and measurements for leakage and breakdown for values as high as 500M Ω using stimulus of 500 volts DC.



Model HP-1 High Voltage Test Module



The Model HP-1 is controlled by CheckSum Visual MDA™ Software. This software provides a variety of software functions to create a flexible test environment. The interactive environment includes a test-executive, test program editor, and statistical process control (SPC). All of the commands of the standard Visual MDA Software package are available to the HP-1 user, except those specific to the MDA Hardware Modules that are not installed.

Mechanically, each HP-1 module uses one full-length, full-height ISA slot. Each module provides 24 test points, each of which can be used as low or high polarity measurement source/inputs. Up to two HP-1 modules can be used in a test station, providing for up to 48 test-point capability.

System Configuration

The HP-1 can be used as a standalone test system or integrated with a CheckSum Manufacturing Defects Analyzer (MDA) test system to expand the MDA system's capabilities.

In the standalone configuration, the Model HP-1-SA consists of test electronics for up to 24 points and the Windows Visual MDA Software package. These can be installed in your test controller (PC), or integrated with a controller purchased from CheckSum, such as the Model T-120-WIN or T-120-WIN-IC. The system can be expanded by an additional 24 points with use of the HP-1 Module.

In the integrated MDA environment, you can add one or two HP-1 modules to the MDA test system. The MDA test system must be configured with Visual MDA software, and contain at least one full-length, full-height ISA expansion slot for each HP-1 Module.

Custom Test Fixturing

Test fixture kits, or ready-to-use customized test fixtures can be purchased from CheckSum or can be built by a variety of fixturing contractors around the world.

Most standard fixturing systems (e.g., mechanical, pneumatic, and vacuum) can be customized to incorporate hi-voltage testing. The most important concern is to provide operator safety via a safety shield around the unit being testing.

**CONTINUITY &
CABLE TEST
SYSTEMS**

Model HP-1 High Voltage Test System

For enhanced safety, the fixture's safety shield should be interlocked with the HP-1's electronics to provide double protection to the operator.

Connection to test fixturing is provided by a standard 50-pin ribbon cable female connector at the HP-1 backpanel.

HP-1 Specifications

Low-Voltage¹ Continuity Test

Default Threshold	Current Range
1K Ω \pm 20%	10mA
20K Ω \pm 20%	1mA
200K Ω \pm 20%	100 μ A
2M Ω \pm 30%	10 μ A

Maximum Current into short: 6mA

Default Hysteresis: Approximately 10%

High-Voltage² Continuity Test

Default Threshold	Current Range
100K Ω \pm 30%	10mA
1M Ω \pm 20%	1mA
10M Ω \pm 20%	100 μ A
100M Ω \pm 30%	10 μ A

Maximum Current into short: 8mA

Default Hysteresis: Approximately 10%

Continuity Test Functions provided:

- Learn from known-good
- Assign network and no-care connections
- Measures each point to all other points by net

Breakdown Testing

Applied Voltage: 50-500 VDC \pm 10%

Default Breakdown Threshold: 1mA \pm 10%

Maximum Current through UUT: 8mA

Breakdown Test Functions provided:

- Sweeps between two specified voltages, monitors current through UUT. Logs point at which current exceeds 1 mA.
- Allows specification of ramp speed
- Measures between two points

¹ Low-Voltage Source: 12VDC \pm 10%

Source Resistance: 2K Ω \pm 10%

² High-Voltage Source: 500VDC \pm 10%

Source Resistance: 64K Ω \pm 10%

Low-Voltage¹ Resistance Test

Range		Measurement Accuracy	Max Current
Min	Max		
0 Ω	10K Ω	\pm 0.5mA	6mA
10 k Ω	118K Ω	\pm .05mA	1mA
118 k Ω	1.2M Ω	\pm 5 μ A	100 μ A
1.2 M Ω	12M Ω	\pm 1 μ A	10 μ A

High-Voltage² Resistance Test

Range		Measurement Accuracy	Max Current
Min	Max		
0K Ω	436K Ω	\pm 0.5mA	8mA
436K Ω	4.9M Ω	\pm .05mA	1mA
4.9M Ω	50M Ω	\pm 5 μ A	100 μ A
50M Ω	500M Ω	\pm 1 μ A	10 μ A

Resistance Measurement method:

Apply voltage and measure current (transconductance measurement).

Resistance Test Functions provided:

- Measure resistance between two points
- Compare to High and Low test limits

Resistance uncertainty, in percent, for a given measured value:

$$= \frac{(MA) \times (MR + SR) \times 100}{SV} + 10\%$$

where units are volts, amps and ohms:

MA = Measurement Accuracy (see previous tables)

MR = Measured Resistance

SR = Source Resistance (see previous tables)

SV = Source Voltage (see previous tables)

Other Specifications

- Model HP-1 includes the measurement module, 50-pin ribbon cable, and self-test fixture. Order the HP-1 module to add onto any Visual MDA test system.
- Model HP-1-SA includes the measurement module, Visual MDA for Windows Software, 50-pin ribbon cable, Visual MDA Instruction Manual, and self-test fixture.
- Self-test of each module, status checking during program execution of safety interlock status
- Test Points per HP-1 module: 24
- Maximum Test Points per System: 48
- Mechanical: Full-length, full-height ISA module
- I/O Space requirements: 32 contiguous bytes, jumper-selectable