

PC-BASED CONTINUITY TESTERS



Cablescan's Series 90 PC-based circuit analyzers provide exceptional speed, versatility, and accuracy in the testing of wire harnesses and backplanes, and prescreening of loaded printed-circuit boards. In addition to continuity testing, the testers provide resistance and capacitance measurements, diode testing, and guided harness assembly.

There are two basic types of analyzers: Series 90, for low-voltage applications, and Series 90HV, for high-voltage applications. Each analyzer features a Pentium-based system controller with keyboard, VGA color monitor, and up to 32 expansion cabinets housing scanner boards. The system controller and the expansion cabinets can be separated by up to 200 feet, for applications requiring interconnects over large areas.

All Series 90 analyzers have an extensive assortment of programmable options to customize test and build operations, as well as the printing, storage, and evaluation (using a statistical reporting system) of test results.

The Series 90 family also includes low-cost units that utilize customer PCs in place of Cablescan's system controller, monitor, and keyboard. Although less expandable, these units offer the power, functions, and flexibility of the basic analyzers.

SERIES 90

Cablescan's Series 90 includes expandable low-voltage and high-voltage PC-based analyzers with system controller, monitor, and keyboard — as well as economical analyzers that work with a customer PC in place of the system controller, monitor, and keyboard.

LOW VOLTAGE ANALYZERS

SERIES 90 S9 • SERIES 90 S32 • SERIES 90 L4



SERIES 90 S9 FEATURES

- Up to 1152 test points in base system
- Component measurements
- Programmable options/parameters
- Color-graphics/work instructions
- Expandable to 131,072 test points

The basic Series 90 S9 has a 9-board expansion cabinet, which supports up to nine, 128-point scanner boards. A full complement of boards provides 1152 test points. It may be expanded to include up to 32 nine-board expansion cabinets and /or 32 thirty-two-board expansion cabinets, in any combination, with full or partial complements of scanner boards, for a maximum of 131,072 test points.



The basic Series 90 S32 includes a 32-board expansion cabinet, which supports up to 32 scanner boards. A full complement of boards provides 4096 test points. It may also be expandable to include up to 32 expansion cabinets for a maximum of 131,072 test points.

SERIES 90 S32 FEATURES

- Up to 4096 test points in base system
- Component measurements
- Programmable options/parameters
- Color-graphics/work instructions
- Expandable to 131,072 test points

SERIES 90 L4 FEATURES

- Controlled by your PC
- Up to 512 test points
- Component measurements
- Programmable options/parameters
- Color-graphics/work instructions



An economy model is the Series 90 L4, which connects to the serial port of your PC and is supplied with Series 90 software. The Series 90 L4 is expandable to 512 test points in 128-point increments, and it provides the same test and guided assembly capabilities as the standard Series 90.

HIGH VOLTAGE ANALYZERS

SERIES 90HV S23 • SERIES 90 H8

The Series 90HV S23 analyzer combines low-voltage solid-state technology with high-voltage relay technology – solid-state devices for testing continuities and components at low-voltage; relays for testing high-resistance isolation and high-current continuity.

The high-resistance isolation tests (up to 1500vdc) typically are used to evaluate harness insulation material, while the high current continuity tests (up to 1 amp) are for harness connections. The

Series 90HV provides the same features as the low-voltage Series 90 including guided harness assembly. For operator protection, there is a high-voltage password lockout feature incorporated into the analyzer.

The basic Series 90HV S23 has one high-voltage expansion cabinet containing up to 23 high-voltage 64-point scanner boards; fully loaded, it provides 1472 test points. It may be expanded to include up to 32 twenty-three-board expansion cabinets, with full or partial complements of scanner boards, with a maximum of 47,104 test points.



SERIES 90HV S23 FEATURES

- Up to 1472 test points in base system
- Component measurements
- Expandable to 47,104 test points
- Programmable options/parameters
- Color-graphics/work instructions

SERIES 90 H8 FEATURES

- Controlled by your PC
- Up to 512 test points
- High-voltage password lock-out
- Component measurements
- Programmable options/parameters
- Color-graphics/work instructions



Full-featured high-voltage testing also is available in the economical Series 90 H8, which utilizes your PC in place of the system controller, monitor, and keyboard; it is, however, for applications that require no more than 512 test points. It provides isolation tests up to 1,500 vdc, and high-current continuity tests up to 1 amp. Like the low-voltage Series 90 L4, it includes Series 90 software.

FEATURES

TEST FEATURES:

Component Measurements

Cablesan Series 90 analyzers can be programmed through the keyboard and built-in editor to define component values and tolerances for circuits containing resistors, capacitors, and diodes. Additionally, diode and capacitor polarities can be defined, as well as diode forward voltage drops.

Programmable Thresholds

Continuity and isolation (shorts) thresholds can be programmed at three levels; as system defaults, or for individual programs, or while running specific tests.

Programmable Test Methods

Continuity (opens and shorts) tests are individually selectable. A single test scan or continuous scans may be performed. Test results can be displayed in three formats: value of each circuit/component tested; failed circuit/component only; pass/fail status only. Programmable passwords control access to high voltage testing. Complete test results may be printed and a pass/fail label may be printed for attaching to the harness.

Wire List Programming

Test programs can be generated by scanning known-good assemblies or by programming through the keyboard. The keyboard is also used for programming components, changing test parameters and options, editing existing programs, or assigning 16-character user labels and 32-character circuit labels.

Statistical Data Reporting

Test results may be serialized and stored for use in test summary reports. Build times may be saved and used to evaluate production performance.

BUILD FEATURES:

Body Conductance

During harness build, body conductance is used to identify points by touch accompanied by audio and visual signals.

Programmable Build Methods

During harness build, each circuit is verified as it is terminated. The build sequence can be sequential or random, or programmed to be switched automatically between the two. The wire list may also be grouped to allow a section to be routed without terminating.

Shorts Testing

The Series 90 verifies that the circuit being terminated is not shorted to another circuit (normally occurring when a wire is inserted incorrectly).

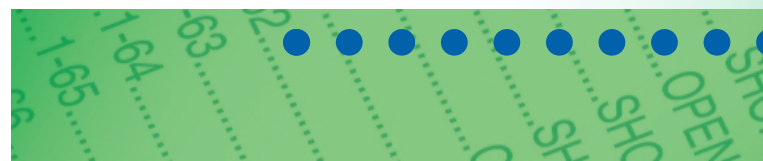
Color Graphics

Color graphics and text displays during assembly provide detailed work instructions. This enables a "paperless factory" environment, providing automatic indexing to the corresponding assembly details for each circuit.

Last-Circuit Retest

The Series 90 can be set to retest the previously terminated circuit for continuity. If that circuit becomes unterminated, the Series 90 automatically backs up, allowing retermination. Connector pins that back out after the operator releases the wire will also cause the tester to back up.

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PROGRAMMABLE OPTIONS & PARAMETERS

TEST OPTIONS:

- Test unused points
- Display errors only
- Display all circuit values
- Write test results to disk
- Print test results
- Print product label
- Pause after each error or page
- Activate output signal
- Log test data
- Serialize test results
- Assign job/batch number

BUILD OPTIONS:

- Build sequentially or randomly
- Route sequentially or randomly
- Test after build is complete
- Monitor last continuity
- Perform shorts test during build
- Allow manual sequence override
- Log build time
- Display graphic pictures
- Display work instructions
- Activate relay/lamp drivers

PARAMETERS:

- Continuity thresholds
- Continuity current*
- Continuity voltage
- Continuity dwell time
- Number of test points
- Number of relay/lamp drivers
- Isolation threshold
- Isolation voltage*
- Isolation voltage ramp up*
- Isolation dwell time
- Start testing at point number

**Series 90HV and Series 90 H8 only*

BASIC SYSTEM SPECIFICATIONS

SYSTEM CONTROLLER:

Pentium, 8MB RAM;
1.6 GB Hard Drive;
1.44 MB, 3.5" Floppy Disk;
Parallel & Serial Ports

Dimensions:

6.0 x 23.5 x 15.0 inches
(15.2 x 59.7 x 38.1cm);

Weight:

26 lbs. (11.8 kg)

DISPLAYS & CONTROLS:

15-inch VGA Color Monitor
101-key AT-style keyboard
User Labels: 16-character
Circuit Labels: 32-character

BODY CONDUCTANCE:

Less than 10 μ

TEMPERATURE:

Operating:
32° F to 105° F (0° C to 40° C)

Storage:

-40° F to 165° F (-40° C to 74° C)

LAMP/RELAY DRIVERS:

Scanner boards can be assigned
to drive lamps and relays.
Up to 100 ma @ 5 vdc per point
1 amp for high-voltage systems

INPUT POWER:

SYSTEM CONTROLLER:

100 to 252 V~, 5 amps, 50/60 Hz.*

EXPANSION CABINETS:

100 to 252 V~, 1 amp, 50/60 Hz.*

**Automatically adjusts to input voltage*

SERIES 90 SPECIFICATIONS/INTERFACE ACCESSORIES

Interface Accessories: Cablescan offers a complete line of interface accessories to meet every testing need.



Low-voltage Tester Interface Cable (P/N 5210914-3) Eight-foot, 64-conductor flat cable with tester mating connector (7200481) on one end; second end unterminated.



Low-voltage Tester Interface Cable (P/N 5210917-3) Eight-foot, 64-conductor cable with tester mating connector (7200481) on one end; male "AMP CHAMP" (Ribbon) connector on second end.



Harness Board Backwire Cable (P/N 5210982) Eight-foot, 64-conductor, discrete-wired cable with female "AMP CHAMP" panel-mount connector on one end; second end unterminated. Used for back-wiring harness boards – mates with interface cable 5210917-3.



High Voltage Tester Interface Cable (P/N 5211037) Eight-foot, 32-conductor, discrete-wired cable with high-voltage tester mating connector (5211036) on one end; second end unterminated.



High Voltage Tester Interface Cable (P/N 5211038) Eight-foot, 96-conductor, discrete-wired cable with three high-voltage tester mating connectors (5211036) on one end; ITT DL Series 96-pin ZIF on second end.

PARAMETER	LOW VOLTAGE SERIES 90	HIGH VOLTAGE SERIES 90HV
Models	Series 90 S9 Series 90 S32 Series 90 L4	Series 90HV S23 Series 90 H8
TEST POINT CAPACITY	Up to 131,072 test points (in increments of 128) Series 90 L4: up to 512 test points	Up to 47,104 test points (in increments of 64) Series 90 H8: up to 512 test points
CONTINUITY RANGE	1.0 Ω to 1.0 K Ω	0.10 Ω to 1.0 K Ω
CURRENT RANGE	0.512 μ a to 5.12 ma (Auto ranging)	0.512 μ a to 1.0 amp
ISOLATION (Shorts Threshold)	10 k Ω to 9.5 M Ω	10 k Ω to 9.5 M Ω @ 5 vdc 5 M Ω to 1,000 M Ω * (*depends on test voltage)
TEST VOLTAGE	5 vdc or 200 mvdc	5 vdc to 1500 vdc or 200 mvdc
RAMP TIME:	N/A	40 volts to 10 kvolts per second
RESISTANCE TEST	1 Ω to 9.5 M Ω (\pm 10% \pm 1 Ω)	1 Ω to 9.5 M Ω (\pm 10% \pm 1 Ω)
CAPACITANCE TEST	1,000 pf to 10,000 μ f (\pm 20%)	1,000 pf to 10,000 μ f (\pm 20%)
DIODE TEST	Polarity & voltage drop	Polarity & voltage drop
DWELL TIME	Auto or Programmable: from 1 μ s to 1 minute	Auto or Programmable: from 1 μ s to 1 minute
TEST SPEED	Continuity: 500 points/sec Component: 50 points/sec	Continuity: 500 points/sec Component: 50 points/sec High Current: 20 points/sec Isolation: 20 points/second* (*plus dwell & ramp-up time)
DIMENSIONS & WEIGHT	Series 90 S9 Expansion: 6.0 x 23.5 x 15.0 inches (15.2 x 59.7 x 38.1 cm) 21 lbs. (14.1 kg) plus 1 lb. (0.5 kg) per 128 points Series 90 S32 Expansion: 15.0 x 23.5 x 15.0 inches (38.1 x 59.7 x 38.1 cm) 31 lbs. (14.1 kg) plus 1 lb (0.5 kg) per 128 points Series 90 L4: 7.0 x 12.25 x 12.75 inches (17.8 x 31.1 x 32.4 cm) 18 lbs. (8.2 kg) plus 1 lb. (0.5 kg) each additional board	Series 90HV S23 Expansion: 14.5 x 24.1 x 12.0 inches (36.8 x 61.2 x 30.5 cm) 32 lbs. (14.6 kg) plus 1.5 lbs. (0.68 kg) per 64 points Series 90 H8: 7.0 x 12.25 x 12.75 inches 17.8 x 31.1 x 3.4 cm 18 lbs. (8.2 kg) plus 1.5 lbs. (0.68 kg) each additional board

ORDERING INFORMATION

Low Voltage Analyzers

Part Number	Description
5210967	Series 90 S9 – System with 9-board expansion cabinet and 128 test points
5210973	Series 90 S32 – System with 32-board expansion cabinet and 128 test points
5211054	Series 90 L4 – Tester with 4-board expansion cabinet and 128 test points
5210944	128-point low-voltage scanner board
5210963	Series 90 E9 – 9-board expansion cabinet
5210972	Series 90 E32 – 32-board expansion cabinet

High Voltage Analyzers

Part Number	Description
5211032	Series 90HV S23 – System with 23-board expansion cabinet and 64 test points
5211072	Series 90 H8 – Tester with 8-board expansion and 64 test points
5211018	64-point high-voltage scanner board
5211031	Series 90HV E23 – 23-board expansion cabinet

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