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## HP 9460 and HP 9464 Isolation Voltage Testers

### Accurate and Non-Destructive Production Testing of AC Isolation Voltage and Partial Discharge

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The HP 9460 and HP 9464 Series Testers provide a practical automatic solution for accurate production isolation voltage testing. They are designed specifically to test the input-to-output isolation of:

- Opto-couplers
- Solid state relays
- Pulse transformers
- Photo interrupters
- Isolation amplifiers

These testers assure that the devices shipped will meet the stringent specifications of UL and VDE-0883 for isolation voltage as well as the VDE-0884 partial discharge specification.

The HP 9460 can also test the lead-to-case isolation voltage of isolated case power packages, like DIP and isolated TO-220, for power semiconductor devices.



HP 9464 for DIP Production Testing of  
Isolation Voltage and Partial Discharge

## Product Features

### Isolation Voltage Testing

The HP 9460 and HP 9464 detect resistive and capacitive leakage for both the UL and VDE-0883 specifications at up to 7.00 kV AC or 9.99 kV peak, depending upon configuration.

### Partial Discharge Detection

Partial discharge or high corona activity indicates the presence of a physical insulation defect that can lead to high leakage and failure after the device is put into service. The HP 9464 is unique in its ability to detect partial discharge with sensitivity at less than 5 pico-coulombs (pC) as specified in the VDE-0884 specification. An optional calibrator allows 1 to 9 pC repeatable calibration.

### Non-Destructive Testing

Isolation voltage testing can often destroy a device due to the discharge of stored energy. The HP 9460 and HP 9464 feature negligible stored energy and a current-limiting design that prevents additional damage to failed devices. Voltages are applied to the DUT at the AC zero crossings. If a failure is detected, a solid state switch removes test voltage within 0.1 millisecond. The HP 9464 adds the unique advantage of testing for partial discharge non-destructively.

### Complete Operator Control

Front panel controls are provided to set test limits for device leakage, high voltage/low limit thresholds, and partial discharge on the HP 9464. A digital panel meter displays actual device voltage as peak or AC, source voltage, or leakage current. The front panel displays PASS/FAIL, as well as the type of failure.

### Manual Operation

The manual version is ideal for incoming inspection, sampling, and laboratory analysis of many types of devices or assemblies where high throughput is not required.

### Multiple Handler Options

For production applications, the tester can be fully integrated with an automatic DIP handler. All handlers have a semi-automatic, two-sleeve input. The three and five output handlers can be programmed to allow any output sort to be assigned to any sort class. Automatic re-test indicators are also included. Typical throughput is 2,000 to 2,400 devices per hour with a one-second programmed test time.

### Integration Kits

The HP 9464 is also available in a kit for interfacing to user supplied automatic handling or robotics systems.

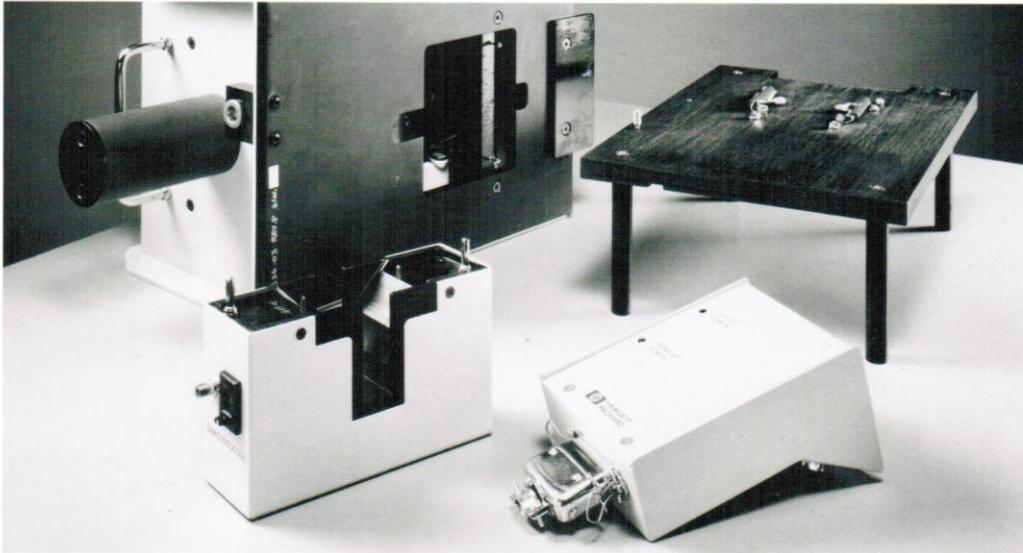
### Easy, Safe Operation

The HP 9460 and HP 9464 Series have been designed for simple test operation. Safety interlocks protect the operator from contact with the high test voltages. Setting the desired test voltage is aided by a 3-1/2 digit display of the actual voltage. A transparent hinged cover prevents inadvertent operation of the adjustment knob.

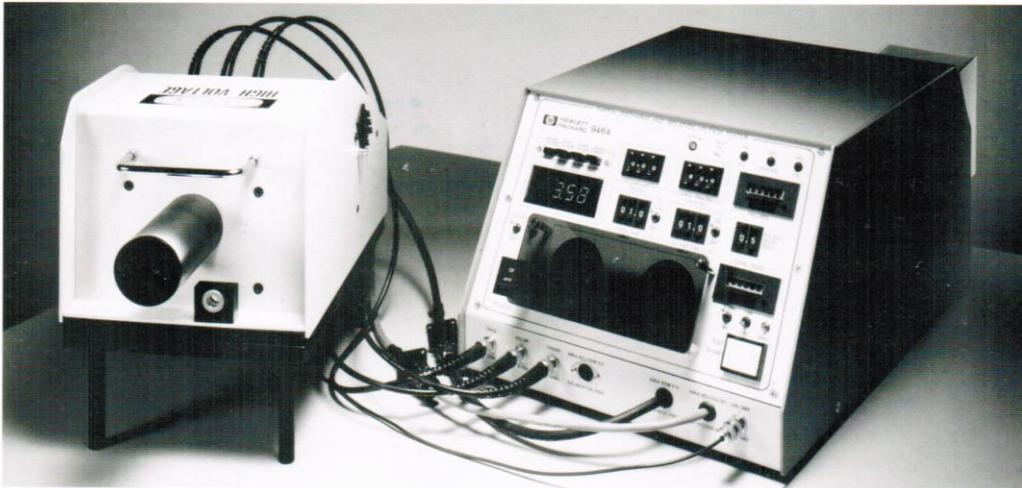


HP 9460 and HP 9464  
Bench Top Model  
Voltage Isolation Testers

## HP 9464 Testing Kits



The HP 9464 integration kit consists of the controller and the following components (shown above, clockwise from upper left): High Voltage Box, Verification Stand, Opto-isolated handler or robotics interface, and Optional PDC-710V Partial Discharge Calibrator. Power line filter, cables and documentation are not shown, but are also included. The optional PDC-710V Partial Discharge Calibrator injects a selected known charge (1 to 9 pC) into the DUT contacts. This calibration technique simulates an actual device partial discharge, which allows all stray capacitances to be calibrated.



Pictured above are the HP 9464 Controller (right) and High Voltage Box mounted on the Verification Stand (left). The controller includes a reversible front panel to allow horizontal or vertical installation. The integration kit includes 60 cm (24 in) cables for connection to the high voltage box, as displayed above.

## HP 9460 Series Tester

- Meets the production test requirements for UL, IEC and VDE-0883 specifications.
- Single cycle acceptance testing at 0.2 to 99.9 seconds as well as 1 to 5 second production testing.
- Non-destructive testing capability includes opto-couplers, opto-isolators, opto-triacs, opto-relays, reed relays, transformers, and other devices in compliance with their I/O voltage isolation specifications.
- AC test voltage is turned on and off at AC zero crossing on PASS condition; test voltage is removed within 0.1 ms after FAIL detection.
- Available in manual or tube-to-tube single test-site handler configuration.
- Complete safety interlocks.

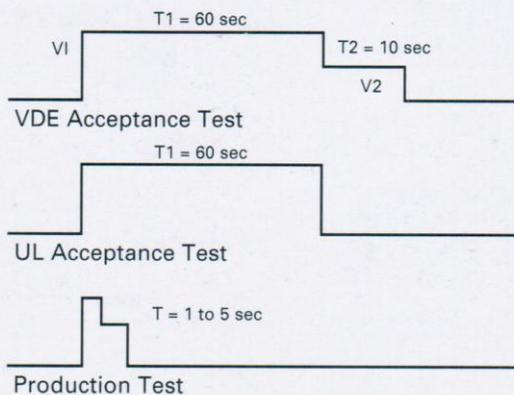
### Other Options Available

The HP 9460 is also designed to test the leads-to-case isolation voltage of isolated case power packages (like isolated TO-220) used in the power semiconductor industry. This offers a practical solution for accurate, complete isolation voltage testing in a production environment. For more information or a custom quotation contact your local sales office.

## HP 9464 Series Tester

- Exceeds the production test requirements for UL, IEC and VDE-0884 specifications.
- Performs VDE-0884 two-cycle acceptance testing (60 sec/10 sec) as well as 1 to 5 second production testing.
- Used for both leakage and partial discharge testing, with real time characterization.
- Resolves partial discharge threshold of 0.2 pC.
- Implements high-Q selective circuitry which allows for repeatable 1 pC calibration with PDC-710V Partial Discharge Calibrator.
- Non-destructive testing capability available.
- 0.2 to 99.9 second programmable two-cycle test sequence with voltage levels and time adjustable for each cycle.
- Available in manual bench top, kit, or single test-site handler configurations.
- Complete safety interlocks.

### Multiple Test Time Capabilities



## HP 9460 and HP 9464 Specifications

	HP 9460 Specifications	HP 9464 Specifications
<b>Voltage Range</b>	0 to 7.00 kVac, 10 Vac resolution. Accuracy of 2% ± one digit.	0 to 7.00 kVac or 0 to 9.90 kV-peak, 10 Volts resolution. Accuracy of 2% ± one digit. 0 to 4.0 kVac or 5.66 V-peak for automatic partial discharge testing at 5 pC.
<b>Test Voltage Duration</b>	0.2 to 99.9 seconds.	T1 and T2 from 0.2 to 99.9 seconds.
<b>Programmable Leakage Test Threshold</b>	0 to 50.0 μA in 0.1 μA steps, 150 MΩ current limit resistor. Accuracy of 2% ± one digit.	0 to 99.9 μA in 0.1 μA steps, 100 MΩ in parallel with 10 pF current limit. Accuracy of 2% ± one digit.
<b>Partial Discharge Test Threshold and Delay</b>	Corona detection only >50pC.	0 to 50 picocoulombs in 0.2 pC steps, with 0.0 to 9.9 second sense delay.
<b>Partial Discharge Detection</b>	Multiple digitally filtered corona events.	Single event or digitally filtered multiple events.
<b>Display Mode and 3-1/2 Digit Panel Meter</b>	Source or Device Voltage (kVac), Leakage Current (μA) or blank display.	Source or Device Voltage (kVac or kV-peak), Leakage Current (μA).
<b>High Voltage</b>	0 to 7.00 kVac or 0 to 9.90 kV-peak (HP 9464 only), accuracy of 2% ± one digit.	
<b>Low Limit Threshold</b>	Ensures that actual device test voltage is not below requirement.	
<b>LED Indicators</b>	Testing, Pass, Fail High Voltage, Fail Leakage, Fail Corona.	
<b>Audible Alarm</b>	100 ms audible alarm for each device FAIL, disabled by panel switch.	
<b>Test Counter</b>	6 digit counter for total number of devices tested.	
<b>Failures Counter</b>	6 digit counter for total number of device failures.	
<b>Output Signals</b>	Handler Interface, Half Cycle Marker, Test-in-Progress, Leakage Monitor (1 μA = 100 mV), Half Cycle with Corona.	
<b>Safety Interlocks</b>	Test voltage circuitry is automatically interrupted on opening handler device test area or removal of high voltage assembly.	
<b>Operating Environment</b>	15° C to 35° C; 35% to 75% relative humidity, non-condensing.	
<b>Dimensions and Weight</b>	Manual version is 38.1 cm (15 inches) high, 30.5 cm (12 inches) wide, 81.28 cm (32 inches) long, and weighs 31.8 kg (70 lbs). For automatic versions, consult factory.	