

PT-5000W

PORTABLE DUAL HIGH VOLTAGE TESTER

Operating & Instruction Manual



GENERAL DESCRIPTION

This portable dual high voltage tester can test both primary and secondary insulated systems and components. The test voltage is selected by the user at either 500VDC or 5,000VDC.

This HD Electric tool is designed for use only on cables or equipment that has been verified to be both deenergized and discharged. This tool does not have any capability to withstand any externally applied voltage.

Always connect both alligator clip connections before initiating a test and disconnect the leads only after the tester is turned off and the device under test is discharged. This tester is powered by one 9V lithium or alkaline battery which can be accessed on the back of the unit by removing the two screws holding the battery compartment cover in place.

This tester provides a high voltage DC output used typically to test primary distribution voltage or secondary voltage equipment for faults or high leakage currents. The tester includes these features:

- Powered by one 9V lithium or alkaline battery.
- Provides a nominal output voltage of user selectable 500VDC or 5,000VDC.
- The output is current limited to two milliamps maximum for safety.
- The tester is turned on by pressing and holding a single pushbutton for 500VDC or two buttons for 5,000VDC. The buttons are mechanically guarded to prevent accidental operation.
- The front panel has indicators for each voltage range. When only the left button is pressed an amber light turns on indicating the battery condition is good and that the 500VDC range has been selected. When both buttons are pressed simultaneously a red light turns on indicating the battery condition is good and that the 5,000VDC range has been selected. An additional red light indicates a leakage current of 100 microamps when the 5,000VDC range is selected or 1,000 microamps when the 500VDC range is selected. If the voltage indicating lights do not turn on, indicating a low battery, no high voltage will be produced.
- The maximum test period is 30 seconds after which the tester automatically shuts off.
- The output leads are high voltage retractable wire with an insulation value of 10kV, a retracted length of 24 in. and an extended length of 48 in. The output leads are terminated in large booted copper alligator clips.
- A magnet on the back holds the tester firmly to a steel surface.

OPERATING INSTRUCTIONS

WARNING: Always wear high voltage gloves rated for the planned test. For a 500V test class 00 or better high voltage gloves are required. For a 5,000V test, class 1 or better high voltage gloves are required. Before using this tool, ensure that the equipment to be tested is both deenergized and discharged. This tool may leave a high voltage charge on tested equipment. Following each test, leave the tool connected for 30 seconds to allow this equipment to discharge.

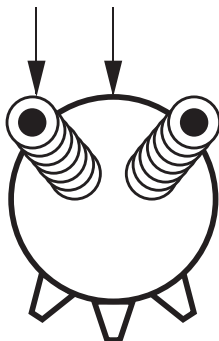
- 1) Connect one of the two clips to ground. Connect the other clip to the equipment to be tested.
- 2) Select the test voltage. Press and hold the ONE left button to select 500VDC. Press and hold BOTH buttons simultaneously to select 5,000VDC.
- 3) Indicator lights verify the selected test voltage and confirm the battery condition is OK.
- 4) Leakage current, if any, is indicated for either 100 or 1,000 microamps depending on the voltage range selected. Equipment with a substantial capacitance such as long cables or power factor correction capacitors may indicate leakage current when first energized. If the equipment is in good condition, these leakage current indications will disappear as the equipment is charged.

APPLICATIONS

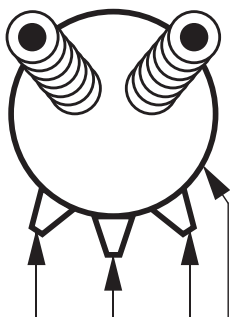
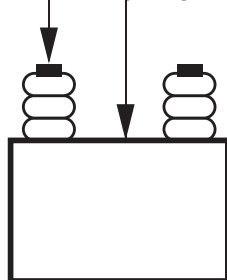
The PT-5000W is a general purpose insulation tester for both primary voltage and secondary voltage insulation systems and components. Most important is that the proper voltage is selected for the system or components to be tested. For secondary voltage systems rated to 600V select the 500VDC test range.

Testing secondary voltage systems or components with 5,000VDC may result in permanent damage to the systems or components being tested. For primary voltage systems either the 500VDC or 5,000VDC range may be selected but the 5,000VDC range will be both a more rigorous and more sensitive test since the 5,000VDC range automatically selects the lower leakage current indication threshold of 100 microamps.

primary to ground
on two bushing
transformer

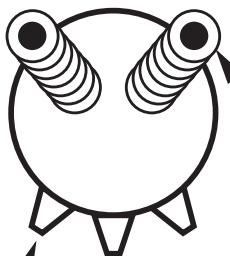
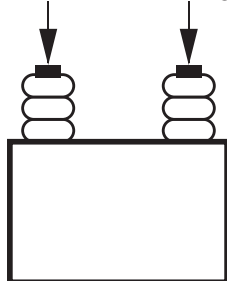


one bushing to ground



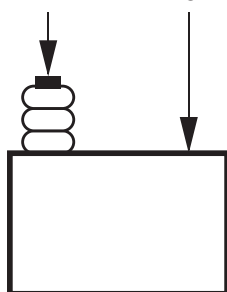
secondaries to ground
center tap must be
ungrounded

across two bushings



from primaries to
secondaries

one bushing



OVERHEAD APPLICATIONS

Such typical components as capacitors, transformers, potheads, terminations and insulators can be tested with the PT-5000W as shown here.

Transformers can be tested to verify insulation between both primary and secondary windings. For two bushing transformers connect the tester from either primary bushing to ground and select the 5,000VDC range. Single primary bushing transformers cannot be tested here.

Test transformer secondary insulation to ground only when the secondary center tap has been ungrounded. Select the 500VDC range.

Test insulation from primary winding to secondary winding as shown here. Select the 500VDC range.

Test capacitor insulation to ground on two bushing capacitors as shown. Select the 5,000VDC range for typical primary voltage power factor correction capacitors.

Testing across the two bushings of a two bushing capacitor or from bushing to ground on a one bushing capacitor will place a substantial charge on the capacitor and the PT-5000W will indicate leakage current until the capacitor is fully charged. Because of the built in 30 second time limit, capacitors tested in this manner can only be charged up to 500VDC and should only be tested with the 500VDC range. Remember that the tester requires up to 2 minutes to fully discharge a charged capacitor and should remain connected for that time.

Underground Applications

Underground insulation systems include a wide variety of cable and equipment and almost any insulating system or component can be tested with the PT-5000W. Secondary voltage systems should be tested only with the 500VDC range except some direct bury secondary cables with higher test voltages can be tested on the 5,000VDC range. Consult the cable supplier for more information.

Pad mount transformers can be tested with the same connections as shown for overhead transformers as shown for overhead transformers above.

Primary voltage insulating systems can be tested with the 5,000VDC range. When testing primary voltage systems that include lengths of underground cable, the PT-5000W may initially show a high leakage indication until the cable charges up. If the high leakage indication does not turn off before the end of the test then leaky or shorted cable would be indicated. For very long cable lengths, it may be possible to test only with the 500VDC range.

SPECIFICATIONS

| | |
|---------------|---|
| TEST VOLTAGE: | 500VDC or 5,000VDC nominal |
| TEST CURRENT: | 100 microamps indicated on 5,000VDC range and 1,000 microamps indicated on 500VDC range, 2,000 microamps maximum. |
| BATTERY: | 9V lithium or alkaline |

IMPORTANT SAFETY INFORMATION

Read and understand these instructions prior to use. These operating instructions are not a substitute for proper training in the use of this equipment. High voltage systems present serious hazards, including the risk of death or serious injury due to arcing, thermal burns and electrocution. HD Electric's products are intended solely for use by professionals with knowledge, training and experience in the use of the equipment and its accessories in and around high voltage systems.

All applicable federal, state, company and OSHA work practices must be followed. If you are unfamiliar with the work practices required, **DO NOT PROCEED**. Call HD Electric if you have any questions regarding this equipment.

Important labels are affixed to the products. Read and understand each of them before proceeding.

The users of this device should always be equipped with personal protective equipment including high voltage gloves, flame retardant clothing and eye and face protection. Some applications may require additional protective equipment.

Failure to follow these and other warnings and safety precautions may result in severe injury or death.

NOTICES - This product is designed for use by professionals trained in its use and application in and around high voltage electrical equipment. If you are not trained in the work methods required for safe operation, do not proceed until you obtain the training.

CAUTIONS - This product was tested before leaving the factory but it must be inspected prior to and after each use for proper working condition. If any defect or condition is noted, do not use this product. Remove from service and arrange for repair.

WARNINGS - Rigorous hot stick work precautions and all OSHA and company work practices must be followed. Always wear approved cover-up and safety equipment. Read and understand instructions prior to use. Misuse and abuse of this product can lead to severe injury or death.

REPAIRS - If any damage is found please contact us at 800-435-0786 to arrange for service.

MANUFACTURING LOCATION

HD Electric • Southaven, MS, 38672 USA

PT-5000W High Voltage Tester

This Tester will produce up to 5kVDC at the test leads for testing insulating systems for the presence of leakage current.

Press and hold one button for 500V or two buttons for 5,000V. Leakage is indicated for >100 uA for 5kV tests and >1ma for 500V tests.

CAUTION: This Tester generates high voltage DC. Do not touch the test leads or any connected equipment while testing.

WARNING: Do not use this tester except as directed. Do not apply to energized circuits or equipment. Refer all servicing to the factory. Failure to follow these instructions may lead to electric shock, severe injury or death.

HD Electric Company, Waukegan, IL U.S.A.
www.HDElectricCompany.com 8/07

TERMS AND CONDITIONS OF SALE

HD Electric Company is herein referred to as "HDE" or "Seller" and the customer or person or entity purchasing goods or services (hereinafter collectively referred to as "Goods") is referred to as the "Buyer". These Terms and Conditions, any price list or schedule, quotation, acknowledgment or invoice from HDE relevant to the sale of the Goods and all documents incorporated by specific reference therein, constitute the complete and exclusive statement of the terms of the agreement governing the sale of Goods by HDE to Buyer. Buyer's acceptance of the Goods will manifest Buyer's assent to these terms and conditions without variation or addition. Any different or additional terms in Buyer's purchase order or other Buyer documents are hereby objected to. HDE reserves the right in its sole discretion to refuse orders.

1. PRICES AND TAXES: Unless a fixed price is quoted, the price at which the order is accepted is subject to adjustment to HDE's price in effect at the time of order. Any current or future tax or governmental charge (or increase in same) affecting Seller's costs or production, sale or delivery or which Seller is otherwise required to pay or collect in connection with the sale, purchase, delivery, storage, processing, use or consumption of Goods (but excluding any tax on Seller's net income or profit) shall be for Buyer's account and shall be added to the price.

2. TERMS OF PAYMENT: Terms are stated on HDE's invoice in U.S. currency. HDE shall have the right, among other remedies, either to terminate this agreement or to suspend further performance under this and/or other agreements with the Buyer in the event Buyer fails to make any payment when due, which other agreements Buyer and Seller hereby amend accordingly, or HDE otherwise deems itself insecure. Buyer shall be liable for all expenses, including attorney's fees, relating to the collection of past due amounts. Once Buyer's financial responsibility becomes unsatisfactory to HDE, cash payments or security satisfactory to HDE may be required by HDE for future deliveries and for the goods theretofore delivered. If such cash payment or security is not provided, in addition to HDE's other rights and remedies, HDE may discontinue deliveries. HDE may apply a finance charge for payments made by credit card.

3. SHIPMENT AND DELIVERY: Unless otherwise expressly provided, shipments are made F.O.B. HDE's shipping point. Risk of loss or damage and responsibility shall pass from HDE to Buyer upon delivery to and receipt by common carrier. Any claims for shortages or damages suffered in transit are the responsibility of Buyer and shall be submitted by the Buyer directly to the carrier. Shortages or damages must be acknowledged and signed for at the time of delivery. While HDE will use all reasonable commercial efforts to maintain the delivery date(s) acknowledged or quoted by HDE, all shipping dates are approximate and not guaranteed. HDE reserves the right to make partial shipments. HDE, at its sole discretion, may not be bound to tender delivery of any Goods for which Buyer has not provided shipping instructions. If the shipment of Goods is postponed or delayed by Buyer for any reason, Buyer agrees to reimburse HDE for any and all handling and storage costs and other additional expenses resulting therefrom. All claims for shipping errors, lost shipments or any other discrepancies must be made within ninety (90) days or they will be disallowed and deemed waived.

4. HDE LIMITED WARRANTY: HDE covers its products with a manufacturer's warranty against defects in material or workmanship for a period of ten years in the case of Capacitor Controls and in all other circumstances for a period of one year, unless otherwise stated by HDE in writing. To take advantage of this warranty, the complete product must be delivered prepaid to HDE or any HDE Authorized Service Center. This warranty shall not apply to any Goods including but not limited to products which: (a) Have been repaired or altered outside HDE's factory (or Authorized Service Center) or in any manner so as, in HDE's judgment, to affect its serviceability or proper operation; (b) Have been subjected by persons other than HDE (or Authorized Service Center) to improper handling, operation, maintenance, repair or alteration; and, (c) Have been subjected to normal wear and tear, misuse, neglect, improper installation or use. Under this warranty, the Buyer's exclusive remedy shall be limited to: HDE's option, repair or replacement of any allegedly defective Goods or issuance of credit. HDE requires the return of any allegedly defective Goods, transportation prepaid, before honoring any claim. All returned Goods are subject to inspection, and if examination does not disclose any defect covered by this warranty, replacement of such Goods or issuance of credit for same will not be approved. THE FOREGOING CONSTITUTES HDE'S SOLE WARRANTY RESPONSIBILITY AND BUYER'S EXCLUSIVE REMEDY WHETHER SOUNDING IN TORT, CONTRACT, STRICT LIABILITY OR OTHERWISE. EXCEPT AS OTHERWISE EXPRESSLY SET FORTH IN THIS AGREEMENT, THERE ARE NO OTHER WARRANTIES, EXPRESS OR IMPLIED, WHETHER OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE. No employee, agent, dealer, or other person is authorized to give any warranty on behalf of HDE. This warranty extends only to persons or organizations who purchase the Goods from HDE for resale.

5. LIMITATION OF REMEDY AND LIABILITY: THE SOLE AND EXCLUSIVE REMEDY FOR BREACH OF ANY WARRANTY HEREUNDER SHALL BE LIMITED TO REPAIR, CORRECTION, REPLACEMENT OR CREDIT UNDER SECTION 4. HDE SHALL NOT BE LIABLE FOR DAMAGES CAUSED BY DELAY IN PERFORMANCE, AND IN NO EVENT, REGARDLESS OF THE FORM OF THE CLAIM OR CAUSE OF ACTION (WHETHER BASED IN CONTRACT, INFRINGEMENT, NEGLIGENCE, STRICT LIABILITY, OTHER TORT OR OTHERWISE), SHALL HDE'S LIABILITY TO BUYER AND/OR ITS CUSTOMERS EXCEED THE PRICE PAID BY BUYER FOR THE SPECIFIC GOODS GIVING RISE TO THE CLAIM OR CAUSE OF ACTION, AND BUYER SHALL INDEMNIFY HDE FOR ANY DAMAGES IN EXCESS THEREOF. BUYER AGREES THAT IN NO EVENT SHALL HDE'S LIABILITY TO BUYER AND/OR ITS CUSTOMERS INCLUDE SPECIAL DAMAGES, PUNITIVE DAMAGES OR PUNITIVE DAMAGES OF ANY CHARACTER IN CONNECTION WITH THE SALE, RESALE OR IMPLIED, WHETHER OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE. HDE's term "consequential damages" shall include, but not be limited to, loss of anticipated profits, business interruption, loss of use of revenue, cost of capital or loss of or damage to property, equipment, or data, or loss of reputation. Further, Buyer shall indemnify and hold HDE harmless from any liability to Buyer, Buyer's employees, workers, contractors or any other persons arising out of Buyer's, and any other persons', use of the Goods. All instructions and warnings supplied by HDE shall be passed on to those persons who use the Goods. HDE's Goods are to be used in their recommended applications and all warning labels adhered to the Goods by HDE shall be left intact. It is impossible to eliminate all risks associated with the use of the Goods. Risks of serious injury or death, including risks associated with electrocution, arcing and thermal burn, are inherent in work in and around energized electrical systems. Such risks arise from the wide variety of electrical systems and equipment to which Goods may be applied, the manner of use or application, weather and environmental conditions or other unknown factors, all of which are beyond the control of HDE. HDE does not agree to be an insurer of these risks, and shall have no liability for any claims arising from such risks. WHEN YOU BUY OR USE THESE PRODUCTS, YOU AGREE TO ACCEPT THESE RISKS.

6. EXCUSE OF PERFORMANCE (FORCE MAJEURE): HDE shall not be liable for delays in performance or for non-performance due to acts of God; acts of Buyer; war; fire; flood; weather; sabotage; strikes, labor disputes, civil disturbances or riots; governmental restrictions, restrictions, allocations, laws, regulations, orders or actions; unavailability of or delays in transportation; default of suppliers; or unforeseen circumstances or events beyond HDE's reasonable control. Deliveries or other performance may be suspended for an appropriate period or cancelled by HDE upon notice to Buyer in the event of any of the foregoing, but the balance of this agreement shall otherwise remain unaffected. If HDE determines that its ability to supply the total demand for the Goods, or to obtain material used directly or indirectly in the manufacture of the Goods, is hindered, limited or made impracticable due to causes set forth herein, HDE may allocate its available supply of the Goods or such material (without obligation to acquire other supplies of any such Goods or materials) among itself and its purchasers on such basis as HDE determines to be equitable without liability for any failure of performance which may result therefrom.

7. CHANGES: HDE reserves the right to change designs and specifications for standard Goods without prior notice to Buyer, but not with respect to custom Goods being made for Buyer. HDE shall have no obligation to install or make such change in any Goods manufactured prior to the date of such change.

8. ASSIGNMENT: Buyer shall not assign its rights or delegate its duties hereunder or any interest herein without the prior written consent of HDE, and any such assignment, without such consent, shall be void.

9. INSTALLATION: Buyer shall be responsible for receiving, inspecting, testing, storing, installing, starting up and maintaining all Goods.

10. INSPECTION/TESTING: Buyer, at its expense, agrees that it will promptly inspect the Goods upon receipt thereof, and in no event later than thirty (30) days from the date of receipt of the Goods. Buyer shall deliver to HDE within fifteen (15) days of inspection, but in no event later than forty-five (45) days from the date of receipt of the Goods, written notice of any and all deficiencies, defects, variations from specifications or complaints of any kind with respect to the quantity, quality, condition, shipment, performance, price or appearance of the Goods as received by Buyer. If the Buyer has no such written notice, HDE shall be deemed conclusively to have inspected and accepted all such Goods unconditionally and to have waived any and all rights and claims, including without limitation any right to reject the Goods or to claim damages in respect thereof. Buyer may not return goods without first advising HDE of the reasons therefor, obtaining from HDE a material authorization number and observing such instructions as HDE may give in authorizing such return. In the event a return is authorized by HDE, a restocking for any Goods requiring repackaging or maintenance a twenty percent (20%) restocking fee shall be assessed to Buyer in the final credit amount.

11. SERVICES: If this agreement requires HDE to perform or provide any services, HDE (including without limitation its successors, assigns, agents or any person or entity acting at HDE's direction) shall not be responsible for any damages, claims, liabilities or expenses of any nature arising out of such services.

12. U.S. EXPORT CONTROL LAWS: All Goods sold to Buyer by HDE hereunder are subject to U.S. Export Control Laws. Buyer hereby agrees not to re-sell or divert any goods contrary to such laws.

13. COMPLIANCE: Seller/Contractor shall comply with all applicable federal, state or local laws, rules, regulations, or orders. Seller/Contractor shall comply with Executive Order 11246, as amended by Executive Order 11375, and the applicable provisions of the Office of Federal Contract Compliance Programs (OFCCP), 41 CFR Part 60, which are incorporated herein by this reference. Buyer shall comply with all applicable federal, state, or local laws, rules, regulations or orders including but not limited to the Foreign Corrupt Practices Act of 1977, as amended. HDE reserves the right to delay or refuse delivery if requests for reasonable assurances of Buyer's compliance are not tendered as requested.

14. MISCELLANEOUS: These terms and conditions supersede all other communications, negotiations and prior oral or written statements regarding the subject matter hereof. No change, modification, rescission, discharge, abandonment, or waiver of these terms and conditions shall be binding upon HDE unless made in writing and signed on its behalf by its duly authorized representative. No conditions, usage or trade, course of dealing or performance, understanding or agreement purporting to modify, vary, explain, or supplement these terms and conditions shall be binding unless hereafter made in writing and signed by Seller. No modification shall be effected by HDE's receipt or acceptance of Buyer's purchase orders, shipping instruction forms, or other documentation containing terms at variance with or in addition to those set forth herein, all of which are objected to by HDE. Any such modifications or additional terms are specifically rejected by HDE. No waiver by HDE with respect to any breach or default of any right or remedy and no course of dealing, shall be deemed to constitute a continuing waiver of any other breach or default of any other right or remedy, unless such waiver be expressed in writing and signed by HDE. All typographical or clerical errors made by HDE in any quotation, acknowledgment or publication are subject to correction. Validity and performance relating to the interpretation and effect of this agreement shall be governed by the laws of the state of Illinois without regard to its conflict of law principles.

15. DISPUTE RESOLUTION: In the event of any dispute INCLUDING, BUT NOT LIMITED TO, BREACH OF CONTRACT, BREACH OF WARRANTY, CLAIMS BASED IN TORT, NEGLIGENCE, PRODUCT LIABILITY, FRAUD, MARKETING, STATE OR FEDERAL REGULATIONS, ANY CLAIMS REGARDING THE ENFORCEABILITY OF THIS LIMITED WARRANTY, AND THE WAIVER OF CLASS ACTION TRIALS between Buyer and Seller, either may choose to resolve the dispute by binding arbitration, as described below, instead of in court. THIS MEANS IF EITHER BUYER OR SELLER CHOOSE BINDING ARBITRATION, NEITHER PARTY SHALL HAVE THE RIGHT TO LITIGATE SUCH CLAIM IN COURT OR HAVE A JURY TRIAL. DISCOVERY AND APPEAL RIGHTS ARE LIMITED IN BINDING ARBITRATION. Buyer and Seller agree that the proper venue for Arbitration is not to be chosen by Buyer or Seller of all actions arising in connection herewith shall be only in the state of Illinois and the parties agree to submit to such jurisdiction. No action, regardless of form, arising out of transactions relating to the agreement, may be brought by either party more than two (2) years after the cause of action has accrued. The U.N. Convention on Contracts for the International Sales of Goods shall not apply to this agreement.

16. CLASS ACTION WAIVER: BINDING ARBITRATION MUST BE ON AN INDIVIDUAL BASIS. THIS MEANS NEITHER BUYER NOR SELLER MAY JOIN OR CONSOLIDATE CLAIMS IN ARBITRATION BY OR AGAINST OTHERS, OR LITIGATE IN COURT OR ARBITRATE ANY CLAIMS AS A REPRESENTATIVE OR MEMBER OF A CLASS OR IN A PRIVATE ATTORNEY GENERAL CAPACITY. ADMINISTRATION OF ARBITRATION: The binding arbitration by HDE shall be administered by the American Arbitration Association ("AAA") in accordance with its Commercial Arbitration Rules and Supplementary Procedures for Consumer-Related Disputes (including proceedings to mitigate costs of travel). This binding arbitration is governed by the Federal Arbitration Act ("FAA") (9 USC §1, et. seq.) and will govern the interpretation and enforcement. The binding arbitration shall be held at a location determined by AAA or at such other location as mutually agreed. In addition to the terms stated above, the following will apply to the binding arbitration: (1) the arbitrator, and not any federal, state, or local court or agency, will have exclusive authority to resolve any dispute relating to the interpretation, applicability, enforceability or formation of this Agreement including any claim that all or any part of this Agreement is void or voidable; (2) the arbitrator shall apply Illinois law consistent with the FAA.

HD Electric Company is committed to ongoing review and improvement of its product lines, and thus reserves the right to modify product design and specifications without notice.

HD Electric Company® products are available through HDE® sales representatives worldwide.

HD Electric products receive final assembly and shipment from HDE's production facility at
Suite 400 - 4320 Executive Drive, Southaven, MS 38672.

HD Electric Company is ISO 9001:2015 certified

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