SINGLE STICK DIGITAL VOLTMETER and ACCESSORIES

Operating & Instruction Manual





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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 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.

THESE IMPORTANT LABELS ARE AFFIXED TO THE PRODUCT. READ AND UNDERSTAND EACH OF THEM BEFORE PROCEEDING.



All meters require the use of accessory hot sticks, which may or may not be supplied with the meter. The minimum hot stick length required for safe use depends upon the particular operation; consult federal, state, company and OSHA specifications for the proper hot stick length for the intended operation.



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

Accessory probes are available for all meters. Always use the proper probe(s) for your application.

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

OPERATIONAL IMPAIRMENT

If the SVM-25 is used in a manner not described in this instruction manual, the protection and effective operation of this equipment may be impaired.

GENERAL DESCRIPTION

The HD Electric Single Stick Digital Voltmeter includes one single stick line to ground voltmeter and a ground cord. The high strength molded housing includes epoxy encapsulated high voltage resistors, a ground cord and a digital LED display.



the current through the ground cord to a maximum of less than one milliamp. Although the ground cords is insulated for voltage up to 20kV, it should always be kept free and clear from you and any other conductors.



Hot Stick Connection: Shotgun or Universal Spline

TECHNICAL SPECIFICATIONS MODEL NUMBER SVM-25 ENVIRONMENTAL CONDITIONS

- · Conditions Indoor and outdoor use
- Altitude Up to 6,566 ft. (2000M)
- Operating Temperature -20°F to +120°F (-29°C to +49°C)
- Humidity 95% to 49°C (non-condensing)
- Pollution Degree PD4
- Measurement Category IV- Classification Rating (CAT IV) Product is intended for use with test and measuring circuits connected to the circuits/wiring outside of a building installation, including transmission lines.
- Overvoltage Category IV
- · Enclosure Material Supertough Nylon UL 94-HB
- Printed Circuit Boards FR-4 UL94V-0
- · IEC Protection Rating IP64

DIMENSIONS:

- Length 14 in. (36cm), Width 4.6 in. (12cm), Height 4.1 in. (10cm)
- Ground Cord Length 12'(3.6m) fully extended, 3.5'(1.7m) retracted
- Weight (w/o probes): 2.25 lbs. (1.02kg)
- · Battery Life 8 hours continuous use under normal operating conditions
- · Battery 9V alkaline 1604A, IEC 6LR61 or 9V lithium, ANSI-1604LC
- · Digital Meter Reads in kilovolts
- Voltage Range 5V-25kV line to ground AC 25-1000Hz or DC
- Auto-Ranging No range selector switch
- · Accuracy Within 1% of reading +/- 3 counts
- Meter Resolution: 0.005 0.999 range with 1 Volt resolution
 1.00 9.99 range with 10 Volt resolution
 10.0 25.0 range with 100 Volt resolution

OPERATING INSTRUCTIONS

The SVM-25 Digital Voltmeter measures DC and AC RMS voltage from 5V to 25kV line to ground and from 25-1000Hz.

Press the ON button to turn it on. The initial zero kV indication will be replaced shortly with the display of hollow zeros as a battery saving measure.

A low battery indication in the lower right corner of the screen indicates that the battery will need to be replaced soon. If the battery dies completely, the display will shut off. The battery compartment is on the bottom of the unit. HD Electric recommends using 9V lithium batteries but alkaline batteries may also be used.

The display will turn off after five minutes of a zero display.

BATTERY REPLACEMENT INSTRUCTIONS

To replace the battery, open and remove the compartment on the bottom of the meter housing. Remove and dispose of the old battery, replacing it with a fresh, new 9-volt lithium or alkaline battery.

Note battery polarity on the battery compartment. This compartment cannot be reinserted if the battery polarity is reversed.







OPERATING INSTRUCTIONS continued

Pre-Use Inspection

WARNING: Before using the instrument be sure to test and inspect the equipment to ensure that it is functioning properly and is in safe, working condition. Failure to do so may cause serious injury or death and may result in erroneous test measurements.

Before making any high voltage measurements, test and inspect the voltmeter as follows:

- 1) Make certain the instrument is clean and dry.
- 2) Inspect the cord for cracked insulation.
- 3) Be sure that you are using a hot stick of the appropriate length, and examine the hot stick to ensure that it is clean, dry and waxed to a clear shiny surface.
- 4) Attach the appropriate probe for overhead or underground applications (see page 9) and ensure that the probe is properly installed and tightened (do not overtighten).
- 5) Confirm that the meter is configured for the correct application (normal reading, Peak Hold, Test Point).
- 6) Test the voltmeter with a voltmeter tester such as the HD Electric PT-5000B Proof Tester® Voltmeter Tester (see page 9).

Voltage Measurements – Line-to-Ground

First connect the ground cord to either a ground or system neutral. Maintain contact with the meter probe tip only long enough to read the meter. Always remove the probe from the energized source first before removing the ground connection.

Test Point Measurements

To activate Test Point mode press the ON button. Test Point mode is indicated by TP in the display. To turn Test Point mode off, simply push the ON button once and verify the TP turns off.

Peak Hold

Press the ON button to activate this feature and press again to clear the reading. The H in the display confirms Peak Hold. The display will hold the highest reading while Peak Hold is activated. **Note:** The meter will not shut off while a peak reading is displayed.





PROBES AND ACCESSORIES

WARNING: ALWAYS use probes appropriate to your application. NEVER use overhead probes in underground applications. Failure to use the correct probe can result in arcing or electrical contact and may cause serious injury or death. If you are not trained in the particular operation or are not sure about the appropriate probe for your application **DO NOT PROCEED**.

Overhead Probes

- A. OLPS-5 brass hook probe
- B. OLPS-6 brass pigtail probe
- C. Hot stick

A range of hot sticks are available in lengths starting at 4'. Contact HD Electric for more details.

D. Insulated Underground Probe

GCP-1 for general underground use on grounded terminals, exposed high voltage terminals or elbow test points.

Underground Dead Front Bushing Probes

- E. ASP-15/25 for use in 15kV and 25kV loadbreak bushings
- F. ASP-35U for use in 35kV loadbreak bushings
- G. Underground Elbow Probe EA-15/25 for insertion in loadbreak elbows.
 Note: The elbow must be firmly supported when using this probe.

Proof-Tester® Voltmeter Tester

The PT-5000B Proof Tester Voltmeter Tester will produce 5kVDC at the test leads to confirm proper operation of voltmeters and phasers. This tester should be used only with voltmeters/phasers that measure DC voltage. It will not confirm operation of voltmeters/phasers that measure AC voltage only. The PT-5000B operates from one 9V lithium or alkaline battery and produces approximately 5kVDC at the connecting leads. To use:

- 1) Connect one tester lead to the meter ground cord and the other lead to the probe tip, typically the OLPS-5 probe.
- 2) Press and hold both TEST buttons.
- 3) Confirm a good battery by checking the red light on the Tester. If the red light does not come on, replace the battery with a 9V lithium or alkaline only.
- 4) Verify the voltmeter reads approximately 5kV.
- 5) Release the TEST buttons and disconnect the Tester from the voltmeter.

WARNING: Do not use the voltmeter if proper operation is not confirmed. **WARNING:** Do not use this tester except as directed. Do not use to test equipment other than voltmeters/phasers. 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.



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CARE AND MAINTENANCE

Periodic regular maintenance is required to keep the voltmeter in proper operating condition. Digital models will require periodic battery replacement. Keep the voltmeter clean and dry and always store it in its case. The voltmeter should be kept clean and free of dirt, contamination and marking. Examine the cord for cracking or other damage prior to each use. Although we do not specify a calibration cycle, we recommend you test, measure and calibrate your instrument annually. The Calibration and Maintenance Log provided on page 11 can be used to record these events. Contact HD Electric for details.

CLEANING INSTRUCTIONS

To clean the SVM-25 wipe with a damp cloth with water. Do not use harsh chemicals or solvents.

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

CALIBRATION AND MAINTENANCE LOG

DATE	CALIBRATED BY

TERMS AND CONDITIONS OF SALE

HD Electric Company is herein referred to either as "HDE" or "Seller" and the customer or person or entily purchasing goods or services (hereinafter collectively referred to as "Goods") is referred to as the "Buyer". These Terms and Conditors, 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 qoverning the sale of Goods by HDE to Buyer, Buyer's acceptance of the Goods will manifes Buyer's asceptance to be selms 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 this 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 Selfer's costs or production, sale or delivery or which Selfer 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 Selfer's real to for eight production 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 inscure. Buyer shall be liable for all express, including atomsys' fisse, retaining to the calcification of past due amounts. Should Buyer's financial responsibility become unsatisfactory to HDE, cash payment or security satisfactory to HDE and the due in the cash and accordingly or HDE. Cash payments or security astisfactory to HDE and the state of the goods therefoldere 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 charactor for the goods therefoldere 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 charactor for the goods therefoldere deliveries. HDE may apply a finance charactor for the goods therefoldere deliveries. HDE may apply a finance charactor for the growther made by credit cad.

3.SHPMENT AND DELUCERY: 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 shortpatings or damages and frequent affect of transit are to the responsibility of buyer and shall be submitted by the Buyer directly to the carrier. Shortpage or damages and the signal different instant are the responsibility of buyer and shall be submitted by the Buyer directly as the Buyer directly as the Buyer directly as the Buyer direct the Buyer directly as the Buyer directly

4. HDE LIMITED WARRANTY: HDE covers is products with a manufacturer's warrary against detects in material or workmanship for a period of ner years in the case of Capacitor Controls and in all other circumstances for a period of ner years in the case of Capacitor Controls and in all other circumstances for a period of ner years in the case of Capacitor Controls and in all other circumstances for a period of nerge system, where Schember stated by HDE in whites. To lake advantage of the warrary is hall all other circumstances or year unless otherwise stated by HDE in whites. To lake been repared to all other discusses the term of the period of the term of the case of the period of the term of the case of the period of the term of the period of the period of the term of the period of the term of the term

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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 frer, flood; weather, sabotage, strikes, labor disputes, o'di disturbances or riots; governmental requests, 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. Delaveries or ordhe performance may be suspended for an appropriate period or cancelled by HDE upon notice to Buyer in the event of any of the foregoris, but the balance of this sagement shall otherwise remain unaffected. (HDE determines that is shilly to supply the total demand for the Goods, or to totain material used directly or indirectly in the manufacture of the Goods is, bindred, limited or made imparticable 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 equilable without liability for any failure of performance which may result herefrom.

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. NSPECTION/TESTING: Buyer, at its expense, agrees that it will promptly inspect the Goods upon receipt thereof, and in or event littler than thirty (30) days from the date of receipt of the Goods. Buyer shall deliver to HDE within filten (16) days of inspection, but in or event later than thirty-file (3) days from the date of receipt of the Goods. Buyer shall deliver to any kind with respect to the quantity, quality, condition, shipment, performance, price or appearance of the Goods are event of the Soods. Writen notice is any axia dideficiencies, detects, variations from specifications or comparises of any kind with respect to the quantity, quality, condition, shipment, performance, price or appearance of the Goods are constrained to conclusively to have inspected and accode surcentification or any data or event in data. The second second and any data is negreed thereord. Buyer may not return goods without first advising 14DE of the reasons therefore, obtaining from HDE a material authorization rumber or dosteeving such instructions as HDE may give in authorizing such return. In the event a return is authorized by HDE, are testing or maintenance a envery prevent (20%); rescloxing for each addition for any Coost and unity and in a return is authorized by HDE. In the reasons therefore, obtaining from HDE an material authorization rumber or dosteeving such instructions as HDE may give in authorizing such return. In the event a return is authorized by HDE, are testing reparkaging or maintenance a werk ty prevent (20%); rescloxing for each addition and units.

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: Selenic/Contractor shall comply with all applicable federal, state or local laws, nelse, requiations, or orders. Selenic/Contractor shall comply with Executive Order 11248, as an ended by Executive Order 11

14. MISCELLANEOUS: These terms and conditions supersede all other communications, angoliations and prior roal or withins statements regarding the subject matter hered. No change, modification, rescission, dischange, abandomment, or waiver of these terms and conditions shall be binding upon HDE unless made in writing and signed on its behalt by its duiy authorized representative. No conditions, usage or trade, course of ealing or parformance, understanding or agreement purporting to modify, vary, explain, or supplement these terms and conditions shall be binding unless thereafter made in writing and signed on its behalt by its duiy authorized representative. No conditions, usage or trade, course of a failing or parformance, understanding or agreement purporting to modify, vary, explain, or supplement these terms and conditions shall be binding unless thereafter made in writing and signed by Seler. No modification on shall be effected by HDE's receipt or acceptance of Buyer's purchase orders, shipping instruction forms, of other documentation containing terms at variance with or in addition to those set forth herein, all of which are objected by DHD. We avaiter by HDE with respect to any therain or default of any other thready, and ordered and consultance with or in addition or additional terms are specifically reliced by HDE. We avaiter by HDE with respect to any therait or default of any other thready and no course of default, shall be expressed in writing and signed by HDE. All prographical or default of any other thready and performance relating to the interpretation and effect of this agreement that be powered by the Buw show the set at of limits and signed by HDE. The any quotation, acknowledgment or to this agreement that be objected to course. All works the state of this agreement that be objected to the state or other that and the state of the state or advisored the state of the state or other terms and the state or the state or the state or other terms and the state or terms and the state or other

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 REGULATIONE, ANY CLAIMS REGARDING THE ENFORCEABILITY OF THIS LIMITED WARRANTY, AND THE WAIVER OF CLASS ACTION TRULS between Buyer and Seller, differ may choose to resolve the dispute by binding adhation, as described below, instead of nour. THIS MEANS IF ETHERS BUYER OR SELLER CHOOSE BINDING ARBITRATION, NETHER PARTY SHALL HAVE THE RIGHT TO LITIGATE SUCH CLAIM IN COURT OR HAVE A JURY TRUL. DISCOVERY AND APPEAL RIGHTED IN BINDING ARBITRATION. Buyer and Seller agrees that the proper vorume if Arbitration is not schores by Buyer or Seller of all adions arising in connection herewith shale be only in the state of limited main state of instance. THIS out of functions in the agreement, may be brought by either party more than two (2) years after the cause of action has accrued. The UN. Convention on Contracts for the International Sales of Goods shall not apply to this agreement.

16. CLASS ACTION WAVER: 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 AR-BITRATION. The binding athritism on wust be administered by the American Arbitration Association (AAA) in accordance with its Commercial Arbitration Rules and/or Supplementary Procedures for Consume-Related Disputs (including proceedings to miligate costs of travel). This binding athritism (association) are with a general arbitration and an enforcement. The binding athritism shall be left at a location determined by AAA or a such other locations armutually agreed. In addition the terms stated above, the following will apply to be binding athritism (1) the athritism (1) arbitration and and/or and or 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 agoint 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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