

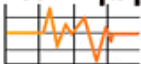
UNDERGROUND CABLE TESTER

and ACCESSORIES

Operating Instruction Manual



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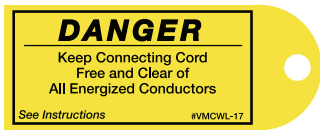
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IMPORTANT SAFETY INFORMATION

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'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.

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



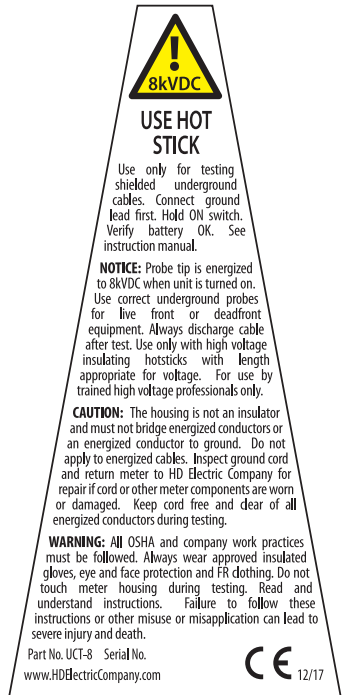
All meters require the use of accessory hot sticks, which may or may not be supplied with the meter. The minimum hot stick length required for safe use depends upon the particular operation; consult federal, state, company and OSHA specifications for the proper hot stick length for the intended operation.

The users of this meter should always be equipped with personal protective equipment including high voltage gloves, flame retardant clothing and eye protection. Face protection is recommended but not required. 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 UCT-8 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 Underground Cable Tester is a self contained one piece solution for DC leakage current testing of deenergized shielded primary voltage underground cables. Test results are displayed on a large LED display.

The UCT-8 first alerts the user to the presence of AC voltage on the underground cable. After verifying the cable is completely deenergized, the UCT-8 charges the cable to a maximum voltage of 8kVDC. Cable leakage current is measured and shown on the front display as an analog bar graph. After several seconds, test results are shown as GOOD, HIGH LEAKAGE or FAULT. The UCT-8 then proceeds to discharge the connected cable and verifies when this discharge process is complete.

An internal high voltage resistor allows the UCT-8 to be used on grounded Y systems up to 25kV. The insulated ground cord connects to any system ground or neutral.

The UCT-8 can test 15kV, 1/0 XLPE cables up to 7,500 ft. in length. Higher voltage cables allow longer cable lengths and larger conductors will reduce maximum cable length. The maximum cable charging time for the longest cables is 35 seconds.



**Hot Stick Connection:
Shotgun or Universal Spline**

TECHNICAL SPECIFICATIONS

MODEL NUMBER: UCT-8

ENVIRONMENTAL CONDITIONS

CONDITIONS - Indoor and outdoor use

ALTITUDE - Up to 6,566 ft. (2000M)

OPERATING TEMPERATURE +20°F to +120°F (-7°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): 3 lbs. (1.36kg)

BATTERY LIFE - Approximately 40 tests on 300' of 250 Kcmil (non-faulted) cable,
fewer on faulted cable

BATTERY - 9V lithium, ANSI-1604LC, IEC-6LR61

DIGITAL DISPLAY - Reads AC kilovolts and displays DC leakage/
discharge current as an analog bar graph

TEST VOLTAGE - 8kVDC

FAULT CURRENT MEASUREMENT - 10 - 250 uADC

VOLTAGE RANGE - 50V-25kVAC line to ground, 50/60Hz

AUTO-RANGING - No range selector switch

ACCURACY – AC voltage 2% of reading

ANALOG BAR GRAPH – Log display of DC current (see detail page 9)

FAULTED CABLE CURRENT THRESHOLD: $\geq 120\mu\text{A}$

HIGH LEAKAGE INDICATION: $>32\mu\text{A}$ and $<120\mu\text{A}$

CABLE GOOD INDICATION: $<32\mu\text{A}$

OPERATING INSTRUCTIONS

Pre-Use Inspection

WARNING: Before using the instrument be sure to 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 tester as follows:

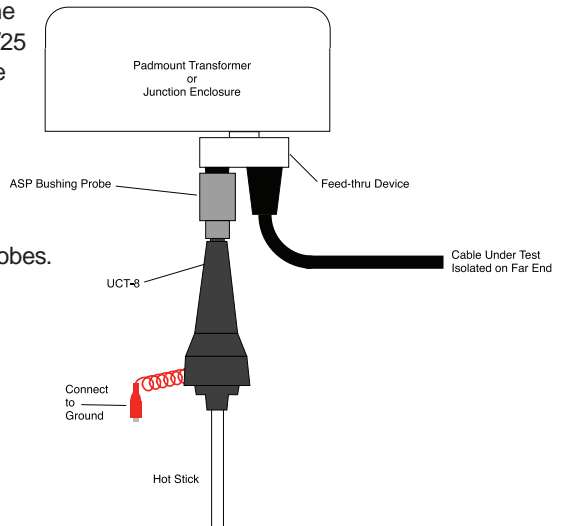
- 1) Make certain the instrument is clean and dry.
- 2) Inspect the cord for cracked insulation.
- 3) Be sure that you are using a hot stick of the appropriate length, and examine the hot stick to ensure that it is clean, dry and waxed to a clear shiny surface.
- 4) Confirm that the meter turns on and the battery is OK.
- 5) Attach the Brass Hook Accessory Probe (025-OLPS-5) to the tester and connect the ground cord clip to the brass hook probe.
- 6) Press and hold the ON button to turn on the high voltage. Verify a full scale deflection of the current measurement on the display (as shown).
- 7) Discontinue this test by pressing and holding the ON button again until the 8kV indication disappears.



The UCT-8 is designed for use on deenergized shielded primary voltage underground cables. Always verify the cable is both deenergized and discharged before proceeding with testing. Only cable with extruded dielectric such as rubber or polyethylene can be tested with the UCT-8. Using it on paper insulated cable may provide erroneous test results caused by higher leakage currents typical for this type of cable.

Connect the appropriate probe to the end of the UCT-8. Use the ASP-15/25 or ASP-35U for deadfront separable connector connections or the OLPS-5 for live front construction. An EA-15/25 elbow probe may also be used for deadfront applications. See page 10 for more details on these accessory probes.

Always connect the ground cord alligator clip to a system ground or neutral before turning on or using the UCT-8. Cable under test should be isolated and disconnected from transformers and other equipment.



Press the ON button to turn the unit on and verify a good battery. A low battery is shown with an empty battery icon in the bottom right corner of the screen.

Press and hold the ON button for 3 seconds to turn on the 8kVDC high voltage.

Connect the tester to the cable to be tested.

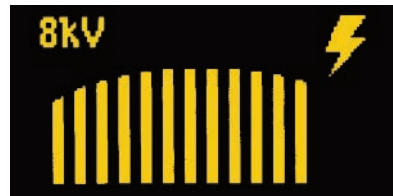
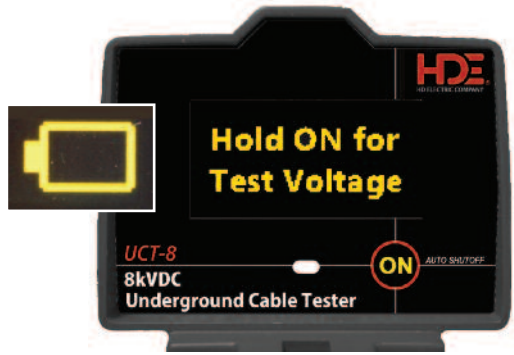
In the event the UCT-8 is connected to a live cable energized with 50/60Hz AC voltage, that voltage will be displayed on the front panel and testing cannot proceed until the cable is verified deenergized. This cable should also be grounded to completely discharge it before beginning the test.

If no AC voltage above 100V is detected, the UCT-8 is ready to test the underground cable.

The presence of high voltage DC from the UCT-8 is indicated by the lightning bolt symbol at top right of the display.

When the high voltage is first applied to the cable, the displayed charging current will be high. If the cable is in good condition and does not have high leakage current, this charging current will slowly diminish over several seconds.

If the cable leakage current drops to near zero, the CABLE GOOD message will be displayed and the cable discharging current is now shown in the bar graph.



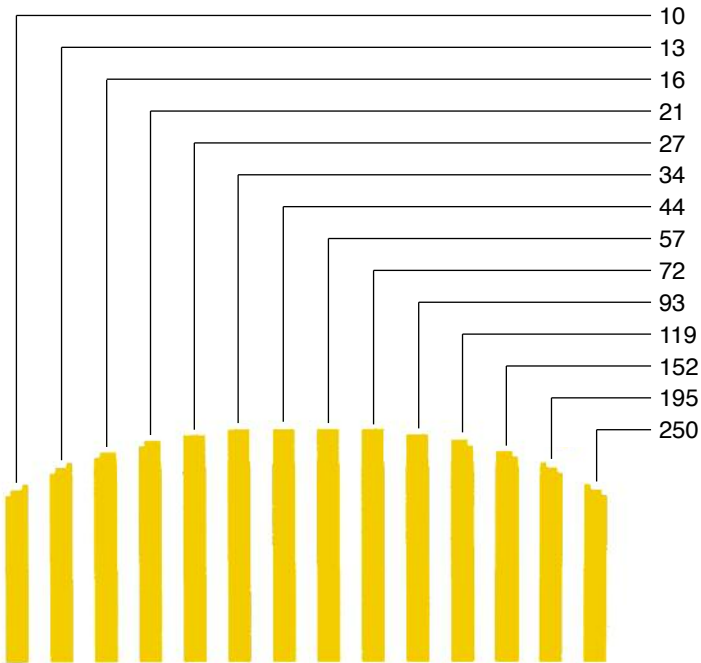
If the cable leakage current stays high, the CABLE FAULT message will be displayed and the cable discharging current is now shown in the bar graph.

If the cable leakage current remains high but not as high as a faulted cable, the HIGH LEAKAGE message will be displayed. High leakage cables are usually older unjacketed polyethylene cables with internal insulation damage. These cables may or may not hold line voltage when reenergized.

The cable discharging display will remain on the screen until the DC voltage present on the cable has fallen below 50V. Once the cable under test is discharged, the device will return to the activation screen.



Cable Charging / Leakage Current (DC microamps)



PROBES & 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.**

PROBES

A. OLPS-5 brass hook probe

B. HOT STICK

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

UNDERGROUND DEAD FRONT BUSHING PROBES

C. ASP-15/25 for use in 15kV and 25kV loadbreak bushings

D. ASP-35U for use in 35kV loadbreak bushings

E. UNDERGROUND ELBOW PROBE

EA-15/25 for insertion in loadbreak elbows.
NOTE: The elbow must be firmly supported when using this probe.



WARNING: Do not use the UCT-8 if proper operation is not confirmed. Do not use it to test equipment other than underground shielded primary cable. 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.

CARE AND MAINTENANCE

Regular periodic maintenance is required to keep the cable tester in proper operating condition. Digital models will require periodic battery replacement. Keep the tool clean and dry and always store it in its case. The tester 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. Contact HD Electric for details.

CLEANING INSTRUCTIONS

To clean the UCT-8 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

TERMS AND CONDITIONS OF SALE

HD Electric Company is herein referred to either 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 of 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. Should Buyer's financial responsibility become unsatisfactory to HDE, cash payments or security satisfactory to HDE may be required by HDE for future deliveries and for the goods thereafter 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 option, shall be bound to tender delivery of Goods to the Buyer, but does not provide shipping instructions. If the shipment of Goods is postponed or delayed by HDE 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 an 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 and misuse, neglect, or improper use. HDE's limited warranty does not cover consequential damages. The Buyer's exclusive remedy shall be limited to HDE's option to 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 must be inspected, 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, INDIRECT, INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES OF ANY CHARACTER IN CONNECTION WITH THE SALE, RESALE OR USE OF THE GOODS, WHICH ARE WAIVED BY BUYER AND AS TO WHICH BUYER SHALL INDEMNIFY HDE. The 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 will 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, arc flash and normal but 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; theft; 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 in the absence of such 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 all defects, variations from specifications or complaints of any kind with respect to the quantity, quality, condition, shipment, performance, fit, or appearance of the Goods so received by Buyer. In the event no such written notice is received by HDE, Buyer 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 in 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 of arbitration is not 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 will be administered by the American Arbitration Association ("AAA") in accordance with its Commercial Arbitration Rules and/or Supplementary Procedures for Consumer-Related Disputes (including proceedings to mitigate costs of AAA). 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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