

PRX

PROXIMITY VOLTAGE DETECTORS *and ACCESSORIES*

Operating & Instruction Manual



Making the Invisible Visible®

HDE HD ELECTRIC

PRX

PROXIMITY VOLTAGE DETECTORS

and ACCESSORIES

Operating & Instruction Manual

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For the latest information on PRX Proximity Voltage Detectors, including product updates and technical information, visit our website at www.HDElectricCompany.com

GENERAL DESCRIPTION

The PRX Proximity Voltage Detectors detect voltage at a distance from live unshielded conductors on overhead and underground power distribution systems. They have been tested and operate to a voltage of 870kV line-to-line at a detection distance from the conductor greater than the nominal ten inches.

PRX Proximity Voltage Detectors have up to nine user selectable voltage ranges covering the range from secondary voltages to the highest transmission voltages. A setting may be included for detecting elbow test point voltages on underground distribution systems.

Accessories may include a holster, charging cord for charging the unit from a car or truck, a 115-240VAC wall charger adapter and a carrying case.

OPERATIONAL IMPAIRMENT

If the PRX Proximity Voltage Detector is used in a manner not described in this instruction manual, the protection and effective operation of this equipment may be impaired.

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.

- Only trained, professional operating personnel should use the instrument. The voltages this instrument operates at are dangerous and lethal. Severe injury or death can occur if improperly used.
- Risk of electrocution is inherent in or around high voltage.
- Always use proper high voltage procedures, including personal protective equipment, when working near or around high voltage equipment or conductors.
- Do not exceed the maximum voltage rating.
- The PRX Proximity Voltage Detector must be used with a hot stick of the appropriate length for the voltage being measured per your company and OSHA published requirements.
- Do not touch the instrument during measurements. The housing should be considered to be at the same voltage as the conductor under test.
- Prior to using, inspect the instrument for any physical damage, cleanliness and check for proper working order by pressing the ON button and checking that all voltage range lights turn on in turn and that the unit stays on following the self test.
- Never allow another high voltage or grounded conductor to contact the instrument during use. Keep the housing free and clear of all structures at all times.
- Bridging the housing from line-to-ground or line-to-line may cause a fault and arc.
- The PRX Proximity Voltage Detector does not detect voltages less than the lowest voltage range setting on the instrument. Always use proper grounding procedures.
- Lack of a voltage indication does not mean the conductor is dead or grounded.
- Grounded equipment or lines can appear to be live when in close proximity to energized conductors.
- The PRX Proximity Voltage Detector is a proximity sensing device. Voltage detection distance is not affected by insulation on conductors such as on tree wire or spacer wire.
- Voltage readings are sensitive to geometry. Read and understand the HOW TO USE IT section of this manual (page 5) before using the instrument.
- The instrument detects AC voltage only. It does not detect DC voltage such as charged capacitors or cable.

Read and understand the labeling on the product before proceeding.

PRX Proximity Voltage Detector

Indicates presence of AC Line to Ground voltage with proximity to energized conductor from 120V to maximum indicated.

Press **ON** button to start self test and turn unit on. Select voltage range with arrow buttons. Very short beeps and lights indicate battery OK. Longer beeps and lights indicate voltage detected. Point SENSING ZONE towards voltage source. Always use with hot stick with length appropriate for voltage. Unit powers down 30 minutes after last use. Voltage range 120T indicates 120V detection at 6 inches or less and elbow test point detection with contact to test point. All other ranges are phase to phase voltage with 10 inch detection range.

Charge battery when unit does not turn on. End of charge indicated by single flashing light followed by automatic power off. Lithium battery inside. Refer to instruction manual for handling and disposal.

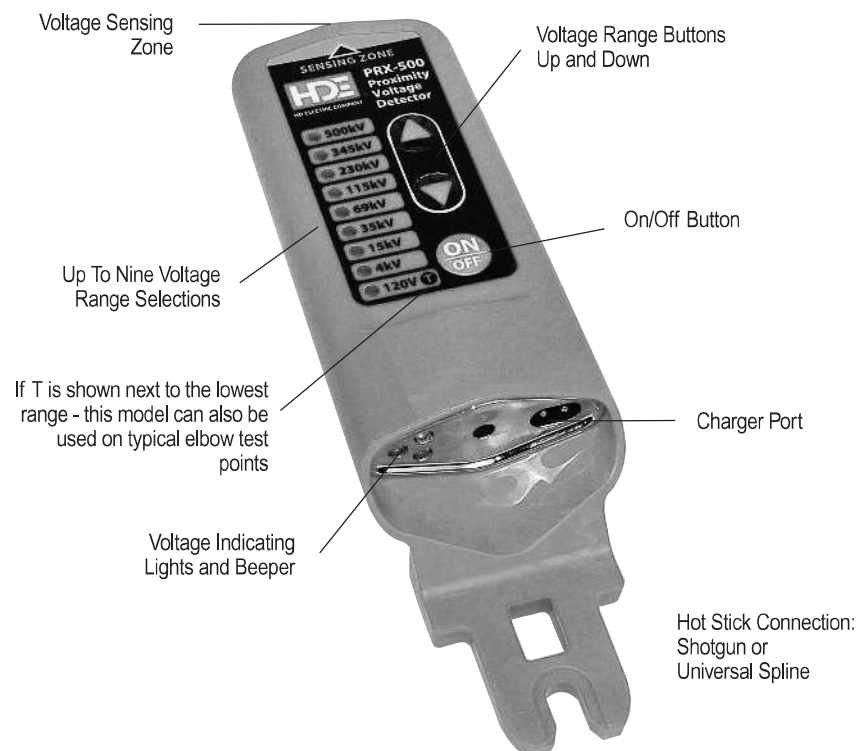
WARNING: Detects AC voltage only. Does not detect DC voltage such as charged capacitors or cable. Do not touch during measurement and keep free of other conductors and grounds. Read and understand all instructions. For use by trained professionals only. Misuse or abuse of this product can lead to severe injury or death.

US Patent Applied For. **s.n.**



HOW TO USE IT

- 1 CONNECT TO A SUITABLE HOT STICK:** The PRX Proximity Voltage Detector will accept either a shotgun stick or a universal spline connection.
- 2 TURN IT ON:** Press the ON/OFF button and verify that the instrument turns on all voltage range lights one at a time from the lowest range to the highest, returns to the lowest range and then turns on the voltage indicating lights and beeper. The presence of the lights and beeper indicates that the instrument is detecting an internally generated voltage to test the entire circuit. If the PRX Proximity Voltage Detector stays on following this test it has passed the self test and is ready to use. If it turns off after this test then it has not passed the self test and must be recharged or serviced. While the instrument is on it will emit a very short beep and flash of the lights once every four seconds.
- 3 SELECT A VOLTAGE RANGE:** Use the up and down arrows to select a voltage range. The lowest range setting is indicated by the lowest voltage range shown on the label. If there is a T next to the lowest range, the T indicates this range can also be used on typical elbow test points. Always select a voltage range at or just below the voltage of the conductor to be tested. The lowest voltage range shown on the label is line to ground voltage. All higher ranges are line to line voltage.



HOW TO USE IT *continued*

4 DETECT VOLTAGE: Move the PRX Proximity Voltage Detector toward the conductor to be tested. The nominal detection distance for all voltage ranges above the lowest setting is 10 inches from the tip of the unit marked SENSING ZONE. Below the lowest range, the nominal sensing distance can range from three inches (PRX-4) to six inches (other models). Always keep the instrument perpendicular to the conductor to be tested and choose a portion of the conductor free of points, corners, extensions or other apparatus such as fuses, lightning arresters, switches, bushings, etc. Voltage detection is indicated by flashing lights and beeper.

If voltage is detected, do not further approach or contact the conductor. If voltage is not detected, continue to approach the conductor with the PRX Proximity Voltage Detector until the SENSING ZONE end contacts the conductor.

For increased sensitivity or greater sensing distance, select a voltage range lower than the voltage of the conductor to be tested. Never select a voltage range higher than the voltage of the conductor to be tested, as sensing distance will be reduced or diminished.



Application near an outside corner of an energized conductor increases sensing distance.



Application near an inside corner of an energized conductor decreases sensing distance.



HOW TO USE IT *continued*

- NEVER** allow prolonged arcing between an energized conductor and the instrument. This will damage the housing of the unit.
- NEVER** bridge between conductors with the housing. This may result in an arc and/or fault.
- NEVER** select a voltage range above the voltage of the conductor to be tested. The instrument may not detect voltage on the conductor being tested.
- NEVER** assume a conductor is deenergized or grounded if the instrument does not detect voltage.
- ALWAYS** make sure the instrument is turned on before use. It does not turn on automatically.
- ALWAYS** align the instrument perpendicular to the conductor being tested and approach the conductor with the SENSING ZONE end.

5 TURN IT OFF: To turn the PRX Proximity Voltage Detector off, press the ON/OFF button. If the instrument is left on and does not detect voltage for 30 minutes, it will shut itself off. This automatic shut-off is accompanied by beeping and flashing of the lights as a warning to the user.

The instrument can be returned to the accessory holster after use and should be returned to the protective carrying case for longer term storage.

BATTERY CHARGING

The instrument is powered by an internal lithium battery of the same type used in cell phones. It has a long life, many charge cycles and no memory effect. It will indicate battery charge when it is turned on and has completed the self test as follows:

- Slowly beeps once every four seconds indicating the battery charge is good.
- Beeps faster at once per second indicating the battery charge is low and should be recharged soon. The unit can be used for up to 10 minutes in this condition and will then shut off automatically. It cannot be turned on again until the battery has been charged.

Charge the instrument using the charger cord. Apply the plug end of the cord to a 12VDC automotive jack or use the 115-240VAC adapter. Charge is indicated on the face of the unit by the voltage range lights turning on in sequence. A full charge of a low battery can take up to three hours.

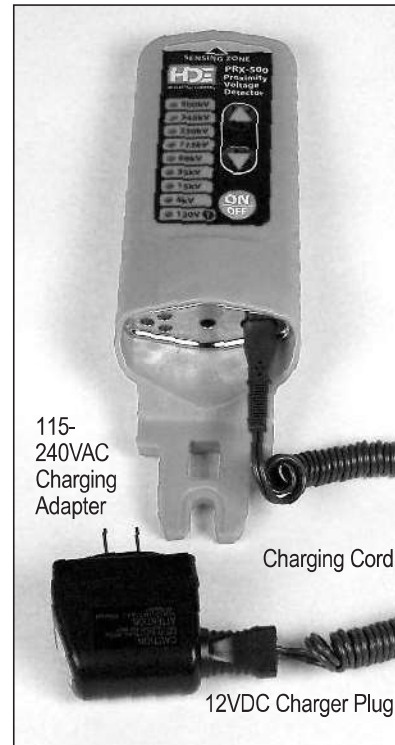
When the charge is complete only the highest voltage range light will remain on. After three hours, this light will turn off. The battery cannot be overcharged.

A quick fifteen minute charge to a low battery will allow one day of use under typical conditions. A full charge will allow more than one week of continuous use under typical conditions.

If the instrument will not turn on, try charging it for fifteen minutes. The battery may be drained down too far to be able to power on. If it still will not turn on then the battery may need to be replaced. For battery replacement contact HD Electric to order a replacement battery.

Lithium Battery Use and Disposal

- Charge the battery only with the HD Electric supplied charger.
- Do not disassemble, open, crush, bend, deform, puncture or shred the internal battery.
- Contact your local recycling center or HD Electric for proper battery disposal.
- Improper battery use may result in a fire, explosion or other hazard.



TECHNICAL SPECIFICATIONS

OPERATING VOLTAGE RANGES:

- **PRX-500:** 120VAC to 500kVAC in 9 ranges
- **PRX-275:** 230VAC to 275kVAC in 9 ranges
- **PRX-69D:** 120VAC to 69kVAC in 7 ranges
- **PRX-4:** 50VAC to 500kVAC in 2 ranges
- **ESB-PRX:** 50VAC to 400VAC in one range
- **PRX-35D:** 220VAC to 35kVAC in 3 ranges
- **PRX-500-04:** 220VAC to 500kVAC in 7 ranges

VOLTAGE SENSING DISTANCE:

- **PRX-500 / PRX-69D:** 6 inches at 120V, 10 inches at all other ranges.
- **PRX-275:** 6 inches at 230V, 10 inches at all other ranges.
- **PRX-35D:** 6 inches at 220V, 10 inches at all other ranges.
- **PRX-4:** 3 inches at 50V LO range, 10 inches at 4kV HI range.
- **ESB-PRX:** 3 inches at 50V.
- **PRX-500-04:** 6 inches at 220VAC, 10 inches at all other ranges.

When used above the maximum range of 500kV up to 870kV, sensing distance increases with increasing voltage; when held perpendicular to conductor under test with SENSING ZONE facing live conductor.

DIMENSIONS: 11"L x 3"W x 2"D (28 cm x 7.6 cm x 5 cm)

WEIGHT: 11oz. (0.31 kg)

OPERATING FREQUENCY: 25Hz-400Hz beeper sound

PRESSURE LEVEL: 100 db.

BATTERY LIFE: One week of typical daily use after full charge.

BATTERY CHARGING CURRENT:

0.5A maximum at 12VDC.

ENCLOSURE MATERIAL: Supertough Nylon UL 94-HB

PRINTED CIRCUIT BOARDS: FR-4 UL94V-0

ENVIRONMENTAL CONDITIONS

CONDITIONS: Indoor and outdoor use

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

OPERATING TEMPERATURE:

-20°F to +140°F (-29°C to +60°C)

HUMIDITY: 95% to +60°C (non-condensing)

OVERVOLTAGE CATEGORY: II Non-contact

POLLUTION DEGREE: PD4

MAINTENANCE AND CARE

STORAGE - It is recommended for protection that the instrument and its accessories are stored in the carrying case.

CLEANING INSTRUCTIONS - To clean, wipe with a damp cloth with water.

Do not use harsh chemicals or solvents.

CLEANLINESS - The molded housing is very rugged, but it should be kept clean and free of dirt, grease and any other foreign materials. If the housing surface integrity has been compromised in any way, remove from service and return to factory for repair or replacement.

DAMAGE - If you suspect any mechanical or electrical damage, do not use the instrument and arrange for repair by returning to the factory.

CALIBRATION & TESTING - Regular calibration is not required.

There is no calibration adjustment.

MANUFACTURING LOCATION

ACCESSORIES

PT-PRX PROOF TESTER® FOR PRX PROXIMITY VOLTAGE DETECTORS

The PT-PRX Proof Tester Voltage Detector Tester is for use on the PRX. This tester generates high voltage AC for testing the PRX. To use, turn on the PRX and set it for the lowest range, hold the Tester in one hand and the PRX in the other. Apply the PRX SENSING ZONE to the metal end plate on the Tester. Press and hold the TEST button on the Tester. A properly operating PRX will indicate voltage with continuous flashing lights and beeping sound. For best results, hold the PT-PRX with a tight grip and wrap your fingers around it. If the PRX does not indicate voltage, do not use it and return it to HD Electric for service.

CAUTION: This Tester generates high voltage AC for testing PRX AC voltage detectors. There is no danger of electric shock when this tester is used as directed. Discontinue use and return to HDE for service if the housing is cracked or broken, or if the battery cover is lost.

CAUTION: High Voltage

WARNING: Do not use this tester except as directed. Do not use to test equipment other than specified PRX Voltage Detectors. Do not apply to energized circuits or equipment. Do not operate this Tester without the battery cover and do not open the housing. Refer all servicing to the factory. Failure to follow these instructions may lead to electric shock, severe injury or death.



ACCESSORIES *continued*



A. PRX-CORD CHARGE CORD
Charge cord with 12VDC automotive jack.



B. PRX-XF TRANSFORMER
115-240VAC transformer to plug PRX-CORD into 115-240VAC wall outlet.



C. PRX-HS CARRYING HOLSTER
Carrying holster with belt clip and restraining strap.

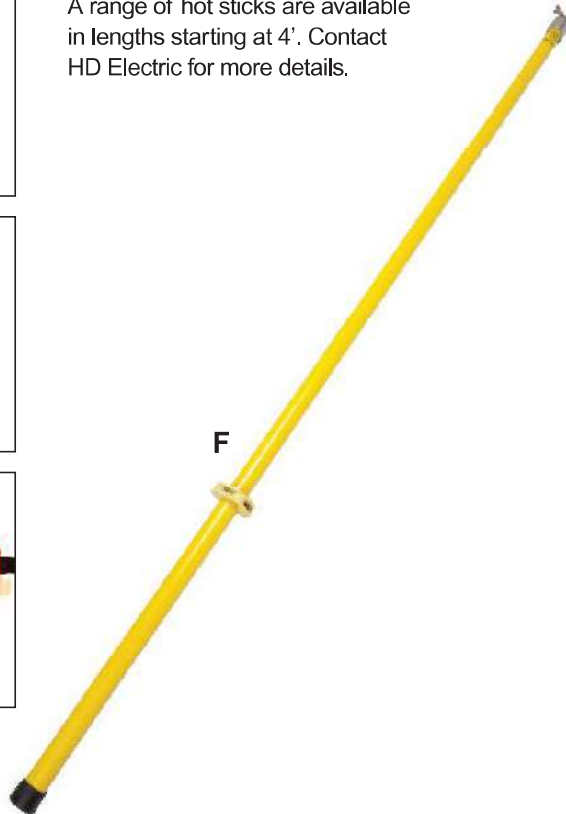


D. PRX-CS CARRYING CASE
Carrying case; holds PRX, PRX-HS and charge cords.



E. B-2 CARRYING BAG
Padded, zippered carrying bag with strap; holds PRX, PRX-HS and charge cords.

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



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 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 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. 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 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 option, shall not be bound to tender delivery of any Goods for which Buyer has not provided shipping instructions. If the shipment of the 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, negligence, improper installation or accident. HDE's obligation under this warranty, and the Buyer's exclusive remedy for the breach thereof, shall be limited to, at 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, 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, arcing and thermal burns, 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 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. 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. 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 therefore, 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 hereinafter 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 of 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 if Arbitration is not so 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 must 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 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

HD Electric Company is ISO 9001:2015 certified

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