

PRX

PROXIMITY VOLTAGE DETECTORS *and ACCESSORIES*

Operating & Instruction Manual



Making the Invisible Visible®

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A Textron Company

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PRX

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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 hotstick 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.

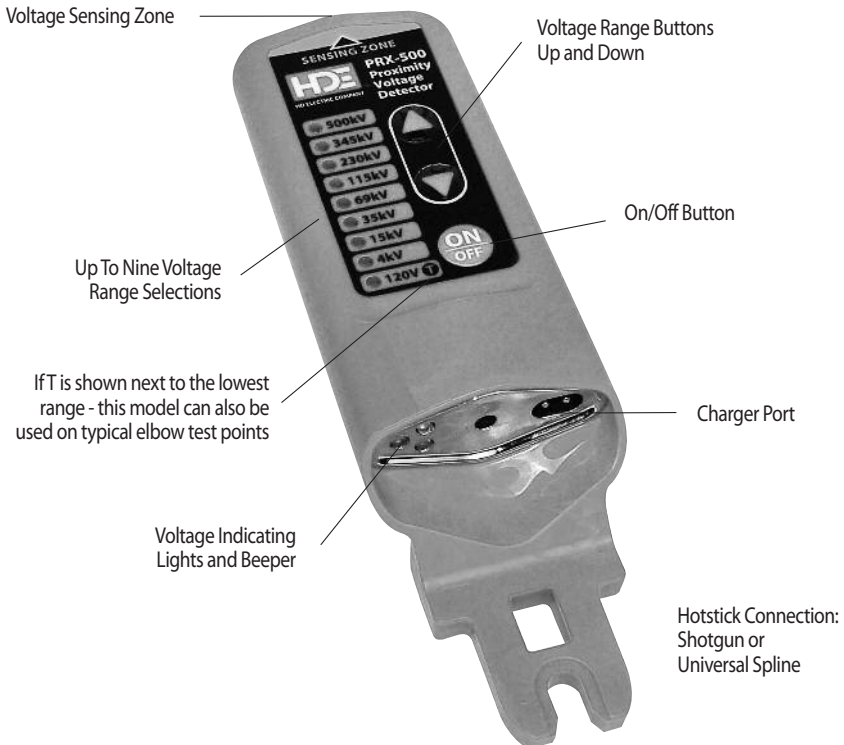
US Patent Applied For. **s.n.**
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HOW TO USE IT

- 1 CONNECT TO A SUITABLE HOTSTICK:** 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.

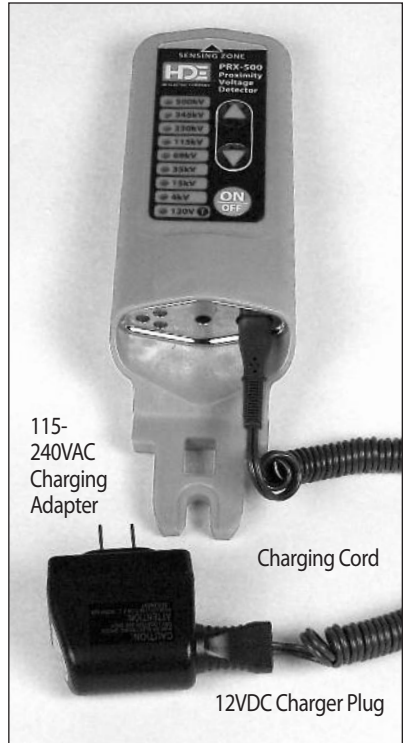
When the charge is complete only the highest voltage range light will remain on. After three hours, this light will turn off. The battery cannot be overcharged.

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 Company at 847-473-4980 or by email at sales@hde.textron.com 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-69D:** 120VAC to 69kVAC in 7 ranges
- **ESB-PRX:** 50VAC to 400VAC in one range
- **PRX-500-04:** 220VAC to 500kVAC in 7 ranges
- **PRX-275:** 230VAC to 275kVAC in 9 ranges
- **PRX-4:** 50VAC to 500kVAC in 2 ranges
- **PRX-35D:** 220VAC to 35kVAC in 3 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.

SERVICE - Return to HD Electric Company for service.

MANUFACTURING LOCATION - HD Electric Company • Waukegan, IL. 60085, USA

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 Company 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.





A

A. PRX-CORD CHARGE CORD

Charge cord with 12VDC automotive jack.



B

B. PRX-XF TRANSFORMER

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



C

C. PRX-HS CARRYING HOLSTER

Carrying holster with belt clip and restraining strap.



D

D. PRX-CS CARRYING CASE

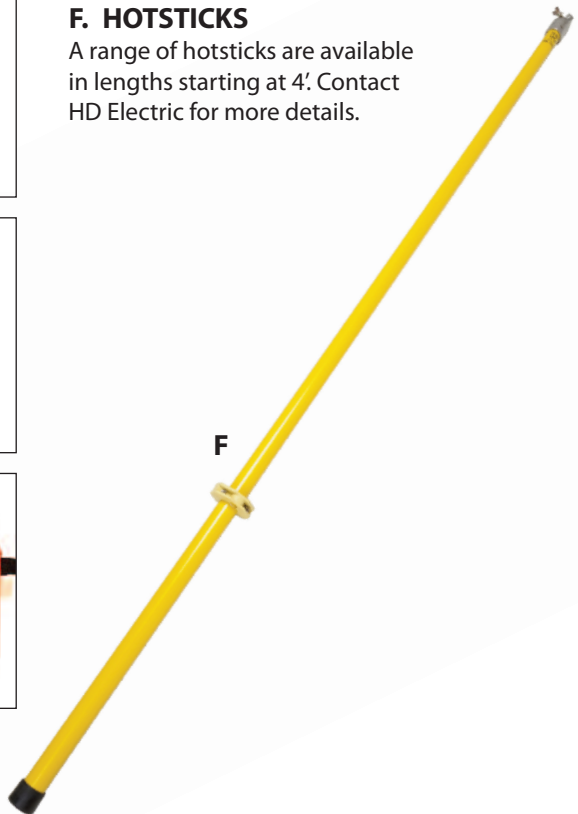
Carrying case; holds PRX, PRX-HS and charge cords.



E

E. B-2 CARRYING BAG

Padded, zippered carrying bag with strap; holds PRX, PRX-HS and charge cords.



F

F. HOTSTICKS

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

LIMITED WARRANTY AND LIMITATION OF LIABILITY

This warranty applies to all products sold by HD Electric Company (the "Products"); provided, however, that the term Products does not include any third party products purchased through HD Electric Company, for which no warranties are made (the "Third Party Products"). Third Party Products may be subject to a separate manufacturer's warranty; [should you have any question regarding whether a separate warranty applies, please contact HD Electric Company].

NOTICE: READ THIS LIMITATION OF WARRANTY AND LIABILITY BEFORE BUYING OR USING THE PRODUCTS CONTAINED HEREIN.

It is impossible to eliminate all risks associated with the use of the Products. 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 Products 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 HD Electric Company.

HD Electric Company 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.

HD Electric Company warrants to the original purchaser that the Products (excluding any third party products purchased through HD Electric Company, for which no warranties are made) will be free from defects in material and workmanship, under normal use and regular service, and preventative maintenance for a period of one (1) year (ten (10) years for HDE Capacitor Controls) from the date of shipment (the "Warranty Period"). Should any failure to conform with this warranty be found during the Warranty Period, you must notify HD Electric Company of your claim within thirty (30) days of discovery, and within the Warranty Period. Your failure to give notice of claims of breach of warranty within the Warranty Period shall be deemed an absolute and unconditional waiver of claims for such defects. HD Electric Company will have no responsibility to honor claims received after the date the applicable Warranty Period expires.

Upon notice of your claim, HD Electric Company will provide a return authorization number, and further instructions on how to return the product for service. You must follow HD Electric Company's instruction. You are responsible for all Product removal, handling, re-installation, and shipping (both to and from HD Electric Company). Products returned for repair, as well as repaired or replacement Products shall be sent postage / freight prepaid. After receipt of a product which HD Electric Company determines is defective, HD Electric will, at its option, either (1) repair (or authorize the repair of) the Product or (2) replace the Product, subject to the following: The Products are made using parts sourced from a variety of manufacturers. Due to the rapidly changing technology environment, parts may become obsolete / unavailable over time (end of life). In the event that a Product cannot be repaired or replaced due to unavailability of parts, HD Electric Company will use commercially reasonable efforts to obtain substitute parts or conduct work around design, but cannot guarantee its ability to do so.

Items not found defective will be returned at your expense, or failing receipt of instruction from you on return of such items within five (5) business days of our notice to you that the product is not defective, HD Electric may dispose of the product at its discretion and with no liability to you. HD Electric Company's determination of defects is final. Products repaired or replaced during the Warranty Period shall be covered by the foregoing warranties for the remainder of the original Warranty Period or ninety (90) days from the date of delivery of the repaired or replaced Products, whichever is longer.

LIMITATIONS:

This warranty is void in the event of misuse, alteration, faulty installation, or misapplication of the product.

This warranty does not cover failure of product or components due to any ACT OF NATURE; lightning, floods, hurricanes, tornadoes or any other such catastrophic events.

HD Electric Company does not warrant any third party products or associated hardware or their performance or suitability for use and application. Such items are provided "as-is".

All repairs must be authorized by HD Electric Company. Unauthorized repairs will not be reimbursed under any circumstances.

HD Electric Company is not required to make replacement or loaner equipment available while Products are being repaired or replaced, or to compensate you for any in/out labor charges or expenses associated with removal, handling or re-installation of the Products.

TO THE MAXIMUM EXTENT PERMITTED BY LAW, THIS WARRANTY AND THE REMEDIES SET FORTH ABOVE ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, REMEDIES AND CONDITIONS, WHETHER ORAL OR WRITTEN, EXPRESS OR IMPLIED. HD ELECTRIC EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY AND NON-INFRINGEMENT.

IN NO EVENT SHALL HD ELECTRIC COMPANY BE LIABLE FOR ANY INDIRECT, INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES RESULTING FROM THE USE OR HANDLING OF THESE PRODUCTS. THIS SHALL INCLUDE BUT, NOT LIMITED TO, LOST PROFITS OR REVENUE, LOSS OF USE OF THE PRODUCTS, COST OF SUBSTITUTE PRODUCTS, FACILITIES OR SERVICES, OR DOWNTIME.

IN NO EVENT SHALL HD ELECTRIC COMPANY HAVE ANY LIABILITY FOR ANY THIRD PARTY PRODUCTS OR ASSOCIATED HARDWARE, OR CUSTOMER-OWNED SYSTEMS, EQUIPMENT OR SOFTWARE.

HD Electric Company must have prompt notice of any claim so that an immediate product inspection and investigation can be made. Buyer and all users shall promptly notify HD Electric Company of any claims, whether based on contract, negligence, strict liability, or other tort or otherwise be barred from any remedy.

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.

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