



DVR-150
ac/dc
High Voltage
Divider

Safety, Operation, and Procedure Instructions for the DVR-150 High Voltage Divider

Danger- Lethal Voltages:

Equipment to be used by trained personnel only

This Operator Manual contains instructions for the operation of a High Voltage measuring device. The operator of this equipment must use good judgement and follow all safety precautions noted in this guide to ensure the protection of himself and others in close proximity to the test area. **Failure to follow the instructions could result in injury or death.** Proper grounding of the equipment must be done prior to connecting this unit to a power source.

Operator Manual



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About the Operator Manual

Important

This Operator Manual describes the features and safe operation of a High Voltage Divider . The instructions are intended to be clear and simple, but the operator must be trained and qualified according to established procedures for the use of this type of equipment.

This Operator Manual is organized to provide information on the **DVR-150** in steps that familiarize the new operator with the entire scope of operation of this test set.

Section 1: Specifications and Controls.

Section 2: Setup and Operation.

Section 3: Performing Special Operations.

The Functions, Features, and Specifications of the DVR-150 ac/dc High Voltage Divider are also discussed in the DVR-150 Brochure available from High Voltage, Inc.

General Information

This section familiarizes the operator with the features and specifications of the

DVR-150 ac/dc High Voltage Divider manufactured by **HIGH VOLTAGE, INC.**

Features and Specifications

The DVR -150 is a high voltage divider designed to extend the voltage measuring capability of almost any digital ac/dc voltmeter or oscilloscope to 150,000 volts dc or ac up to 1kHz. The DVR-150 is a precision resistor/capacitor compensated 1000:1 voltage divider.

This rugged, light weight unit is suited to industrial and field maintenance applications. The compensated circuit of the DVR-150 lends itself to waveshape analysis or power monitor applications.

Standard features of the DVR-150 ac/dc High Voltage Divider

- Switch selectable 1Meg/10Meg low end meter impedance
- Light Weight (less than 25lbs.)
- 2 x 13 inch top spinning
- Transit sturdy assembly
- 25 ft RG58/u metering lead with DVM adapter
- 20ft black ground test lead

DVR-150 Specifications

	Part No. DVR-0002S
Voltage Range	1-150 kV dc or ac to 1kHz
Input Resistance	715 Megohms
Input Capacitance	96.3 Picofarads
Division Ratio	1000:1 (1000x attenuator)
Divider Accuracy	<p>+/- 0.5%, 10°C - 40°C (50°F- 104°F)</p> <p>(for total measurement accuracy, add the accuracy of the voltmeter or oscilloscope being used)</p> <p>No low end calibration is necessary, by choosing the correct meter impedance the divider is pre-calibrated for most standard meters</p>
Signal Cable	25 ft. RG58/U coaxial cable with double banana plug adapter for the meter
Dimensions	13" dia. x 22" high 330 mm dia x 559 mm high
Weight	23 lbs. (10.4 kg)

Table 1 *DVR-150 Specifications.*

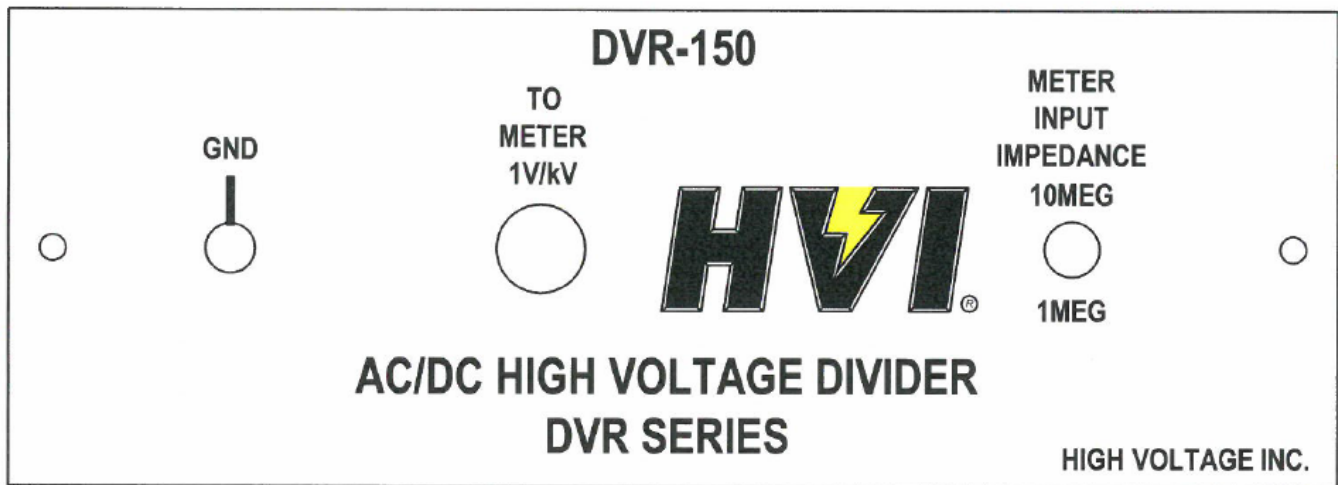


Figure 1 *DVR-150 panel.*

GND

The brass **GND** stud provides the safety ground connection for the divider. This point *must be* grounded to the local station ground prior to using the divider. *Failure to provide a ground at this point creates a dangerous shock hazard.* A 20 ft. black test lead with necessary lug and clip is provided to ground the divider.

TO METER 1V/KV

The output of the divider is connected to the monitoring meter by this BNC connector and the coaxial cable provided with the divider.

METER INPUT IMPEDANCE

This toggle switch is provided to set the pre-calibrated low end to match the input impedance of most standard DVMs and oscilloscopes. Check the Specifications of the metering device to ensure proper position of the switch.

List of included components

- ☐ Black test lead with black boot for ground connection
- ☐ 25 ft. RG58/U metering lead with adapter

SETTING UP THE EQUIPMENT

The setup of this equipment is important to the safety of the operator or technician using this device. The **DVR-150** one-piece construction reduces the possibility of misplacing components while providing convenient portability.

1. **Select a level location** for the divider close to the test object that will allow easy viewing of the meter with the meter lead extended at a safe distance from the test object.
2. **Secure the ground test lead to the panel.** The **GND** post on the front panel should be used for that purpose.
3. **Connect the coaxial meter lead to the metering BNC connector.** Using the coax to double banana adapter, plug the metering lead into the DVM or oscilloscope being used.
4. **Set the Meter Input Impedance to the proper position for the meter being used.**
5. **Turn the Meter to the appropriate range for the test source.**

Be sure all high voltage sources are off and de-energized prior to connecting the divider to the unit being monitored.

6. **Make the high voltage connection between the divider and the high voltage source.** Connections are made from the top aluminum spinning to the voltage source using user supplied test lead or tubing.

Keep all high voltage leads clear of grounded objects to avoid possible arcing from the test source. Allow approx. 1 inch for 10 kV in air

Operating the Equipment

* * * CAUTION * * *

POTENTIALLY LETHAL VOLTAGES MAY BE PRESENT

1. Once all the steps in Setting Up the Equipment are accomplished the operation of the high voltage source is up to the test technician. **Only properly trained and qualified individuals should operate any high voltage equipment.**
2. Be sure to evacuate the test area and restrict access to the area in accord with local electrical codes and any applicable standards.
3. Maintain strict watch as any testing is being performed to ensure continued safety consciousness.

PERFORMING SPECIAL OPERATIONS

The following section contains information on the care and upkeep of your new DVR-150 High Voltage Divider. There are some notes on troubleshooting and service, which will save much time and money over the life of the unit.

Meter Re-calibration

The DVR-150 divider uses precision metal film resistors and low drift polypropylene capacitors for measurement and calibration of the divider circuits. The use of these resistors and capacitors in the metering circuits will minimize circuit drift due to aging and temperature.

The certification of meters on a yearly basis is recommended to ensure accurate test results.

Re-calibration instructions are available if the customer wishes to perform in-house calibration. Please contact the factory for these instructions. High Voltage suggests using a reputable calibration house or returning the equipment to the factory for re-calibration on a yearly basis.

RETURNED MATERIAL

If for any reason it becomes necessary to return any equipment or materials to High Voltage, Inc., the Service Department of High Voltage, Inc. must be notified, and authorization received, prior to the shipment of the equipment. When notified, the following information must be provided:

MODEL:

SERIAL NO:

PART NO:

REASON FOR RETURN:

SUSPECTED DEFECT:

CAUSE OF DEFECT:

With the above information provided, High Voltage, Inc. will determine if the return of the equipment is appropriate. If deemed appropriate, a Return Authorization Number will be issued. At that time, the Purchaser will be instructed how to mark and return the equipment.

The above procedure must be adhered to in order to ensure prompt service. No equipment should be returned without the prior knowledge and authorization of High Voltage, Inc.

REPLACEMENT PARTS ORDERING

To order replacement parts, first refer to the Parts List for the product in question. Every part is issued a part number. It will be necessary for this part number and the product model and serial number to be provided. When calling High Voltage, Inc. request the Service Department.

THESE TERMS AND CONDITIONS OF SALE AND LIMITED WARRANTY OF HIGH VOLTAGE, INC. ("High Voltage") SHALL BE GOVERNED BY AND CONSTRUED ACCORDING TO THE INTERNAL LAWS OF THE STATE OF NEW YORK, USA, WITHOUT GIVING EFFECT TO ITS CONFLICT OF LAWS PROVISIONS. THE RIGHTS AND OBLIGATIONS OF ALL PARTIES AND ALL PERSONS OR ENTITIES CLAIMING HEREUNDER SHALL NOT BE GOVERNED BY THE PROVISIONS OF THE 1980 U.N. CONVENTION ON CONTRACTS FOR THE INTERNATIONAL SALE OF GOODS.

1. **ACCEPTANCE.** All orders become effective only when accepted by High Voltage's written order acknowledgment at Copake, New York, USA. Unless modified in writing by an authorized representative of High Voltage, or modified in High Voltage's Quotation or order Acknowledgment, these Terms and Conditions and Limited Warranty shall solely control Purchaser's order. High Voltage expressly rejects any additional or different provisions, terms or conditions proposed by Purchaser at any time.

2. **SCHEDULING.** High Voltage's shipping date specified in High Voltage's quotation or purchase order acknowledgment is approximate and High Voltage shall use reasonable commercial efforts to effect timely shipment. Furthermore, High Voltage shall not be liable for any delay in the performance of orders or contracts or in the delivery or shipment of goods or for any damages suffered by Purchaser by reason of such delay when such delay is, directly or indirectly, caused by, or in any manner arising from Purchaser's fault, fires, floods, accidents, riots, acts of God, war, governmental interference or, embargoes, strikes, labor difficulties, shortage of labor, fuel, power, materials or supplies, transportation delays, or any other cause or causes (whether or not similar in nature to any of these hereinbefore specified) beyond the control of High Voltage.

3. **CANCELLATIONS.** Prior to shipment, Purchaser may request cancellation or delayed delivery of an order or part thereof, but such shall be conditioned upon written consent of High Voltage and upon payment to High Voltage of cancellation or delayed delivery charges to be determined by High Voltage.

4. **SALE AND DELIVERY.** Unless otherwise agreed in writing, sale and delivery of the goods hereunder shall be made EXW or FCA (Incoterms® 2010) at High Voltage's option, High Voltage's dock at Copake, New York, USA, at which time all risk of loss or damage shall pass to Purchaser. All shipments and packaging shall be made in the manner determined by High Voltage, unless otherwise requested by Purchaser, in which case any resultant additional changes and expenses shall be paid by Purchaser.

5. **TAXES.** Any and all sales, use, excise and similar taxes, and duty and all other charges levied or imposed by governmental authority, foreign and domestic, upon any goods sold or contracted to be sold shall be paid by Purchaser and added to the purchase price unless appropriate tax exemption certificates are supplied to High Voltage in form satisfactory to High Voltage.

6. **PAYMENTS.**

a. All payments shall be in US Dollars without discount unless otherwise specified in High Voltage's order acknowledgment. Credit card payments are accepted only if specified in High Voltage's order acknowledgment.

b. Terms of payment are net thirty (30) days from date of invoice, unless otherwise agreed by High Voltage in its order acknowledgment. Delinquent payments are subject to a service charge on the unpaid balance from invoice date equal to the lower of 1-1/2% per month or the maximum rate permitted by law until all amounts are paid in full. If the financial responsibility of Purchaser becomes unsatisfactory to High Voltage for any reason, or if Purchaser has been in default to High Voltage under any order, High Voltage may require full payment in cash before shipment of goods.

c. If Purchaser so requests and makes arrangements prior to shipment

which meet High Voltage's full satisfaction, High Voltage in its discretion may accept irrevocable letters of credit in its favor issued by a United States bank which is satisfactory to High Voltage.

7. **INFRINGEMENT, ETC.** On goods manufactured to Purchaser's specifications, Purchaser shall and does indemnify and hold High Voltage harmless against any claims, damages, liabilities, costs and expenses (including attorneys' fees) arising out of or resulting from actual or alleged infringement of patent, copyright, trademark or other proprietary rights, or claim of unfair trade or unfair competition arising from or occasioned by the use, possession, sale or delivery of any such goods sold by High Voltage.

8. **REPRODUCTION RIGHTS.** Drawings, specifications, reports, photographs and other data relating to all orders and all proprietary rights and interests therein and the subject matter thereof shall be and remain the property of High Voltage. Purchaser agrees that it shall not use High Voltage's drawings, specifications or other materials covered by this order, or any similar article from any other source, or reproduce the same or otherwise appropriate them, without the prior written authorization of High Voltage.

9. **LIMITED WARRANTY.**

a. High Voltage warrants to the original Purchaser of any new goods that the goods are free from defects in material and workmanship under normal use and service for a period of one (1) year from the date of shipment by High Voltage. The obligation of High Voltage under this Limited Warranty is limited, in High Voltage's exclusive option, to repair, replace with new or reconditioned parts or issue credit for goods, parts or materials which prove to be defective. Costs incurred by Purchaser for labor or other expenses to repair or replace such goods, parts and/or materials shall be the sole responsibility of Purchaser. High Voltage shall not be responsible for any damage or lack of performance resulting from: (i) defects due to accident, negligence, alteration, modification, faulty installation, abuse or misuse, whether by Purchaser, Purchaser's agents or employees, or by others than High Voltage (ii) attempted or actual dismantling, disassembly, service or repair by any person, firm or corporation not specifically authorized in writing by High Voltage, or (iii) defects caused by or due to handling by carrier, or incurred during shipment, transshipment or other move.

b. High Voltage expressly disclaims any warranty whatsoever of (i) consumables, and of (ii) parts, components, software (including but not limited to object code and source code and software user instructions), accessories, and materials not prepared, compiled or manufactured by High Voltage, and Purchaser must deal directly with such other supplier. High Voltage may elect to assist Purchaser in settling such claim against such other supplier, but any such assistance shall not prejudice High Voltage's position as to its own liability.

c. Compliance with the following Limited Warranty Claim Procedure is a condition precedent to the obligation of High Voltage under this Limited Warranty:

i. Purchaser must notify High Voltage in writing as soon as is reasonably possible, but within the applicable warranty period, of any alleged defect in material, workmanship, or operation of any goods covered under this Limited Warranty. Such notice must describe in detail the defect, any and all defective parts, and the alleged cause of the defect. No goods may be returned to High Voltage without High Voltage's prior written permission, which permission may be withheld by High Voltage in its sole discretion.

ii. At the exclusive option of High Voltage, Purchaser may be directed in writing to dismantle the goods at the Purchaser's cost and expense and ship the goods prepaid to High Voltage (refer to "Returns" Section 10 for provisions regarding the return of any goods to High Voltage). If High Voltage elects to inspect the goods at Purchaser's site, and to repair, replace,

[Section 9.c.ii. continued on page 2]

or ship the defective goods to High Voltage's factory, Purchaser, at its own cost and expense, shall provide the facilities for such work as needed to inspect and evaluate and possibly repair/replace the goods. If inspection discloses that the defect is not one for which High Voltage is liable, then Purchaser shall promptly reimburse High Voltage for all expenses incurred.

iii. Upon receipt of the defective goods, or following access to the same, High Voltage shall inspect and evaluate the goods and determine the validity of Purchaser's claim.

iv. The validity of any warranty claim, Purchaser's compliance with the Limited Warranty and Limited Warranty Claim Procedure, and the obligation to replace, repair, or issue credit for any goods are solely and exclusively to be determined by High Voltage and any determination shall be final and binding.

d. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, STATUTORY OR EXPRESSED OR IMPLIED ON THE PART OF HIGH VOLTAGE, INCLUDING THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT; FURTHERMORE, HIGH VOLTAGE MAKES NO WARRANTY REGARDING NON-INTERRUPTION OF USE OR SOFTWARE FREEDOM FROM BUGS. HIGH VOLTAGE NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON, FIRM, OR CORPORATION TO ASSUME ANY LIABILITY OR OBLIGATION IN CONNECTION WITH THIS SALE OR LIMITED WARRANTY ON HIGH VOLTAGE'S BEHALF AND PURCHASER ACKNOWLEDGES THAT NO REPRESENTATION EXCEPT THOSE MADE HEREIN HAS BEEN MADE TO PURCHASER.

10. **RETURNS.** No goods may be returned to High Voltage without High Voltage's prior written permission, which permission may be withheld by High Voltage in its sole discretion. Any request for return authorization must be in writing and include, as applicable, model number, serial number, part number, reason for return, alleged defect, and apparent cause of alleged defect. Except as specifically provided in Section 9 Limited Warranty, if High Voltage consents to return of goods: (a) all return shipments are to be via prepaid freight and with all other charges prepaid, (b) if goods are returned to High Voltage within sixty (60) days from the date of original shipment for reasons other than an error by High Voltage in filling the Purchaser's order, Purchaser shall only be entitled to receive a credit in an amount equal to the payment received by High Voltage for the goods minus (i) handling charges, and (ii) a restocking fee determined solely by High Voltage which shall not exceed twenty five percent (25%) of the invoiced amount, and (c) if goods are returned to High Voltage after sixty (60) days from the date of original shipment for reasons other than an error by High Voltage in filling the Purchaser's order, Purchaser shall only be entitled to receive a credit in the amount equal to the payment received by High Voltage for the goods minus (x) a handling fee, and (y) a restocking fee in excess of twenty five percent (25%) which shall be determined by High Voltage.

11. **SECURITY INTEREST.** In order to induce High Voltage to ship goods without full payment, Purchaser grants a security interest to High Voltage in any and all of Purchaser's right, title and interest in the goods, and Purchaser agrees to comply with any reasonable request of High Voltage to perfect such security interest. Purchaser hereby further authorizes High Voltage to perfect High Voltage's security interest in said goods and consents to filing one or more financing statements without the signature of Purchaser.

12. **ARBITRATION.** Any controversy arising out of or relating to this document, or any breach thereof, including, without limitation, any claim that this document is voidable or void, shall be submitted to final and binding arbitration before, and in accordance with, the Commercial Rules of the American Arbitration Association then in effect, and judgment upon the award may be entered in any court have jurisdiction thereof; provided, however, that this clause shall not be construed to limit any rights which

High Voltage may have to apply to any court of competent jurisdiction for equitable, injunctive or provisional relief. This arbitration provision shall be deemed self-executing, and in the event that either party fails to appear at any properly noticed arbitration proceeding, an award may be entered against such party notwithstanding said failure to appear. Such arbitration shall be conducted before a single arbitrator under the aegis of the American Arbitration Association in Columbia County, State of New York. The arbitrator shall have the authority to award expenses to the successful party.

13. **LIMITATION OF LIABILITY.** TO THE MAXIMUM EXTENT PERMITTED UNDER APPLICABLE LAW, AND NOTWITHSTANDING ANYTHING ELSE IN THIS DOCUMENT OR OTHERWISE, INCLUDING THAT HIGH VOLTAGE WAS WARNED THAT DAMAGES WOULD OCCUR OR WERE LIKELY TO OCCUR, HIGH VOLTAGE SHALL NOT BE LIABLE WITH RESPECT TO ANY SUBJECT MATTER OF THIS DOCUMENT UNDER ANY CONTRACT, NEGLIGENCE, STRICT LIABILITY OR OTHER LEGAL OR EQUITABLE THEORY FOR (i) ANY AMOUNTS IN EXCESS IN THE AMOUNT PAID TO HIGH VOLTAGE FOR THE PARTICULAR GOODS OR PART THEREOF WHICH GAVE RISE TO THE APPLICABLE CAUSE OF ACTION OR CLAIM, OR (ii) ANY INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOST PROFITS OR LOST OR CORRUPTED DATA, OR (iii) COST OF PROCUREMENT OF SUBSTITUTE GOODS, SOFTWARE, TECHNOLOGY OR SERVICES. HIGH VOLTAGE SHALL HAVE NO LIABILITY FOR ANY FAILURE OR DELAY DUE TO MATTERS BEYOND ITS REASONABLE CONTROL.

14. **SEVERABILITY.** These Terms and Conditions and Limited Warranty are the entire understanding between Purchaser and High Voltage with respect to the subject matter hereof and supersede all prior agreements, dealings and negotiations. No modification, alteration or amendment shall be effective unless made in writing and signed by a duly authorized representative of High Voltage. No waiver of any breach hereof shall be held to be a waiver of any other or subsequent breach. Nothing contained in this document shall be construed as requiring the commission of any act contrary to law. Whenever there is any conflict between any provision of this document and any present or future statute, ordinance or regulation contrary to which the parties have no legal right to contract, the latter shall prevail, but in such event the provision of this document thus affected shall be curtailed and limited only to the extent necessary to bring it within the requirements of the law. In the event that any part, article, section, paragraph, sentence or clause of this document shall be held to be indefinite, invalid or otherwise unenforceable, the entire document shall not fail on account thereof, and the balance of the document shall continue in full force and effect. If any arbitration tribunal or court of competent jurisdiction deems any provision hereof (other than for the payment of money) unreasonable, said arbitration tribunal or court may declare a reasonable modification thereof, and this document shall be valid and enforceable, and the parties hereto agree to be bound by and perform the same as thus modified.

15. **BASIS OF BARGAIN.** Each party recognizes and agrees that the warranty disclaimers and liability and remedy limitations in this document are material, bargained for bases of their agreement and that they have been taken into account and reflected in determining the respective obligations of the parties.

[End]

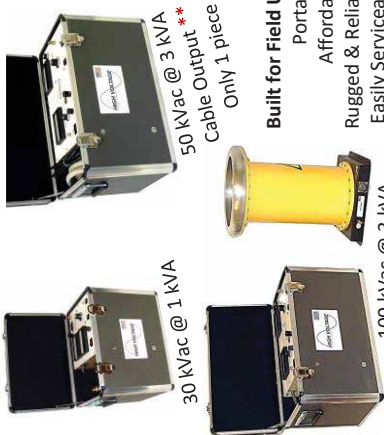
DC Hipot/Megohmmeter Test Sets

Two Testers in One



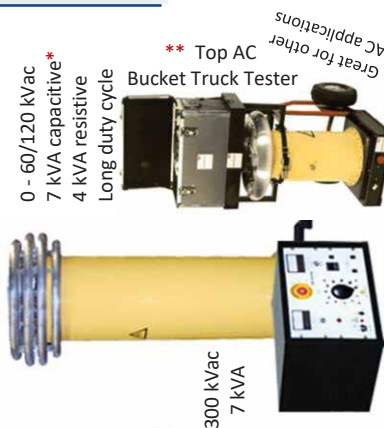
Bucket Truck Tester

AC Hipots - Field Portable



Built for Field Use
Portable
Affordable
Rugged & Reliable
Easily Serviceable

Aerial Lift Test Sets - AC



Great for other AC applications

Oil Dielectric Testing

Standard & Micro Controlled 60 kVac & 100 kVac models



60 kVac
Fully Programmable
Panel Printer

Very Low Frequency AC Technology

Cables & Motors/Generators
0.1 – 0.01 Hz up to 200 kVac

VLF Withstand
VLF TD & VLF PD



200 kVac peak - sine wave	90 kVac peak - sine wave	30 kVac
0.1 - 0.02 Hz to 3.75 uF	0.1 - 0.02 Hz to 2.75 uF	0.4 uF

Many more models available.



**** New Solid State Design**
34 kV peak - sine wave
0.1 – 0.01 Hz to 7 uF

50/60 Hz AC Dielectric Test Equipment: 5 kVA - 50 kVA

AC Testing of High Capacitance Loads – up to 300 kVac



10 kVac @ 10 kVA
Low PD < 10 pc

Concentric Neutral Resistance Tester

150 kV AC/DC
300 kV AC/DC

HV Dividers

150 kV AC/DC
300 kV AC/DC



VLF Diagnostic Cable Testing

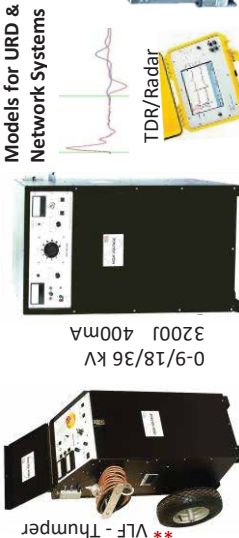
Tan Delta & Partial Discharge



ID/PD Meas.
40 – 200 kV

Capacitor Discharge Systems - Thumpers

Three Full Joule Outputs – VLF/Thumper Combo



0-9/18/36 kV
3200J 400mA

TDR/Radar

HVI Products 10/2015