



# PORTABLE PRODUCTS for Field Testing



**High Voltage • High Current • High Power Test Systems and Components**



PHENIX TECHNOLOGIES • Accident, Maryland USA • [www.phenixtech.com](http://www.phenixtech.com) • +1.301.746.8118

## PORTABLE PRODUCTS for FIELD TESTING

**PHENIX Technologies offers a wide variety of Portable Products (also referred to as Standard Products) which are designed to be utilized for mobile or field testing.**

**PHENIX Portable Products are durable, easy to transport and set up, and feature user-friendly design interfaces.**

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Specifications are subject to change without notice.



## INTRODUCTION

PHENIX Technologies is a manufacturer of high voltage, high current, high power test systems and components. We have been in business since 1975. Our manufacturing facility is located in Accident, Maryland, USA with additional sales offices located in Atlanta, GA; Basel, Switzerland; and Taipei, Taiwan. Additionally, we have sales representative organizations across the U.S. and in over 75 countries.

Our state-of-the-art products have been delivered around the world providing quality assurance testing solutions to:

- Electrical Utilities
- Equipment Manufacturers
- Motor Manufacturers and Repair Industry
- Transformer Manufacturers and Repair Industry
- Cable Manufacturers and Service Contractors
- Personal Protective Equipment Test Laboratories
- Field Service Organizations
- High Voltage Test Laboratories
- Quality Control Areas

PHENIX Technologies offers a full line of standard-design products as well as the expertise to design and build custom test systems.

Our products are divided into two main categories:

- Power Products such as AC Dielectric Test Systems, Resonance Test Systems, Transformer Test Systems, Motor Test Systems, and custom made testing solutions
- Standard Portable Products which are summarized in this brochure

## GENERAL INFORMATION ON HIGH VOLTAGE TESTING

When we are ready to test in a High Voltage environment, general safety precautions should be taken into account as Hipot testers are capable of providing POTENTIALLY LETHAL VOLTAGES!

Improper operation or test practices may result in injury or death to the operator or surrounding personnel.

The operation of High Voltage test equipment should only be performed by personnel familiar with HIGH VOLTAGE testing and safety procedures. The operator of this equipment must be aware of all hazards associated with High Voltage testing. The operator is responsible for himself and others in close proximity of the testing area.

Some General Safety Practices for working with High Voltage test equipment have been listed below for your reference.

- Become familiar with your instrument before performing an actual test.
- Know your work area, check that all circuits are de-energized and locked out.
- Never work alone; always work with another qualified worker.
- Mark off entire work area with barriers and warning tape.
- Make all personnel aware of your testing activities.
- Be aware of dangerous conditions that may arise from energizing a test specimen.
- Never modify test equipment; modifications to equipment could introduce an unknown hazard or hinder a designed-in safety feature.
- DO NOT operate damaged equipment. Remove power, and do not use the equipment until safe operation can be verified by service-trained personnel.

**PHENIX Technologies, Inc. assumes no liability for unsafe or improper use of test equipment.**

## TERMINOLOGY

The following terms relate to testing applications in the Electrical Laboratory or temporary Laboratory Set-up and in Test Stations.

### High Voltage (HV):

- Voltages exceeding 1000 V rms AC or 1000 V DC with current exceeding 2 mA AC or 3 mA DC.

### Interlock:

- Safety circuit to prevent energizing HV generators until all access doors are closed, and immediately de-energizes HV if door is opened; this function does not necessarily ensure full discharge of stored energy.

### Earthing System:

- HV test labs with earthing systems reduce potential increases and overvoltages to avoid danger to operators or control and measuring equipment.

Type of Test System	Buried Earth-electrode System	
	with screening cage $R_E$ (Ohm)	without screening cage $R_E$ (Ohm)
AC and DC Voltage Test Systems	<2	<1

### Grounding/Discharge Stick:

- Before touching HV circuit components or leaving unattended and exposed, they must be de-energized and grounded with a grounding/discharge stick.
- Grounding/discharge sticks must remain visible on HV terminal until circuit is re-energized; typically located near entrances to HV test station.
- Automated grounding/discharge systems.

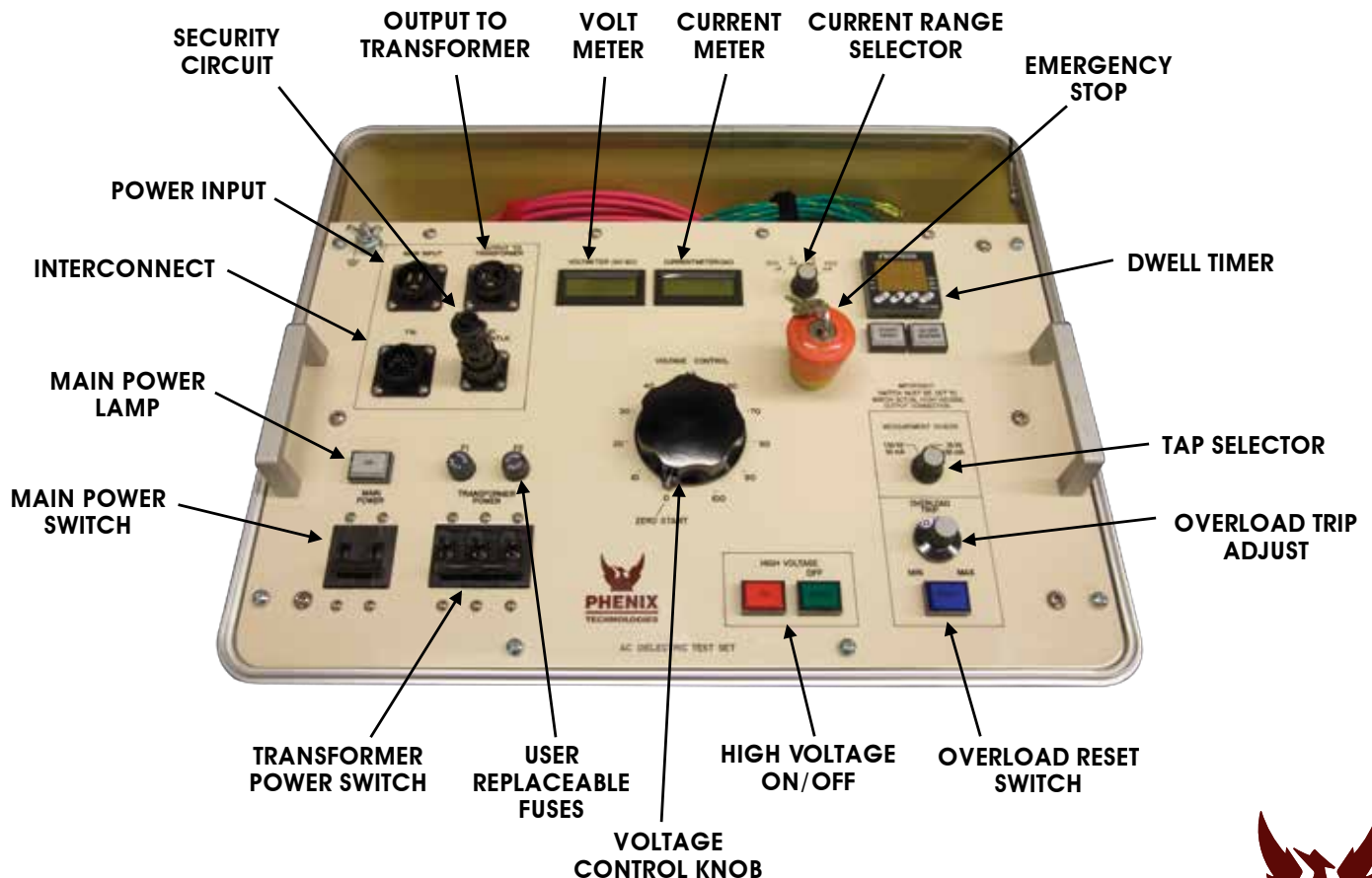
### Safe Clearance:

- The minimum distance of HV component electrodes to safety fences.

### Security Circuit:

- PHENIX builds in a Security Circuit or auxiliary safety control device on most test sets. This consists of a removable plug that has a shorting jumper installed to complete circuit. The jumper must be removed and cable connected to user supplied device if using this provision. This feature may prevent unauthorized use until the test process has been examined by safety personnel. Optional devices may be ordered including a Gate Switch, Foot Switch, or Deadman Switch to further ensure safety.

## CONTROL PANEL for 6CP and BK Series AC HIPOT TESTERS





## AC DIELECTRIC TEST SYSTEMS

## FIELD and LAB AC HIPOTS, 6CP Series (15-200 kV)

The 6CP Series is designed for dielectric testing on a wide range of electrical apparatus including Switchgear, Circuit Breakers, Transformers, Rotating Machines, and Protective Equipment for Workers.

Within this product line, PHENIX offers 7 models with different output current/voltage.

These systems are either 2-piece or 3-piece design depending upon the power and voltage requirements.

NOTE: The 6CP Series has a PD specification of <10 pC but can be ordered with a spec of <3 pC when high sensitive PD measurement is needed.

## AC Hipot Testers up to 50 kV &amp; 3 kVA

	MODEL	6CP30/15-3	6CP50/10-3
INPUT	Voltage/Current	110-120 V, 16 A or 220-240 V, 8 A (Voltage required must be specified)	
	Frequency	50/60 Hz	
OUTPUT	Voltage/Current	≈ 0-15 kV, 200 mA	≈ 0-10 kV, 300 mA
		≈ 0-30 kV, 100 mA	≈ 0-50 kV, 60 mA
DUTY CYCLES	5 min ON/15 min OFF	3 kVA	
	15 min ON/1 hr OFF	2 kVA	
	1 hr ON/1 hr OFF	1.5 kVA	
FEATURES	Compensation	50% Inductive Reactive	
	Metering Accuracy	0.8% Reading + .2% Full Scale	
	Voltmeter Range(s)	0-15/30 kV	0-10/50 kV
	Currentmeter Range(s)	0-200 $\mu$ A/2 mA/ 20 mA/200 mA	0-200 $\mu$ A/2 mA/ 20 mA/300 mA
	Output	HV Electrode	



Model  
6CP30/15-3 or  
6CP50/10-3

## AC Hipot Testers up to 120 kV &amp; 7.5 kVA

	MODEL	6CP100/50-7.5	6CP120/60-7.5
INPUT	Voltage/Current	110-120 V, 30 A or 220-240 V, 15 A (Voltage required must be specified)	
	Frequency	50/60 Hz	
OUTPUT	Voltage/Current	≈ 0-50 kV, 150 mA	≈ 0-60 kV, 125 mA
		≈ 0-100 kV, 75 mA	≈ 0-120 kV, 62.5 mA
DUTY CYCLES	5 min ON/15 min OFF	7.5 kVA	
	15 min ON/1 hr OFF	5 kVA	
	1 hr ON/1 hr OFF	3 kVA	
FEATURES	Compensation	66% Inductive + Selectable Capacitive Preload	
	Metering Accuracy	0.8% Reading + .2% Full Scale	
	Voltmeter Range(s)	0-50/100 kV	0-60/120 kV
	Currentmeter Range(s)	0-200 $\mu$ A/ 2 mA/ 20 mA/ 200 mA	
	Output	HV Electrode	



Model  
6CP100/50-7.5 or  
6CP120/60-7.5



## FIELD and LAB AC HIPOTS, 6CP Series (15-200 kV) *continued*

### AC Hipot Testers up to 120 kV & 10 kVA

	MODEL	6CP100/50-10	6CP120/60-10
INPUT	Voltage/Current	220-240 V, 30 A	
	Frequency	50/60 Hz	
OUTPUT	Voltage/Current	≈ 0-50 kV, 200 mA ≈ 0-100 kV, 100 mA	≈ 0-60 kV, 166 mA ≈ 0-120 kV, 83 mA
DUTY CYCLES	5 min ON/15 min OFF	10 kVA	
	15 min ON/1 hr OFF	7.5 kVA	
	1 hr ON/1 hr OFF	5 kVA	
FEATURES	Compensation	50% Inductive Reactive	
	Metering Accuracy	0.8% Reading +.2% Full Scale	
	Voltmeter Range(s)	0-50/100 kV	0-60/120 kV
	Currentmeter Range(s)	0-200 $\mu$ A/ 2 mA/ 20 mA/ 200 mA	
	Output	HV Electrode	



Model  
6CP100/50-10 or  
6CP120/60-10

### AC Hipot Tester up to 200 kV & 10 kVA

	MODEL	6CP200/100-10
INPUT	Voltage/Current	220-240 V, 25 A
	Frequency	50/60 Hz
OUTPUT	Voltage/Current	≈ 0-100 kV, 100 mA ≈ 0-200 kV, 50 mA
DUTY CYCLES	5 min ON/15 min OFF	10 kVA
	15 min ON/1 hr OFF	7.5 kVA
	1 hr ON/1 hr OFF	5 kVA
FEATURES	Compensation	50% Inductive Reactive
	Metering Accuracy	0.8% Reading +.2% Full Scale
	Voltmeter Range(s)	0-100/200 kV
	Currentmeter Range(s)	0-200 $\mu$ A/ 2 mA/ 20 mA/ 200 mA
	Output	HV Electrode



Model  
6CP200/100-10



Refer to brochure no. 60700 for additional information, options, and accessories available for the 6CP Series.



## AC DIELECTRIC TEST SYSTEMS

### AERIAL LIFT, ELEVATED PLATFORM, INSULATED BOOM TESTING, BK Series (36-180 kV)

The BK Series is an ideal testing kit for Aerial Lift Devices, Elevated Platforms, Double and Horseshoe Liners and complies with ANSI and IEC standards (A92.2 and IEC 61813). The BK Series can also be used for common dielectric and insulation testing requirements.

#### AC Hipot Tester up to 60 kV & 10 mA

	MODEL	BK60
INPUT	Voltage/Current	110-120 V, 10 A or 208-240 V, 6 A (Voltage required must be specified)
	Frequency	50/60 Hz
OUTPUT	Voltage/Current	≈ 0-60 kV, 10 mA
DUTY CYCLES	5 min ON/15 min OFF	10 mA
	1 hr ON/1 hr OFF	7 mA
	Continuous	5 mA
DIGITAL METERING	Metering Accuracy	0.8% Reading + .2% Full Scale
	Voltmeter Range(s)	0-60 kV
	Currentmeter Range(s)	0-200 $\mu$ A/2 mA/ 20 mA



Model BK60

#### AC Hipot Tester up to 130 kV & 50 mA

	MODEL	BK130/36
INPUT	Voltage/Current	110-120 V, 30 A or 208-240 V, 15 A (Voltage required must be specified)
	Frequency	50/60 Hz
OUTPUT	Voltage/Current	≈ 0-36 kV, 180 mA ≈ 0-130 kV, 50 mA
DUTY CYCLES	5 min ON/15 min OFF	50 mA/180 mA
	1 hr ON/1 hr OFF	33.3 mA/120 mA
	Continuous	25 mA/90 mA
DIGITAL METERING	Metering Accuracy	0.8% Reading + .2% Full Scale
	Voltmeter Range(s)	0-36/130 kV
	Currentmeter Range(s)	0-200 $\mu$ A/2 mA/ 20 mA/200 mA



Model BK130/36



**AERIAL LIFT, ELEVATED PLATFORM, INSULATED BOOM TESTING, BK Series *continued*****AC Hipot Tester up to 180 kV & 18 mA**

	MODEL	BK180
INPUT	Voltage/Current	110-120 V, 30 A or 220-240 V, 15 A (Voltage required must be specified)
	Frequency	50/60 Hz
OUTPUT	Voltage/Current	≈ 0-180 kV, 18 mA
DUTY CYCLES	5 min ON/15 min OFF	18 mA
	1 hr ON/1 hr OFF	12 mA
	Continuous	9 mA
DIGITAL METERING	Metering Accuracy	0.8% Reading + .2% Full Scale
	Voltmeter Range(s)	0-180 kV
	Currentmeter Range(s)	0-200 $\mu$ A/2 mA/ 20 mA

**Model BK180**

*Refer to brochure no. 60208 for additional information, options, and accessories available for the BK Series.*

**QUICK REFERENCE CAPABILITIES**  
per ANSI A92.2 standard (IEC/ISO similar)

**Category A&B Devices Periodic Test**

46 kV & Below Voltage Class	BK60, BK130/36, BK180
69 kV Voltage Class	BK60, BK130/36, BK180
138 kV Voltage Class	BK130/36, BK180

**Category C Devices Periodic Test**

46 kV & Below Voltage Class	BK60, BK130/36, BK180
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**Insulating Aerial Ladders & Insulating Aerial Vertical Towers Periodic Test**

46 kV & Below	BK60, BK130/36, BK180
20 kV & Below	BK60, BK130/36, BK180

**Category A&B Devices 50/60 Hz Qualification Test**

50/60 Hz Qualification Test	
46 kV & Below Voltage Class	BK60, BK130/36, BK180
69 kV Voltage Class	BK60, BK130/36, BK180
138 kV Voltage Class	BK130/36, BK180

**Category A&B Double Rated Voltage Test**

46 kV & Below Voltage Class	BK60, BK130/36, BK180
69 kV Voltage Class	BK130/36, BK180
138 kV Voltage Class	BK180

**Category C Qualification Test**

46 kV & Below Voltage Class	BK130/36, BK180
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**Insulating Aerial Ladders & Insulating Aerial Vertical Towers Qualification Test**

46 kV & Below	BK130/36, BK180
20 kV & Below	BK60, BK130/36, BK180



## AC DIELECTRIC TEST SYSTEMS

### AC VACUUM INTERRUPTER TEST SETS (40-60 kV)

These AC Hipots are designed primarily for Vacuum Interrupter Testing; however, can also be used to test Circuit Breakers, Switchgear and other apparatus keeping in mind the current generated.

#### AC Hipot Tester up to 40 kV & 10 mA

	MODEL	640-0.4P
INPUT	Voltage/Current	110-120 V, 5 A or 220-240 V, 3 A (Voltage required must be specified)
	Frequency	50/60 Hz
OUTPUT	Voltage/Current	≈ 0-40 kV, 10 mA
DUTY CYCLES	Duty Cycles	120 V input 20 min ON/30 min OFF @ 10 mA
		220 V input 15 min ON/45 min OFF @ 10 mA
DIGITAL METERING	Metering Accuracy	0.8% Reading +.2% Full Scale
	Voltmeter Range(s)	0-40 kV
	Currentmeter Range(s)	0-10 mA



Model 640-0.4P

#### AC Hipot Tester up to 60 kV & 10 mA

	MODEL	660-10P
INPUT	Voltage/Current	110-120 V, 6 A or 220-240 V, 3 A
	Frequency	50 or 60 Hz (Voltage and Frequency required must be specified)
OUTPUT	Voltage/Current	≈ 0-60 kV, 10 mA
DUTY CYCLES	Duty Cycles	5 min ON/15 min OFF @ 10 mA
DIGITAL METERING	Metering Accuracy	0.8% Reading +.2% Full Scale
	Voltmeter Range(s)	0-60 kV
	Currentmeter Range(s)	0-10 mA



Model 660-10P

Refer to brochure no. 60106 for additional information, options, and accessories available for the Vacuum Interrupter Testers.





## AC DIELECTRIC TEST SYSTEMS

### LIQUID DIELECTRIC TEST SETS, LD Series (60-100 kV)

The LD Series is used to measure the breakdown voltage of Insulation Fluids used in Transformers, Capacitors, Bushings and related high voltage equipment.

With the selection of an oil vessel test cell, these test sets are designed to perform tests in accordance with many different standards.

	MODEL	LD60	LD75	LD100
INPUT	Voltage / Current	120 V, 5 A or 230 V, 2.5 A		
	Frequency	50 or 60 Hz (Voltage and Frequency required must be specified)		
OUTPUT	Voltage	0-60 kV at 500 VA	0-75 kV at 500 VA	0-100 kV at 500 VA
	Maximum Voltage to Earth	30,000 V	37,500 V	50,000 V
RATE OF RISE	selectable	500/2000/3000 Volts per Second	2000 Volts per Second, Variable	2000 Volts per Second, Variable
DUTY CYCLE	Duty Cycle	continuous breakdown testing		
DIGITAL MEMORY VOLTMETER	Accuracy	+/-1% of Full Scale		
	Range	~0-60 kV	~0-75 kV	~0-100 kV



Model  
LD60



Model  
LD75 or  
LD100

### Test Cells

TYPE	TEST STANDARD	TEST ELECTRODES	GAP SETTING	RATE OF RISE
TC/DE (flat electrodes)	ASTM D877	Polished brass disc 1" (25 mm) diameter	.1" +/-0.0005"	3000 Volts per Second
TC/VDE (motorized with stirrer)	ASTM D1816	Spherical dome 1.4" (36 mm) diameter	.04" or .08" +/-0.001"	500 Volts per Second
TC/IEC	IEC 60156	Spherical dome 36 mm (1.4") diameter	2.5 mm +/-0.1 mm	2000 Volts per Second
TC/BS	BS 148	Spherical cap 12.5 mm (.5") diameter	2.5 mm +/-0.1 mm	2000 Volts per Second



Type TC/DE



Type  
TC/VDE



Type TC/IEC



Type TC/BS

Refer to brochure no. 10104 for additional information, options, and accessories available for the LD Series.



## DC DIELECTRIC TEST SYSTEMS

## PORTABLE DC HIPOTS (40-160 kV)

This product line is used for accurate DC Hipot testing of electrical Switchgear, Cables, Motors, Generators, and Protective Equipment for Workers.

Each unit contains an internal discharge device for safe operation, as well as over current protection for both the operator and test specimen.

	MODEL	440-20	475-20	4100-10	4120-10	4160-5
INPUT	Voltage / Current	110-120 V, 5 A or 220-240 V, 3A	110-120 V, 10 A or 220-240 V, 5 A			
		(Voltage required must be specified)				
	Frequency	50/60 Hz				
DC OUTPUT	Voltage / Current	0-40 kV, 20 mA	0-75 kV, 20 mA	0-100 kV, 10 mA	0-120 kV, 10 mA	0-160 kV, 5 mA
	Ripple	<2%				
	Polarity	negative output, positive ground				
DUTY CYCLE	Continuous Capacitive Charging	20 mA	20 mA	10 mA	10 mA	5 mA
INTERNAL DISCHARGE DEVICE	Internal Discharge Device	3 kJ	6 kJ	6 kJ	12 kJ	12 kJ
DIGITAL METERING	Accuracy	0.5% of Full Scale				
	Voltmeter Range(s)	0-19.99/40 kV	0-19.99/75 kV	0-19.99/100 kV	0-19.99/120 kV	0-19.99/160 kV
	Currentmeter Range(s)	0-19.99 $\mu$ A/ 199.9 $\mu$ A/ 1.999 mA/ 19.99 mA				
	Output Charging Indicator	1.5" Analog 0-100% of selected range indication				



Model 440-20  
or 475-20



Model 4100-10



Model 4120-10  
or 4160-5



Refer to brochure no. 40106 for additional information, options, and accessories available for DC Hipots.



## AC, DC or AC/DC HIPOT/MEGOHMMETERS and INSULATION ANALYZER

### AC/DC HIPOT/MEGOHMMETERS

Typical applications for these units are Dielectric Withstand Testing, Insulation Resistance and Leakage Current Measurement. All models measure leakage current flow through

(or insulation resistance levels of) the ground insulation of the test object. These testers are used for Switchgear, Cables, Motors, Generators and many other devices.

MODEL		PAD10-25	PAD56
INPUT	Voltage/Current	120 VAC, 1.2 A or 230 VAC, .6 A	120 VAC, .3 A or 230 VAC, .15 A
	Frequency	(Voltage required must be specified) 50/60 Hz	
OUTPUT	AC & DC Testing Capability	10 kV AC and 25 kV DC	5 kV AC and 6 kV DC
	Leakage Current Measurements	.02 to 5,000 microamps DC .1 to 10 milliamps AC	.01 to 5,000 microamps DC .1 to 5 milliamps AC
	Insulation Resistance Measurements	Values up to 150,000 Megohms at test voltages of .5 / 2.5 / 5/ or 15 kV DC	Values up to 1,000,000 Megohms at test voltages of 2.5 or 5 kV DC
	Polarity	Negative output, positive ground	



### DC HIPOT/MEGOHMMETERS

MODEL		PM6	PM15-2
INPUT	Voltage/Current	120 VAC, .3 A or 230 VAC, .15 A	120 VAC, 1 A or 230 VAC, .5 A
	Frequency	(Voltage required must be specified) 50/60 Hz	
OUTPUT	DC Testing Capability	6 kV DC	15 kV DC
	Leakage Current Measurements	.01 to 5,000 microamps DC	.01 to 2,000 microamps DC
	Insulation Resistance Measurements	Values up to 1,000,000 Megohms at test voltages of 2.5 or 5 kV DC	Values up to 3,000,000 Megohms at test voltages of 5 /10 or 15 kV DC
	Polarity	Negative output, positive ground	



*Refer to brochure no. 10204 for additional information, options, and accessories available for the Hipot/Megohmmeters.*



## AC, DC or AC/DC HIPOT/MEGOHMMETERS and INSULATION ANALYZER

### INSULATION ANALYZER

The model PM15-4A is the perfect solution for performing many different tests on a single piece of equipment.

The PM15-4A features automatic operation with micro-processor controls and accomplishes the following tests:

- Megohmmeter up to 15 T $\Omega$
- Hipot up to 15 kV DC
- Dielectric Absorption Ratio Test (DA)
- Polarization Index Test (PI)
- Step-Voltage Test
- Capacitance Test
- Insulation Resistance Test (IR)

#### Model PM15-4A

INPUT	Voltage	100-240 VAC	or Internal Battery Power
	Frequency	50/60 Hz	
RESISTANCE MEASUREMENT RANGES		up to 15 TΩ / 15 kV / 4 mA	
		Selectable in 10 V steps between 100-15000 V Negative Polarity, Positive Ground	
DIGITAL METERING	Voltmeter Range	0-15000 VDC	
	Currentmeter Range	0-4000 μA (auto ranging)	
ACCURACY	Voltage	±0.8% of Reading, ±0.2% of range, > 100 VDC	
	Current	±0.8% of Reading, ±0.2% of range	
	Resistance	±5% of Reading up to 2 TΩ , ±20% of Reading up to 15 TΩ	



*Refer to brochure no. 10305 for additional information, options, and accessories available for the Insulation Analyzer.*





## HIGH CURRENT TEST SETS, HC Series (1000-5000 A)

The HC Series is ideal for testing Thermal, Magnetic, and Solid State Motor Overload Relays, as well as Molded-Case Circuit Breakers and Ground Fault Trip Devices.

The smaller of the HC Series High Current Test Sets are available in 4 different output ranges from 1000 A to 5000 A.

NOTE: The output current indicated in the table is subject to change depending on the impedance of the test circuit.

	MODEL	HC1	HC2	HC3	HC5
INPUT	Voltage/Current	120 VAC, 20 A or 230 VAC, 10 A	120 VAC, 20 A or 230 VAC, 12 A	230 VAC, 25 A	230 VAC, 50 A
	Frequency	50 or 60 Hz (Voltage and Frequency required must be specified)			
OUTPUT	Voltage/Current	0-120 VAC, 5 A 0-24 VAC, 25 A 0-6 VAC, 120 A 0-3 VAC, 240 A	0-70 VAC, 25 A 0-14 VAC, 125 A 0-7 VAC, 250 A 0-3.5 VAC, 500 A	0-15 VAC, 0-200 A 0-7.5 VAC, 0-400 A 0-3.75 VAC, 0-800 A	0-15 VAC, 0-333 A 0-10 VAC, 0-500 A 0-5 VAC, 0-1000 A
	Overload	1000 A	2000 A	3000 A	5000 A
DUTY CYCLES	Duty Cycles	Continuous @ 100%		Continuous @ 100%	
		5 min ON/15 min OFF @ 200%		5 min ON/15 min OFF @ 200%	
		1 min ON/5 min OFF @ 300%		1 min ON/10 min OFF @ 300%	
		30 sec ON/5 min OFF @ 400%		10 sec ON/5 min OFF @ 400%	
		3 sec ON/5 min OFF @ 500%		3 sec ON/5 min OFF @ 500%	
DIGITAL METERING	Currentmeter	3 1/2 digit LCD		4 1/2 digit LCD	
	Ranges	0-1.999/19.99/199.9/1999 A		0-1.9999/19.999/199.99/5000 A	
	Accuracy	±1% Full Scale up to 2 A		±1% Full Scale 0-2 A; 2000-5000 A	
		±0.5% Full Scale 2-2000 A		±0.5% Full Scale 2-2000 A	
	Timer	6 digit LCD, in cycles or seconds		6 digit LCD, in cycles or seconds	
	Range	0-999999 cycles or 0-9999.99 seconds		0-999999 cycles or 0-9999.99 seconds	
	Accuracy	±0.1% of reading ± least significant digit		±0.1% of reading ± least significant digit	



Model HC1  
or HC2

Refer to brochure no. 30403  
for additional information on the HC Series.



Model HC3  
or HC5



## AC/DC KILOVOLTMETERS, KVM Series (100-200 kV)

The KVM Series can be used for calibration and voltage monitoring of high voltage systems. Precise and accurate voltage measurement functions include PEAK/ $\sqrt{2}$ , PEAK, RMS, AVERAGE AC/DC, PEAK DC, RMS RIPPLE.

SPECIFICATIONS	MODEL	KVM100	KVM200
	Input Power	100-240 VAC, 0.4 A, 47-63 Hz	
	Battery Power	9.6 V, Ni-MH, 3200 mA hr	
	Input Charging Jack	+18 VDC, .8 A	
	Resolution	Range	Range
	1 VOLT	0-20 kV	0-20 kV
	10 VOLT	0-100 kV	0-200 kV
	High Voltage Input		
	Low Range	0-20 kV AC/DC	0-20 kV AC/DC
	High Range	0-100 kV AC/DC	0-200 kV AC/DC
	Peak	0-142 kV AC	0-200 kV AC
	Divider Impedance		
	Resistance	380 M Ohms	760 M Ohms
	Capacitance	$\leq 200$ pF	$\leq 100$ pF
	Ratio	10,000:1	10,000:1



Refer to brochure no. 90603 for additional information on the KVM Series.

## VARIABLE VOLTAGE POWER SUPPLY

These units can be used to check contactors, test run small motors and to energize power circuits and are also useful for DC fields voltage drop testing and other applications which require a variable voltage supply. Units are available in AC only or with AC and DC capability.

These power supplies are a necessity for all in-shop and field-service electrical technicians.

	Model VMS-1	Model VMS-2	Model VMS-3
INPUT	110-120 VAC, 10 A, 50/60 Hz	220-240 VAC, 25 A, 50/60 Hz	110-120 VAC, 10 A, 50/60 Hz
OUTPUT	$\approx 0-120$ VAC, 10 A Fine voltage adjustment	$\approx 0-220$ or 240 VAC, 25 A $\approx 0-300$ VDC, 10 A	$\approx 0-120$ VAC, 10 A $\approx 0-150$ VDC, 5 A
DUTY	continuous		



Refer to brochure no. 70301 for additional information on the Variable Voltage Power Supplies.



## GROUND and DISCHARGE STICKS

Ground and discharge sticks are a vital part of high voltage safety practices and have been specifically designed for high voltage testing in the field or laboratory.

Depending upon the application, only a ground stick may be needed or both the discharge stick and ground stick.

### GROUND STICKS

MODEL	AC RATING	DC RATING	CABLE LENGTH	LENGTH (assembled)	LENGTH (transportation)	WEIGHT
GS100-2	100 kVAC	100 kVDC	25' (7 m)	77" (1955 mm)	35" (889 mm)	4 lbs (1.8 kg)
GS160-2	100 kVAC	160 kVDC	25' (7 m)	91" (2311 mm)	46" (1168 mm)	5 lbs (2.2 kg)



GS100-2 Ground Stick

### DISCHARGE STICK

MODEL	DC RATING	MAXIMUM INSTANTANEOUS ENERGY ABSORPTION	RESISTANCE	MAXIMUM DISCHARGE CAPACITANCE AT RATED VOLTAGE	MAXIMUM STEADY STATE POWER DISSIPATION
DS100-2	100 kVDC	40 kJ	100 kOHM	8.6 $\mu$ F @ 100 kVDC	100 W

CABLE LENGTH	LENGTH (assembled)	LENGTH (transportation)	WEIGHT
25' (7 m)	77" (1955 mm)	35" (889 mm)	5 lbs (2.2 kg)



DS100-2 Discharge Stick

### COMBINATION GROUND/DISCHARGE STICK

MODEL	AC/DC GROUND RATING	DC DISCHARGE RATING	MAXIMUM INSTANTANEOUS ENERGY ABSORPTION	RESISTANCE	MAXIMUM DISCHARGE CAPACITANCE AT RATED VOLTAGE	MAXIMUM STEADY STATE POWER DISSIPATION
GSDS-30	30 kV	30 kVDC	10.8 kJ	25 kOHM	24 $\mu$ F @ 30 kVDC	30 W

CABLE LENGTH	LENGTH	WEIGHT
25' (7 m)	39" (991 mm)	3 lbs (1.4 kg)

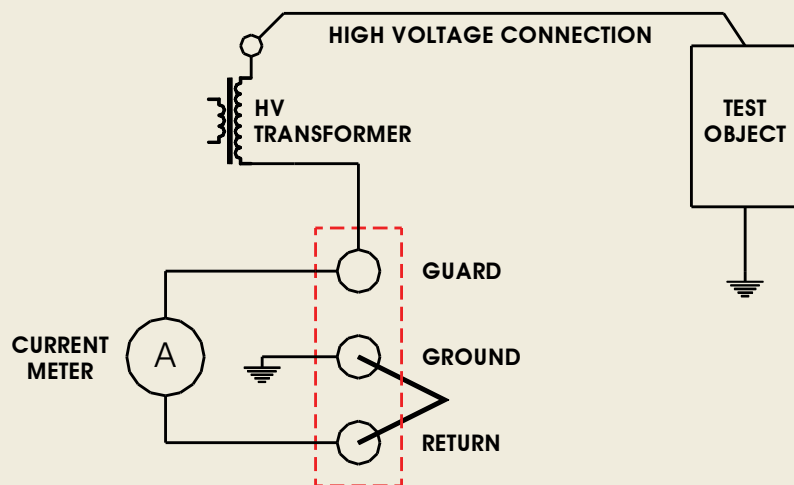


GSDS-30 Ground/Discharge Stick

Refer to brochure no. 40401 for additional information on Ground and Discharge Sticks.

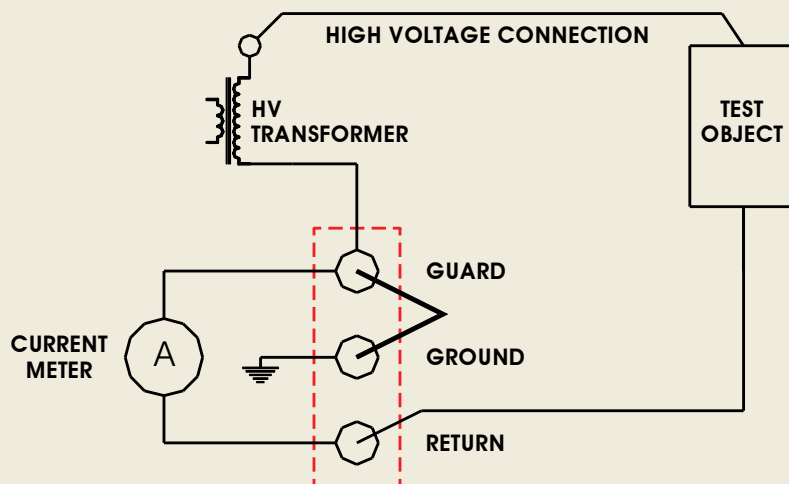


## GUARD & NON GUARD MEASUREMENT of LEAKAGE CURRENT



### STANDARD MODE

In this configuration the current meter measures all leakage current from the high voltage electrode. Measured current includes specimen leakage and stray leakage.



### GUARD MODE

In this configuration only the leakage current from the high voltage electrode through the test specimen to the RTN terminal is measured by the current meter. Any stray leakage current to ground is guarded out (bypasses the meter) and is not measured. Stray leakage current to ground can be from several sources. The high voltage transformer has some capacitive leakage to ground. The high voltage connection might have some leakage due to partial discharge (corona). The test specimen might have some leakage current to ground and your application requires that this "stray" leakage not be measured.

High Voltage • High Current • High Power Test Systems and Components

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www.phenixtech.com

**World Headquarters**  
**Phenix Technologies, Inc.**  
 75 Speicher Drive  
 Accident, MD 21520 USA  
**Ph: +1.301.746.8118**  
**Fx: +1.301.895.5570**  
**Info@phenixtech.com**

#### Branch Offices

**Phenix Systems AG**  
 Riehenstrasse 62A, 4058 Basel, Switzerland  
**Ph: +41.61.383.2770 • Fx: +41.61.383.2771**  
**Info@phenixsystems.com**

**Phenix Asia**  
 Zhong Cheng Rd, Sec 1, No 177, 2F, Taipei 11148 Taiwan  
**Ph: +886.2.2835.9738 • Fx: +886.2.2835.9879**  
**Info@phenixasia.com**

