

# AC Dielectric Test Sets

## High Voltage AC Test Systems

■ **Hipotronics** standard line of AC Test Systems are designed to perform high voltage AC tests on electrical apparatus in accordance with IEC60, IEEE 4 and IEC 270 and other national test standards. A variety of mechanical configurations are available to suit different installation conditions. Some models can be supplied in mobile versions for instances where it is difficult to move the test object to the test area.

Hipotronics AC Dielectric Test Sets are available in a wide range of voltage and power ratings with exceptional reliability, durability and functionality. No matter what your requirement, Hipotronics has an affordably priced, highly reliable test solution to meet your needs.

### 7100-100 AC High Voltage Tank



---

## Features

- ☑ **Continuously adjustable test output voltage** from zero to rated voltage
- ☑ **Easily accessible** meter recalibration access
- ☑ **Adjustable Overload** from 10 to 110% of rated current output
- ☑ **Backup Breaker** overload safety situation
- ☑ **Output Connected** voltmeter and ammeter
- ☑ **Zero start interlock** ensures that the voltage control is at zero before HV can be energized
- ☑ **Rated current** available from zero to rated voltage

---

## Benefits

**Simple to Use** – minimal amount of setup time and intuitive control panel allows simple testing

**Surge-compensated** HV transformer windings for withstanding flashovers at full voltage

**Output Connected Meters** ensures for fast accurate readings

**Surge and Transient Protection** on all meters, transformers, etc.

**Partial Discharge Testing** low PD levels available at full output voltage (PD level needs to be specified when ordering)

---

## Applications

- Rotating Machines
- Switchgear
- Insulating Materials
- Instrument Transformers
- Connectors
- Transformers
- Capacitors
- Bushings
- Sample Cable Lengths
- Transmission Line Hardware
- Arrestors
- HV Components

## Technical Specifications

### 1kVA Power Rating

General	705-1	710-1	715-1	720-1	730-1
Input Voltage	120V, 60Hz –A version 230V, 50Hz –B version				
Output Voltage	0 – 5kV AC	0 – 10kV AC	0 – 15kV AC	0 – 20kV AC	0 – 30kV AC
Output Current	200mA	100mA	67mA	50mA	33mA
Output Connection	Shielded Cable Output			Epoxy Output Bushing	
Metering	4.5" analog meters, ±2% full scale accuracy				
Duty Cycle	1kVA 1 hr. ON, 1 hr. OFF/ Continuous @ 0.6kVA			1kVA 1 hr. ON, 1 hr. OFF/ Continuous N/A	
Control Dimensions	21.25"W x 15"H x 15.625"D (540mm x 381mm x 391mm)				
Control Weights	Net 85lbs (39kg)			Net 81lbs (37kg)	
High Voltage Dimensions	In Controller			12"W x 12"H x 11"D (305mm x 305mm x 279mm)	
High Voltage Weight	In Controller			40lbs (18kg)	45lbs (20kg)
Regulator Dimensions	In Controller				
Regulator Weight	In Controller				

Note: Dimensions and Weights are Approximate

### 2kVA Power Rating

General	705-2	710-2	715-2	730-2	750-2
Input Voltage	120V, 60Hz –A version 230V, 50Hz –B version				
Output Voltage	0 – 5kV AC	0 – 10kV AC	0 – 15kV AC	0 – 30kV AC	0 – 50kV AC
Output Current	400mA	200mA	133mA	67mA	40mA
Output Connection	Shielded Cable Output			Epoxy Output Bushing	
Metering	4.5" analog meters, ±2% full scale accuracy				
Duty Cycle	2kVA 1 hr. ON, 1 hr. OFF/ Continuous @ 1.2kVA			2kVA 1 hr. ON, 1 hr. OFF/Continuous N/A	
Control Dimensions	21.25"W x 15"H x 15.625"D (540mm x 381mm x 391mm)				
Control Weights	Net 95lbs (43kg)			Net 70lbs (32kg)	
High Voltage Dimensions	In Controller			12"W x 12"H x 11"D (305 x 305 x 279mm)	14"W x 14"H x 12"D (356 x 356 x 305mm)
High Voltage Weight	In Controller			Net 60lbs (27kg)	Net 72lbs (33kg)
Regulator Dimensions	In Controller				
Regulator Weight	In Controller				

Note: Dimensions and Weights are Approximate

## Technical Specifications

### 5kVA Power Rating

General	705-5	715-5	730-5	775-5	7100-5
Input Voltage	230V, 50/60Hz Other Inputs Available, Consult Factory				
Output Voltage	0 – 5kV AC	0 – 15kV AC	0 – 30kV AC	0 – 75kV AC	0 – 100kV AC
Output Current	1000mA	333mA	167mA	67mA	50mA
Output Connection	Shielded Output Cable		Epoxy Output Bushing		
Metering	4.5" analog meters, ±2% full scale accuracy				
Duty Cycle	5kVA 1 hr. ON, 1 hr. OFF/ Continuous @ 4kVA				
Control Dimensions	23"W x 51"H x 26"D (584 x 1295 x 660mm)		21.25"W x 20.50"H x 19.625"D (540 x 521 x 498mm)		
Control Weights	Net 230lbs (105kg)		Net 90lbs (41kg)		
High Voltage Dimensions	In Controller		21"Wx36"Hx39"D (533x914x991mm)	21"Wx36"Hx40"D (533x914x1016mm)	21"Wx36"Hx48"D (533x914x1219mm)
High Voltage Weight	In Controller		Net 300lbs (136kg)	Net 570lbs (259kg)	Net 700lbs (318kg)
Regulator Dimensions	In Controller				
Regulator Weight	In Controller				

Note: Dimensions and Weights are Approximate

- Other Output Ratings Available, Consult Factory with Your Requirements

### 10kVA Power Rating

General	705-10	715-10	730-10	775-10	7125-10
Input Voltage	230V, 50/60Hz Other Inputs Available, Consult Factory				
Output Voltage	0 – 5kV AC	0 – 15kV AC	0 – 30kV AC	0 – 75kV AC	0 – 125kV AC
Output Current	2000mA	667mA	333mA	133mA	80mA
Output Connection	Shielded Output Cable		Epoxy Output Bushing		Porcelain Bushing
Metering	4.5" analog meters, ±2% full scale accuracy				
Duty Cycle	10kVA 1 hr. ON, 1 hr. OFF/Continuous @ 7.5kVA				
Control Dimensions	23"W x 51"H x 26"D (584mm x 1295mm x 660mm)				
Control Weights	Net 400lbs (182kg)		Net 220lbs (100kg)		
High Voltage Dimensions	In Controller		21"Wx36"Hx39"D (533x914x991mm)	21"Wx36"Hx40"D (533x914x1016mm)	34"Wx102"Hx34"D (864x2591x864mm)
High Voltage Weight	In Controller		Net 380lbs (173kg)	Net 830lbs (377kg)	Consult factory
Regulator Dimensions	In Controller				
Regulator Weight	In Controller				

Note: Dimensions and Weights are Approximate

- Other Output Ratings Available, Consult Factory with Your Requirements
- Porcelain Condenser Bushings are used on systems rated >100kV with a approximate load rating of 400pF

## Technical Specifications

### 20kVA Power Rating

General	705-20	715-20	730-20	775-20	7150-20
Input Voltage	480V, single phase, 60Hz 380V, single phase, 50Hz				
Output Voltage	0 – 5kV AC	0 – 15kV AC	0 – 30kV AC	0 – 75kV AC	0 – 150kV AC
Output Current	4000mA	1333mA	667mA	267mA	113mA
Output Connection	Shielded Output Cable		Epoxy Output Bushing		Porcelain Bushing
Metering	Digital, ±2% accuracy				
Duty Cycle	20kVA 1 hr. ON, 1 hr. OFF/ Continuous @ 15kVA				
Control Dimensions	30"W x 73"H x 31"D (762 x 1855 x 788mm)		23"W x 51"H x 26"D (584 x 1295 x 660mm)		
Control Weights	Net 695lbs (316kg)		Net 280lbs (127kg)		
High Voltage Dimensions	In Controller		21"Wx36"Hx39"D (533x914x991mm)	21"Wx36"Hx40"D (533x914x1016mm)	34"Wx102"Hx34"D (864x2591x864mm)
High Voltage Weight	In Controller		Net 930lbs (423kg)	Net 950lbs (432kg)	Net 2030lbs (923kg)
Regulator Dimensions	In Controller				
Regulator Weight	In Controller				

Note: Dimensions and Weights are Approximate

- Other Output Ratings Available. Consult Factory with Your Requirements
- Porcelain Condenser Bushings are used on systems rated >100kV with an approximate load rating of 400pF

### 40kVA Power Rating

General	705-40	720-40	750-40	7100-40	7150-40
Input Voltage	480V, single phase, 60Hz 380V, single phase, 50Hz				
Output Voltage	0 – 5kV AC	0 – 20kV AC	0 – 50kV AC	0 – 100kV AC	0 – 150kV AC
Output Current	8000mA	2000mA	800mA	400mA	266mA
Output Connection	Epoxy Output Bushing				Porcelain Bushing
Metering	Digital, ±2% accuracy				
Duty Cycle	40kVA 1 hr. ON, 1 hr. OFF/Continuous @ 30kVA				
Control Dimensions	30"W x 73"H x 31"D (762 x 1855 x 788mm)				
Control Weights	Net 675lbs, (307kg)				
High Voltage Dimensions	21"Wx36"Hx42"D (533x914x1067mm)		21"Wx36"Hx51"D (533x914x1295mm)		38"Wx102"Hx36"D (965x2591x914mm)
High Voltage Weight	Net 950lbs (432kg)	Net 950lbs (432kg)	Net 1600lbs (727kg)	Net 2070lbs (941kg)	Net 2650lbs (1205kg)
Regulator Dimensions	In Controller				
Regulator Weight	In Controller				

Note: Dimensions and Weights are Approximate

- Other Output Ratings Available. Consult Factory with Your Requirements
- Porcelain Condenser Bushings are used on systems rated >100kV with an approximate load rating of 400pF

## Technical Specifications

### 60kVA Power Rating

General	705-60	720-60	760-60	7100-60	7150-60
Input Voltage	480V, single phase, 60Hz 380V, single phase, 50Hz				
Output Voltage	0 – 5kV AC	0 – 20kV AC	0 – 60kV AC	0 – 100kV AC	0 – 150kV AC
Output Current	12000mA	3000mA	1000mA	600mA	400mA
Output Connection	Epoxy Output Bushing				Porcelain Bushing
Metering	Digital, ±2% accuracy				
Duty Cycle	60kVA 1 hr. ON, 1 hr. OFF/ Continuous @ 50kVA				
Control Dimensions	30"W x 73"H x 31"D (762 x 1855 x 788mm)				
Control Weights	Net 820lbs (373kg)				
High Voltage Dimensions	29"Wx37"Hx38"D 737x940x965mm	29"Wx37"Hx40"D 737x940x1016mm	30"Wx39"Hx44"D 762x991x1118mm	32"Wx41"Hx51"D 813x1041x1295mm	40"Wx106"Hx40"D 1016x2692x1016mm
High Voltage Weight	Net 1920lbs (873 kg)	Net 1920lbs (873 kg)	Net 2330lbs (1059 kg)	Net 2540lbs (1155 kg)	Net 3200lbs (1455 kg)
Regulator Dimensions	In Controller				
Regulator Weight	In Controller				

Note: Dimensions and Weights are Approximate

- Other Output Ratings Available, Consult Factory with Your Requirements
- Porcelain Condenser Bushings are used on systems rated >100kV with a approximate load rating of 400pF

### 100kVA Power Rating

General	720-100	750-100	7100-100	7150-100	7250-100
Input Voltage	480V, single phase, 60Hz 380V, single phase, 50Hz				
Output Voltage	0 – 5kV AC	0 – 20kV AC	0 – 50kV AC	0 – 100kV AC	0 – 150kV AC
Output Current	5000mA	2000mA	1000mA	666mA	400mA
Output Connection	Epoxy Output Bushing			Porcelain Bushing	
Metering	Digital, ±2% accuracy				
Duty Cycle	100kVA 1 hr. ON, 1 hr. OFF/Continuous @ 75kVA				
Control Dimensions	22"W x 43"H x 44"D (Deluxe slope front w/ writing desk) (559 x 1092 x 1118mm)				
Control Weights	Net 210lbs (95 kg)				
High Voltage Dimensions	30"Wx39"Hx46"D 762x991x1168mm	32"Wx39"Hx46"D 813x991x1168mm	34"Wx42"Hx53D 864x1067x1346mm	42"Wx112"Hx42"D 1067x2845x1067mm	Consult factory
High Voltage Weight	Net 2600lbs (1182 kg)	Net 2800lbs (1273 kg)	Net 3100lbs (1409 kg)	Net 3900lbs (1773 kg)	Consult factory
Regulator Dimensions	30"W x 73"H x 48"D (762 x 1855 x 1219mm)				
Regulator Weight	Net 990lbs (450 kg)				

Note: Dimensions and Weights are Approximate

- Other Output Ratings Available, Consult Factory with Your Requirements
- Porcelain Condenser Bushings are used on systems rated >100kV with a approximate load of 400pF

## Technical Specifications

### 150kVA Power Rating

General	730-150	750-150	7100-150	7200-150	7300-150
Input Voltage	480V, single phase, 60Hz 380V, single phase, 50Hz				
Output Voltage	0 – 30kV AC	0 – 50kV AC	0 – 100kV AC	0 – 200kV AC	0 – 300kV AC
Output Current	5000mA	3000mA	1500mA	750mA	500mA
Output Connection	Epoxy Output Bushing			Porcelain Bushing	
Metering	Digital, ±2% accuracy				
Duty Cycle	150kVA 1 hr. ON, 1 hr. OFF/ Continuous @ 100kVA				
Control Dimensions	22"W x 43"H x 44"D (Deluxe slope front w/ writing desk) (762 x 1855 x 788mm)				
Control Weights	Net 210lbs (95kg)				
High Voltage Dimensions	32"Wx44"Hx49"D 813x1118x1245mm	32"Wx44"Hx49"D 813x1118x1245mm	34"Wx44"Hx57"D 864x1118x1448mm	Consult factory	Consult factory
High Voltage Weight	Net 3250lbs (1477 kg)	Net 3250lbs (1477 kg)	Net 2330lbs (1059 kg)	Consult factory	Consult factory
Regulator Dimensions	30"W x 73"H x 48"D (762 x 1855 x 1219mm)				
Regulator Weight	Net 1550lbs (705 kg)				

Note: Dimensions and Weights are Approximate

- Other Output Ratings Available. Consult Factory with Your Requirements
- Porcelain Condenser Bushings are used on systems rated >100kV with an approximate load of 400pF

### 200kVA Power Rating

General	750-200	7100-200	7200-200	7300-200	7400-200
Input Voltage	480V, single phase, 60Hz 380V, single phase, 50Hz				
Output Voltage	0 – 50kV AC	0 – 100kV AC	0 – 200kV AC	0 – 300kV AC	0 – 400kV AC
Output Current	4000mA	2000mA	1000mA	666mA	500mA
Output Connection	Epoxy Output Bushing			Porcelain Bushing	
Metering	Digital, ±2% accuracy				
Duty Cycle	200kVA 1 hr. ON, 1 hr. OFF/Continuous @ 150kVA				
Control Dimensions	22"W x 43"H x 44"D (Deluxe slope front w/writing desk) (559 x 1092 x 1118mm)				
Control Weights	Net 210lbs (95 kg)				
High Voltage Dimensions	34"Wx46"Hx49"D 864x1168x1245mm	36"Wx46"Hx55"D 914x1168x1397mm	34"Wx42"Hx53D 864x1067x1346 mm	42"Wx112"Hx42"D 1067x2845x1067mm	Consult factory
High Voltage Weight	Net 3700lbs (1682 kg)	Net 4170lbs (1895 kg)	Consult factory		
Regulator Dimensions	30"W x 73"H x 48"D (762 x 1855 x 1219mm)				
Regulator Weight	Net2100lbs (955 kg)				

Note: Dimensions and Weights are Approximate

- Other Output Ratings Available. Consult Factory with Your Requirements
- Porcelain Condenser Bushings are used on systems rated >100kV with an approximate load of 400pF

## Technical Specifications

### 250kVA, 300kVA, 400kVA and 500kVA Power Ratings

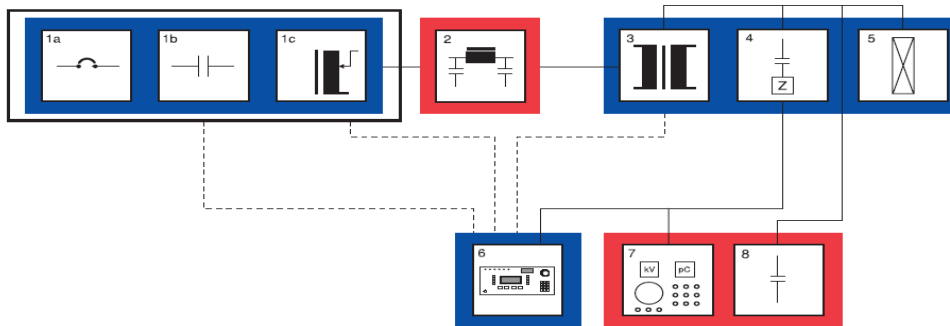
General	7250-250	730-300	7300-300	7400-400	7500-500
Input Voltage	480V, single phase, 60Hz 380V, single phase, 50Hz				
Output Voltage	0 – 250kV AC	0 – 30kV AC	0 – 300kV AC	0 – 400kV AC	0 – 500kV AC
Output Current	1000mA	10000mA	1000mA	1000mA	1000mA
Output Connection	Porcelain Bushing				
Metering	Digital, ±2% accuracy				
Duty Cycle	Maximum KVA 1 hr. ON, 1 hr. OFF, 8 times per day, Continuous @ 75% of rated KVA				
Control Dimensions	22"W x 43"H x 44"D (Deluxe slope front w/writing desk) (559 x 1092 x 1118mm)				
Control Weights	Net 210lbs (95 kg)				
High Voltage Dimensions	Consult factory				
High Voltage Weight	Consult factory				
Regulator Dimensions	30"W x 73"H x 48"D (762 x 1855 x 1219mm)				Consult factory
Regulator Weight	Net 2700lbs (1225 kg)	Net 3150lbs (1430 kg)	Net 3150lbs (1430 kg)	Net 3700lbs (1680 kg)	Consult factory

Note: Dimensions and Weights are Approximate

- Other Output Ratings Available, Consult Factory with Your Requirements
- Porcelain Condenser Bushings are used on systems rated >100kV with a approximate load of 400pF

### Typical Test System Components:

#### One-Line Diagram for AC Test System Setup



- |                           |                             |
|---------------------------|-----------------------------|
| 1a. Input Circuit Breaker | 4. Coupling Capacitor (PSF) |
| 1b. HV ON/OFF Contactor   | 5. Test Object              |
| 1c. Voltage Regulator     | 6. System Controls          |
| 2. LV Filter              | 7. PD Detector              |
| 3. HV Transformer         | 8. Capacitor                |

Note: block 2,4, and 7 are optional for partial discharge (PD) testing.



## Selecting an AC Test Set

In order to properly size an AC Test Set, it is necessary to have the following information:

- 1. Maximum test voltage required** The maximum test voltage is determined by the relevant standard that equipment is being built to plus any additional user-defined over sizing to take into account changes to test standards, or special end-user requirements.
- 2. The power rating** to determine the power rating, the capacitance, resistance or inductance of the load must be known. High voltage test objects are usually capacitive in nature.
- 3. PD requirements** Partial discharge testing is usually performed at lower levels than AC withstand levels. If PD testing is required it is necessary to know the PD sensitivity level for the test and the test voltage. Specifying too high a PD test voltage or unnecessarily low PD free rating for the system inflates the cost of a test system.
- 4. Environment** Most testing is done indoors in reasonable environments. If the HV test transformer is to be located outdoor or in a harsh environment, bushing size and tank design will change.

## Current Versus Capacitive Load

If the load is predominantly capacitive, the test current required can be calculated by using the following formula:

$$A = 2\pi fCV$$

Where:

- **A** = Test current in Amps
- **f** = Test frequency in Hertz
- **C** = Total test load capacitance in Farads
- **V** = Test voltage in Volts

Once these four things are known, the test voltage and load current can be used to determine the rating of the system. We suggest that you consider rating your system 10 to 20% higher in voltage and up to 50% higher in current to accommodate future, unanticipated test requirement changes.

## Control Options

### CAC-PLC

Auto, Manual-Programmable Logic Controller System w/ Advanced Operating Software



### OT 248

Windows XP Based AC System Control Terminal



### OT 257 AC

Auto, Manual-Programmable Logic Controller Windows XP Based AC Control System w/ Advanced Operating Software



Note: OT 248 and OT 257 options are stand alone controllers. The CAC-PLC is rack mounted into a control cabinet or control/regulator cabinet, depending on size of the regulator.

European Contact  
**Haefely Test AG**  
 Lehenmattstrasse 353  
 CH-4028 Basel  
 Switzerland  
 ☎ + 41 61 373 4111  
 📠 + 41 61 373 4912  
 ✉ [sales@haefely.com](mailto:sales@haefely.com)

Locate your local  
 sales representative at  
[www.high-voltage-hubbell.com](http://www.high-voltage-hubbell.com)



USA Contact  
**Hipotronics Inc.**  
 1650 Route 22  
 PO Box 414  
 Brewster, NY 10509 USA  
 ☎ + 1 845 279 8091  
 📠 + 1 845 279 2467  
 ✉ [sales@hipotronics.com](mailto:sales@hipotronics.com)