700 Series AC Dielectric Test Sets

High Voltage AC Test Systems

■ HAEFELY HIPOTRONICS' standard line of AC Test Systems is 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 when 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.

Standard System Controller: TS-PLC-AC
Touch Screen Programmable Logic Controller

FEATURES

- ☑ **Continuously adjustable test output voltage**
- ☑ **Designed** to operate from 10% to 100% of the maximum rated output voltage
- ☑ **Easily accessible** meter recalibration access
- ☑ **New software** for Touch Screen PLC Controller
- ☑ **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 a minimum before HV can be energized
- ☑ **Rated current** available from zero to rated voltage
- ☑ **Up to 10 dwell steps**
- ☑ **Optional data acquisition software**

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

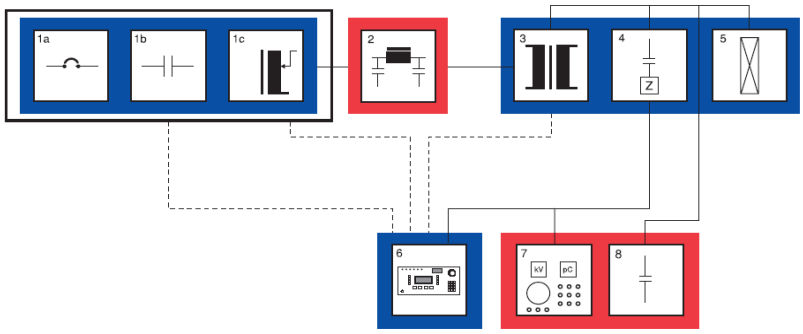
Surge and Transient Protection on all meters, transformers, etc.

Partial Discharge Testing - low PD levels available at full output voltage (PD level needs to be specified when ordering and may require additional components)

APPLICATIONS

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

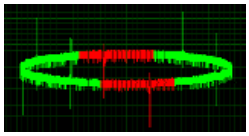
One-Line Diagram for AC Test System Setup (with PD Option)



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

STANDARD OPTIONS

- OT248 Windows XP Based AC System Controller
- Partial Discharge Free AC Sources
- Remote PLC controller*
- Data acquisition software



**Note: Standard AC dielectric systems have the new Touch Screen PLC controller mounted into the regulator cabinet. For a remote TS-PLC, an optional line item must be quoted.*

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:

$$A = 2\pi fCV$$

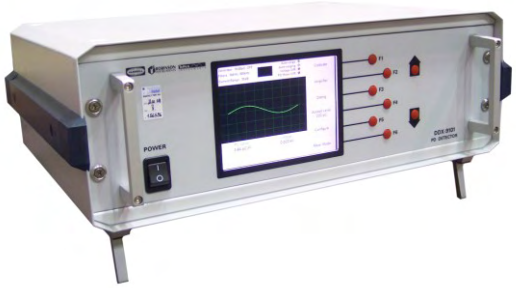
Where:

- **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.

ACCESSORIES

2820a & 2840 C / tanδ bridges



DDX Series Partial Discharge Detectors

TECHNICAL SPECIFICATIONS

The following tables outline the most common models from our 700 Series AC Dielectric Testing Line. As noted, other output ratings are available; consult factory with your requirements.

1kVA Power Rating

General	705-1	710-1	715-1	720-1	730-1
Input Voltage	120V, 60Hz –A version 230V, 50Hz –B version				
Max Output Voltage	5kV AC	10kV AC	15kV AC	20kV AC	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 6 times per day			1kVA 1 hr. ON, 1 hr. Off 6 times per day	
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				
Max Output Voltage	5kV AC	10kV AC	15kV AC	30kV AC	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	1kVA 1 hr. ON, 1 hr. OFF 6 times per day			1kVA 1 hr. ON, 1 hr. Off 6 times per day	
Control / Regulator Dimensions	21.25″W x 15″H x 15.625″D (540mm x 381mm x 391mm)				
Control / Regulator Weights	Net 95lbs (43kg)			Net 70lbs (32kg)	
High Voltage Dimensions	In Control / Regulator Section			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 Control / Regulator Section			Net 60lbs (27kg)	Net 72lbs (33kg)

Note:

- Dimensions and weights are approximate.

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kVA Power Rating

General	705-5	715-5	730-5	775-5	7100-5
Input Voltage	230V, 50/60Hz Other Inputs Available, Consult Factory				
Max Output Voltage	5kV AC	15kV AC	30kV AC	75kV AC	100kV AC
Output Current	1000mA	333mA	167mA	67mA	50mA
Output Connection	Shielded Output Cable		Epoxy Output Bushing		
Metering	Digital, 1% of FS, range 10-100% of system output				
Duty Cycle	1 hr. ON, 1 hr. OFF / Continuous @ 4kVA				
Control/Regulator 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/Regulator Weights	Net 550bs (250kg)		Net 150lbs (68kg)		
High Voltage Dimensions	In Control / Regulator Section		21″Wx23″Hx36″D (533x914x991mm)	21″Wx36″Hx40″D (533x914x1016mm)	21″Wx36″Hx48″D (533x914x1219mm)
High Voltage Weight	In Control / Regulator Section		Net 450lbs (204kg)	Net 850lbs (386kg)	Net 1100lbs (499kg)

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	7100-10
Input Voltage	230V, 50/60Hz Other Inputs Available, Consult Factory				
Max Output Voltage	5kV AC	15kV AC	30kV AC	75kV AC	100kV AC
Output Current	2000mA	667mA	333mA	133mA	100mA
Output Connection	Shielded Output Cable		Epoxy Output Bushing		
Metering	Digital, 1% of FS, range 10-100% of system output				
Duty Cycle	10kVA 1 hr. ON, 1 hr. OFF/Continuous @ 7.5kVA				
Control / Regulator Dimensions	23″W x 51″H x 26″D (584mm x 1295mm x 660mm)				
Control / Regulator Weights	Net 600lbs (272kg)		Net 550lbs (250kg)		
High Voltage Dimensions	In Control / Regulator Section		21″Wx23″Hx36″D (533x914x991mm)	21″Wx36″Hx40″D (533x914x1016mm)	21″Wx36″Hx48″D (533x914x1219mm)
High Voltage Weight	In Control / Regulator Section		Net 550lbs (250kg)	Net 1000lbs (454kg)	Net 1100lbs (499kg)

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.

20kVA Power Rating

General	705-20	715-20	730-20	775-20	7100-20
Input Voltage	480V, single phase, 60Hz 380V, single phase, 50Hz				
Max Output Voltage	5kV AC	15kV AC	30kV AC	75kV AC	100kV AC
Output Current	4000mA	1333mA	667mA	267mA	200mA
Output Connection	Shielded Output Cable		Epoxy Output Bushing		
Metering	Digital, 1% of FS, range 10-100% of system output				
Duty Cycle	20kVA 1 hr. ON, 1 hr. OFF/ Continuous @ 15kVA				
Control / Regulator Dimensions	25″W x 73″H x 25″D (635 x 1855 x 635mm)				
Control / Regulator Weights	Net 750lbs (340kg)		Net 600lbs (272kg)		
High Voltage Dimensions	In Control / Regulator Section		21″Wx36″Hx39″D (533x914x991mm)	21″Wx36″Hx40″D (533x914x1016mm)	21″Wx36″Hx48″D (533x914x1219mm)
High Voltage Weight	In Control / Regulator Section		Net 900lbs (408kg)	Net 950lbs (432kg)	1300lbs (590kg)

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	710-40	715-40	720-40	750-40	7100-40
Input Voltage	480V, single phase, 60Hz 380V, single phase, 50Hz					
Max Output Voltage	5kV AC	10kV AC	15kVA AC	20kV AC	50kV AC	100kV AC
Output Current	8000mA	4000mA	2666mA	2000mA	800mA	400mA
Output Connection	Shielded Output Cable			Epoxy Output Bushing		
Metering	Digital, 1% of FS, range 10-100% of system output					
Duty Cycle	40kVA 1 hr. ON, 1 hr. OFF/Continuous @ 30kVA					
Control / Regulator Dimensions	30″W x 73″H x 42″D (762 x 1855 x 1067mm)			25″W x 73″H x 30″D (635 x 1855 x 672mm)		
Control / Regulator Weights	Net 1300lbs, (590kg)			800lbs (363kg)		
High Voltage Dimensions	In Control / Regulator Section			21″Wx36″Hx39″D (533x914x991mm)	21″Wx36″Hx39″D (533x914x991mm)	30″Wx40″Hx48″D (533x914x991mm)
High Voltage Weight	In Control / Regulator Section			Net 1200lbs (544kg)	Net 1700lbs (771kg)	Net 2070lbs (941kg)

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.

60kVA Power Rating

General	705-60	720-60	760-60	7100-60
Input Voltage	480V, single phase, 60Hz 380V, single phase, 50Hz			
Max Output Voltage	5kV AC	20kV AC	60kV AC	100kV AC
Output Current	12000mA	3000mA	1000mA	600mA
Output Connection	Shielded Output Cable	Epoxy Output Bushing		
Metering	Digital, 1% of FS, range 10-100% of system output			
Duty Cycle	60kVA 1 hr. ON, 1 hr. OFF/ Continuous @ 50kVA			
Control / Regulator Dimensions	30″W x 73″H x 42″D (762 x 1855 x 1067mm)	25″W x 73″H x 30″D (635 x 1855 x 672mm)		
Control / Regulator Weights	Net 1500lbs (680kg)	900lbs (408kg)		
High Voltage Dimensions	In Control / Regulator Section	29″Wx37″Hx40″D 737x940x1016mm	34″Wx42″Hx49″D 864x1067x1245mm	34″Wx48″Hx55″D 864x1220x1397mm
High Voltage Weight	In Control / Regulator Section	Net 1600lbs (726 kg)	Net 2000lbs (907 kg)	Net 2540lbs (1155 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 rating of 400pF

100kVA Power Rating

General	720-100	750-100	775-100	7100-100
Input Voltage	480V, single phase, 60Hz 380V, single phase, 50Hz			
Max Output Voltage	20kV AC	50kV AC	75kV AC	100kV AC
Output Current	5000mA	2000mA	1333mA	1000mA
Output Connection	Epoxy Output Bushing			
Metering	Digital, 1% of FS, range 10-100% of system output			
Duty Cycle	100kVA 1 hr. ON, 1 hr. OFF/Continuous @ 75kVA			
Control / Regulator Dimensions	30″W x 73″H x 42″D (762 x 1855 x 1067mm)			
Control / Regulator Weights	Net 1400lbs (635 kg)			
High Voltage Dimensions	30″Wx39″Hx40″D 762x991x1016mm	30″Wx39″Hx40″D 762x991x1016mm	34″Wx45″Hx58″D 864x1143x1473mm	34″Wx42″Hx53D 864x1067x1346mm
High Voltage Weight	Net 2600lbs (1182 kg)	Net 2800lbs (1273 kg)	Net 2900lbs (1315 kg)	Net 3100lbs (1409 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

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