

# 50/100 kV AC Dielectric Test Sets



- **Permits ANSI A92.2 for tests on aerial bucket trucks**
- **50-kV tap with doubled output current for ANSI A92.2 bucket liner testing**
- **Output current meter, with guard circuit, for ANSI A92.2 leakage current measurements**

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## DESCRIPTION

The 50/100 kV AC Dielectric Test Sets are ac high-voltage sources for testing electrical insulation. The standard system includes a control/instrument cabinet, a high-voltage transformer assembly and all necessary cables including ground and input power.

The high-voltage transformer is installed in an oil-filled, heavy-duty, fiberglass tank permanently mounted on a cart with casters. Convenient points are provided on the tank top (0 to 100 kV) and side (0 to 50 kV) for connection to the high-voltage output.

A voltage divider is permanently connected to the output terminals and installed inside the high-voltage tank for mechanical protection. A wing nut is provided on the cart for the ground connections. Storage space is provided on the cart for the control cabinet, instruction manual and cables.

## APPLICATIONS

These test sets consist of general-purpose ac high-voltage sources suitable for dielectric withstand (high-potential) testing of all types of electrical insulation. They also permit guarded leakage current measurements and are suitable for use with capacitance and dissipation factor bridge systems to measure insulation power factor.

The 681100 Series test sets are recommended for testing capacitive loads that fall under the capability curve shown on the graph in the Specifications section. Most electrical insulation systems are principally capacitive. Operation from 50-Hertz input supply permits a 20% increase in maximum load capability as shown in the curve.

The 686100 Series test sets are recommended for special applications involving resistive loads, or small capacitive loads with extended test durations. Consultation with Technical Sales is recommended in these cases.

## FEATURES AND BENEFITS

- Suitable for testing aerial bucket trucks according to ANSI A92.2
- 50-kV tap with doubled output current permits testing bucket liners according to ANSI A92.2
- Built-in, four-range output current meter with guard circuit
- Four-range output kilovoltmeter has accuracy unaffected by sample loading
- High-speed overvoltage and overcurrent trip-out holds test voltage reading at instant of trip-out
- Output signals are provided for both voltage and current meters, on all ranges, to permit external recording of test data
- Zero-start safety interlock system with provision for external safety interlocks and warning lights
- 15-ft (4.6-m) inter-unit cables, separate control and high-voltage units for safety during tests

**Instrumentation and Control Unit (Optional)**

This control unit replaces the standard controls with a digital kilovoltmeter and milliammeter, overvoltage and overcurrent trips, digital timer, motorized ac voltage control, hold circuit, and ramp and dwell controls.

**This unit features:**

- Single-range, digital output kilovoltmeter and milliammeter for improved accuracy and reading convenience.
- Accuracy:  $\pm 1\%$  of full scale, +LSD.
- Peak-sensing kilovoltmeter circuit, calibrated in rms for a pure sine wave, overcomes metering errors caused by power-line waveform distortion.
- Adjustable overcurrent and overvoltage protection, with trip levels variable from 10 to 110%, provides high-speed trip-out of test voltage if either limit is exceeded due to high-voltage breakdown or other cause.
- Digital test timer, a standard feature at all ratings, displays both preset test period and elapsed test time from 0 to 99.99 minutes. Automatically controls motorized voltage regulator and permits more uniform test cycles.
- Hold circuit freezes indication of test voltage and time when a trip-out occurs. This relieves the operator of continuously monitoring test status.
- Ramp and dwell control supplied with motorized voltage regulator systems permits test voltage to be ramped from zero to a preset voltage stop level. Dwell time at the voltage stop level is controlled by the test timer. At the end of the dwell time, voltage is automatically ramped down to zero, the TEST COMPLETE indicator lights, and the high voltage is de-energized. This capability ensures a uniform test cycle and frees the operator to perform other functions.
- EMERGENCY HV OFF button provides a convenient "panic" button to manually shut down the high voltage. Provision for external test-area interlocks accommodates customer-furnished, safety-interlocked test areas and warning lights.
- Output: Analog, 0 to 5 Vdc for graphic recording.

**SPECIFICATIONS****Input (681100 Series and 686100 Series)**

**Nominal:** 240 V, 60 Hz, 1 $\phi$  OR 240 V, 50 Hz, 1 $\phi$

**Full-Rated Output Limits:** 216 to 264 V

**Current:** 17 A max. at 240 V

**Frequency:** 60 Hz standard, 50 Hz available by specification

**Output****681100 Series**

0 to 50 kV, 150 mA, 7.5 kVA

0 to 100 kV, 75 mA, 7.5 kVA

**686100 Series**

0 to 50 kV, 80 mA, 4 kVA

0 to 100 kV, 40 mA, 4 kVA

**Duty Cycle (worst case):** 15 min on, 45 min off

**Sample Load Range:** See curve in illustration (applies to 681100 Series only).

**Instrumentation**

**Meters:** Analog linear 4.5-in. (114-mm) scale

**Kilovoltmeter:** 0 to 10/20/50/100 kV

**Peak Responding, RMS Calibrated:**  $\pm 2\%$  full scale on 100-kV range,  $\pm 3\%$  full scale on 10-, 20-, 50-kV ranges

**Output for External Recording:** 0 to 5 Vdc

**Milliammeter**

0 to 1.5/15/75/150 mA

$\pm 2\%$  full scale on 150-mA range,  $\pm 3\%$  full scale on 1.5-, 15-, 75-mA ranges

Average responding, rms calibrated, provision for guarded use

**Output for External Recording:** 0 to 5 Vdc

**Cables Provided**

**Input Power Cable:** 240 V, 10 ft (3 m)

**Inter-unit Power Cable:** 15 ft (4.6 m)

**Inter-unit Signal Cable:** 15 ft (4.6 m)

All cables provided with suitable connectors at both ends

**Environmental**

**Operating Temperature Range:**  $-4$  to  $+104^{\circ}$  F ( $-20$  to  $+40^{\circ}$  C)

**Storage Temperature Range:**  $-22$  to  $+131^{\circ}$  F ( $-30$  to  $+55^{\circ}$  C)

**Humidity:** 5 to 95% RH

**Dimensions****High-Voltage Transformer Cart Assembly**

40 H x 19 W x 38 D in.

1016 H x 483 W x 965 D mm

**Control/Instrument Cabinet Assembly**

15 H x 20 W x 22 D in.

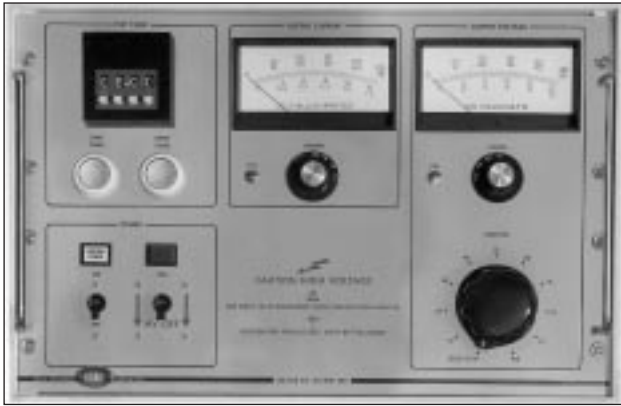
381 H x 508 W x 559 D mm

**Weight**

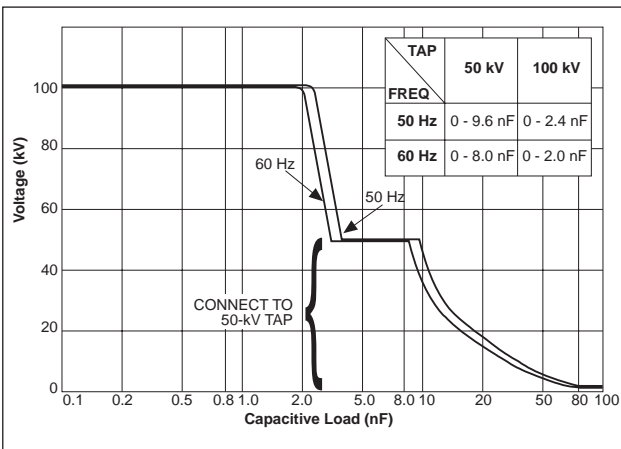
**High-Voltage Transformer Cart Assembly:** 440 lb (200 kg)

**Control/ Instrument Cabinet Assembly:** 60 lb (28 kg)

**Cables:** 17 lb (7.7 kg)



Typical control panel of the standard 50/100 kV ac test set showing test timer option at top, left



Capacitive load range for the 681100 Series test sets as a function of output voltage

**OPTIONAL ACCESSORIES**

**Digital Electronic Test Timer**

Allows timing of a high-voltage test over a preset period. Sounds an audible alarm at the end of the preset period. If test sample fails, timer holds time indications at instant of trip-out until reset. Digital display indicates both preset test period and elapsed time.

**Time Set Range:** 0 to 99.99 min

**Time Set Resolution:** 0.01 min

**Controls Provided:** Start Timer, Reset Timer, Time Set

**External Safety Interlock Switch and Cable Assembly**

A foot switch with 10-ft (3-m) cable connects to the external interlock connector on the control cabinet. It permits lockout of the high voltage by a second person separated from the operator. Any time the switch is opened, the high voltage is immediately de-energized. High voltage cannot be established again until all external interlocks, plus the zero-start interlock, are closed.

**Warning Beacon**

A rotating red warning beacon mounts on a tripod with a 50-ft (15-m) supply cable that connects to the beacon receptacle on the control console. It is illuminated only when the high voltage is on.

**686100 Series Special-Purpose Model**

This model is recommended for special applications requiring resistive loads or small capacitive loads with extended test duration. Consultation with Technical Sales is recommended in these cases.

**Cable Extension Assemblies**

Special length cable extension assemblies with mating connectors at both ends are available. Specify the cables and lengths needed.



Optional control panel

## ORDERING INFORMATION

Item	Cat. No.
<b>60-Hz Models</b>	
Standard 50% resonant unit with 240-V ac input, 60-Hz operation, analog meters	681100-360W
Standard 50% resonant unit with 240-V ac input, 60-Hz operation, analog meters, digital test timer	681100-36AW
Standard 50% resonant unit with 240-Vac input, 60-Hz operation, digital ac kilovoltmeter, digital milliammeter, overvoltage and overcurrent protection with adjustable trip levels, motorized ac voltage control, ramp and dwell control, digital test timer	681100-008
Standard nonresonant unit with 240-Vac input, 60-Hz operation, analog meters	686100-360W
Standard nonresonant unit with 240-Vac input, 60-Hz operation, analog meters, digital test timer	686100-36AW
Standard nonresonant unit with 240-Vac input, 60-Hz operation, digital ac kilovoltmeter, digital milliammeter, overvoltage and overcurrent protection with adjustable trip levels, motorized ac voltage control, ramp and dwell control, digital test timer	686100-008
<b>50-Hz Models</b>	
Standard 50% resonant unit with 240-Vac input, 50-Hz operation, analog meters	681100-350W
Standard 50% resonant unit with 240-Vac input, 50-Hz operation, analog meters, digital test timer	681100-35AW
Standard 50% resonant unit with 240-Vac input, 50-Hz operation, digital ac kilovoltmeter, digital milliammeter, overvoltage and overcurrent protection with adjustable trip levels, motorized ac voltage control, ramp and dwell control, digital test timer	681100-009
Standard nonresonant unit with 240-Vac input, 50-Hz operation, analog meters	686100-350W
Standard nonresonant unit with 240-Vac input, 50-Hz operation, analog meters, digital test timer	686100-35AW
Standard nonresonant unit with 240-Vac input, 50-Hz operation, digital ac kilovoltmeter, digital milliammeter, overvoltage and overcurrent protection with adjustable trip levels, motorized ac voltage control, ramp and dwell control, digital test timer	686100-009
<b>Included Accessories</b>	
Control console cable, 10 ft (3 m)	
Measurement cable, 15 ft (4.6 m)	
Transformer primary power cable, 15 ft (4.6 m)	
Ground cable, 25 ft (7.6 m)	
<b>Optional Accessories</b>	
Digital electronic timer	22603
External safety interlock switch	10229-1
Warning beacon	13470