

Capacitance Ratio High Voltage Standard Capacitors

What are the performance specifications for high voltage capacitors?

Performance specifications for high voltage capacitors include capacitance range and capacitance tolerance, a percentage of total capacitance. Working DC voltage, insulation resistance, dissipation factor, and temperature coefficient are additional considerations.

What is a high-voltage capacitor?

Calibrations at frequencies from 50-400 Hz are available over a more limited voltage range. The service for high-voltage capacitors provides measurements of capacitance and dissipation factor at applied voltages ranging from 100 V to 170 kV at 60 Hz depending on the nominal capacitance.

How do you measure the ratio of two capacitors?

The ratio of the two capacitors in eq (2) can be measured using the circuit of figure 2. The measurement of a voltage transformer or a capacitor both involve the measurement of the ratio of two standard capacitors. The measurement of capacitors will be discussed below followed by a discussion on the measurement of voltage transformers.

What is a good dissipation factor for a capacitor?

The best low-voltage standard capacitors with 10 pF and 100 pF have a quartz or nitrogen insulation whose dissipation factors are in the range of $(2-4) \times 10^{-6}$. The Schering and Vieweg compressed-gas capacitors (see Sect. 11.5), which are used as CN at high voltages of up to 1.5 MV, have about twice the dissipation factor.

How accurate are capacitance and dissipation factor measurements?

The accuracy of capacitance and dissipation factor measurements depends on the quality of both the standard capacitor CN and the measuring bridge. The best low-voltage standard capacitors with 10 pF and 100 pF have a quartz or nitrogen insulation whose dissipation factors are in the range of $(2-4) \times 10^{-6}$.

What is a high-voltage bridge for capacitance and dissipation factor measurements?

The development of very precise current comparators with high permeability core and electromagnetic shielding has resulted in a new type of high-voltage bridge for capacitance and dissipation factor measurements.

A commercial capacitance bridge is used with two standard capacitors to determine the ratio error and phase displacement of a 10 kV and 30 kV reference voltage transformers. The bridge is ...

services: high-voltage capacitors and voltage transformers. At NIST these two services are performed using the same equipment. In fact, in order to calibrate a voltage transformer, one of ...

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In this paper, high on/off capacitance ratio radio frequency micro-electro-mechanical-systems (RF MEMS) switches are designed, fabricated, measured and analyzed. ...

Pressurized gas capacitors can be used in high-voltage tests as: standards in bridge circuits for capacitance and loss factor measurement; part of potential dividers for high-

In the case of high accuracy requirements, in particular when measuring other high-voltage standard capacitors, ... Recent developments in 50 c/s bridge networks with ...

ANY calibrations of high-voltage power equipment depend on standard capacitors. This is the case of voltage transformers, high-voltage dividers [1], and tangent delta bridges, among ...

Performance specifications for high voltage capacitors include capacitance range and capacitance tolerance, a percentage of total capacitance. ... IEEE C37.43 -- ...

capacitors (SC series) are designed to be high precision and stable high voltage reference capacitors with a very low loss factor. With these characteristics, the SC series capacitors are ...

A commercially available transformer-ratio-arm capacitance bridge is used in two different circuits to measure the voltage dependence of a capacitor by comparing it with a ...

which the transformer under calibration is the standard voltage transformer 4820. C 1 is the capacitor under evaluation, C 2 is composed of low voltage standard capacitors. The ...

This TechNote has been written as a guide to the operation of and applications for the NIST Capacitor Ratio Bridge (CRB). The theory, design, and operating principles of the ...

How much charge is stored in this capacitor if a voltage of (3.00 times 10^3 V) is applied to it? ... The main advantage of an electrolytic capacitor is its high capacitance ...

The schematic diagram of the High Voltage Schering Bridge is shown in Fig. 9.11. The lossy capacitor or capacitor with the dielectric between electrodes is represented as an imperfect ...

The high-voltage supply is then used to feed both the voltage transformer and the two high-voltage standard capacitors. During the calibration of the voltage transformer, the two high-voltage capacitors are interchanged and the voltage ...

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Mode 1 ($V_o = 1V$ dc): In Fig. 2a, both of the capacitors (C_1 and C_2) are in parallel with the DC source through the power switch S_2 and S_3 , respectively. In addition, ...

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Various factors affecting the value and voltage dependence of the capacitance of high-voltage compressed-gas capacitors, used as high-voltage measurement standards, are considered. ...

4. Voltage Ratio Measurement The voltage ratio of a generalized divider is indicated primarily by the capacitance balance of the bridge. The reduced voltage applied to capacitor 0 is ...

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