

Method for measuring the voltage of compensation capacitor

How does a resonance method calculate capacitance?

The resonance methods calculate the capacitance information from the resonance frequency of the circuit, e. g. by sweeping the frequency of the input voltage until the current is at the maximum. This method has a medium to low tolerance for stray capacitances and is very sensitive to conductance losses.

How much power does a capacitance measurement circuit use?

The power consumption is around 68mW. The dynamic range is 40 dB. Overall, the dual/multi-slope capacitance measurement circuits provide very high immunity to stray capacitances thanks to the virtual ground in the integrator and low impedance of the excitation signal interface.

What is a capacitive voltage divider?

The capacitive voltage divider is composed of the high-voltage capacitor C1 and the medium-voltage capacitor C2. The electromagnetic unit includes the compensation reactor LC, the intermediate transformer T, and the damper Zf. The damper can be connected to any one of the secondary windings. Fig 1. Structure of the CVT system.

How accurate is a capacitance measurement?

In and by only using the Quadrature-phase information, the capacitance has been measured and good measurement accuracy of 1 fF could be reached over a measurement range up to 50 fF and a dynamic range of 33.97 dB. This method should be principally immune against stray capacitances, but conductance losses could affect the measurement accuracy.

How can a capacitance-to-time converter be digitized?

Most of the proposed methods proposed here in this paper are digital-friendly, as they provide output signals that could be easily digitized by using an ADC interface or by connecting a microcontroller directly to the output node of the capacitance-to-time converter and even precisely using interruptions.

Does a capacitor voltage transformer have a harmonic measurement error?

IEEE Transaction on Power Delivery. 2000; 15 (1): 62-72. This paper explores the mechanism for the harmonic voltage measurement error (HVME) of a capacitor voltage transformer (CVT) in a comprehensive way and develops a practical error correction method to improve the harmonic measurement performance of a CVT.

The MFIA and LabOne can easily measure the ESL and ESR of a DC-link capacitor. Figure 3 shows the test setup used with a TDK capacitor with nominal capacitance of 120 μ F, ESR of 0.8 m Ω and ESL of 15 nH. Figure 3: Test setup for measuring the ESL and ESR of a DC-Link capacitor. Source: Zurich Instruments

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Figure 2: Capacitor equivalent circuit When measuring a capacitor these parasitic components must be considered. Measuring a capacitor in series or parallel mode can provide different results. How the results differ can depend on the quality of the device, but the thing to keep in mind is that the capacitor's measured value most closely represents

The general theory of each compensation method is explained, and based on this, specific data is provided for the TS507. The TS507 is a high precision rail-to-rail amplifier, with very low input offset voltage, and a 1.9 MHz gain bandwidth product, which is available in SOT23-5 and SO-8 packages. This document simplifies the task of designing an application that includes the ...

Research the distortion of applying CVT to measure harmonic in the high-voltage power network," in . 2008 China International Conference on Electricity Distribution (IEEE, 2008). Google Scholar. Crossref. Search ADS 2. M. He, J. Zhang, and . J. Zhao, " Influence of the temperature changes on CVT's accuracy," Power Capacitor. 2006 (01), 13 - 17. 3. Y. Yan, X. ...

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capacitance measurement is charge and discharge method. The voltage developed across a capacitance is proportional to the charging current. The larger the capacitor the longer it takes ...

A new method to measure the voltage across the submodule (SM) capacitors in a modular multilevel converter (MMC) that requires only one voltage sensor per arm and improves the converter's overall reliability.

To solve this problem, this paper first reveals the relationship between the capacitor parameter distribution and the thermal stress distribution. Then a method for realizing the temperature balance of capacitors by controlling the equivalent modulation indexes of SMs with compensation voltage is proposed. The hot-spot temperatures of ...

The estimation accuracy of SM-CV is significantly improved by correcting the output voltage of the multiplexing group, and compensating for the sampling deviation of the corresponding submodule by modeling the error of the matrix equation $Ax=b$. Simulation results verify the feasibility of the proposed methods.

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From the above-mentioned analysis, it can be seen that the full compensation method can effectively control the neutral-to-ground voltage to suppress the faulty phase voltage, thus eliminating the condition of ground arc spontaneous combustion. At the same time, the impedance of the compensation component does not need to be adjusted according to the ...

In the new National Institute of Metrology cross-capacitor, an alternative approach, in which a fraction of the measuring voltage is applied to an isolated electrode in the ...

A low-cost square waveform voltage source coupled with a reference resistor can be used to measure the ESL, ESR and capacitance of an electrolytic capacitor. By connecting a capacitor in series with a reference resistor, the equivalent output step response of the capacitor voltage reveals the ESL and ESR of the capacitor. To effectively capture ...

Aiming at the problem that the non-uniform electrode spacing angle affects the characteristics of the measured value of the actual ECT sensor, a method for compensating ...

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