Substitution device for a linear active electrical circuit with sinusoidal current relative to two poles consists of an independent source of sinusoidal voltage, whose electromotive force E is equal to the voltage of the original electrical circuit with sinusoidal current between the two poles when the circuit is open. The independent voltage source is connected to the two specified poles through a first active-reactive resistance connected in series, whose complex value R+jX is equal to the equivalent complex resistance of the original sinusoidal current circuit with respect to the two specified poles when the internal sources are removed. Wherein a second active-reactive resistance is connected in parallel with the independent sinusoidal voltage source, whose complex value is selected such that the complex powers of the substitution device and the original electrical circuit are equal in the open-circuit mode, and the output terminals of a controlled current source, whose control terminals are connected to the circuit of the first active-reactive resistance. The transfer coefficient ensures linear relationships between the active and reactive powers of the substitution device and the load current, with proportionality coefficients characteristic of the original circuit. Wherein, the controlled current source is driven by the voltage of the active component of the first active-reactive resistance, and a second controlled current source is introduced, driven by the voltage of the reactive component of the first active-reactive resistance, whose output terminals are also connected in parallel to an independent source of sinusoidal voltage, wherein the transfer coefficients G_1 and G_2, corresponding to the first and second dependent current sources, respectively, are real numbers such that the product G_1R equals the real part, and the product G_2X equals the imaginary part of the complex expression taken with the opposite sign:

$$\Delta\tilde{S} \times (R - jX)/E^2 - 1,$$

where $\Delta\tilde{S}$ is the difference between the complex powers of all sources in the original sinusoidal current circuit in the short-circuit and open-circuit modes. Wherein, the negative value of each of the aforementioned transfer coefficients corresponds to the same polarity of the dependent and independent sources, while the positive value corresponds to opposite polarities of these sources.