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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 17625.7-2013

Electromagnetic compatibility -- Limits -- Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems for equipment with rated current ≤ 75 A and subject to conditional connection

(English Translation)

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1 Scope

This Part is concerned with the emission of voltage changes, voltage fluctuations and flicker produced by equipment and impressed on the public low-voltage supply system.

This Part specifies the limits of voltage changes produced by equipment tested under specified conditions.

This Part is primarily applicable to electrical and electronic equipment having a rated input current from 16 A up to and including 75 A, which is intended to be connected to public low-voltage distribution systems having nominal system voltages of 220 V, line-to-neutral at 50 Hz, and which is subject to conditional connection.

This Part is also applicable to equipment within the scope of GB 17625.2 that does not meet the limits when tested or evaluated with reference impedance

Z_{ref} and is therefore subject to conditional connection. Equipment which meets the requirements of GB 17625.2, is excluded from this Part.

Equipment tests made in accordance with this Part are type tests.

NOTE: The flicker limits specified in this part, being the same as those in GB 17625.2, are based on the subjective severity of the flicker imposed on the light from 220 V/60 W coiled-coil filament lamps when subjected to fluctuations of the supply voltage. For systems with nominal voltages less than 220 V, line-to-neutral and/or frequency of 60 Hz, the limits and reference circuit values are under consideration.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any service current capacity

The current per phase which can be taken continuously by the user at the interface point without exceeding the plant ratings used by the supply authority in the design of its system.

NOTE: In practice the service current capacity is the rating of the main service fuse or overcurrent protection setting of the circuit breaker at the interface point. In cases where supply authorities declare supply capacities in volt-amperes, the current per phase may be deduced for single phase supplies by dividing the volt-amperes by the declared phase voltage, and for three-phase supplies by dividing it by $\sqrt{3}$ times the declared line voltage.

4 Requirements

If equipment complies with the requirements of GB/T 17625.2 and therefore is not subject to conditional connection, it may be declared so by the manufacturer in documentation made available to users before purchase.

Equipment which does not meet the limits of GB/T 17625.2, when tested or evaluated with reference impedance Z_{ref} , is subject to conditional connection, and the manufacturer shall either.

a) determine the maximum permissible system impedance Z_{max} at the interface point of the user's supply in accordance with 6.2, declare Z_{max} in the equipment instruction manual and instruct the user to determine in consultation with the supply authority, if necessary, that the equipment is connected only to a supply of that impedance or less, or b) test the equipment in accordance with 6.3 and declare in the equipment instruction manual that the equipment is intended for use only in premises having a service current capacity ≥ 100 A per phase, supplied from a distribution network having a nominal voltage of 380/220 V, and instruct the user to determine in consultation with the supply authority, if necessary, that the service current capacity at the interface point is sufficient for the equipment.

The equipment shall be clearly marked as being suitable for use only in premises having a service current capacity equal to or greater than 100 A per phase.

NOTE 1: In the case of option a), restrictions to connection may be imposed by the supply authority on the use of equipment if the actual system impedance at the interface point on the user's premises, Z_{act} , exceeds Z_{max} .

NOTE 2: In the case of option b), a new symbol (5855 in GB/T 5465.2) is under consideration

Annex A (informative)

Explanation of flicker exponents

A.1 Explanation of 6.2.2

For harmonics or flicker, the permitted perturbation of the system voltage is decreased as the system impedance is reduced, because the number of consumers influenced by the disturbances is increased and there is less diversity.

However, coincidence of voltage change disturbances is very unlikely, since two changes having only 1 s time difference can be regarded as separate events. It is unlikely that, for example, two uncombined motors will start exactly in the same second, and that the voltage drops will be cumulative. For this reason, the permitted voltage change is independent of the network impedance and, therefore, the voltage drop during operation at the system impedance may reach, but should not exceed, the limit values according to Clause 5.

Where the probability of two, or more, exactly simultaneous switching processes is quite small and a reduction of the permitted relative voltage drops is not necessary, the Pst and Plt values should be smaller than the limit values valid for the reference impedance, Z_{ref} , since equipment with a rated current greater than 16 A needs a smaller system impedance Z_{sys} . For example, large equipment, which is connected near to the supply transformer, affects an area greater than that of a 16 A device.

The greater area increases the probability of coincidence with voltage fluctuations caused by other equipment. The admissible values of Pst and Plt should therefore decrease with the decrease in the system impedance, Z_{sys} .

The "total disturbing effect" of equipment corresponds to the integral of all Pst values - caused by this equipment - over the "affected area". Under the philosophy of "equal rights", the "total disturbing effect" should be the same for all equipment.

Extensive calculations, based on the superposition cube law of flicker, show that this condition is met if the admissible flicker value decreases according to the following relationship.

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