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**NATIONAL STANDARD OF THE
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Particular requirements for load-shedding equipment (LSE)

甩负荷设备(LSE)的特殊要求

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Introduction Introduction

Appropriate design and installation can promote the optimisation of electrical energy use, and electrical installation techniques can provide the required level of service and safety at the lowest energy consumption. Designers regard this as a general requirement of the design procedure in determining the best use of electrical energy.

As shown in Figure 1 of IEC 60364-8-1:2019, the optimisation of the use of electric power is based on energy efficiency management, which rests on the electricity price, the quantity of electricity used and real-time adjustment. Figure 1, reproduced in the document as the energy efficiency management system, shows the sources of energy on one side, the loads on the other, and the energy efficiency management hardware and software in the middle, taking inputs from the user, from measurement of available and priced energy, from the loads and from environmental data such as temperature, day and night and humidity.

LSE is equipment capable of responding to a monitored current, a monitored supply or a substitute monitored parameter, and is used to open and close selected loads when defined conditions are met.

The load-shedding function serves energy management systems in order to optimise the overall use of electrical energy, including generation and storage, and can be used for the energy efficiency purposes shown in IEC 60364-8-1:2019.

1 Scope

The document fixes the technical requirements for load-shedding equipment as regards marking and documentation, protection against electric shock, construction, mechanical performance and electrical performance.

The purpose of the document is to provide requirements for equipment used in energy efficiency systems, and it covers load-shedding equipment, abbreviated LSE. The safety principles of LSE follow IEC Guide 110.

It applies to LSE for household and similar uses. The load-shedding function is used in energy management systems to optimise the overall use of electrical energy, including generation and storage, and can be used for the energy efficiency purposes shown in IEC 60364-8-1:2019.

The document applies to LSE operating under normal conditions in alternating-current circuits with a rated frequency of 50 Hz, 60 Hz or both, a rated voltage not exceeding 440 V between phases, a rated current not exceeding 125 A and a rated short-circuit capacity not exceeding 25 000 A, and in direct-current circuits, with a footnote recording that LSE for

direct-current circuits is still under consideration.

LSE is intended to provide energy to one or more loads, circuits or the grid when defined time and current conditions are reached, or when a command or information is received from an external system.

LSE is expected to take the form of a single device with all the means needed to control the load, for example equipment in which an electrical energy management function is embedded; a unit integrated in more complex equipment, or a standalone device forming part of an electrical energy management system (EEMS); an LSE formed by an assembly of standalone devices, for example an LSE with an external current sensor; or a combination of these. LSE can have a wireless interface, and LSE is part of a fixed installation.

LSE applies to circuits with protection against electric shock and overcurrent protection as specified in GB/T 16895 (all parts). By its nature, LSE does not provide isolation or overcurrent protection.

LSE is normally installed by trained persons or skilled persons as defined in GB/T 2900.73-2008 and used by ordinary persons as defined in the same document.

The document contains all the requirements needed to ensure that the operating characteristics required for the type test of an LSE based on a single device or on an assembly of standalone devices are complied with.

The requirements apply under the standard temperature and environmental conditions given in 5.1. They apply to LSE with degree of protection IP20 and pollution degree 2. LSE with a degree of protection higher than IP20 according to GB/T 4208, intended for harsh environmental conditions such as high humidity, high temperature, cold or dust deposits, and for hazardous locations such as those where explosion may occur, may require a special construction.

If other functions are contained in the LSE, the relevant standards cover those functions. The document does not deal with communication aspects such as protocols, interoperability, data security or any other related aspect.

2 Normative references

The content of the listed documents constitutes indispensable provisions of this document through normative reference in the text; for dated references only the edition cited applies, and for undated references the latest edition, including all amendments, applies.

The list includes GB/T 1633-2000 on the determination of the Vicat softening temperature of thermoplastics, GB/T 5169.10-2017 and GB/T 5169.11-2017 on glow-wire fire hazard testing, GB/T 5465.2-2008 on graphical symbols for electrical equipment, GB/T 6109.1-2008 on enamelled round winding wires, GB/T 6346.14-2015 on fixed capacitors for

electronic equipment, GB 8898-2011 on the safety requirements for audio, video and similar electronic apparatus, GB/T 9364 (all parts) on miniature fuses, GB/T 10580 on standard conditions for solid insulating materials before and during testing, GB/T 11021 on the thermal endurance of electrical insulation, GB/T 14536 (all parts) on automatic electrical controls, GB/T 16842-2016 on probes for the protection of persons and equipment by enclosures, GB/T 16895 (all parts) on low-voltage electrical installations, GB/T 16935.1-2008 on insulation coordination for equipment within low-voltage systems, GB/T 17626.2, GB/T 17626.3, GB/T 17626.4, GB/T 17626.5, GB/T 17626.6, GB/T 17626.8 and GB/T 17626.11 on electromagnetic compatibility testing and measurement techniques, GB/T 17743 on the limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment, and GB/T 18039.3 on compatibility levels for low-frequency conducted disturbances in public low-voltage power supply systems.

Relationship to IEC 62962:2019 Relationship to IEC 62962:2019

The document is a modified adoption of IEC 62962:2019, Particular requirements for load-shedding equipment (LSE). One structural adjustment was made: the hanging paragraph of clause 27 was made subclause 27.1 and the following subclauses were renumbered.

The technical deviations from IEC 62962:2019 are listed in the foreword. Following GB/T 1.1-2020, the scope was supplemented with the sentence stating that the document fixes the technical requirements for load-shedding equipment as regards marking and documentation, protection against electric shock, construction, mechanical performance and electrical performance.

A series of normative references was replaced by Chinese documents to suit national technical conditions and improve operability: GB/T 16895 (all parts) for IEC 60364 (all parts), GB/T 5465.2-2008 for IEC 60417, GB/T 5169.10-2017 for IEC 60695-2-10:2000, GB/T 5169.11-2017 for IEC 60695-2-11:2000, GB/T 10580 for IEC 60212, the GB/T 17626 series for the corresponding parts of IEC 61000-4, GB/T 17743 for CISPR 15, GB/T 18039.3 for IEC 61000-2-2, GB/T 6109.1-2008 for IEC 60317-0-1:1997, GB/T 9364 (all parts) for IEC 60127 (all parts), GB 8898-2011 for IEC 60065:2001, GB/T 14536 (all parts) for IEC 60730 (all parts), GB/T 6346.14-2015 for IEC 60384-14:1993, GB/T 19212.7 for IEC 61558-2-6, GB/T 1633-2002 for ISO 306, and GB/T 11021 for IEC 60085.

Editorial changes were also made, replacing informative references to IEC 61008-1, IEC 61009-1, IEC 60050-195:1998, IEC 60529, IEC 60947-1:2007, IEC 60669-1:2017, IEC 60721-3-3, IEC 60038, IEC 60112, IEC 61000-3-2, IEC 61140 and IEC 60364-4-41 with the corresponding Chinese documents, and deleting the notes of the IEC text that do not apply in China.