

ICS 13.020.01, 91.140.50, 27.015
CCS Z 04;F04;P63



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

GB/T 16895.35-2023

**Low-voltage electrical installations - Part 8-1: Functional
aspects - Energy efficiency**

低压电气装置 第8-1部分：功能方面能源效率

(English Translation)

Issued on: September 7, 2023

Implemented on: September 7, 2023

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

Table of Contents

Preface	
Introduction	
1 Scope	
2 Normative reference documents	
3 Terms, definitions and abbreviations	2
3.1 General terminology	
3.2 Power management	3
3.3 Electric energy measurement	
3.4 Facility classification	
3.5 Abbreviations	
4 General provisions and requirements	
4.1 Basic Principle	
4.2 Energy efficiency assessment of electrical installations	6
5 Facility Category	
6 Requirements and suggestions for design	
6.1 General	
6.2 Determination of load energy curve	
6.3 Use the center of gravity method to determine the location of transformers and distribution cabinets	7
6.4 High voltage/low voltage substation	
6.5 Efficiency of local generation and local energy storage	8
6.6 Cabling system losses	
7 Determination of area, load usage and grid	
7.1 Determine area	
7.2 Identify the load usage in the identified area	
7.3 Demand response	10
7.4 Determine the grid	10
7.5 Drive parameters	
7.6 Impact on electrical installation design	12
8 Energy Efficiency and Load Management Systems	12
8.1 Overview	
8.2 User requirements	13

8.3	Inputs from loads, sensors and forecasts	
8.4	Inputs from power sources. energy availability and electricity prices	
8.5	Monitoring the performance of electrical installations	19
8.6	Managing Loads via Grids	
8.7	Multiple power supply management. grid, local generation and energy storage	
9	Maintenance and improvement of device performance	20
9.1	Methodology	
9.2	Device Life Cycle Methodology	
9.3	Energy efficiency life cycle	
9.4	Data Management	
9.5	Maintenance	
10	Parameters for implementing efficiency measures	23
10.1	Overview	
10.2	Efficiency measures	
11	Energy Efficiency Action	
Appendix A (informative) Use the center of gravity method to determine the location of transformers and distribution cabinets		
A.1	Center of Gravity Method	
A.2	Total load center of gravity	
A.3	Average line length method	
Appendix B (normative) Methods for assessing energy efficiency of electrical installations		
34		
B.1	Overview	
B.2	Electrical installation efficiency class	

Foreword

This document complies with the regulations of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents" Custom drafting.

GB/T 16895 "Low-voltage electrical installations" has been released into 6 parts. Part 4, Part 5, Part 7 and Part 8 are Divided into sub-sections.

---Part 1: Basic principles, general characteristics assessment and definitions;

---Part 4: Safety protection;

---Part 5: Selection and installation of electrical equipment;

---Part 6: Inspection;

---Part 7: Requirements for special devices or locations;

---Part 8: Functional aspects.

This document is Part 8-1 of GB/T 16895 "Low-voltage electrical installations".

This document is equivalent to IEC 60364-8-1:2019 "Low-voltage electrical installations Part 8-1.Functional aspects of energy efficiency".

This document has made the following minimal editorial changes.

---Incorporates the technical errata content of IEC 60364-8-1:2019/CORI.2019, and the outer margins of the involved clauses Locations are marked with vertical double lines (||).

Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying patents.

Introduction

GB/T 16895 proposes safety protection and electrical equipment for medium and low-voltage electrical devices in general devices or places and special devices or places.

selection, installation and inspection and functional requirements. It has positive guiding significance for the safe use of low-voltage electrical devices.

GB/T 16895 is planned to consist of six parts.

---Part 1: Basic principles, general characteristics assessment and definitions. Determining safety for the design, installation and inspection of low voltage electrical installations rules to avoid damage to people, livestock and property during the installation and use of low-voltage electrical installations, and to ensure the correct installation of electrical installations.

Install and run correctly.

---Part 4: Safety protection. Contains sub-sections 4-41, 4-42, 4-43, and 4-44, which respectively describe the installation and use of electrical devices.

Specific safety measures are proposed for four types of electrical hazards that may occur during the process. electric shock, thermal effects, overcurrent, voltage interference and electromagnetic interference.

Protection requirements.

---Part 5: Selection and installation of electrical equipment. Contains subparts 5-51, 5-52, 5-53, 5-54, 5-55, 5-56, which are intended to be based on the equipment usage function and installation environment have a significant impact on the wiring system, isolation, switching and control and monitoring electrical appliances, grounding configuration and

protective conductors, Proposal for the selection and installation of low-voltage power generation equipment, auxiliary equipment, lamps and lighting fixtures, safety facility power supplies and other electrical equipment Require.

---Part 6: Inspection. Put forward specific requirements for the preliminary inspection and periodic inspection of electrical devices to provide long-term safe operation of the equipment.

Quality assurance.

---Part 7: Requirements for special devices or locations. Including 7-701, 7-702, 7-703, 7-704, 7-705, 7-706, 7-710, Subparts 7-711, 7-712, 7-713, 7-714, 7-715, 7-717, 7-722, 7-740, and 7-753 are for various special devices or locations.

Put forward safety protection, equipment selection and installation requirements accordingly. Each sub-part of Part 7 is relatively independent and there is no direct connect.

---Part 8: Functional aspects. Make functional requirements for electrical installations. Currently, only subpart 8-1 covers electrical installations.

requirements for energy efficiency.

Part 1, Part 4, Part 5, Part 6 and Part 8 mentioned above are general parts, and most of the requirements are applicable to Part 7: However, in special devices and places, Part 7 proposes some provisions and requirements that supplement, modify or replace the general parts.

This document optimizes the use of electrical energy by considering proper design and installation. Reach minimum while maintaining safe operation of electrical installations Energy consumption, and achieving optimal power utilization is a common requirement for the design process. In addition to the many parameters taken into account in the design of electrical installations, What is more important is to reduce the internal losses during the operation of the power distribution system. Electrical installations are designed taking into account the user, power supply and utility requirements.

In addition to new installations, this document also applies to the renovation of existing electrical installations to significantly improve their energy efficiency.

The optimized utilization of electric energy is energy efficiency management based on electricity price, electricity consumption and real-time adjustment. Full course in electrical installations During the life cycle, efficiency is tested through measurement. Improvements and improvements in energy efficiency can be achieved by redesigning or replacing equipment. the purpose is Design and install an efficient electrical installation based on acceptable investment, and perform power management processes to meet user needs. this document Various energy efficiency measures have been introduced to ensure that the energy consumption of the electrical device itself is reduced on the basis of improving