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

GB/T 40815.6-2026

**Mechanical structures for electrical and electronic equipment - Thermal
management for cabinets in accordance with inch and metric system -
Part 6: Air recirculation and bypass of indoor cabinets**

电气和电子设备机械结构 符合英制系列和公制系列机柜的热管理 第6部分：户内
机柜的空气再循环和旁路

(English Translation)

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Foreword

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

Drafting.

This document is part of GB/T 40815 "Mechanical Structures of Electrical and Electronic Equipment - Thermal Management of Cabinets in Accord and Metric Series".

GB/T 40815 has been published in 6 parts.

---Part 2: Methods for Determining Forced Air Cooling;

---Part 4: Cooling performance test of water supply heat exchanger in electronic cabinet;

---Part 5: Evaluation of Cooling Performance of Indoor Cabinets;

---Part 6: Air recirculation and bypass for indoor cabinets.

This document is equivalent to IEC 62610-6:2020 "Mechanical construction of electrical and electronic equipment conforming to IEC 60297 and IEC 60917 series".

Thermal Management of Server Racks Part 6: Air Recirculation and Bypass for Indoor Server Racks.

The following minimal editorial changes have been made to this document.

---To harmonize with existing standards, the standard name has been changed to

"Mechanical Structures of Electrical and Electronic Equipment in Conformity to Imperial and Metric Series".

Thermal Management of Cabinets Part 6: Air Recirculation and Bypass for Indoor Cabinets.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed and is under the jurisdiction of the National Technical Committee on Comprehensive Standardization of Electrical and Electronic Equipment Structures (SAC/TC34).

Introduction

Imperial and metric series server racks are widely used in data center computer rooms and various communication equipment rooms for installing various information and communication equipment.

Communication equipment. To improve the heat dissipation efficiency of equipment within the cabinet, ensure safe and efficient operation of the equipment, and reduce energy consumption in the computer room, GB/T 40815 "Electrical Equipment" is required.

The document "Thermal Management of Air and Electronic Equipment Mechanical Structures in Imperial and Metric Series Cabinets" elaborates on the requirements for imperial and metric series cabinets.

This paper presents thermal management methods that provide design guidelines for rack thermal management. The main problems it addresses include.

- Specifies the universal installation interface specifications and requirements for the thermoelectric cooling system of indoor electronic cabinets;
- Specifies the design specifications and requirements for optimal airflow in indoor electronic cabinets and their internal enclosures and chassis;
- Specifications for evaluating the cooling performance of indoor electronic cabinets and thermoelectric cooling systems;
- Specifies the performance test specifications and requirements for water supply heat exchangers in indoor electronic cabinets;
- Specifies the test specifications for air recirculation and bypass of indoor electronic cabinets.

GB/T 40815 is proposed to consist of six parts.

---Part 1: Design Guidelines. Interface Dimensions and Specifications for Thermoelectric Cooling Systems (Peltier Effect). This aims to standardize thermoelectric cooling systems.

It has universal installation interface dimensions and requirements.

---Part 2: Methodology for Determining Forced Air Cooling. This section aims to specify the optimal airflow configuration and design for indoor electronic cabinets, enclosures, and chassis.

method.

---Part 3: Design Guidelines. Evaluation Methods for Thermoelectric Cooling Systems (Peltier Effect). Aimed at standardizing the performance of thermoelectric cooling systems.

Evaluation methods and design guidelines are provided.

---Part 4: Cooling Performance Testing of Water Supply Heat Exchangers in Electronic Cabinets. This section aims to specify the performance testing procedures for water supply heat exchangers.

Fan, guiding the experiment.

---Part 5: Evaluation of Cooling Performance of Indoor Cabinets. This section aims to define a methodology for evaluating the air cooling capacity of indoor electronic cabinets.

---Part 6: Air Recirculation and Bypass in Indoor Cabinets. This section aims to specify the testing methods for air recirculation and bypass in indoor electronic cabinets.

specification.

Parts 1 and 3 correspond to international documents that are technical specifications and have not yet been converted into Chinese documents.

This document proposes a method for easily measuring the airflow recirculation rate and bypass rate within a server rack, clarifying the characteristics of cooling airflow in such racks.

The level of effective recyclability is intended to provide a reference for cabinet equipment integrators and developers.

Mechanical structure of electrical and electronic equipment Thermal management compliant with imperial and metric series cabinets Part 6: Air Recirculation and Bypass in Indoor Cabinets

1 Scope

This document pertains to thermal management of cabinets compliant with IEC 60297 and IEC 60917 series standards, providing compatibility measurements for recirculation rate and bypass rate.

These measurement methods define the quality of airflow in forced air cooling and are generally applicable to rack-mounted and/or chassis-based equipment.