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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

中华人民共和国国家标准

GB 4943.1–2011

Replace GB 4943–2001

Information technology equipment—Safety —Part 1: General requirements

信息技术设备　安全

第 1 部分：通用要求

(IEC 60950-1: 2005, MOD)

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Contents

Foreword

All the technical contents in the Part of GB4943 are mandatory.

GB4943 *Safety of Information Technology Equipment* proposes to be divided into four parts currently:

——Part 1: General requirements;

——Part 21: Remote feeding;

——Part 22: Outdoor installation equipments;

——Part 23: Large-scale data storage device.

The Part is Part 1 of GB/T 4943.

The Part is drafted according to the rules specified in GB/T1.1-2009.

The Part uses the redraft method to modify the adopted international standards IEC 60950-1:2005 *Safety of Information Technology Equipment - Part 1: General Requirements* Second Edition (English Edition).

The technical differences between the Part and IEC 60950-1:2005:

a) Power tolerance

1.4.5 in the IEC 60950-1:2005 specifies that the tolerance of rated voltage is +6% and -10%, but according to the actual situation of China's power grid supply voltage, GB 4943.1-2011 specifies it as +10% and -10%. Delete the contents of the first dash.

b) Mark of the power rated value

The mark of the rated voltage and frequency in 1.7.1 of IEC 60950-1:2005 does not clearly specify the specific values, which is only expressed with example, and the voltage in example does not include China's power grid supply voltage, according to the requirements of China's power grid supply voltage, the supply voltage is 220V and 50Hz or three-phase 380V and 50Hz, therefore, the Part clearly specify the rated value of the power supply: the single rated voltage shall be marked as 220V or three-phase 380V; the

Introduction

0 Principles of safety

The following principles have been adopted in the development of this part of GB 4943.

These principles do not cover performance or functional characteristics of equipment.

0.1 General principles of safety

It is essential that designers understand the underlying principles of safety requirements in order that they can engineer safe equipment.

These principles are not an alternative to the detailed requirements of this standard, but are intended to provide designers with an appreciation of the basis of these requirements. Where the equipment involves technologies and materials or methods of construction not specifically covered, the design of the equipment should provide a level of safety not less than those described in these principles of safety.

Designers shall take into account not only normal operating conditions of the equipment but also likely fault conditions, consequential faults, foreseeable misuse and external influences such as temperature, altitude, pollution, moisture, overvoltages on the MAINS SUPPLY and overvoltages on a TELECOMMUNICATION NETWORK or a CABLE DISTRIBUTION SYSTEM. Dimensioning of insulation spacings should take account of possible reductions by manufacturing tolerances, or where deformation could occur due to handling, shock and vibration likely to be encountered during manufacture, transport and normal use.

The following priorities should be observed in determining what design measures to adopt:

- where possible, specify design criteria that will eliminate, reduce or guard against hazards;

- where the above is not practicable because the functioning of the equipment would be impaired, specify the use of protective means independent of the equipment, such as

personal protective equipment (which is not specified in this standard);

- where neither of the above measures is practicable, or in addition to those measures, specify the provision of markings and instructions regarding the residual risks.

There are two types of persons whose safety needs to be considered, USERS (or OPERATORS) and SERVICE PERSONS.

USER is the term applied to all persons other than SERVICE PERSONS. Requirements for protection should assume that USERS are not trained to identify hazards, but will not intentionally create a hazardous situation. Consequently, the requirements will provide protection for cleaners and casual visitors as well as the assigned USERS. In general, USERS should not have access to hazardous parts, and to this end, such parts should only be in SERVICE ACCESS AREAS or in equipment located in RESTRICTED ACCESS LOCATIONS.

When USERS are admitted to RESTRICTED ACCESS LOCATIONS they shall be suitably instructed.

SERVICE PERSONS are expected to use their training and skill to avoid possible injury to themselves and others due to obvious hazards that exist in SERVICE ACCESS AREAS of the equipment or on equipment located in RESTRICTED ACCESS LOCATIONS. However, SERVICE PERSONS should be protected against unexpected hazards. This can be done by, for example, locating parts that need to be accessible for servicing away from electrical and mechanical hazards, providing shields to avoid accidental contact with hazardous parts, and providing labels or instructions to warn personnel about any residual risk.

Information about potential hazards can be marked on the equipment or provided with the equipment, depending on the likelihood and severity of injury, or made available for SERVICE PERSONS. In general, USERS shall not be exposed to hazards likely to cause injury, and information provided for USERS should primarily aim at avoiding misuse and situations likely to create hazards, such as connection to the wrong power source and replacement of fuses by incorrect types.

MOVABLE EQUIPMENT is considered to present a slightly increased risk of shock, due to possible extra strain on the supply cord leading to rupture of the earthing conductor. With HAND-HELD EQUIPMENT, this risk is increased; wear on the cord is more likely, and further hazards could arise if the units were dropped. TRANSPORTABLE EQUIPMENT introduces a further factor because it can be used and carried in any orientation; if a small metallic object enters an opening in the ENCLOSURE it can move around inside the equipment, possibly creating a hazard.

0.2 Hazards

Application of a safety standard is intended to reduce the risk of injury or damage due to the following:

- electric shock;
- energy related hazards;
- fire;
- heat related hazards;
- mechanical hazards;
- radiation;
- chemical hazards.

0.2.1 Electric shock

Electric shock is due to current passing through the human body. The resulting physiological effects depend on the value and duration of the current and the path it takes through the body. The value of the current depends on the applied voltage, the impedance of the source and the impedance of the body. The body impedance depends in turn on the area of contact, moisture in the area of contact and the applied voltage and frequency. Currents of approximately half a milliampere can cause a reaction in persons in good health and may cause injury indirectly due to involuntary reaction. Higher currents can have more direct effects, such as burn or muscle tetanization leading to inability to let go

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