BRITISH STANDARD

BS EN
62018:2003

Power consumption of information technology equipment — Measurement methods

The European Standard EN 62018:2003 has the status of a British Standard

ICS 35.020; 35.260

BSI
British Standards

National foreword

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The UK participation in its preparation was entrusted to Technical Committee EPL/108, Safety of electronic equipment within the field of audio/video, information technology and communication technology, which has the responsibility to:

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EUROPEAN STANDARD **EN 62018**

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English version

Power consumption of information technology equipment – Measurement methods
(IEC 62018:2003)

Consommation d'énergie des matériels de traitement de l'information – Méthodes de mesure
(CEI 62018:2003)

Energieverbrauch von Einrichtungen der Informationstechnik – Messverfahren
(IEC 62018:2003)

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

The text of document 108/65/FDIS, future edition 1 of IEC 62018, prepared by IEC TC 108, Safety of electronic equipment within the field of audio/video, information technology and communication technology, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62018 on 2003-10-01.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2004-07-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2006-10-01

Annexes designated "normative" are part of the body of the standard.
In this standard, annex ZA is normative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 62018:2003 was approved by CENELEC as a European Standard without any modification.

CONTENTS

INTRODUCTION

Energy management is the result or condition of a design, construction, or process within IT equipment for reducing energy consumption from external energy sources, or reducing the total energy consumption of the IT equipment during idle periods within any program.

The result is that a minimum amount of energy is consumed in accomplishing the essential functionality of the equipment.

The design, process, or construction of the energy management program is not detrimental to the equipment or to its functionality.

The above expresses the result as the minimum amount of energy to accomplish a specific task. Energy management is sometimes expressed as the ratio between two power consumption levels under different modes of operation.

When equipment becomes idle after completing its intended function, it receives program instructions to assume an **energy saving mode**. It may have several different **energy saving modes**. In one **energy saving mode**, a hard disk may be switched off. In another **energy saving mode**, more functions may be switched off in order to provide the maximum saving of energy. In some cases, the lowest mode is an off mode, where little or no energy is consumed. **User** or software activity returns the equipment to a higher energy consumption level or to the **full-on mode** without intervention by the **user** or an extended restart procedure.

If the equipment is mainly intended to be continuously operated, it may rarely reach an idle state, so no **energy saving mode** is required.

POWER CONSUMPTION OF INFORMATION TECHNOLOGY EQUIPMENT – MEASUREMENT METHODS

1 Scope

This International Standard defines the test methods used to measure power consumption of information technology equipment (ITE) under various modes of operation for the purpose of energy management. ITE includes the products identified in the scope of IEC 60950-1.

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 amendments) applies.

IEC 60950-1, *Information technology equipment – Safety – Part 1: General requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60950-1 and the following apply. Defined terms are printed in **bold characters** where they occur in the text.

3.1
full-on mode
a normal operating condition of the ITE in which all functions are fully powered

3.2
energy saving mode
an operating condition of the ITE in which one or more functions are switched off

4 Test procedure

4.1 Measuring equipment

Measurements are made with a suitably calibrated true r.m.s. voltmeter and a wattmeter. The voltmeter shall have an accuracy of ±1 % or better at **rated voltage**. The wattmeter shall have an accuracy of ±1 % or better at 100 W and greater. It shall be capable of accurate readings of waveforms having peak factors up to 5. The test instruments shall have a bandwidth of at least 1 kHz.

4.2 Configuration

The equipment under test shall be a representative configuration for typical use and capable of performing the functions for which it was configured.

4.3 Temperature and humidity

If the operational environment is not specified by the manufacturer, or if a temperature range is specified that includes 23 °C, the tests are conducted at 23 °C ± 5 °C. If a temperature range is specified that does not include 23 °C, the tests are conducted at whichever end of the temperature range is closer to 23 °C.

4.4 Power source for test

4.4.1 Frequency and waveform

The test supply frequency shall be the **rated frequency** of the EUT.

The test supply waveform shall contain less than 5 % total harmonic distortion when the EUT is operating at the maximum configuration declared by the manufacturer.

4.4.2 Voltage

If the equipment has one or more **rated voltages**, the measurements are made at one rated voltage and are not repeated for multiple **rated voltages**. If the equipment has one or more **rated voltage ranges**, measurements are made at each end of the selected **rated voltage range**.

NOTE It is recommended that the power source be capable of supplying three times the power actually required by the EUT.

4.5 Power measurements

4.5.1 Full-on mode

Readings of input power and voltage in the **full-on mode** are taken under **normal load** when the power has stabilized. If the power varies during the normal operating cycle, the power is taken as the mean of the measured power over a complete operating cycle.

4.5.2 Energy saving mode

Readings of input power and voltage in the **energy saving mode** are taken under **normal load** when the power has stabilized and not sooner than 1 min after entering the **energy saving mode**. It is permitted to initiate the **energy saving mode** manually in the shortest time permitted in the energy management program, to reduce the test duration. It may be necessary to use a password to return to a higher energy consumption level. Measurements are repeated for each **energy saving mode** of which the EUT is capable.

5 Records of results of measurements

The following is the minimum information that shall be recorded for each configuration tested:

– EUT manufacturer's name and trade mark or identification mark and model or type reference and the serial number of the EUT;

– configuration and work load used for the test;

– ambient temperature during the tests;

– input power supply – actual voltage and frequency;

– power consumption in the **full-on mode**;

– power consumption in each applicable **energy saving mode**.

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Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60950-1 (mod)	- [1)]	Information technology equipment - Safety Part 1: General requirements	EN 60950-1	2001 [2)]

1) Undated reference.

2) Valid edition at date of issue.

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