

INTERNATIONAL STANDARD

IEC
62333-1

First edition
2006-05

**Noise suppression sheet for digital
devices and equipment –**

**Part 1:
Definitions and general properties**

IECNORM.COM : Click to view the full PDF of IEC 62333-1:2006



Reference number
IEC 62333-1:2006(E)

Publication numbering

As from 1 January 1997 all IEC publications are issued with a designation in the 60000 series. For example, IEC 34-1 is now referred to as IEC 60034-1.

Consolidated editions

The IEC is now publishing consolidated versions of its publications. For example, edition numbers 1.0, 1.1 and 1.2 refer, respectively, to the base publication, the base publication incorporating amendment 1 and the base publication incorporating amendments 1 and 2.

Further information on IEC publications

The technical content of IEC publications is kept under constant review by the IEC, thus ensuring that the content reflects current technology. Information relating to this publication, including its validity, is available in the IEC Catalogue of publications (see below) in addition to new editions, amendments and corrigenda. Information on the subjects under consideration and work in progress undertaken by the technical committee which has prepared this publication, as well as the list of publications issued, is also available from the following:

- **IEC Web Site** (www.iec.ch)

- **Catalogue of IEC publications**

The on-line catalogue on the IEC web site (www.iec.ch/searchpub) enables you to search by a variety of criteria including text searches, technical committees and date of publication. On-line information is also available on recently issued publications, withdrawn and replaced publications, as well as corrigenda.

- **IEC Just Published**

This summary of recently issued publications (www.iec.ch/online_news/justpub) is also available by email. Please contact the Customer Service Centre (see below) for further information.

- **Customer Service Centre**

If you have any questions regarding this publication or need further assistance, please contact the Customer Service Centre:

Email: custserv@iec.ch
Tel: +41 22 919 02 11
Fax: +41 22 919 03 00

IECNORM.COM Click to view the full PDF of IEC 62353-1:2006

INTERNATIONAL STANDARD

IEC 62333-1

First edition
2006-05

Noise suppression sheet for digital devices and equipment –

Part 1: Definitions and general properties

IECNORM.COM : Click to view the full PDF of IEC 62333-1:2006

© IEC 2006 — Copyright - all rights reserved

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Electrotechnical Commission, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE

F

For price, see current catalogue

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**NOISE SUPPRESSION SHEET
FOR DIGITAL DEVICES AND EQUIPMENT –**

Part 1: Definitions and general properties

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 62333-1 has been prepared by IEC technical committee 51: Magnetic components and ferrite materials.

This standard is to be used in conjunction with IEC 62333-2.

The text of this standard is based on the following documents:

FDIS	Report on voting
51/852/FDIS	51/860/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

IEC 62333 consists of the following parts, under the general title *Noise suppression sheet for digital devices and equipment*:

Part 1: Definitions and general properties

Part 2: Measuring methods

Further topics are under consideration and will be issued as new parts in the IEC 62333 series. The present Part 1 of IEC 62333 will cover new definitions and will be updated as and when necessary.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

IECNORM.COM : Click to view the full PDF of IEC 62333-1:2006

NOISE SUPPRESSION SHEET FOR DIGITAL DEVICES AND EQUIPMENT –

Part 1: Definitions and general properties

1 Scope

This part of IEC 62333 provides terms and definitions for an electromagnetic noise suppression sheet for digital devices and equipment used in a frequency range of between 30 MHz to 30 GHz, and refers to the influence on the signal by usage of a noise suppression sheet. Guidance is also given for uniform presentation of the properties of a noise suppression sheet, intended for use in manufactures' technical data. A noise suppression sheet is distinguished from RF wave absorbers used in free space.

This part of IEC 62333 is limited to establishing terms and definitions. It constitutes a concise reference for Part 2 of the standard. Part 2 specifies in detail the measurement of parameters defined in Part 1. The two parts of IEC 62333 are therefore closely related, and are intended to be used together.

NOTE This standard also specifies the influences on signal lines by using these sheets.

2 Normative reference

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 60050, *International Electrotechnical Vocabulary (IEV)*

IEC 62333-2, *Noise suppression sheet for digital devices and equipment – Part 2: Measuring methods*

3 Terms, definitions and symbols

3.1 Terms and definitions

For the purposes of this document, the terms and definitions of IEC 60050 and the following apply.

3.1.1

noise suppression

suppression generally classified into signal decoupling, radiation suppression and attenuation of transmission power by its means

NOTE Each function above is achieved by absorption and/or shielding.

3.1.2

noise suppression sheet

NSS

sheet which enables noise suppression and is composed of magnetic or dielectric or conductive material with electromagnetic losses

3.1.3**suppression ratio**

ratio of noise level with suppression sheets and without them, which is classified into intra-decoupling ratio, inter-decoupling ratio, transmission attenuation power ratio and radiation suppression ratio, and is expressed in dB

3.1.3.1**intra-decoupling ratio** R_{da}

reduction of coupling between lines and circuit existing on one side of the noise suppression sheet

3.1.3.2**inter-decoupling ratio** R_{de}

reduction of coupling between lines and circuit existing on both sides of the noise suppression sheet

3.1.3.3**transmission attenuation power ratio** R_{tp}

attenuation of conduction current noise caused by a noise suppression sheet

3.1.3.4**radiation suppression ratio** R_{rs}

suppression of radiation noise emitted from the circuit board

3.2 Symbols

μ_r	relative complex permeability
μ'_r	real part of relative complex permeability
μ''_r	imaginary part of relative complex permeability
ϵ_r	relative complex permittivity
ϵ'_r	real part of relative complex permittivity
ϵ''_r	imaginary part of relative complex permittivity
R_{da}	intra-decoupling ratio
R_{de}	inter-decoupling ratio
R_{tp}	transmission attenuation power ratio
R_{rs}	radiation suppression ratio

4 Properties to be specified in specifications and technical data**4.1 General****4.1.1 Noise suppression sheet****4.1.2 Product(s) name**

4.1.3 Structural diagram

- A: Bulk magnetic oxide or metal
- B: Composite of magnetic oxide or metal and rubber or plastic
- C: Composite of dielectrics or conductors and rubber or plastic
- D: Others, for example multi-layers made of the above materials

4.1.4 Thickness

4.1.5 Commodity shape (roll or sheet)

4.1.6 Installation method

4.2 Electrical characteristics

4.2.1 Intra-decoupling ratio, R_{da}

4.2.2 Inter-decoupling ratio, R_{de}

4.2.3 Transmission attenuation power ratio, R_{tp}

4.2.4 Radiation suppression ratio, R_{rs}

4.2.5 Surface resistance, ρ_s or resistivity, ρ_v

NOTE The measuring methods of R_{da} , R_{de} , R_{tp} and R_{rs} should be referred to IEC 62333-2.

4.3 Mechanical characteristics

4.3.1 Density, ρ

4.3.2 Coefficient of linear thermal expansion, α_T

4.3.3 Young's modulus E or hardness

4.4 Environmental conditions

4.4.1 Temperature range

4.4.1.1 Operating temperature

4.4.1.2 Storage temperature

4.4.2 Humidity range

4.4.3 Flame resistance

4.4.4 Statement for non-usage of the prohibited chemical materials
