SLOVENSKI STANDARD

SIST EN 60939-1:2005

december 2005

Pasivni filtri za dušenje elektromagnetnega motenja – 1. del: Generična specifikacija (IEC 60939-1:2005)

Passive filter units for electromagnetic interference suppression – Part 1: Generic specification (IEC 60939-1:2005)

ICS 31.160

Referenčna številka
SIST EN 60939-1:2005(en)

EUROPEAN STANDARD **EN 60939-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM April 2005

ICS 31.160 Supersedes EN 133000:1997

English version

Passive filter units for electromagnetic interference suppression Part 1: Generic specification

(IEC 60939-1:2005)

Filtres passifs d'antiparasitage
Partie 1: Spécification générique
(CEI 60939-1:2005)

Passive Filter für die Unterdrückung von elektromagnetischen Störungen
Teil 1: Fachgrundspezifikation
(IEC 60939-1:2005)

This European Standard was approved by CENELEC on 2005-03-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 60939-1:2005 E

Foreword

The text of document 40/1509/FDIS, future edition 2 of IEC 60939-1, prepared by IEC TC 40, Capacitors and resistors for electronic equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60939-1 on 2005-03-01.

This European Standard supersedes EN 133000:1997.

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)	2005-12-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2008-03-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60939-1:2005 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

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

Publication	Year	Title	EN/HD	Year
IEC 60027	Series	Letter symbols to be used in electrical technology	HD 60027 HD 245 S1	Series 1997
IEC 60050	Series	International Electrotechnical Vocabulary	-	-
IEC 60062	- [1)]	Marking codes for resistors and capacitors	EN 60062	2005 [2)]
IEC 60068-1	- [1)]	Environmental testing Part 1: General and guidance	EN 60068-1	1994 [2)]
IEC 60068-2-1	- [1)]	Part 2: Tests - Tests A: Cold	EN 60068-2-1	1993 [2)]
IEC 60068-2-2	- [1)]	Part 2: Tests - Tests B: Dry heat	EN 60068-2-2	1993 [2)]
IEC 60068-2-6	- [1)]	Part 2: Tests - Test Fc: Vibration (sinusoidal)	EN 60068-2-6	1995 [2)]
IEC 60068-2-13	- [1)]	Part 2: Tests - Test M: Low air pressure	EN 60068-2-13	1999 [2)]
IEC 60068-2-14	- [1)]	Part 2: Tests - Test N: Change of temperature	EN 60068-2-14	1999 [2)]
IEC 60068-2-17	- [1)]	Part 2: Tests - Test Q: Sealing	EN 60068-2-17	1994 [2)]
IEC 60068-2-20	- [1)]	Part 2: Tests - Test T: Soldering	HD 323.2.20 S3	1988 [2)]
IEC 60068-2-21	- [1)]	Part 2-21: Tests - Test U: Robustness of terminations and integral mounting devices	EN 60068-2-21	1999 [2)]
IEC 60068-2-27	- [1)]	Part 2: Tests - Test Ea and guidance: Shock	EN 60068-2-27	1993 [2)]
IEC 60068-2-29	- [1)]	Part 2: Tests - Test Eb and guidance: Bump	EN 60068-2-29	1993 [2)]

1) Undated reference.

2) Valid edition at date of issue.

Publication	Year	Title	EN/HD	Year
IEC 60068-2-30	- [1]	Part 2: Tests - Test Db and guidance: Damp heat, cyclic (12 + 12-hour cycle)	EN 60068-2-30	1999 [2]
IEC 60068-2-45	- [1]	Part 2: Tests - Test Xa and guidance: Immersion in cleaning solvents	EN 60068-2-45	1992 [2]
IEC 60068-2-78	- [1]	Part 2-78: Tests - Test Cab: Damp heat, steady state	EN 60068-2-78	2001 [2]
IEC 60085	- [1]	Electrical insulation - Thermal classification	EN 60085	2004 [2]
IEC 60294	- [1]	Measurement of the dimensions of a cylindrical component having two axial terminations	-	-
IEC 60384-14	1993	Fixed capacitors for use in electronic equipment Part 14: Sectional specification: Fixed capacitors for electromagnetic interference suppression and connection to the supply mains	-	-
IEC 60410	- [1]	Sampling plans and procedures for inspection by attributes	-	-
IEC 60695-2-2	- [1]	Fire hazard testing Part 2: Test methods -- Section 2: Needle-flame test	EN 60695-2-2	1994 [2]
IEC QC 001002-3	- [1]	IEC Quality Assessment System for Electronic Components (IECQ) - Rules of Procedure Part 3: Approval procedures	-	-
CISPR 17	1981	Methods of measurement of the suppression characteristics of passive radio interference filters and suppression components	-	-
ISO 1000	1992	SI units and recommendations for the use of their multiples and of certain other units	-	-

INTERNATIONAL STANDARD

IEC 60939-1

Second edition
2005-02

Passive filter units for electromagnetic interference suppression –

Part 1: Generic specification

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 V

For price, see current catalogue

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

PASSIVE FILTER UNITS FOR ELECTROMAGNETIC INTERFERENCE SUPPRESSION –

Part 1: Generic specification

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of 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 60939-1 has been prepared by IEC technical committee 40: Capacitors and resistors for electronic equipment.

This second edition cancels and replaces the first edition published in 1988. This second edition constitutes a technical revision.

The major changes that have been made between the first and the second edition are:

– Clause 3 has been updated in accordance with the usual practice in IEC TC 40 documents.
– Discharge resistance, current overload, passive flammability, active flammability, solvent resistance of marking and component solvent resistance have been added to Clause 4, test and measurement procedures.

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

FDIS	Report on voting
40/1509/FDIS	40/1536/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 60939 consists of the following parts, under the general title *Passive filter units for electromagnetic interference suppression*

Part 1: Generic specification

Part 2: Sectional specification: Test methods and general requirements

Part 2-1: Blank detail specification – Passive filter units for electromagnetic interference suppression – Filters for which safety tests are required (Assessment level D/DZ)

Part 2-2: Blank detail specification – Passive filter units for electromagnetic interference suppression – Filters for which safety tests are required (Safety tests only)

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.

PASSIVE FILTER UNITS FOR ELECTROMAGNETIC INTERFERENCE SUPPRESSION –

Part 1: Generic specification

1 General

1.1 Scope

This generic specification relates to passive filter units for electromagnetic interference suppression for use within, or associated with, electronic or electrical equipment and machines.

Both single- and multi-channel filters within one enclosure are included within the scope of this generic specification.

Filters constructed of capacitive elements where the inductance is inherent in the construction of the filter are within the scope of this specification. Similarly, filters constructed of inductive elements where the capacitance is inherent in the construction of the filter are also within the scope of this generic specification. The manufacturer shall state whether a given component is to be designed as a capacitor, an inductor or a filter.

The filter units within the scope of this generic specification are further distinguished as those for which safety tests are appropriate (e.g. those connected to mains supplies) and those for which such tests are not appropriate. A separate sectional specification covers the passive filter units for which safety tests are appropriate.

This generic specification establishes standard terms, inspection procedures and methods of test for use in sectional and detail specifications within the IECQ-CECC system for electronic components.

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.

NOTE Components other than inductors and capacitors in the filter unit should fulfil requirements in the relevant IEC Standard.

IEC 60027 (all parts), *Letter symbols to be used in electrical technology*

IEC 60050 (all parts), *International Electrotechnical Vocabulary (IEV)*

IEC 60062, *Marking codes for resistors and capacitors*

IEC 60068-1, *Environmental testing – Part 1: General and guidance*

IEC 60068-2-1, *Environmental testing – Part 2: Tests – Tests A: Cold*

IEC 60068-2-2, *Environmental testing – Part 2: Tests – Tests B: Dry Heat*

IEC 60068-2-6, *Environmental testing – Part 2: Tests – Test Fc: Vibration (sinusoidal)*

IEC 60068-2-13, *Environmental testing – Part 2: Tests – Test M: Low air pressure*