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Passive filter units for electromagnetic interference suppression

Part 3: Passive filter units for which safety tests are appropriate

bsi.

National foreword

This British Standard is the UK implementation of EN 60939-3:2015. It is identical to IEC 60939-3:2015, incorporating corrigendum April 2016.

The UK participation in its preparation was entrusted to Technical Committee EPL/40X, Capacitors and resistors for electronic equipment.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Passive filter units for electromagnetic interference suppression - Part 3: Passive filter units for which safety tests are appropriate (IEC 60939-3:2015)

Filtres passifs d'antiparasitage - Partie 3: Filtres passifs pour lesquels des essais de sécurité sont appropriés (IEC 60939-3:2015)

Passive Filter für die Unterdrückung von elektromagnetischen Störungen - Teil 3: Filter, für die Sicherheitsprüfungen vorgeschrieben sind (IEC 60939-3:2015)

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European foreword

The text of document 40/2387/FDIS, future edition 1 of IEC 60939-3, prepared by IEC/TC 40 "Capacitors and resistors for electronic equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60939-3:2015.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2016-06-16
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2018-09-16

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In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60068-2-13	NOTE	Harmonized as EN 60068-2-13.
IEC 60068-2-27	NOTE	Harmonized as EN 60068-2-27.
IEC 60085	NOTE	Harmonized as EN 60085.
IEC 60335-1	NOTE	Harmonized as EN 60335-1.
IEC 60384-9	NOTE	Harmonized as EN 60384-9.
IEC 60947-1	NOTE	Harmonized as EN 60947-1.
IEC 60990	NOTE	Harmonized as EN 60990.
IEC 61112	NOTE	Harmonized as EN 61112.
IEC 62109-1	NOTE	Harmonized as EN 62109-1.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60027-1	-	Letter symbols to be used in electrical technology - Part 1: General	-	-
IEC 60050	series	International Electrotechnical Vocabulary (IEV)	-	-
IEC 60060-1	2010	High-voltage test techniques - Part 1: General definitions and test requirements	EN 60060-1	2010
IEC 60062	-	Marking codes for resistors and capacitors	EN 60062	-
IEC 60068-1	2013	Environmental testing - Part 1: General and guidance	EN 60068-1	2014
IEC 60068-2-1	-	Environmental testing - Part 2-1: Tests - Test A: Cold	EN 60068-2-1	-
IEC 60068-2-2	-	Environmental testing - Part 2-2: Tests - Test B: Dry heat	EN 60068-2-2	-
IEC 60068-2-6	-	Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)	EN 60068-2-6	-
IEC 60068-2-14	-	Environmental testing - Part 2-14: Tests - Test N: Change of temperature	EN 60068-2-14	-
IEC 60068-2-17	-	Basic environmental testing procedures - Part 2-17: Tests - Test Q: Sealing	EN 60068-2-17	-
IEC 60068-2-20	2008	Environmental testing - Part 2-20: Tests - Test T: Test methods for solderability and resistance to soldering heat of devices with leads	EN 60068-2-20	2008
IEC 60068-2-21	-	Environmental testing - Part 2-21: Tests - Test U: Robustness of terminations and integral mounting devices	EN 60068-2-21	-

Publication	Year	Title	EN/HD	Year
IEC 60068-2-30	2005	Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)	EN 60068-2-30	2005
IEC 60068-2-45	1980	Basic environmental testing procedures - Part 2-45: Tests - Test XA and guidance: Immersion in cleaning solvents	EN 60068-2-45	1992
IEC 60068-2-78	-	Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state	EN 60068-2-78	-
IEC 60294	-	Measurement of the dimensions of a cylindrical component with axial terminations	EN 60294	-
IEC 60384-14	2013	Fixed capacitors for use in electronic equipment - Part 14: Sectional specification - Fixed capacitors for electromagnetic interference suppression and connection to the supply mains	EN 60384-14	2013
IEC 60664-1	2007	Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests	EN 60664-1	2007
IEC 60695-11-5	-	Fire hazard testing - Part 11-5: Test flames - Needle-flame test method - Apparatus, confirmatory test arrangement and guidance	EN 60695-11-5	-
IEC 60695-11-10	-	Fire hazard testing - Part 11-10: Test flames - 50 W horizontal and vertical flame test methods	EN 60695-11-10	-
IEC 60938-1	1999	Fixed inductors for electromagnetic interference suppression - Part 1: Generic specification	EN 60938-1	1999
+ A1	2006		+ A1	2007
IEC 60938-2	-	Fixed inductors for electromagnetic interference suppression - Part 2: Sectional specification	EN 60938-2	-
IEC 60939-1	-	Passive filter units for electromagnetic interference suppression - Part 1: Generic specification	EN 60939-1	-
IEC 60940	-	Guidance information on the application of capacitors, resistors, inductors and complete filter units for electromagnetic interference suppression	EN 60940	-
IEC 61140	-	Protection against electric shock - Common aspects for installation and equipment	EN 61140	-
ISO 80000-1	-	Quantities and units - Part 1: General	EN ISO 80000-1	-
CISPR 17	-	Methods of measurement of the suppression characteristics of passive EMC filtering devices	EN 55017	-

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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PASSIVE FILTER UNITS FOR ELECTROMAGNETIC INTERFERENCE SUPPRESSION –

Part 3: Passive filter units for which safety tests are appropriate

FOREWORD

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International Standard IEC 60939-3 has been prepared by IEC technical committee 40: Capacitors and resistors for electronic equipment.

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

FDIS	Report on voting
40/2387/FDIS	40/2398A/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.

A list of all parts in the IEC 60939 series, published under the general title *Passive filter units for electromagnetic interference suppression*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability 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.

PASSIVE FILTER UNITS FOR ELECTROMAGNETIC INTERFERENCE SUPPRESSION –

Part 3: Passive filter units for which safety tests are appropriate

1 General

1.1 Scope

This specification covers passive filters used to attenuate unwanted radio-frequency signals (such as noise or interference) generated from electromagnetic sources.

Both single and multi-channel filters within one enclosure or which are built on a printed circuit board forming a compact entity are included within the scope of this 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 specification. It is up to the manufacturer to state whether a given component is to be designed as a capacitor, an inductor or a filter. Filters can include also other components like resistors and/or varistors or similar components

This specification applies to passive filter units for electromagnetic interference suppression for which safety tests are appropriate. This implies that filters specified according to this specification will either be connected to mains supplies, when compliance with the mandatory tests of Table 3 is necessary, or used in other circuit positions where the equipment specification prescribes that some or all of these safety tests are required.

This specification applies to passive filter units, which will be connected to an a.c. mains or other supply (d.c. or a.c.) with a nominal voltage not exceeding 1 000 V a.c., with a nominal frequency not exceeding 400 Hz, or 1 500 V d.c.

NOTE For a.c. use, IEC 60384-14 applies to capacitors which will be connected to a.c. mains with a nominal frequency not exceeding 100 Hz.

This specification covers appliance filters (US) but does not cover facility filters, cord-connected filters or direct plug-in filters. These other filters will be covered by another sectional specification.

1.2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 These documents are referenced, in whole, in part or as alternative requirements to the requirements contained in this standard. Their use is specified, where necessary, for the application of the requirements of this standard.

NOTE 2 The list below is a summary of all standards that are referred to within this standard. Appearance of a standard in the list does not mean that the standard or parts of it are applicable. Only those parts that are specifically referenced in this standard are applicable.

IEC 60027-1, *Letters symbols to be used in electrical technology – Part 1: General*