# INTERNATIONAL STANDARD

IEC 60939-1

Second edition 2005-02

Passive filter units for electromagnetic interference suppression –

### Part 1:

Generic specification



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### INTERNATIONAL ELECTROTECHNICAL COMMISSION

# PASSIVE FILTER UNITS FOR ELECTROMAGNETIC INTERFERENCE SUPPRESSION –

Part 1: Generic specification

### **FOREWORD**

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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.

NOTE Corrigendum 1 (2005-11) has been included in this copy. It constitutes a revision of the structure of subclause 4.5, as well as an addition to subclause 4.10.3.

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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

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IEC 60068-2-14, Environmental testing – Part 2: Tests – Test N: Change of temperature

IEC 60068-2-17, Basic environmental testing procedures – Part 2: Tests – Test Q: Sealing

IEC 60068-2-20, Environmental testing – Part 2: Tests – Test T: Soldering

IEC 60068-2-21, Environmental testing – Part 2-21: Tests – Test U: Robustness of terminations and integral mounting devices

IEC 60068-2-27, Environmental testing - Part 2: Tests - Test Ea and guidance: Shock

IEC 60068-2-29, Environmental testing – Part 2: Tests – Test Eb and guidance: Bump

IEC 60068-2-30, Environmental testing – Part 2: Tests – Test Db and guidance: Damp heat, cyclic (12 + 12-hour cycle)

IEC 60068-2-45, Environmental testing – Part 2: Tests – Test XA and guidance: Immersion in cleaning solvents

IEC 60068-2-78, Environmental testing – Part 2-78. Tests – Test Cab: Damp heat, steady state

IEC 60085, Thermal evaluation and classification of electrical insulation

IEC 60294, Measurement of the dimensions of a cylindrical component having two axial terminations.

IEC 60384-14: 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, Sampling plans and procedures for inspection by attributes

IEC 60695-2-2, Fixe hazard testing - Part 2: Test methods - Section 2: Needle flame test

IEC QC 001002-3, 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