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Edition 2.1 2023-08
CONSOLIDATED VERSION

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Passive filter units for electromagnetic interference suppression – Part 2: Sectional specification – Passive filter units for which safety tests are appropriate – Test methods and general requirements

Filtres passifs d'antiparasitage – Partie 2: Spécification intermédiaire – Filtres passifs pour lesquels des essais de sécurité sont appropriés – Méthodes d'essai et exigences générales



IEC 60939-2:2005-02+AMD1:2023-08 CSV(en-fr)



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PASSIVE FILTER UNITS FOR ELECTROMAGNETIC INTERFERENCE SUPPRESSION –

Part 2: Sectional specification – Passive filter units for which safety tests are appropriate – Test methods and general requirements

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This consolidated version of the official IEC Standard and its amendment has been prepared for user convenience.

IEC 60939-2 edition 2.1 contains the second edition (2005-02) [documents 40/1510/FDIS and 40/1537/RVD], its corrigendum (2005-11) and its amendment 1 (2023-08) [documents 40/3059/FDIS and 40/3072/RVD].

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

International Standard IEC 60939-2 has been prepared by IEC technical committee 40: Capacitors and resistors for electronic equipment.

This second edition constitutes a technical revision.

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

– Capacitance and tan δ measurements, d.c. line resistance or voltage drop at rated current, impulse voltage, passive flammability, current overload, solvent resistance of marking, component solvent resistance and active flammability have been added to Clause 4, test and measurement procedures.

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 document and its amendment will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

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- withdrawn,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

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PASSIVE FILTER UNITS FOR ELECTROMAGNETIC INTERFERENCE SUPPRESSION –

Part 2: Sectional specification – Passive filter units for which safety tests are appropriate – Test methods and general requirements

1 General

1.1 Scope

This Sectional specification applies to passive filter units for electromagnetic interference suppression which fall within the scope of the Generic Specification IEC 60939-1:2010.

The scope of this Sectional specification is restricted to passive filter units for which safety tests are appropriate. This implies that filters specified according to this Sectional 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 Sectional specification applies to passive filter units which will be connected to an a.c. mains or other supply with a nominal voltage not exceeding 1 000 V a.c., with a nominal frequency not exceeding 400 Hz, or 1 000 V d.c.

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 60060-1, *High-voltage test techniques – Part 1: General definitions and test requirements*

IEC 60062, *Marking codes for resistors and capacitors*

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

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

IEC 60085, *Thermal evaluation and classification of electrical insulation*

IEC 60335-1:2020, ~~*Safety of*~~ *Household and similar electrical appliances – Safety – Part 1: General requirements*

IEC 60384-14:2023, *Fixed capacitors for use in electronic equipment – Part 14: Sectional specification: Fixed capacitors for electromagnetic interference suppression and connection to the supply mains*

IEC 60664 (all parts), *Insulation coordination for equipment within low-voltage systems*

IEC 60939-1:2010, *Passive filter units for electromagnetic interference suppression – Part 1: Generic specification*

IEC 60940, *Guidance information on the application of capacitors, resistors, inductors and complete filter units for radio interference suppression*

IEC 61140, *Protection against electric shock – Common aspects for installation and equipment*

1.3 Information to be given in a detail specification

1.3.1 General

The detail specifications shall be derived from the relevant blank detail specification.

Detail specifications shall not specify requirements inferior to those of the generic, sectional or blank detail specification. When more severe requirements are included, they shall be listed in 1.9 of the detail specification, and indicated in the test schedules, for example by an asterisk.

NOTE The information given in 1.3.2 may, for convenience, be presented in tabular form.

The following information shall be given in each detail specification and the values quoted shall preferably be selected from the appropriate clause of this sectional specification.

1.3.2 Outline drawing and dimensions

There shall be an illustration of the filter as an aid to easy recognition and for comparison of the filter with others. Dimensions and their associated tolerances, which affect inter-changeability and mounting, shall be given in the detail specification. All dimensions shall preferably be stated in millimetres.

Normally, the numerical values shall be given for the length of the body, the width and height of the body and the wire spacing, or for cylindrical types, the body diameter and the length and diameter of the terminations. When necessary, for example when a range of filters is covered by a single detail specification, their dimensions and their associated tolerances shall be placed in a table following the drawing.

In addition, the detail specification shall state such other dimensional information as will adequately describe the filter outline.

1.3.3 Mounting

The detail specification shall specify the method of mounting recommended for normal use and the method which is mandatory for the application of the vibration, bump, shock and endurance tests. The design of the filter may be such that special mounting fixtures or heat sinks are required in its use. In this case, the detail specification shall describe the mounting fixtures and they shall be used in the application of the vibration, bump or shock tests. The specified heat sink shall be used in the application of the endurance test.

If recommendations for mounting for "normal" use are made, they shall be included in the detail specification under 1.8 "Additional information (not for inspection purposes)". If they are included, a warning can be given that the full vibration, bump and shock performance may not be available if mounting methods other than those specified in 1.1 of the detail specification are used.

1.3.4 Ratings and characteristics

1.3.4.1 General

The ratings and characteristics shall be in accordance with the relevant clauses of this specification.