

Guidance information on the application of capacitors, resistors, inductors and complete filter units for electromagnetic interference suppression

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 60940:2015 sisaldab Euroopa standardi EN 60940:2015 ingliskeelset teksti.	This Estonian standard EVS-EN 60940:2015 consists of the English text of the European standard EN 60940:2015.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 08.05.2015.	Date of Availability of the European standard is 08.05.2015.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 33.100

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:

Aru 10, 10317 Tallinn, Eesti; koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Aru 10, 10317 Tallinn, Estonia; homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

ICS 33.100

English Version

Guidance information on the application of capacitors, resistors,
inductors and complete filter units for electromagnetic
interference suppression
(IEC 60940:2015)

Guide d'emploi des condensateurs, résistances,
inductances et filtres complets d'antiparasitage
(IEC 60940:2015)

Grundlagen für die Anwendung von Kondensatoren,
Widerständen, Drosseln und vollständigen Filtereinheiten
zur Unterdrückung elektromagnetischer Störungen
(IEC 60940:2015)

This European Standard was approved by CENELEC on 2015-04-14. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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



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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Foreword

The text of document 40/2337/FDIS, future edition 2 of IEC 60940, 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 60940:2015.

The following dates are fixed:

- latest date by which the document has to be (dop) 2016-01-14
implemented at national level by
publication of an identical national
standard or by endorsement
- latest date by which the national (dow) 2018-04-14
standards conflicting with the
document have to be withdrawn

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 60940:2015 was approved by CENELEC as a European Standard without any modification.

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

IEC 60068-2-78	NOTE	Harmonized as EN 60068-2-78.
IEC 60204-1	NOTE	Harmonized as EN 60204-1.
IEC 60384-14-1	NOTE	Harmonized as EN 60384-14-1.
IEC 60384-14-2	NOTE	Harmonized as EN 60384-14-2.
IEC 60384-14-3	NOTE	Harmonized as EN 60384-14-3.
IEC 60664-1	NOTE	Harmonized as EN 60664-1.
IEC 60938-1	NOTE	Harmonized as EN 60938-1.
IEC 60938-2	NOTE	Harmonized as EN 60938-2.
IEC 60938-2-1	NOTE	Harmonized as EN 60938-2-1.
IEC 60938-2-2	NOTE	Harmonized as EN 60938-2-2.
IEC 60939-1	NOTE	Harmonized as EN 60939-1.
IEC 60939-2	NOTE	Harmonized as EN 60939-2.
IEC 60939-2-1	NOTE	Harmonized as EN 60939-2-1.
IEC 60939-2-2	NOTE	Harmonized as EN 60939-2-2.
IEC 60950-1	NOTE	Harmonized as EN 60950-1.
IEC 62368-1	NOTE	Harmonized as EN 62368-1.
CISPR 11	NOTE	Harmonized as EN 55011.
CISPR 17	NOTE	Harmonized as EN 55017.

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

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60335-1	-	Household and similar electrical appliances - Safety - Part 1: General requirements	EN 60335-1	-
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	EN 60384-14	-

CONTENTS

FOREWORD	3
1 Scope	5
2 Normative references	5
3 Electromagnetic and Radio frequency interference suppression (EMI/RFI)	5
3.1 General	5
3.2 Limits of interference	6
4 Classification of suppression components	6
4.1 Suppression components	6
4.2 Capacitors	8
4.3 Inductors	8
4.4 Filters	8
5 Choice of ratings for specific applications	8
5.1 Voltage	8
5.2 Current	9
5.3 Environmental classification (climatic category)	9
5.4 Insertion loss	9
6 Connection of suppression components	9
7 Safety aspects	10
7.1 Class X and Y capacitors	10
7.2 Leakage current	11
7.3 Mounting of radio interference suppression components in equipment and appliances	11
7.4 Electrical shock hazard protection testing	11
Bibliography	12
Figure 1 – Example use of suppression components in EMI filter	7