

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**Fixed capacitors for use in electronic equipment –  
Part 14-1: Blank detail specification: Fixed capacitors for electromagnetic  
interference suppression and connection to the supply mains – Assessment  
level D**

**Condensateurs fixes utilisés dans les équipements électroniques –  
Partie 14-1: Spécification particulière cadre: Condensateurs fixes  
d'antiparasitage et raccordement à l'alimentation – Niveau d'assurance D**

<https://www.iec.ch/standards/60384-14-1-2005>



**THIS PUBLICATION IS COPYRIGHT PROTECTED**  
**Copyright © 2005 IEC, Geneva, Switzerland**

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester.  
If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de la CEI ou du Comité national de la CEI du pays du demandeur.  
Si vous avez des questions sur le copyright de la CEI ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de la CEI de votre pays de résidence.

IEC Central Office  
3, rue de Varembe  
CH-1211 Geneva 20  
Switzerland

Tel.: +41 22 919 02 11  
Fax: +41 22 919 03 00  
[info@iec.ch](mailto:info@iec.ch)  
[www.iec.ch](http://www.iec.ch)

### About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

### About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

#### Useful links:

IEC publications search - [www.iec.ch/searchpub](http://www.iec.ch/searchpub)

The advanced search enables you to find IEC publications by a variety of criteria (reference number, text, technical committee,...).

It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - [webstore.iec.ch/justpublished](http://webstore.iec.ch/justpublished)

Stay up to date on all new IEC publications. Just Published details all new publications released. Available on-line and also once a month by email.

Electropedia - [www.electropedia.org](http://www.electropedia.org)

The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in additional languages. Also known as the International Electrotechnical Vocabulary (IEV) on-line.

Customer Service Centre - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: [csc@iec.ch](mailto:csc@iec.ch).

### A propos de la CEI

La Commission Electrotechnique Internationale (CEI) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

### A propos des publications CEI

Le contenu technique des publications de la CEI est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente. un corrigendum ou amendement peut avoir été publié.

#### Liens utiles:

Recherche de publications CEI - [www.iec.ch/searchpub](http://www.iec.ch/searchpub)

La recherche avancée vous permet de trouver des publications CEI en utilisant différents critères (numéro de référence, texte, comité d'études,...).

Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

Just Published CEI - [webstore.iec.ch/justpublished](http://webstore.iec.ch/justpublished)

Restez informé sur les nouvelles publications de la CEI. Just Published détaille les nouvelles publications parues. Disponible en ligne et aussi une fois par mois par email.

Electropedia - [www.electropedia.org](http://www.electropedia.org)

Le premier dictionnaire en ligne au monde de termes électroniques et électriques. Il contient plus de 30 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans les langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (VEI) en ligne.

Service Clients - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: [csc@iec.ch](mailto:csc@iec.ch).

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**Fixed capacitors for use in electronic equipment –  
Part 14-1: Blank detail specification: Fixed capacitors for electromagnetic  
interference suppression and connection to the supply mains – Assessment  
level D**

**Condensateurs fixes utilisés dans les équipements électroniques –  
Partie 14-1: Spécification particulière cadre: Condensateurs fixes  
d'antiparasitage et raccordement à l'alimentation – Niveau d'assurance D**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

PRICE CODE  
CODE PRIX

M

ICS 31.060.10

ISBN 978-2-83220-699-7

**Warning! Make sure that you obtained this publication from an authorized distributor.  
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**FIXED CAPACITORS FOR USE IN ELECTRONIC EQUIPMENT –****Part 14-1: Blank detail specification:  
Fixed capacitors for electromagnetic interference suppression  
and connection to the supply mains –  
Assessment level D**

## 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 CEI 60384-14-1 has been prepared by IEC technical committee 40: Capacitors and resistors for electronic equipment.

This second edition of CEI 60384-14-1 cancels and replaces the first edition published in 1993. It constitutes a technical revision. All changes that have been agreed upon can be categorized as minor revisions.

This bilingual version (2013-05) corresponds to the monolingual English version, published in 2005-07.

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

FDIS	Report on voting
40/1553/FDIS	40/1587/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.

The French version of this standard has not been voted upon.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

It should be read in conjunction with IEC 60384-1 and IEC 60384-14.

This standard forms Part 14-1 of IEC 60384, which is published under the general title *Fixed capacitors for use in electronic equipment*.

Part 1: Generic specification

Part 14 is composed as follows:

Part 14: Sectional specification – Fixed capacitors for electromagnetic interference suppression and connection to the supply mains

Part 14-1: Blank detail specification – Fixed capacitors for electromagnetic interference suppression and connection to the supply mains – Assessment level D

Part 14-2: Blank detail specification – Fixed capacitors for electromagnetic interference suppression and connection to the supply mains – Safety tests only

Part 14-3: Blank detail specification – Fixed capacitors for electromagnetic interference suppression and connection to the supply mains – Assessment level DZ

NOTE For the complete list of all the parts, see IEC 60384-14.

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.

## FIXED CAPACITORS FOR USE IN ELECTRONIC EQUIPMENT –

### Part 14-1: Blank detail specification: Fixed capacitors for electromagnetic interference suppression and connection to the supply mains – Assessment level D

#### Blank detail specification

A blank detail specification is a supplementary document to the sectional specification and contains requirements for style and layout and minimum content of detail specifications. In the preparation of detail specifications, the content of 1.4 of the sectional specification shall be taken into account.

#### *Identification of the detail specification and of the component*

The first page of the detail specification should have the layout recommended on the next page of this blank detail specification. The numbers between brackets correspond to the following information which shall be inserted at the position indicated.

- [1] The name of the National Standards Organization under whose authority the detail specification is published and, if applicable, the organization from which the detail specification is available.
- [2] The IECQ symbol and the number allotted to the detail specification by the IECQ General Secretariat.
- [3] The number and issue number of the IECQ generic or sectional specification as relevant; also the national reference if different.
- [4] If different from the IECQ number, the national number of the detail specification, date of issue and any further information required by the national system, together with any amendment numbers.
- [5] A brief description of the component or range of components.
- [6] Information on typical construction (when applicable).

For [5] and [6] the text to be given in the detail specification should be suitable for an entry in the IECQ Register of Approvals.

- [7] Outline drawing with main dimensions which are of importance for inter-changeability and/or reference to the appropriate national or international documents for outlines. Alternatively, the drawing may be given in an annex to the detail specification, but [7] should always contain an illustration of the general outer appearance of the component.
- [8] The level(s) of quality assessment covered by the detail specification, as appropriate.
- [9] Reference data giving information on the most important properties of the component which allow comparison between the various component types intended for the same or similar applications.

	[1]	IECQ 60384-14-1xx QC 302401-xxx	[2]
ELECTRONIC COMPONENTS OF ASSESSED QUALITY – DETAIL SPECIFICATION IN ACCORDANCE WITH:	[3]	ICE 60384-14-1 QC 302401	[4]
Outline drawing (...angle projection):	[7]	FIXED CAPACITORS FOR ELECTROMAGNETIC INTERFERENCE SUPPRESSION AND CONNECTION TO THE SUPPLY MAINS	[5]
(Other shapes are permitted within the dimensions given, see Table 1)		TYPICAL CONSTRUCTION (Examples):	[6]
For notes [ ], see preceding page.		Assessment level D	[8]

REFERENCE DATA:

[9]

Information on the availability of components qualified to this detail specification is given in IEC QC 001005.

## 1 General data

### 1.1 Method of mounting for vibration and bump or shock tests

See 1.4.2 of IEC 60384-14.

### 1.2 Dimensions

**Table 1 – Case-size dimensions**

Case-size reference	Dimensions mm						
	$L_1$	$W$	$H$	$L_2$	$L_3$	$L_4$	...

NOTE 1 When there is no case-size reference, Table 1 may be omitted and the dimensions should be given in Table 2, which then becomes Table 1.

NOTE 2 The dimensions should be given as maximum dimensions or as nominal dimensions with the tolerance.

### 1.3 Ratings and characteristics

Capacitance range (see Table 2)

Tolerance on rated capacitance

Rated voltage (see Table 2)

Climatic category

Rated temperature

Tangent of loss angle

Insulation resistance

**Table 2 – Values of capacitance related to voltages and case sizes**

Rated voltage	Case size			
	Case size	Case size	Case size	Case size
Rated capacitance (in pF and/or nF)				

### 1.4 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.

IEC 60384-1, *Fixed capacitors for use in electronic equipment – Part 1: Generic specification*

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*



## 1.5 Marking

The marking of the capacitor, if any, and the packing shall be in accordance with 1.6 of the sectional specification.

NOTE The details of the marking of the component and packing should be given in full in the detail specification.

## 1.6 Ordering information

Orders for capacitors covered by this specification shall contain, in clear or in coded form, the following information:

- a) rated capacitance;
- b) tolerance on rated capacitance;
- c) rated voltage;
- d) manufacturer's type designation;
- e) number and issue reference of the detail specification and style reference.

## 1.7 Certified records of released lots

Required/not required.

## 1.8 Additional information (not for inspection purposes)

## 1.9 Additional or increased severities or requirements to those specified in the generic and/or sectional specification

NOTE Additional or increased requirements should be specified only when essential.

**Table 3 – Other characteristics**

This table shall be used for defining characteristics which are additional to, or more severe than, those given in the sectional specification.
---

## 2 Inspection requirements

### 2.1 Procedures

**2.1.1** For qualification approval, the procedures shall be in accordance with 3.4 of the sectional specification.

**2.1.2** For quality conformance inspection, the test schedule (Tables 4 and 5) includes sampling, periodicity, severities and requirements. The formation of inspection lots is covered by 3.5.1 of IEC 60384-14.

**Table 4 – Test schedule for lot-by-lot tests (Group A and B inspection) – Assessment level D**

Subclause number and test <sup>a</sup>	Conditions of test <sup>a</sup>	IL  <sub>b</sub>	AQL %	Performance <sup>a</sup> requirements
<b>Group A1</b> 4.1 Visual examination  4.1 Dimensions (gauging)	<b>Non-destructive</b>	II	1,5	No visible damage Any marking on the capacitor shall be legible and correct  As specified in Table 1 of this specification
<b>Group A2</b> 4.2.2 Capacitance 4.2.4 Resistance (if applicable) 4.2.3 Tangent of loss angle (metallized and ceramic capacitors only) 4.2.1 Voltage proof (Test A) 4.2.5 Insulation resistance (Test A)	<b>Non-destructive</b>  Frequency ...  Method ...  Method: ...	II	0,25	Within specified tolerance Within specified tolerance Within specified limits  No permanent breakdown or flashover  See Table 12
<b>Group B1</b> 4.5 Solderability (if applicable)	<b>Destructive</b> Without ageing Method ...	S-3	2,5	Methods 1 and 2: good tinning Method 3: < 3 s
<sup>a</sup> Clause numbers of test and conditions/requirements refer to IEC 60384-14.				
<sup>b</sup> IL = inspection level; AQL = acceptance quality level.				