



SLOVENSKI STANDARD
SIST EN 60154-2:1999

01-maj-1999

Flanges for waveguides - Part 2: Relevant specifications for flanges for ordinary rectangular waveguides (IEC 60154-2:1980)

Flanges for waveguides -- Part 2: Relevant specifications for flanges for ordinary rectangular waveguides (IEC 60154-2:1980)

Flansche für Hohlleiter -- Teil 2: Allgemeine Anforderungen für Flansche für Rechteck-Hohlleiter

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Brides pour guides d'ondes -- Partie 2: Spécifications particulières de brides pour guides d'ondes rectangulaires normaux

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Ta slovenski standard je istoveten z: EN 60154-2:1997

ICS:

33.120.10 Koaksialni kabli. Valovodi Coaxial cables. Waveguides

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en

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EUROPEAN STANDARD

EN 60154-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 1997

UDC 621.372.822 621.372.831.12 621.643.4-181.1::621.753.1
ICS 33.120.10

Supersedes HD 129.2 S2:1983

Descriptors: Rectangular waveguides, dimensions of flanges

English version

Flanges for waveguides
Part 2: Relevant specifications for flanges
for ordinary rectangular waveguides
 (IEC 60154-2:1980)

Brides pour guides d'ondes
 Partie 2: Spécifications particulières
 de brides pour guides d'ondes
 rectangulaires normaux
 (CEI 60154-2:1980)

Flansche für Hohlleiter
 Teil 2: Allgemeine Anforderungen an
 Flansche für Rechteck-Hohlleiter
 (IEC 60154-2:1980)

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of the International Standard IEC 60154-2:1980, prepared by SC 46B, Waveguides and their accessories, of IEC TC 46, Cables, wires, waveguides, R.F. connectors, and accessories for communication and signalling, was approved by CENELEC as HD 129.2 S2 on 1981-07-06.

This Harmonization Document was submitted to the formal vote for conversion into a European Standard and was approved by CENELEC as EN 60154-2 on 1997-07-01.

The following date was fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 1998-06-01

Endorsement notice

The text of the International Standard IEC 60154-2:1980 was approved by CENELEC as a European Standard without any modification.

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Annex ZA (normative)**Normative references to international publications
with their corresponding European publications**

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE: When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60153-2	1974	Hollow metallic waveguides Part 2: Relevant specifications for ordinary rectangular waveguides	HD 123.2 S1	1977

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NORME
INTERNATIONALE
INTERNATIONAL
STANDARD

CEI
IEC

60154-2

Deuxième édition
Second edition
1980-01

Brides pour guides d'ondes

**Deuxième partie:
Spécifications particulières de brides
pour guides d'ondes rectangulaires normaux**

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Flanges for waveguides

Part 2: [SIST EN 60154-2:1999](https://standards.iteh.ai/catalog/standards/sist/ad1d9f73-8362-40bd-89d9-800e52c05a10/60154-2:1999)

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**Relevant specifications for flanges
for ordinary rectangular waveguides**

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Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

CODE PRIX
PRICE CODE

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*Pour prix, voir catalogue en vigueur
For price, see current catalogue*

Publication 154-2 de la CEI
(Deuxième édition — 1980)

Brides pour guides d'ondes
Deuxième partie: Spécifications particulières
de brides pour guides d'ondes rectangulaires
normaux

IEC Publication 154-2
(Second edition — 1980)

Flanges for waveguides
Part 2: Relevant specifications for flanges
for ordinary rectangular
waveguides

CORRIGENDA 1

Page 6, Préface

Dans la liste des pays qui se sont prononcés explicitement en faveur de la publication du document 46B(Bureau Central)83,

supprimer:

Pays-Bas

ajouter:

Egypte

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Page 7, Preface

[SIST EN 60154-2:1999](https://standards.iteh.ai/catalog/standards/sist/ad1d9f73-8362-40bd-89d9-8cc419c23030/sist-en-60154-2-1999)

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In the list of countries that voted explicitly in favour of publication of Document 46B(Central Office)83,

delete:

Netherlands

add:

Egypt

Page 42

Dans la vue de face de la figure, les lettres G et H doivent être interverties.

In the front view of the figure, the letters G and H should be interchanged.

Novembre 1981

November 1981

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

FLANGES FOR WAVEGUIDES

Part 2: Relevant specifications for flanges for ordinary rectangular waveguides

FOREWORD

- 1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.
- 3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.
- 4) The IEC has not laid down any procedure concerning marking as an indication of approval and has no responsibility when an item of equipment is declared to comply with one of its recommendations.

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PREFACE

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This standard has been prepared by Sub-Committee 46B, Waveguides and Their Accessories, of IEC Technical Committee No. 46, Cables, Wires and Waveguides for Telecommunication Equipment, and replaces the first edition of 1968, as well as its amendment, Publication 154-2, Amendment No. 1 (1969).

A draft on rim dimensions for PDR 14 to PDR 180 flanges was discussed at the meeting held in Bucharest in 1974 and as a result of this meeting, Document 46B(Central Office)65 was submitted to the National Committees for approval under the Six Months' Rule in March 1975.

The following countries voted explicitly in favour of publication:

Belgium	Italy	Switzerland
Denmark	Poland	Turkey
France	Romania	United Kingdom
Germany	Spain	United States of America
Israel	Sweden	

A draft on alignment hole location and circular tolerancing dimensions for E Type flanges was discussed at the meeting held in Bucharest in 1974 and as a result of this meeting, Document 46B(Central Office)67 was submitted to the National Committees for approval under the Six Months' Rule in July 1975.

The following countries voted explicitly in favour of publication:

Belgium	Japan	Turkey
Denmark	Romania	United Kingdom
France	Sweden	United States of America
Germany	Switzerland	

A draft on the tolerances of flanges in the range PDR 14 to PDR 180 and UDR 120 to UDR 180 by inscribing a circular tolerance zone within the existing alignment holes' square tolerance zone was discussed at the meeting held in Bucharest in 1974 and as a result of this meeting, Document 46B(Central Office)70 was submitted to the National Committees for approval under the Six Months' Rule in July 1976.

The following countries voted explicitly in favour of publication:

Belgium	Germany	Sweden
Bulgaria	Italy	Switzerland
Denmark	Romania	Turkey
Egypt	South Africa (Republic of)	United Kingdom

A draft on deletion of flange Types F and H was discussed at the meeting held in Bucharest in 1974 and as a result of this meeting, Document 46B(Central Office)73 was submitted to the National Committees for approval under the Six Months' Rule in May 1976.

The following countries voted explicitly in favour of publication:

Belgium	Italy	Switzerland
Denmark	Japan	Turkey
Egypt	South Africa (Republic of)	United Kingdom
Germany	Sweden	United States of America

A draft on attachment hole location and the circular tolerancing dimensions for E Type flanges was discussed at the meeting held in Stockholm in 1976, and as a result of that meeting, Document 46B(Secretariat)84 was circulated to the National Committees under the Accelerated Procedure. In July 1978, Document 46B(Central Office)79 was submitted to the National Committees, for approval under the Six Months' Rule.

The following countries voted explicitly in favour of publication:

Belgium	Japan	Switzerland
Egypt	Poland	Turkey
Germany	Spain	United Kingdom
Italy	Sweden	United States of America

Subsequent to the meeting held in Stockholm in 1976 a draft on deviations of attachment hole diameters for D Type flanges, Document 46B(Secretariat)85, was circulated to the National Committees under the Accelerated Procedure. In July 1978, Document 46B(Central Office)83 was submitted to the National Committees for approval under the Six Months' Rule.

The following countries voted explicitly in favour of publication:

Australia	Germany	Sweden
Belgium	Italy	Switzerland
Canada	Netherlands	Turkey
France	Poland	United Kingdom

At the 1978 Florence meeting an earlier decision was reconfirmed to standardize UDR flanges where there are PDR counterparts. In September 1978, Document 46B(Central Office)84 was submitted to the National Committees for approval under the Two Months' Procedure.

The following countries voted explicitly in favour of publication:

Belgium	Italy	Turkey
Canada	Poland	United Kingdom
France	Sweden	
Germany	Switzerland	

DIMENSIONAL DEVIATIONS

The values for the permissible deviations in this standard follow the principles given in ISO Recommendation R286, where:

Deviation is defined as:

algebraical difference between a size (actual, maximum, etc.) and the corresponding basic size.

Upper deviation is defined as:

algebraical difference between the maximum limit of size and the corresponding basic size.

And lower deviation is defined as:

algebraical difference between the minimum limit of size and the corresponding basic size.

It should be noted that the upper and lower deviations may have like signs, unlike signs or either deviation may be zero. This permits the basic sizes of mating shafts and holes to be identical.

The older concept of plus tolerances and minus tolerances has an undesirable limitation, in that the basic sizes of mating shafts and holes cannot be identical for clearance fits.

Other IEC publication quoted in this standard:

Publication No. 153-2: Hollow Metallic Waveguides, Part 2: Relevant Specifications for Ordinary Rectangular Waveguides.

FLANGES FOR WAVEGUIDES

Part 2: Relevant specifications for flanges for ordinary rectangular waveguides

FLANGES FOR ORDINARY RECTANGULAR WAVEGUIDES

Information on reflection

The reflections at the flange joint are of three kinds:

- a) those caused by the allowed deviations on the internal dimensions of the waveguides;
- b) those caused by lateral displacements of the two flange assemblies;
- c) those caused by the chokes (in the following, these reflections are not taken into account).

When the deviations on the dimensions of the waveguides (according to IEC Publication 153-2, Hollow Metallic Waveguides, Part 2: Relevant Specifications for Ordinary Rectangular Waveguides) and of the assemblies (according to this standard) sum up to cause maximum lateral displacement and maximum changes of the waveguide internal dimensions, the theoretical maximum reflection may be calculated from:

$$\text{reflection loss} = 10 \log_{10} \left[\frac{\lambda_g^2 \Delta a}{4a^3} + \frac{\Delta b}{b} \right]^2 + \left[\frac{4.9348 \lambda_g (\Delta a')^2}{a^3} + \frac{7.8957 (\Delta b')^2}{\lambda_g b} \right]^2 \text{ dB}$$

where:

a = basic inside width of the waveguide

b = basic inside height of the waveguide

λ_g = waveguide wavelength

Δa and Δb are the waveguide internal deviations

$\Delta a'$ and $\Delta b'$ are displacements of the waveguide axes

Notes 1. — The first term within brackets represents the worst case reflection component at a flange joint caused by changes of the waveguide internal dimensions.

2. — The second term within brackets represents the reflection component at a flange joint caused by the displacement of the flange assemblies.

At the high end of the waveguide frequency band, the reflection component is maximum when the displacement exists in the short wall direction only.

At the low end of the waveguide frequency band, the reflection component is maximum when the displacement exists in the long wall direction only.

3. — The maximum reflection at the high end of the waveguide frequency band is smaller than the maximum reflection at the low end of the band for the same magnitude of displacement.
4. — The "reflection loss" in decibels is given as a positive quantity.