IEC 62343-1

Edition 2.0 2019-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Dynamic modules –
Part 1: Performance standards – General conditions

Modules dynamiques –
Partie 1: Normes de performance – Conditions générales

IEC 62343-1:2019-02(en-fr)

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

Tel.: +41 22 919 02 11
info@iec.ch
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 corrigendum or an amendment might have been published.

IEC publications search - webstore.iec.ch/advsearchform
The advanced search enables 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 It also gives information on projects, replaced and withdrawn publications.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
Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - 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: sales@iec.ch.

Electropedia - www.electropedia.org
The world's leading online dictionary on electrotechnology, containing more than 22 000 terminological entries in English and French, with equivalent terms in 16 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary
67 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

A propos de l'IEC
La Commission Electrotechnique Internationale (IEC) 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 IEC
Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Recherche de publications IEC - webstore.iec.ch/advsearchform
La recherche avancée permet de trouver des publications IEC 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.

IEC Just Published - webstore.iec.ch/justpublished
Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et une fois par mois par email.

Service Clients - webstore.iec.ch/csc
Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: sales@iec.ch.

Electropedia - www.electropedia.org
Le premier dictionnaire d'électrotechnologie en ligne au monde, avec plus de 22 000 articles terminologiques en anglais et en français, ainsi que les termes équivalents dans 16 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

Glossaire IEC - std.iec.ch/glossary
67 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.

IEC

IEC 62343-1

Edition 2.0 2019-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Dynamic modules –
Part 1: Performance standards – General conditions

Modules dynamiques –
Partie 1: Normes de performance – Conditions générales

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 33.180.01; 33.180.99

ISBN 978-2-8322-6508-6

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.

CONTENTS

FOREWORD 3
INTRODUCTION 5
1 Scope 6
2 Normative references 6
3 Terms and definitions 6
4 Requirements of operating conditions 6
5 Requirements of operating wavelength range (spectral band) 7
Annex A (informative) Recommendations for other conditions on product specifications 8
A.1 Storage environmental conditions 8
A.2 Absolute maximum ratings 8
Bibliography 9

Table 1 – Operating conditions 7
Table 2 – Spectral bands 7
Table A.1 – Typical storage environmental conditions 8
Table A.2 – Recommended absolute maximum rating items 8

INTERNATIONAL ELECTROTECHNICAL COMMISSION

____

DYNAMIC MODULES –

Part 1: Performance standards – General conditions

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 itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
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 IEC 62343-1 has been prepared by subcommittee 86C: Fibre optic systems and active devices, of IEC technical committee 86: Fibre optics.

This second edition cancels and replaces the first edition, published in 2016, and constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) errors of Table 1 has been corrected;

b) the contents of Table A.1 has been revised.

The text of this International Standard is based on the following documents:

CDV	Report on voting
86C/1518/CDV	86C/1560/RVC

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

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

A list of all parts in the IEC 62343 series, published under the general title *Dynamic modules*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://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.

INTRODUCTION

Performance standards define standard electrical and optical performance under a set of prescribed conditions and contain a series or a set of tests and measurements with clearly defined conditions, severities and pass/fail criteria. The tests are intended to be run on initial design verification to prove the product's ability to satisfy the requirements of a specific application, market sector or user group.

Performance standards do not specify the requirements on reliability, which are defined in IEC 62343-2.

DYNAMIC MODULES –

Part 1: Performance standards – General conditions

1 Scope

This document provides general conditions for the standard performance of optical dynamic modules. All performance standards of dynamic modules are based on the general conditions defined in this document. Additional conditions are included in individual performance standards.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 62343, *Dynamic modules – General and guidance*

IEC TS 62538, *Categorization of optical devices*

ITU-T Recommendation G.Supplement 39 to ITU-T G-series Recommendations, *Optical system design and engineering considerations*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62343 and IEC TS 62538 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

4 Requirements of operating conditions

Dynamic modules are generally installed in optical transmission equipment located in central offices that have a temperature and humidity controlled environment. All dynamic modules shall satisfy their performance requirements under the general conditions specified in this document.

Table 1 specifies the minimum requirements of operating conditions for dynamic modules and devices for commercial use. All performance parameters shall satisfy the specifications defined in relevant performance standards under the operating conditions in Table 1, unless otherwise stated.

Recommendations for other conditions on product specifications are shown in Annex A.

Table 1 – Operating conditions

Items	Conditions
Operating temperature range	−5 °C to 70 °C, case temperature[a]
Operating relative humidity range	Under consideration
Operating vibration[b]	Frequency: 5 Hz to 100 Hz Acceleration: 9,8 m/s^2 (1,0 g) or amplitude of 3 mm maximum. Sweep: 0,1 oct/min 3 axis Optional test condition: Frequency: 100 Hz to 200 Hz Acceleration: 19,6 m/s^2 (2,0 g) Sweep: 8 oct/min 3 axis
Operating shock	Optional requirement
Maximum input power	Depending on individual performance standard

[a] A position at which to measure the temperature on the surface of a module shall be defined. When a dynamic module does not emit heat, a position may not need to be defined.

[b] This operating vibration condition is based on a market survey result given in IEC TR 62343-6-5.

5 Requirements of operating wavelength range (spectral band)

All individual performance standards shall define the operating wavelength range in accordance with the spectral bands defined in ITU-T Recommendation G.Supplement 39, as given in Table 2.

Table 2 – Spectral bands

Band	Descriptor	Range nm
O-band	Original	1 260 to 1 360
E-band	Extended	1 360 to 1 460
S-band	Short wavelength	1 460 to 1 530
C-band	Conventional	1 530 to 1 565
L-band	Long wavelength	1 565 to 1 625
U-band	Ultra-long wavelength	1 625 to 1 675

Annex A
(informative)

Recommendations for other conditions on product specifications

A.1 Storage environmental conditions

Storage environmental conditions are defined in the relevant product specifications. Table A.1 shows the typical storage environmental conditions for dynamic modules and devices for commercial use. Non-operating test conditions defined in performance specifications are chosen taking into account these storage environmental conditions.

Table A.1 – Typical storage environmental conditions

Items	Conditions
Storage temperature range	−40 °C to 70 °C, ambient
Storage relative humidity range	5 % to 85 % RH Absolute humidity is within 24 g per 1 kg dry air
Non-operating shock (for modules)	2 000 m/s^2, 1,33 ms, half sine for 0,125 kg < m (mass)≤ 0,225 kg. 500 m/s^2, 5 ms, half sine for 0,225 kg < m ≤ 1 kg.
Non-operating vibration	Under consideration
Non-operating drop (for modules)	100 mm height for 1 kg < m ≤ 10 kg 75 mm height for 10 kg < m ≤ 25 kg
Packed drop	1 m height
Packed vibration	5 Hz to 20 Hz for frequency; 0,1 m/s^2/Hz (2 m/s^2 at 20 Hz) 20 Hz to 200 Hz, −3 dB/oct

A.2 Absolute maximum ratings

Absolute maximum ratings are defined in relevant product specifications. Table A.2 shows the recommended items of absolute maximum ratings for dynamic modules and devices for commercial use.

Table A.2 – Recommended absolute maximum rating items

Items
Applied voltage
Applied current
Applied electrical power
Input optical power

Bibliography

IEC 62343, *Dynamic modules – General and guidance*

IEC 62343-1-2, *Dynamic modules – Part 1-2: Performance standards – Tuneable chromatic dispersion compensator (non-connectorized)*

IEC 62343-1-3, *Dynamic modules – Part 1-3: Performance standards – Dynamic gain tilt equalizer (non-connectorized)*

IEC 62343-2, *Dynamic modules – Part 2: Reliability qualification*

IEC TR 62343-6-5, *Dynamic modules – Part 6-5: Design guide – Investigation of operating mechanical shock and vibration tests for dynamic modules*

_____