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INTERNATIONAL STANDARD

Dynamic modules –
Part 1: Performance standards – General conditions

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DYNAMIC MODULES –

Part 1: Performance standards – General conditions

FOREWORD

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International Standard IEC 62343-1 has been prepared by subcommittee 86C: Fibre optic systems and active devices, of IEC technical committee 86: Fibre optics.

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

CDV	Report on voting
86C/1312/CDV	86C/1352/RVC

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

This publication 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 publication will remain unchanged until the stability date indicated on the IEC website 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- withdrawn,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.

A bilingual version of this publication may be issued at a later date.

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 is defined in IEC 62343-2.

DYNAMIC MODULES –

Part 1: Performance standards – General conditions

1 Scope

This part of IEC 62343 provides a performance standard of general conditions for dynamic modules. All dynamic modules should satisfy required performance defined in individual performance standards on the general conditions defined in this document. Additional conditions may be included in individual performance standards.

2 Normative references

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.

ITU-T G. 694.1, *Spectral grids for WDM applications: DWDM frequency grid*

3 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. It is required that all dynamic modules satisfy their required performance at the general conditions specified in this standard.

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 on the operating condition in Table 1, unless otherwise stated.

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: 1,0 g (9,8 m/s^2) or amplitude of 3 mm maximum, Sweep: 0,1 octave/min. 3 axis <optional test condition> Frequency: 100 Hz to 200 Hz Acceleration: 2,0 g (19,8 m/s^2) Sweep: 8 octave/min. 3 axis
Operating shock	<optional requirement>
Maximum input power	Depending on individual performance standard

[a] A position 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.

4 Requirements of operating wavelength range (spectral band)

All individual performance standards shall define operating wavelength range to refer the spectral bands defined in ITU-T G. 694.1 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 relevant product specifications. Table A.1 shows the typical storage environmental conditions for dynamic modules and devices for commercial use. Non-operating test conditions which are defined in performance specifications are decided to consider these storage environmental conditions.

Table A.1 – Storage environmental conditions (typical)

Items	Conditions
Storage temperature range	-40 °C to 70 °C, ambient
Storage relative humidity range	5 % to 85 % RH The absolute humidity is within 24 g per 1 kg dry air.
Non-operating shock (for components)	5 000 m/s^2, 1 ms, half sine, for less than or equal to 0,125 kg weight
Non-operating shock (for modules)	2 000 m/s^2, 1,33 ms, half sine for more than 0,125 kg weight, and less than or equal to 0,225 kg weight 500 m/s^2, 5 ms, half sine for more than 0,225 kg weight, and less than or equal to 1 kg weight
Non-operating vibration	10 Hz to 55 Hz for frequency; 1,52 mm for amplitude
Non-operating impact (drop, for modules)	100 mm height for more than 1 kg, and less than or equal to 10 kg weight; 75 mm height for more than 10 kg, and less than or equal to 25 kg weight.
Transportation impact (drop, packed)	1 m height
Transportation vibration (packed)	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/octave

A.2 Absolute maximum ratings

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

Table A.2 – Absolute maximum rating items (minimum list)

Items
Applied voltage
Applied current
Applied electrical power
Input optical power

Bibliography

IEC 62343, *Dynamic modules – General and guidance*

IEC 62343-1 (all parts), *Dynamic modules – Part 1: Performance standards*

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*

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