SLOVENSKI STANDARD
oSIST prEN 62343-3-4:2017

01-september-2017

Dinamični moduli - 3-4. del: Predloge za tehnične specifikacije - Multimedijska optična stikala

Dynamic modules - Part 3-4: Performance specification templates - Multicast optical switches

Modules dynamiques - Partie 3-4: Modèles de spécification de performance - Interrupteur optique multidiffusion

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ICS:

33.180.01	Sistemi z optičnimi vlakni na splošno	Fibre optic systems in general

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86C/1459/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: **IEC 62343-3-4 ED1**	
DATE OF CIRCULATION: **2017-06-30**	CLOSING DATE FOR VOTING: **2017-09-22**
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IEC SC 86C : FIBRE OPTIC SYSTEMS AND ACTIVE DEVICES	
SECRETARIAT: United States of America	SECRETARY: Mr Jack Dupre
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
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TITLE:

Dynamic modules - Part 3-4: Performance specification templates - Multicast optical switches

NOTE FROM TC/SC OFFICERS:

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67 International Standard IEC 62343-3-4 has been prepared by subcommittee 86C: Fibre optic
68 systems and active devices, of IEC technical committee 86: Fibre optics.

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

FDIS	Report on voting
86C/XX/FDIS	86C/XX/RVD

70

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

73 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- withdrawn,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.

The National Committees are requested to note that for this document the stability date is 2022.

THIS TEXT IS INCLUDED FOR THE INFORMATION OF THE NATIONAL COMMITTEES AND WILL BE DELETED AT THE PUBLICATION STAGE.

INTRODUCTION

A multicast optical switch (MCOS) is a dynamic module (DM), which is mainly used in a reconfigurable optical add-drop multiplexer (ROADM) system to realize CDC (colourless, directionless and contentionless) function. A multicast optical switch functions as an optical switch and a non-wavelength dependent branching device. The technical information regarding multicast optical switches and their applications in DWDM systems will be described in IEC TR 62343-6-4.

DYNAMIC MODULES – Part 3-4: Performance specification templates – Multicast optical switches

1 Scope

This part of IEC 62343 provides a performance specification template for multicast optical switches. The object is to provide a framework for the preparation of performance specifications or product specifications of multicast optical switches.

Specification parameters required in this standard is considered as essential in the product specifications or performance specifications.

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 61290-7-1, *Optical amplifiers – Test methods – Part 7-1: Out-of-band insertion losses – Filtered optical power meter method*

IEC 61300-2-14, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-14: Tests – High optical power*

IEC 61300-3-2, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-2: Examination and measurements – Polarization dependent loss in a single-mode fibre optic device*

IEC 61300-3-3, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-3: Examinations and measurements – Active monitoring of changes in attenuation and return loss*

IEC 61300-3-6, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-6: Examinations and measurements – Return loss*

IEC 61300-3-7, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-7: Examinations and measurements – Wavelength dependence of attenuation and return loss of single mode components*

IEC 61300-3-20, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-20: Examinations and measurements – Directivity of fibre optic branching devices*

IEC 61300-3-21, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-21: Examinations and measurements – Switching time*

IEC 61300-3-32, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-32: Examinations and measurements – Polarization mode dispersion measurement for passive optical components*

IEC 61300-3-38, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-38: Examinations and measurements – Group delay, chromatic dispersion and phase ripple*

IEC 61300-3-50, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-50: Examinations and measurements – Crosstalk for optical spatial switches*

IEC 62343-1, *Dynamic modules – Part 1: Performance standards – General conditions*

IEC 62343-5-2, *Dynamic modules – Part 5-2: Test methods – 1xN fixed-grid WSS – Dynamic crosstalk measurement*[1]

3 Terms and definitions

For the purposes of this document, the following terms, definitions, symbols and abbreviations 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

3.1
multicast optical switch
MCOS
dynamic module, which has port configuration of N x M, including N of 1 x M non-wavelength selective branching devices and M of N x *1* optical switches

Note 1 to entry: The optical switches are electrically controlled with software.

Note 2 to entry: $N \geq 2$ and $M \geq 2$, in general.

Note 3 to entry: There are one or two N x M function blocks in the dynamic module. For two blocks in one module case, one block is prepared for drop signal connection from the ROADM, and the other block is prepared for add signal connection to the ROADM.

Note 4 to entry: Generally, for the N port side, an add/drop functional block is connected; for the M port side, a transponder functional block is connected. If required, a tuneable optical filter functional block is connected between this module and the transponder functional block.

Note 5 to entry: The MCOS has electrical interface to control switches.

Note 6 to entry: Non-blocking optical switches are employed for the N x1 optical switch.

Note 7 to entry: A general function block diagram is shown in Figure 1.It consists primarily of two optical blocks. Block 1 is prepared for the drop signal and the Block 2 for the add signal.

Note 8 to entry: Generally, this module works optically in both directions: N side to M side, and M side to N side.

Note 9 to entry: Generally, block state is supported for each M side port by the block state of N x 1 optical switch or by similar technology.

[1] Under consideration.

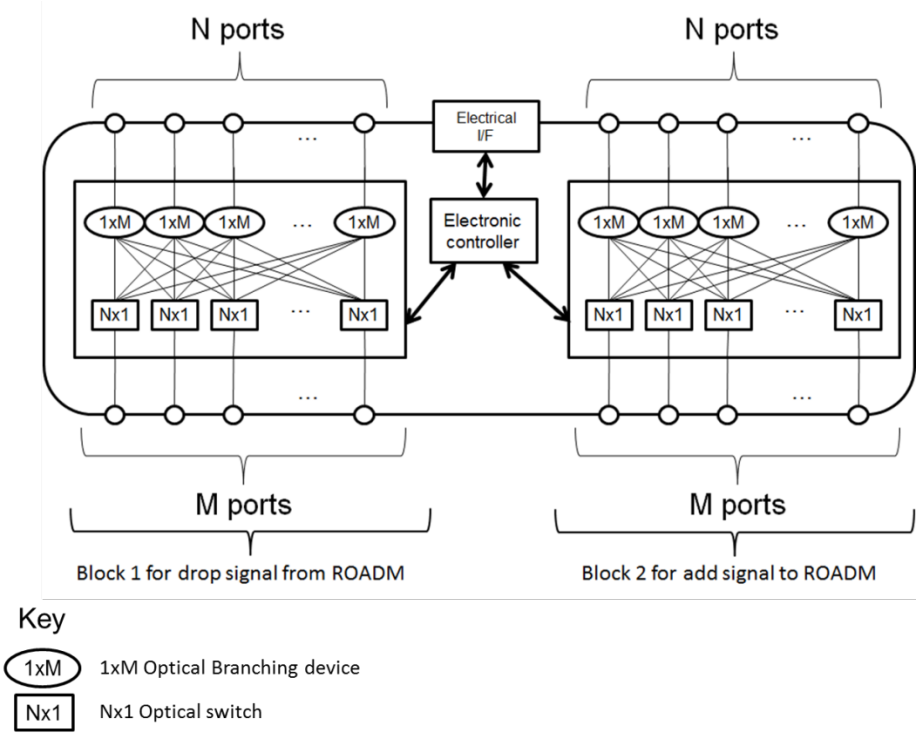

Figure 1 – Functional block diagram of the MCOS

3.2
insertion loss
IL
optical power attenuation at the particular wavelength for the conducting port pair

Note 1 to entry: Insertion loss is the reduction in optical power between an input and output port of a module expressed in decibels.

It is calculated as:

$$IL = -10\log_{10}\left(\frac{P_{out}}{P_{in}}\right)$$

where

P_{in} is the optical power launched into the port;

P_{out} is the optical power received from the other port of the conducting port pair.

Note 2 to entry: For a WSS, the insertion loss is defined in case that the attenuation is zero.

3.3
N side insertion loss difference between different ports
$\boldsymbol{IL_{diffN}}$
difference between the maximum and minimum insertion loss at an N side port for a specified set of an M side port

3.4
M side insertion loss difference between different ports
$\boldsymbol{IL_{diffM}}$
difference between the maximum and minimum insertion loss at an M side port for a specified set of an N side port

3.5
return loss
RL
fraction of input power that is returned from any port of a module at the particular wavelength expressed in decibels