IEC 61300-3-50

Edition 1.0 2013-05

INTERNATIONAL STANDARD

NORME INTERNATIONALE

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

Dispositifs d'interconnexion et composants passifs à fibres optiques – Procédures fondamentales d'essais et de mesures – Partie 3-50: Examens et mesures – Diaphonie relative aux commutateurs spatiaux optiques

IEC 61300-3-50:2013

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

PRICE CODE
CODE PRIX

M

ICS 33.180.20

ISBN 978-2-83220-795-6

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FOREWORD

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International Standard IEC 61300-3-50 has been prepared by subcommittee 86B: Fibre optic interconnecting devices and passive components, of IEC technical committee 86: Fibre optics.

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

FDIS	Report on voting
86B/3593/FDIS	86B/3622/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.

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

A list of all parts in the IEC 61300 series, published under the general title, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures* 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 web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
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- replaced by a revised edition, or
- amended.

FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS – BASIC TEST AND MEASUREMENT PROCEDURES –

Part 3-50: Examinations and measurements – Crosstalk for optical spatial switches

1 Scope

This part of IEC 61300 describes the procedure to measure the crosstalk of optical signals between the ports of a multiport *M* x *N* (*M* input ports and *N* output ports) fibre optic spatial switch. The crosstalk is defined as the ratio of the optical power at an output port which comes from the unconnected input port, to the optical power at the output port which comes from the connected input port.

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.

IEC 61300-1, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 1: General and guidance*

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

3 General description

The general meaning of crosstalk is the ratio of an undesired signal power to a desired signal power. The crosstalk of *N* x 1 (*N* input ports and one output port) fibre optic spatial switches is shown in Figure 1. For an *N* x *M* (*N* input ports and *M* output ports) fibre optic switch, the crosstalk is the same as that for an *N* x 1 optical switch but expanded across *M* output ports. A fibre optic switch is basically bidirectional, i.e. a 1 x *N* (1 input port and *N* output ports) optical switches can operate as an *N* x 1 (*N* input ports and 1 output port) switch. The crosstalk for an *N* x 1 optical switch is measured as a 1 x *N* optical switch, as shown in Figure 2. When the input port for a 1 x *N* optical switch is connected to a light source, the crosstalk for a transmitting output port versus an isolated output port is the ratio of output power of these two output ports, expressed in decibels. Crosstalk is a negative value in dB.

Do not use “isolation” in place of “crosstalk” as the two have a different values and meanings. The meaning of isolation is the optical loss for a port pair intended to block transmission, i.e. for which loss is nominally infinite. Isolation is a positive value in dB. Crosstalk is a negative value in dB.

NOTE 1 For WDM devices, crosstalk is defined as the value of the ratio between the optical power of the specified signal and all noise, as defined in IEC 62074-1 [1][1]. The crosstalk for WDM devices is generally used as

[1] Numbers in square brackets refer to the Bibliography.