



IEC 62148-1

Edition 2.0 2017-08

# INTERNATIONAL STANDARD

---

**Fibre optic active components and devices – Package and interface standards –  
Part 1: General and guidance**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

ICS 33.180.01

ISBN 978-2-8322-4803-4

**Warning! Make sure that you obtained this publication from an authorized distributor.**

## CONTENTS

FOREWORD.....	3
INTRODUCTION.....	5
1 Scope.....	6
2 Normative references .....	6
3 Terms and definitions .....	6
4 Classification.....	7
5 Specifications of optical interfaces.....	7
5.1 General.....	7
5.2 Optical connector interfaces (types 1 and 2) .....	7
5.3 Pigtail interfaces (types 3 and 4).....	8
5.4 Free space optical coupling interface (types 5 and 6).....	8
5.5 Optical port assignments.....	8
6 Specifications of electrical interfaces .....	8
6.1 General.....	8
6.2 Electrical connector interfaces (types 2, 4 and 6) .....	8
6.3 Non-connector type interfaces (types 1, 3 and 5) .....	8
6.4 Numbering of electrical terminals .....	8
6.5 Electrical terminal assignment .....	8
7 Outline and footprint of active components and devices.....	9
7.1 Drawings of case outline .....	9
7.2 Drawings of footprint.....	9
7.3 Mechanical fixturing .....	9
Bibliography.....	10

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**FIBRE OPTIC ACTIVE COMPONENTS AND DEVICES –  
PACKAGE AND INTERFACE STANDARDS –****Part 1: General and guidance****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 62148-1 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 2002, and constitutes a technical revision.

This edition includes the following significant technical change with respect to the previous edition: addition of a free space optical coupling interface in Clause 5.

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

CDV	Report on voting
86C/1406A/CDV	86C/1466/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 62148 series, published under the general title *Fibre optic active components and devices – Package and interface standards*, 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.

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

## INTRODUCTION

Fibre optic active components and devices are used to convert electrical signals into optical signals or vice versa. The optical performance criteria are generally well specified for a number of internationally agreed application areas, for example, consulting ITU-T Recommendations originating in Study Group 15, *Networks, Technologies and Infrastructures for Transport, Access and Home*. Manufacturers using the standards are responsible for meeting the required performance and/or reliability and quality assurance under a recognized scheme.

# **FIBRE OPTIC ACTIVE COMPONENTS AND DEVICES – PACKAGE AND INTERFACE STANDARDS –**

## **Part 1: General and guidance**

### **1 Scope**

This part of IEC 62148 aims to assure interchangeability in physical interfaces between fibre optic active components and devices supplied by different manufacturers, but it does not guarantee operation between such devices.

### **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 60191-1, *Mechanical standardization of semiconductor devices – Part 1: General rules for the preparation of outline drawings of discrete devices*

IEC 60794 (all parts), *Optical fibre cables*

IEC 61754 (all parts), *Fibre optic interconnecting devices and passive components – Fibre optic connector interfaces*

IEC 62148 (all parts), *Fibre optic active components and devices – Package and interface standards*

ISO 1101, *Geometrical product specifications (GPS) – Geometrical tolerancing – Tolerances of form, orientation, location and run-out*