

Optical fibres —

Part 1-49: Measurement methods and test procedures — Differential mode delay

ICS 33.180.10

National foreword

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According to the replies received by the end of the review period, the responsible BSI Committee will decide whether to support the conversion into a international standard, to extend the life of the Technical Specification for another 3 years or to withdraw it. Comments should be sent in writing to the Secretary of BSI Subcommittee GEL/86/1, Optical fibres and cables, at 389 Chiswick High Road, London W4 4AL, giving the document reference and clause number and proposing, where possible, an appropriate revision of the text.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

Cross-references

The British Standards which implement international publications referred to in this document may be found in the *BSI Catalogue* under the section entitled “International Standards Correspondence Index”, or by using the “Search” facility of the *BSI Electronic Catalogue* or of British Standards.

This Draft for Development, having been prepared under the direction of the Electrotechnical Sector Policy and Strategy Committee, was published under the authority of the Standards Policy and Strategy Committee on 23 September 2002

Summary of pages

This document comprises a front cover, an inside front cover, the IEC/PAS title page, pages 2 to 16, an inside back cover and a back cover.

The BSI copyright date displayed in this document indicates when the document was last issued.

Amendments issued since publication

Amd. No.	Date	Comments

© BSI 23 September 2002

ISBN 0 580 40379 3

IEC/PAS 60793-1-49

Edition 1.0
2002-05

PRE-STANDARD

Optical fibres –

Part 1-49:
Measurement methods and test procedures –
Differential mode delay

PUBLICLY AVAILABLE SPECIFICATION



INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

Reference number
IEC/PAS 60793-1-49

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

OPTICAL FIBRES –

**Part 1-49: Measurement methods and test procedures –
Differential mode delay**

FOREWORD

A PAS is a technical specification not fulfilling the requirements for a standard, but made available to the public.

IEC-PAS 60793-1-49 has been processed by subcommittee 86A: Fibres and cables, of IEC technical committee 86: Fibre Optics.

The text of this PAS is based on the following document:

This PAS was approved for publication by the P-members of the committee concerned as indicated in the following document:

Draft PAS	Report on voting
86A/767/PAS	86A/786/RVD

Following publication of this PAS, the technical committee or subcommittee concerned will investigate the possibility of transforming the PAS into an International Standard.

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OPTICAL FIBRES –

Part 1-49 : Measurement methods and test procedures – Differential mode delay

1 Introduction

1.1 Intent

This technical specification describes a method for characterizing the modal structure of a graded-index multimode fibre. This information is useful for assessing the bandwidth performance of a fibre when used with laser sources.

With this method, the output from a fibre that is single-mode at the test wavelength excites the multimode fibre under test. The probe spot is scanned across the endface of the fibre under test, and the optical pulse delay is determined at specified offset positions. The difference in optical pulse delay time between the fastest and slowest modes of the fibre under test is determined. The user specifies the upper and lower limits of radial offset positions over which the probe fibre is scanned in order to specify desired limits of modal structure.

1.2 Scope

This technical specification applies only to multimode, graded-index glass-core (category A1) fibres. The test method is commonly used in production and research facilities, but is not easily accomplished in the field.

1.3 Definitions

The user of this standard specifies the inner (R_{INNER}) and outer (R_{OUTER}) limits of radial offset positions on the endface of the fibre under test over which the probe spot is scanned. The estimated difference in optical pulse delay time between the fastest and slowest modes excited for all radial offset positions between and including R_{INNER} and R_{OUTER} will be called Differential Mode Delay (DMD).

2 Normative References

The following normative documents contain provisions, which, through reference in this text, constitute provisions of this technical specification. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this technical specification are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60825-1: *Safety of laser products – Part 1: Equipment classification, requirements and user's guide.*

IEC 60825-2: *Safety of laser products – Part 2: Safety of optical fibre communication systems.*

IEC 60793-1-1: *Optical fibres – Part 1: Generic specification – Section 1: General*

IEC 60793-1-22: *Optical fibres – Part 1-22: Measurement methods and test procedures – Length measurement*

IEC 60793-1-42: *Optical fibres – Part 1-42: Measurement methods and test procedures – Chromatic dispersion*

IEC 60793-1-45: *Optical fibres – Part 1-45: Measurement methods and test procedures – Mode field diameter*