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Title: BS EN IEC 61757-1-4 Fibre optic sensors

Part 1-4: Strain measurement – Distributed sensing based on Rayleigh scattering

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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/Figure/ Table/Note	Type of comment	Commend (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



86C/1961/CD

COMMITTEE DRAFT (CD)

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CLOSING DATE FOR COMMENTS:
2025-03-21

SUPERSEDES DOCUMENTS:
86C/1936/NP, 86C/1949A/RVN

IEC SC 86C : FIBRE OPTIC SYSTEMS, SENSING AND ACTIVE DEVICES		
SECRETARIAT: United States of America		SECRETARY: Mr Fred Heismann
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 17,TC 18,TC 20,TC 38,TC 45,TC 65,TC 85		HORIZONTAL FUNCTION(S):
ASPECTS CONCERNED:		

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Recipients of this document are invited to submit, with their comments, notification of any local regulations or technical reasons that may exist and should be considered should this proposal proceed, recognizing that failure to address such requirements could result in the need for new or existing "In Some Countries" clauses. (SEE [AC/22/2007](#) OR [NEW GUIDANCE DOC](#)).

TITLE:

Fibre optic sensors – Part 1-4: Strain measurement – Distributed sensing based on Rayleigh scattering

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

FIBRE OPTIC SENSORS –

Part 1-4: Strain measurement –
Distributed sensing based on Rayleigh scattering

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IEC 61757-1-4 has been prepared by subcommittee 86C: Fibre optic systems and active devices, of IEC technical committee 86: Fibre optics. It is an International Standard.

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

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

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts in the IEC 61757 series, published under the general title *Fibre optic sensors*, 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 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.

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INTRODUCTION

120 This document is part of the IEC 61757 series, which is dedicated to fibre optic sensors. Generic
121 specifications for fibre optic sensors are defined in IEC 61757.

122 The individual parts of the IEC 61757 series are numbered as IEC 61757-*M-T*, where *M* denotes
123 the measurand and *T* the technology of the fibre optic sensor. The IEC 61757-1-*T* series is
124 concerned with strain measurements.

125

FIBRE OPTIC SENSORS –

Part 1-4: Strain measurement – Distributed sensing based on Rayleigh scattering

1 Scope

This part of IEC 61757 defines the terminology, structure, and measurement methods of distributed fibre optic sensors for absolute strain measurements based on spectral correlation analysis of Rayleigh backscattering signatures in single-mode fibres, where the fibre is the distributed strain sensing element.

This document also specifies the most important features and performance parameters of these distributed fibre optic strain sensors and defines procedures for measuring these features and parameters.

This part of IEC 61757 does not apply to point measurements or to dynamic strain measurements. Distributed strain measurements using Brillouin scattering in single-mode fibres are covered in IEC 61757-1-2.

The most relevant applications of this strain measurement technique are listed in informative Annex A, while informative Annex B provides a short description of the underlying measurement principle.

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 60793-2-50, *Optical fibres - Part 2-50: Product specifications - Sectional specification for class B single-mode fibres*

IEC 61757, *Fibre optic sensors – Generic specification*

IEC 61757-1-2:2023, *Fibre optic sensors – Part 1-2: Strain measurement- Distributed sensing based on Brillouin scattering*.

IEC 61757-2-2, *Fibre optic sensors – Part 2-2: Temperature measurement – Distributed sensing*

IEC 61757-3-2, *Fibre optic sensors – Part 3-2: Acoustic sensing and vibration measurement – Distributed sensing*

ISO/IEC Guide 98-3, *Uncertainty of measurement – Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)*

3 Terms, definitions, abbreviated terms, and symbols

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61757, IEC 61757-1-2, IEC 61757-2-2, IEC 61757-3-2, and the following apply.