ICS 33.180.99 SLOVENSKÁ TECHNICKÁ NORMA Júl 2017

STN	**Optické vláknové senzory Časť 1-1: Meranie deformácie Deformačné senzory založené na vláknovej Braggovej mriežke**	**STN EN 61757-1-1 35 9275**

Fibre optic sensors - Part 1-1: Strain measurement - Strain sensors based on fibre Bragg gratings

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 06/17

Obsahuje: EN 61757-1-1:2017, IEC 61757-1-1:2016

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61757-1-1

February 2017

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English Version

Fibre optic sensors - Part 1-1: Strain measurement - Strain sensors based on fibre Bragg gratings (IEC 61757-1-1:2016)

Capteurs à fibres optiques - Partie 1-1: Mesure de déformation - Capteurs de déformation basés sur des réseaux de Bragg à fibres (IEC 61757-1-1:2016)

LWL¬-Sensoren - Teil 1-1: Zugmessungen - Zugsensoren basierend auf Faser-Bragg-Gatter (IEC 61757-1-1:2016)

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

EN 61757-1-1:2017

European foreword

The text of document 86C/1322/CDV, future edition 1 of IEC 61757-1-1, prepared by SC 86C "Fibre optic systems and active devices" of IEC/TC 86 "Fibre optics" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61757-1-1:2017.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2017-08-17
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2020-02-17

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

This publication is to be read in conjunction with EN 61757-1:2012.

Endorsement notice

The text of the International Standard IEC 61757-1-1:2016 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60793-1-30	NOTE	Harmonized as EN 60793-1-30.
IEC 60793-1-31	NOTE	Harmonized as EN 60793-1-31.
IEC 60793-1-33	NOTE	Harmonized as EN 60793-1-33.
ISO 527-4	NOTE	Harmonized as EN ISO 527-4.
ISO 7500-1	NOTE	Harmonized as EN ISO 7500-1.
ISO 14125	NOTE	Harmonized as EN ISO 14125.

Annex ZA
(normative)
Normative references to international publications with their corresponding European publications

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.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60050	series	International Electrotechnical Vocabulary_- Part_102: Mathematics_- General concepts and linear algebra	-	series
IEC 60068-2	series	Environmental testing -- Part 2: Tests	EN 60068-2	series
IEC 60793-2	-	Optical fibres - Part 2: Product specifications - General	EN 60793-2	-
IEC 60874-1	-	Fibre optic interconnecting devices and passive components - Connectors for optical fibres and cables -- Part 1: Generic specification	EN 60874-1	-
IEC 61300-2	series	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures -- Part 2-1: Tests - Vibration (sinusoidal)	-	series
IEC 61757-1	2012	Fibre optic sensors -- Part 1: Generic specification	EN 61757-1	2012
IEC 62129-1	-	Calibration of wavelength/optical frequency measurement instruments - Part 1: Optical spectrum analyzers	EN 62129-1	-
IEC 62129-2	-	Calibration of wavelength/optical frequency measurement instruments -- Part 2: Michelson interferometer single wavelength meters	EN 62129-2	-
IEC/TR 61931	-	Fibre optic - Terminology	-	-
IEC/TS 62129-3	-	Calibration of wavelength/optical frequency measurement instruments - Part 3: Optical frequency meters using optical frequency combs	-	-
ISO/IEC Guide 99	-	International vocabulary of metrology - Basic and general concepts and associated terms (VIM)	-	-

IEC 61757-1-1

Edition 1.0 2016-02

INTERNATIONAL STANDARD

colour inside

Fibre optic sensors –
Part 1-1: Strain measurement – Strain sensors based on fibre Bragg gratings

IEC 61757-1-1:2016-02(en)

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IEC Glossary - std.iec.ch/glossary
65 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

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INTERNATIONAL STANDARD

Fibre optic sensors –
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FIBRE OPTIC SENSORS –

Part 1-1: Strain measurement – Strain sensors based on fibre Bragg gratings

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

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

CDV	Report on voting
86C/1322/CDV	86C/1353/RVC

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 61757 series, published under the general title *Fibre optic sensors*, can be found on the IEC website.

This International Standard is to be used in conjunction with IEC 61757-1:2012.

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

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

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

It has been decided to restructure the IEC 61757 series, with the following logic. From now on, the sub-parts will be renumbered as IEC 61757-M-T, where M denotes the measure and T, the technology.

The existing part IEC 61757-1:2012 will be renumbered as IEC 61757 when it will be revised as edition 2.0 and will serve as an umbrella document over the entire series.

FIBRE OPTIC SENSORS –

Part 1-1: Strain measurement – Strain sensors based on fibre Bragg gratings

1 Scope

This part of IEC 61757 defines detail specifications for fibre optic sensors using one or more fibre Bragg gratings (FBG) as the sensitive element for strain measurements. Generic specifications for fibre optic sensors are defined in IEC 61757-1:2012.

This standard specifies the most important features and characteristics of a fibre optic sensor for strain measurements based on use of an FBG as the sensitive element, and defines the procedures for their determination. Furthermore, it specifies basic performance parameters and characteristics of the corresponding measuring instrument to read out the optical signal from the FBG. This standard refers to the measurement of static and dynamic strain values in a range of frequencies.

A blank detail specification is provided in Annex B.

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 60050 (all parts), *International Electrotechnical Vocabulary* (available at http://www.electropedia.org)

IEC 60068-2 (all parts), *Environmental testing – Part 2: Tests*

IEC 60793-2, *Optical fibres – Part 2: Product specifications – General*

IEC 60874-1, *Fibre optic interconnecting devices and passive components – Connectors for optical fibres and cables – Part 1: Generic specification*

IEC 61300-2 (all parts), *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2: Tests*

IEC 61757-1:2012, *Fibre optic sensors – Part 1: Generic specification*

IEC 62129-1, *Calibration of wavelength/optical frequency measurement instruments – Part 1: Optical spectrum analyzers*

IEC 62129-2, *Calibration of wavelength/optical frequency measurement instruments – Part 2: Michelson interferometer single wavelength meters*

IEC TS 62129-3, *Calibration of wavelength/optical frequency measurement instruments – Part 3: Optical frequency meters using optical frequency combs*

IEC TR 61931, *Fibre optic – Terminology*

ISO/IEC Guide 99, *International vocabulary of metrology — Basic and general concepts and associated terms (VIM)* Terms and definitions