

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

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 61757-1-1:2017 sisaldab Euroopa standardi EN 61757-1-1:2017 ingliskeelset teksti.	This Estonian standard EVS-EN 61757-1-1:2017 consists of the English text of the European standard EN 61757-1-1:2017.
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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-Gitter
(IEC 61757-1-1:2016)

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Europäisches Komitee für Elektrotechnische Normung

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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:

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standard or by endorsement
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standards conflicting with the
document have to be withdrawn

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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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
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)	-	-

CONTENTS

FOREWORD.....	5
INTRODUCTION.....	7
1 Scope.....	8
2 Normative references.....	8
3 Terms and definitions	9
4 Symbols	13
5 Structure and characteristics.....	14
5.1 Fibre Bragg grating (FBG)	14
5.2 FBG strain sensor configuration.....	18
5.3 Measuring point and installation	18
5.4 Gauge length	19
5.5 Strain and reference strain	19
5.6 Reference wavelength.....	19
5.7 Stability behaviour.....	20
5.7.1 Drift and creep	20
5.7.2 Shape stability of the Bragg grating peak.....	20
5.7.3 Hysteresis.....	20
5.8 Test specimen.....	20
5.9 Indication of the measured values	21
5.10 Zero point related measurement	21
5.11 Non-zero point related measurement	21
5.12 Production set.....	21
5.13 FBG strain sensor standard type	21
5.14 FBG strain sensor series	21
6 Features and characteristics to be reported.....	21
6.1 Construction details and geometrical dimensions	21
6.2 Configuration of the FBG strain sensor	22
6.3 Temperature and humidity range	22
6.4 Connecting requirement	22
7 Features and characteristics to be measured	22
7.1 Sampling and statistical evaluation	22
7.1.1 Sampling	22
7.1.2 Random sampling	22
7.1.3 Type testing.....	22
7.1.4 Series testing.....	22
7.1.5 Individual sample testing	23
7.1.6 Reporting the measuring result.....	23
7.1.7 Sample conditioning.....	23
7.1.8 Ambient test conditions	23
7.1.9 Required type of test for individual characteristics	23
7.2 Bragg wavelength λ_B	24
7.2.1 General	24
7.2.2 Measuring procedure	24
7.2.3 Evaluation.....	25
7.2.4 Reporting.....	25

7.3	FBG spectral width	25
7.3.1	Measuring procedure	25
7.3.2	Evaluation.....	25
7.3.3	Reporting.....	25
7.4	FBG reflectivity	25
7.4.1	Measuring procedure	25
7.4.2	Evaluation.....	26
7.4.3	Reporting.....	26
7.5	FBG Strain sensitivity	26
7.5.1	General	26
7.5.2	Tensile test set-up	27
7.5.3	Measuring procedure tensile test.....	27
7.5.4	Evaluation.....	28
7.5.5	Reporting.....	28
7.6	Gauge factor k	28
7.6.1	General	28
7.6.2	Bending test set-up	29
7.6.3	Measurement procedure.....	31
7.6.4	Evaluation.....	32
7.6.5	Reporting.....	32
7.7	Maximum strain range at room temperature	32
7.7.1	General	32
7.7.2	Test set-up	32
7.7.3	Measuring procedure	33
7.7.4	Evaluation.....	33
7.7.5	Reporting.....	33
7.8	Fatigue behaviour	34
7.8.1	Test set-up	34
7.8.2	Measuring procedure	34
7.8.3	Evaluation.....	34
7.8.4	Reporting.....	35
7.9	Minimum operating radius of curvature	35
7.9.1	Measuring procedure	35
7.9.2	Evaluation.....	35
7.9.3	Reporting.....	35
7.10	Temperature and humidity ranges.....	35
7.10.1	General	35
7.10.2	Measuring procedure	36
7.10.3	Evaluation.....	36
7.10.4	Reporting.....	36
7.11	Other environmental influences	36
7.12	Temperature-induced strain response.....	36
7.12.1	General	36
7.12.2	Test set-up	37
7.12.3	Measuring procedure	38
7.12.4	Evaluation.....	38
7.12.5	Reporting.....	38
7.13	Proof test and lifetime considerations	38
7.13.1	General	38

7.13.2	Measuring procedure	39
7.13.3	Evaluation.....	39
7.13.4	Reporting.....	40
8	Recommendations for use of FBG measuring instruments	40
Annex A (informative)	Further properties of FBG strain sensors	41
A.1	General.....	41
A.2	Extended explanation of FBG side-lobes for different conditions of use	41
Annex B (informative)	Blank detail specification.....	45
B.1	General.....	45
B.2	Mechanical setup of the FBG strain sensor	45
B.3	Operational characteristics of the FBG strain sensor	45
B.4	Limiting parameters of the FBG strain sensor.....	46
B.5	Temperature data of the FBG strain sensor.....	46
B.6	Further information of the FBG strain sensor given upon request.....	46
B.7	Key performance data of the FBG measuring instrument.....	46
Annex C (informative)	Polarization effects	48
Annex D (informative)	Applied FBG strain sensors.....	49
D.1	General.....	49
D.2	Recommended bonding process	49
Bibliography		50
Figure 1	– Characteristics of the Bragg grating reflectance spectrum	10
Figure 2	– Operation principle of a fibre Bragg grating in an optical waveguide	15
Figure 3	– Reflection spectrum of a fibre Bragg grating array	17
Figure 4	– Gauge length between two attachment points	18
Figure 5	– Reflection spectrum of a FBG [calculated (left) and measured spectrum (right)]	24
Figure 6	– Determination of R_{FBG} from the FBG reflection spectrum (left, Equation (9)) and transmission spectrum (right, Equation (10))	26
Figure 7	– Example set-up of a tensile test facility	27
Figure 8	– Test layout (left) for the 4-point bending test with scheme of lateral force and bending moment curves (right)	29
Figure 9	– Determination of the strain via displacement measurement	30
Figure 10	– Whole-surface applied sensor on a bended flexural beam	31
Figure 11	– Test specimen with applied FBG strain sensor	34
Figure A.1	– Side-lobes in the case of a single FBG strain sensor.....	42
Figure A.2	– Fundamental peaks and detected side-lobe peaks in the case of serially multiplexed FBGs	42
Figure A.3	– Spectral peaks in the case of serially multiplexed FBGs	43
Figure A.4	– Parameters to identify fundamental peaks and side-lobes	43
Figure A.5	– Identification of fundamental peaks and side-lobes	44
Table 1	– Required type of test for individual characteristics	23

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*