SLOVENSKI STANDARD
SIST EN 62754:2017

01-december-2017

Izračun negotovosti parametrov valovne oblike (IEC 62754:2017)

Computation of waveform parameter uncertainties (IEC 62754:2017)

Berechnung der Messunsicherheiten von Schwingungsabbildparametern (IEC 62754:2017)

Calcul des incertitudes des paramètres des formes d'onde (IEC 62754:2017)

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Ta slovenski standard je istoveten z: EN 62754:2017

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EUROPEAN STANDARD

NORME EUROPÉENNE

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EN 62754

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English Version

Computation of waveform Parameter uncertainties (IEC 62754:2017)

Calcul des incertitudes des paramètres des formes d'onde (IEC 62754:2017)

Berechnung der Messunsicherheiten von Schwingungsabbildparametern (IEC 62754:2017)

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European foreword

The text of document 85/585/FDIS, future edition 1 of IEC 62754, prepared by IEC/TC 85 "Measuring equipment for electrical and electromagnetic quantities" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62754:2017.

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)	2018-03-28
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2020-06-28

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

IEC 60359:2001 NOTE Harmonized as EN 60359:2002.

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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 60469	2013	Transitions, pulses and related waveforms - Terms, definitions and algorithms	EN 60469	2013

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Computation of waveform parameter uncertainties

Calcul des incertitudes des paramètres des formes d'onde

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COMPUTATION OF WAVEFORM PARAMETER UNCERTAINTIES

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International Standard IEC 62754 has been prepared by IEC technical committee 85: Measuring equipment for electrical and electromagnetic quantities.

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

FDIS	Report on voting
85/585/FDIS	85/X588/RVD

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.

The terms used throughout this document which have been defined in Clause 3 are in italic type.

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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,
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COMPUTATION OF WAVEFORM PARAMETER UNCERTAINTIES

1 Scope

This document specifies methods for the computation of the temporal and amplitude parameters and their associated uncertainty for step-like and impulse-like waveforms. This document is applicable to any and all industries that generate, transmit, detect, receive, measure, and/or analyse these types of pulses.

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 60469:2013, *Transitions, pulses and related waveforms – Terms, definitions and algorithms*

3 Terms and definitions

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For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

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- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
aberration region

3.1.1
post-transition aberration region
interval between a user-specified *instant* and a fixed *instant*, where the fixed *instant* is the first sampling *instant* succeeding the 50 % *reference level instant* for which the corresponding *waveform* value is within the *state boundaries* of the *state* succeeding the 50 % *reference level instant*

[SOURCE: IEC 60469:2013, 3.2.1.1, modified – the note 1 to entry has been deleted.]

3.1.2
pre-transition aberration region
interval between a user-specified *instant* and a fixed *instant*, where the fixed *instant* is the first sampling *instant* preceding the 50 % *reference level instant* for which the corresponding *waveform* value is within the *state boundaries* of the *state* preceding the 50 % *reference level instant*

[SOURCE: IEC 60469:2013, 3.2.1.2, modified – the note 1 to entry has been deleted.]

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3.2
amplitude

3.2.1
impulse amplitude
difference between the specified *level* corresponding to the *maximum peak* (*minimum peak*) of the positive (negative) *impulse-like waveform* and the *level* of the *state* preceding the first *transition* of that *impulse-like waveform*

[SOURCE: IEC 60469:2013, 3.2.3.1]

3.2.2
waveform amplitude
difference between the *levels* of two different *states* of a *waveform*

SEE Figure 1.

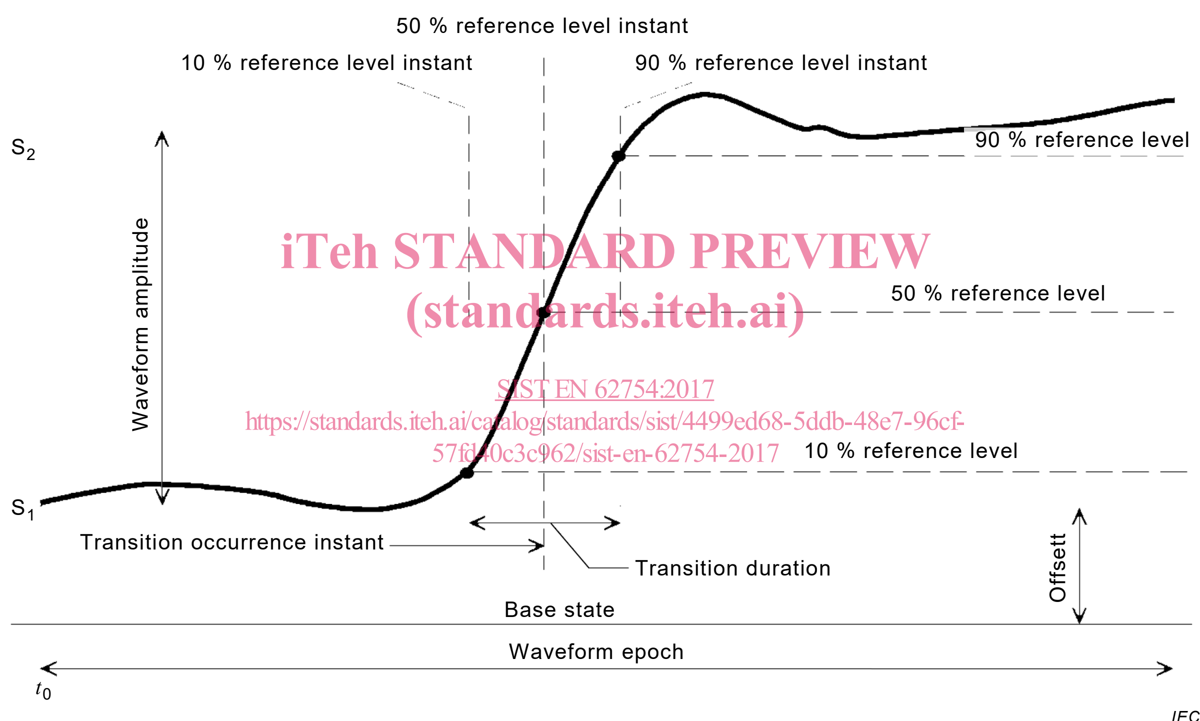

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Figure 1 – Reference levels, reference level instants, waveform amplitude, and transition duration for a single positive-going transition

[SOURCE: IEC 60469:2013, 3.2.3.2, modified – the Note 1 to entry has been deleted and the reference to Figure 1 has been added.]

3.3
correction
operation that combines the results of the conversion operation with the transfer function information to yield a *waveform* that is a more accurate representation of the *signal*

Note 1 to entry Correction may be effected by a manual process by an operator, a computational process, or a compensating device or apparatus. Correction shall be performed to an accuracy that is consistent with the overall accuracy desired in the *waveform measurement process*.

[SOURCE: IEC 60469:2013, 3.2.4]

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3.4
coverage factor
numerical factor used as a multiplier of the combined standard uncertainty in order to obtain an expanded uncertainty

Note 1 to entry: A coverage factor, k, is typically in the range 2 to 3.

Note 2 to entry: Coverage factor is also defined as a "number larger than or equal to one by which a *combined standard measurement uncertainty* is multiplied to obtain an *expanded measurement uncertainty*," (See ISO/IEC Guide 99:2007, 2.38).

[SOURCE: ISO/IEC Guide 98-3:2008, 2.3.6, modified – the Note 2 to entry has been added.]

3.5
degrees of freedom
in general, the number of terms in a sum minus the number of constraints on the terms of the sum

[SOURCE: ISO/IEC Guide 98-3:2008, C.2.31]

3.6
impulse response
output *signal* from an instrument, device, or system that is the result of an input *signal*, where this input *signal* can be described by a unit impulse function, $\delta(t)$:

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$$\begin{aligned} \delta(t = 0) &= 1 \\ \delta(t \neq 0) &= 0 \end{aligned} \tag{1}$$

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3.7
instant
particular time value within a *waveform epoch* that, unless otherwise specified, is referenced relative to the *initial instant* of that *waveform epoch*

[SOURCE: IEC 60469:2013, 3.2.13]

3.7.1
initial instant
first sample *instant* in the *waveform*

[SOURCE: IEC 60469:2013, 3.2.13.3]

3.7.2
impulse center instant
instant at which a user-specified approximation to the *maximum peak* (*minimum peak*) of the positive (negative) *impulse-like waveform* occurs

[SOURCE: IEC 60496:2013, 3.2.13.2]

3.7.3
reference level instant
instant at which the *waveform* intersects a specified *reference level*

SEE Figure 1.

[SOURCE: IEC 60469:2013, 3.2.13.5, modified – the reference to Figure 1 has been added.]

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3.8
interval

set of all values of time between a first *instant* and a second *instant*, where the second *instant* is later in time than the first

Note 1 to entry: These first and second *instants* are called the endpoints of the *interval*. The endpoints, unless otherwise specified, are assumed to be part of the *interval*.

[SOURCE: IEC 60469:2013, 3.2.15]

3.9
level
constant value having the same units as y

SEE Figure 1.

Note 1 to entry: y is the *signal*.

[SOURCE: IEC 60469:2013, 3.2.17, modified – the reference to Figure 1 has been added as well as the note 1 to entry.]

3.9.1
percent reference level
reference level specified by:

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$$y_{x\%} = y_{0\%} + \frac{x}{100\%}(y_{100\%} - y_{0\%}) \quad (2)$$

where

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$0\ \% < x < 100\ \%$

$y_{0\%}$ = *level* of *low state*

$y_{100\%}$ = *level* of *high state*

$y_{0\%}$, $y_{100\%}$, and $y_{x\%}$ are all in the same unit of measurement

SEE Figure 1.

Note 1 to entry: Commonly used *reference levels* are: 0 %, 10 % , 50 %, 90 %, and 100 %.

[SOURCE: IEC 60469:2013, 3.2.17.3, modified – the reference to Figure 1 has been added.]

3.10
measurand
quantity intended to be measured

[SOURCE: ISO/IEC Guide 99:2007, 2.3, modified – the notes have been deleted.]

3.11
measurement model
model of measurement
model
mathematical relation among all quantities known to be involved in a measurement

[SOURCE: ISO/IEC Guide 99:2007, 2.48, modified – the notes have been deleted.]