

SLOVENSKI STANDARD SIST EN 62884-2:2018

01-februar-2018

Merilne tehnike za piezoelektrične, dielektrične in elektrostatične oscilatorje - 2. del: Metoda za merjenje faznega trepetanja (IEC 62884-2:2017)

Measurement techniques of piezoelectric, dielectric and electrostatic oscillators - Part 2: Phase jitter measurement method (IEC 62884-2:2017)

iTeh STANDARD PREVIEW (standards.iteh.ai)

Ta slovenski standard je istoveten Z. SIST EN 6284-2-2018 https://standards.iten.avcatalog/standards/sist/0esc5666-9174-4232-a0a0-889c4d64ee82/sist-en-62884-2-2018

ICS:

31.140 Piezoelektrične naprave Piezoelectric devices

SIST EN 62884-2:2018

en

SIST EN 62884-2:2018

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 62884-2:2018

EUROPEAN STANDARD NORME EUROPÉENNE **EUROPÄISCHE NORM**

EN 62884-2

December 2017

ICS 31.140

English Version

Measurement techniques of piezoelectric, dielectric and electrostatic oscillators - Part 2: Phase jitter measurement method (IEC 62884-2:2017)

Techniques de mesure des oscillateurs piézoélectriques, diélectriques et électrostatiques - Partie 2 : méthode de mesure des gigues de phase (IEC 62884-2:2017)

Messverfahren für piezoelektrische, dielektrische und elektrostatische Oszillatoren - Teil 2: Messverfahren für Phasenjitter (IEC 62884-2:2017)

This European Standard was approved by CENELEC on 2017-10-04. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member. ds.iteh.ai Slali

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions. https://standards.iteh.ai/catalog/standards/sist/0e5c566b-9f74-4232-a0a0-

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

© 2017 CENELEC All rights of exploitation in any form and by any means reserved worldwide for CENELEC Members.

European foreword

The text of document 49/1212/CDV, future edition 1 of IEC 62884-2:2017, prepared by IEC/TC 49 "Piezoelectric, dielectric and electrostatic devices and associated materials for frequency control, selection and detection" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62884-2:2017.

The following dates are fixed:

•	latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2018-07-04
•	latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2020-10-04

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

iTeh STANDARD PREVIEW Endorsement notice

The text of the International Standard IEC 62884-2:2017 was approved by CENELEC as a European Standard without any modification.

Annex ZA

(normative)

Normative references to international publications with their corresponding European publications

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.

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.ceneice.cu.				
Publication	Year	Title	<u>EN/HD</u>	Year
IEC 60027	series	Letter symbols to be used in electrical	EN 60027	series
		technology		
IEC 60050-561	-	International electrotechnical vocabulary -	-	-
		Part 561: Piezoelectric, dielectric and		
		electrostatic devices and associated		
		materials for frequency control, selection		
IEC 60469	-	I ransitions, pulses and related waveforms	EN 60469	-
		- Terms, definitions and algorithms		
IEC 60617	-	Standard data element types with	-	-
		associated classification scheme for		
		electric components Part 4: IEC		
	iTe	reference collection fo standard data element types and component classes	EW	
IEC 60679-1	2017	Piezoelectric, dielectric and electrostatic oscillators of assessed quality - Part 1 :	EN 60679-1	2017
		Generic specification		
IEC 62884-1	2017	Measurementstechniques of piezoelectric,	EN 62884-1	2017
	https://star	dielectric and electrostatic oscillators 9 Par	232-a0a0-	
	-	1: Basic methods for the measurement		
ISO 80000-1	-	Quantities and units Part 1: General	EN ISO 80000-1	-

SIST EN 62884-2:2018

iTeh STANDARD PREVIEW (standards.iteh.ai)



Edition 1.0 2017-08

INTERNATIONAL STANDARD



Measurement techniques of piezoelectric, dielectric and electrostatic oscillators – (standards.iteh.ai) Part 2: Phase jitter measurement method

<u>SIST EN 62884-2:2018</u> https://standards.iteh.ai/catalog/standards/sist/0e5c566b-9f74-4232-a0a0-889c4d64ee82/sist-en-62884-2-2018

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ICS 31.140

ISBN 978-2-8322-4762-4

Warning! Make sure that you obtained this publication from an authorized distributor.

CONTENTS

FOREWORD4				
INTE	INTRODUCTION			
1	Scop	e	7	
2	Norm	native references	7	
3	Term	s and definitions	7	
4	Test	and measurement procedures	8	
. 1	1	General	o	
4. 4	. ı 2	Test methods of phase litter	0 8	
ч.	. <u>~</u> 421	General	0 8	
	422	Measurement in the time domain	0	
	423	Measurement in the data domain	0 0	
	4.2.4	Measurement in the frequency domain	9	
4	.3	Input and output impedances of the measurement system	.13	
4	4	Measurement equipment	13	
	4.4.1	General	13	
	4.4.2	Jitter floor	13	
	4.4.3	Output wave form	13	
	4.4.4	Output veltage	14	
4.	.5	Test fixture 11 en STANDARD PREVIEW	14	
4.	.6	Cable, tools and instruments and so on itch. ai)	.14	
5	Meas	surement and the measurement environment	.14	
5	1	Set-up before taking measurements 2884-2:2018	14	
5.	.2	Points to be considered and noted at the time of measurement ²⁰ -	.14	
5.	.3	Treatment after the measurement	14	
6	Meas	surement	15	
6	1	Reference temperature	15	
6	2	Measurement of temperature characteristics	15	
6	3	Measurement under vibration	15	
6	4	Measurement at the time of impact	15	
6	5	Measurement in accelerated ageing	15	
7	.o Othe	r points to be noted	15	
8	Misc		15	
Δnne		normative) Calculation method for the amount of phase litter	16	
			10	
A.	. I 2		10	
A.	.∠ 2	Explanation	10	
A.	.5	Commontory on theoretical positioning of phase litter	10	
A.	.4 5	Description	10	
A.	.J ^ 5 1	Conoral	10	
	A.5.1		10	
	A.5.2	Pook to pook litter	19	
	Δ 5 /	Random iitter	19 20	
	Δ 5 5	Deterministic litter	20 20	
	A.5.5	Deterministic juter	20 20	
	A.5.0	 Fellou (pellouic) jillet Data dependent iitter 	20 20	
	A.U.1	Data-uepenuent jitter Total jitter	∠∪ 21	
	A.J.0		∠ I	

IEC 62884-2:2017 © IEC 2017 - 3 -

A.6	Points to be considered for measurement	21
A.6.1	1 Measurement equipment	21
A.6.2	2 Factors of measurement errors	22
Bibliograp	ohy	24

Figure 1 – Phase jitter measurement with sampling oscilloscope	9
Figure 2 – Block diagram of a jitter and wander analyser according to ITU-T O.172	11
Figure 3 – Equivalent block diagram	13
Figure A.1 – Concept diagram of SSB phase noise	18
Figure A.2 – Voltage versus time	19
Figure A.3 – Explanatory diagram of the amount of jitter applied to RMS jitter	21
Figure A.4 – Explanatory diagrams of random jitter, deterministic jitter, and total jitter	22

Table 1 – Fourier frequency range for phase noise test	.10
Table 2 – Standard bit rates for various applications	.12

iTeh STANDARD PREVIEW (standards.iteh.ai)

- 4 -

INTERNATIONAL ELECTROTECHNICAL COMMISSION

MEASUREMENT TECHNIQUES OF PIEZOELECTRIC, DIELECTRIC AND ELECTROSTATIC OSCILLATORS –

Part 2: Phase jitter measurement method

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.
- The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user. (Standards.iten.al)
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter. https://standards.iteh.ai/catalog/standards/sist/0e5c566b-9f74-4232-a0a0-
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 62884-2 has been prepared by IEC technical committee 49: Piezoelectric, dielectric and electrostatic devices and associated materials for frequency control, selection and detection.

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

CDV	Report on voting
49/1212/CDV	49/1243/RVC

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.

IEC 62884-2:2017 © IEC 2017 - 5 -

A list of all parts in the IEC 62884 series, published under the general title *Measurement techniques of piezoelectric, dielectric and electrostatic oscillators*, 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 "http://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.

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.

iTeh STANDARD PREVIEW (standards.iteh.ai)

INTRODUCTION

A crystal oscillator as a highly efficient and highly precise source of a frequency oscillation is widely used for fields such as the electronic equipment, communication equipment, measurement equipment and a clock. Also recently, digitalization of these equipments is advancing rapidly. In this situation, the frequency of crystal oscillator requires high precision and high stability and reduction of noise with oscillating phenomenon. A phase jitter is one of the noise characteristic in oscillation characteristic and precise measurement which is needed when shipping a component to a customer.

For advance application in electronic information and communication technology, (e.g. advanced satellite communications, control circuits for electric vehicle (EV)), necessity arises for the measurement method for common guidelines of phase jitter. In these days, measurement method of phase jitter also becomes more important from the electromagnetic influence (EMI) point of view.

This document has been restructured from IEC 60679-1:2007 (third edition) and IEC 60679-6:2011 (first edition). The test methods for oscillators have been separated from IEC 60679-6:2011 into IEC 62884 (all parts). This document covers the phase jitter measurement.

iTeh STANDARD PREVIEW (standards.iteh.ai)