

INTERNATIONAL STANDARD



Laser display devices – **STANDARD PREVIEW**
Part 1-2: Vocabulary and letter symbols
(standards.iteh.ai)

[IEC 62906-1-2:2015](https://standards.iteh.ai/catalog/standards/sist/75be28b8-2a3c-4db8-af67-ab90ae93c25a/iec-62906-1-2-2015)

<https://standards.iteh.ai/catalog/standards/sist/75be28b8-2a3c-4db8-af67-ab90ae93c25a/iec-62906-1-2-2015>



THIS PUBLICATION IS COPYRIGHT PROTECTED
Copyright © 2015 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

IEC Catalogue - webstore.iec.ch/catalogue

The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

IEC publications search - www.iec.ch/searchpub

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and also once a month by email.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in 15 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary

More than 60 000 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.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

IEC 62906-1-2:2015
INTERNATIONAL STANDARD PREVIEW
(standards) (ch) (ab)
https://standards.iteh.ai/catalog/standards/iec-62906-1-2-2015
ab90ae93c25a/iec-62906-1-2-2015

INTERNATIONAL STANDARD



Laser display devices –
Part 1-2: Vocabulary and letter symbols

STANDARD PREVIEW
(standards.iteh.ai)

[IEC 62906-1-2:2015](https://standards.iteh.ai/catalog/standards/sist/75be28b8-2a3c-4db8-af67-ab90ae93c25a/iec-62906-1-2-2015)

<https://standards.iteh.ai/catalog/standards/sist/75be28b8-2a3c-4db8-af67-ab90ae93c25a/iec-62906-1-2-2015>

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 31.260

ISBN 978-2-8322-2779-4

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

CONTENTS

FOREWORD	3
1 Scope	5
2 Terms, definitions, and abbreviations	5
2.1 Classification of terms	5
2.2 Fundamental terms	5
2.3 Terms related to speckle	5
2.4 Terms related to display category	7
2.5 Terms related to optical devices	7
2.6 Terms related to light sources	8
3 Letter symbols (quantity symbols / unit symbols)	8
Annex A (informative) Categorization of speckle and speckle contrast ratio	9
A.1 Objective speckle	9
A.2 Subjective speckle	9
A.3 Speckle contrast ratio	10
Bibliography	12
Figure A.1 – Optical configuration to observe objective speckle	9
Figure A.2 – Optical configuration to observe subjective speckle	10
Figure A.3 – Classification map of speckle	10
Table 1 – Letter symbols	8

<https://standards.iteh.ai/catalog/standards/sist/75be28b8-2a3c-4db8-af67-ab90ae93c25a/iec-62906-1-2-2015>

INTERNATIONAL ELECTROTECHNICAL COMMISSION

LASER DISPLAY DEVICES –

Part 1-2: Vocabulary and letter symbols

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.
- 2) 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.
- 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/75be291b8-2a3e-4148-af67-9e46cc5c091e/iec-62906-1-2-2015>
- 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 62601-1-2 has been prepared by IEC technical committee 110: Electronic display devices.

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

FDIS	Report on voting
110/661/FDIS	110/672/RVD

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 62906 series, published under the general title *Laser display devices*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website 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.

iTeh STANDARD PREVIEW **(standards.iteh.ai)**

[IEC 62906-1-2:2015](#)

<https://standards.iteh.ai/catalog/standards/sist/75be28b8-2a3c-4db8-af67-ab90ae93c25a/iec-62906-1-2-2015>

LASER DISPLAY DEVICES –

Part 1-2: Vocabulary and letter symbols

1 Scope

This part of IEC 62906 gives the preferred terms, their definitions and symbols for laser display devices and relevant components with the object of using the same terminology when publications are prepared in different countries.

2 Terms, definitions, and abbreviations

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

2.1 Classification of terms

Terms for laser display devices and relevant components are classified as follows:

- a) fundamental terms;
- b) terms related to speckle;
- c) terms related to display category;
- d) terms related to optical devices;
- e) terms related to light sources.

2.2 Fundamental terms

2.2.1

laser display device

LDD

display device using a laser or lasers, based on stimulated emission

2.2.2

hybrid laser display device

hybrid LDD

h-LDD

display device using both a laser or lasers and spontaneous emission-based light sources

2.3 Terms related to speckle

2.3.1

speckle

<laser display devices> irregularly aligned spatially-modulated image created by coherent or partially coherent lights as a result of interference on a sensor plane of the visual sensory system of the observer

Note 1 to entry: For a human observer, the sensor plane of the visual sensory system is the retina of the eye.

2.3.2

monochromatic speckle

speckle when the light source is monochromatic or quasi-monochromatic

2.3.3

colour speckle

speckle when the light source is multi-coloured

2.3.4**speckle pattern**

illuminance distribution of speckle

2.3.5**speckle contrast ratio****speckle contrast****SCR**
 C_s

ratio of the illuminance standard deviation to the average of the speckle pattern in the measurement field

Note 1 to entry: See Clause A.3 for further information.

[SOURCE: J.W. GOODMAN, *Speckle Phenomena in Optics: Theory and Applications* (Roberts and Company Publishers, Colorado, 2006)]

2.3.6**signal to noise ratio**

< speckle-oriented noise > inverse of the speckle contrast ratio

2.3.7**objective speckle**

speckle observed by an optical sensory system without imaging optics

Note 1 to entry: See Clause A.1 for further information.

[SOURCE: M. KURASHIGE et al., *The evaluation of speckle contrast with variable speckle generator*, J. Soc. Info. Display 19/9, 631-638 (2011)]

<https://standards.iteh.ai/catalog/standards/sist/75be28b8-2a3c-4db8-af67-ab90ae93c25a/iec-62906-1-2-2015>

2.3.8**subjective speckle**

speckle observed by a visual sensory system with imaging optics

Note 1 to entry: See Clause A.2 for further information.

[SOURCE: M. KURASHIGE et al., *The evaluation of speckle contrast with variable speckle generator*, J. Soc. Info. Display 19/9, 631-638 (2011)]

2.3.9**projected speckle**

subjective speckle arising from a projected interference pattern created by coherent or partially coherent light on a screen

Note 1 to entry: See Clause A.2 for further information.

[SOURCE: M. KURASHIGE et al., "Classification of subjective speckle for evaluation of laser display", SID Symposium Digest 45, 419-422 (2014)]

2.3.10**screen speckle**

subjective speckle arising from the scattering or diffusion of coherent or partially coherent light on a screen

Note 1 to entry: See A.2 for further information.

[SOURCE: M. KURASHIGE et al., "Classification of subjective speckle for evaluation of laser display", SID Symposium Digest 45, 419-422 (2014)]

2.3.11**speckle grain size**

spacing of interference fringes generated by coherent or partial coherent beams on a sensor plane of a visual sensory system

2.3.12**minimum objective speckle grain size** s_{obj}

minimum spacing of interference fringes which is determined by the interference of two coherent beams from the opposite edges of the illuminated area to the sensor plane

Note 1 to entry: See Clause A.1 for further information.

2.3.13**minimum subjective speckle grain size** s_{subj}

minimum spacing of interference fringes which is determined by the interference of two coherent beams from the opposite edges of the effective diameter of imaging optics to the sensor plane

Note 1 to entry: See Clause A.2 for further information.

2.4 Terms related to display category**2.4.1****raster-scanned projection**

image projection (on a screen or a projection plane) by raster-scanning laser beams

2.4.2**full-frame projection**

image projection (on a screen or a projection plane) by a 2D spatial light modulator

2.4.3**line-scanned projection**

image projection (on a screen or a projection plane) by a combination of a 1D spatial light modulator and a 1D optical scanner

2.4.4**front projection**

image projection (on a screen or a projection plane) from the same side as the observer

2.4.5**rear projection**

image projection (on a screen or a projection plane) from the side opposite to that of the observer

2.4.6**retina direct projection**

image projection directly on the retina

2.5 Terms related to optical devices**2.5.1****screen****projection screen****projection plane**

plane on which an image is projected and observed as diffused light