



IEC 62908-12-10

Edition 1.0 2017-06

INTERNATIONAL STANDARD



**Touch and interactive displays –
Part 12-10: Measurement methods of touch displays – Touch and electrical
performance**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 31.120

ISBN 978-2-8322-4394-7

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

CONTENTS

FOREWORD.....	5
1 Scope.....	7
2 Normative references	7
3 Terms and definitions	7
4 Measuring conditions.....	7
4.1 Standard measuring environmental conditions	7
4.2 Standard atmospheric conditions for reference measurements and tests	8
4.3 Standard positioning equipment and setup.....	8
4.4 Human operator alternative to standard positioning equipment	9
4.5 Test bar size, shape and material parameters.....	10
5 Touch performance measuring methods	11
5.1 General.....	11
5.2 Accuracy test.....	11
5.2.1 Purpose.....	11
5.2.2 Test procedure	11
5.2.3 Report	15
5.3 Repeatability/jitter test	15
5.3.1 Purpose.....	15
5.3.2 Test procedure	15
5.3.3 Report	17
5.4 Linearity test.....	18
5.4.1 Purpose.....	18
5.4.2 Test procedure	18
5.4.3 Report	20
5.5 Reproducibility test.....	20
5.5.1 Purpose.....	20
5.5.2 Test procedure	21
5.5.3 Report	22
5.6 Signal-to-noise ratio (SNR) test	23
5.6.1 Purpose.....	23
5.6.2 Test procedure	24
5.6.3 Report	25
5.7 Report rate test.....	25
5.7.1 Purpose.....	25
5.7.2 Test procedure	25
5.7.3 Report	26
5.8 Latency test	26
5.8.1 Purpose.....	26
5.8.2 Test procedure	26
5.8.3 Report	27
5.9 Electrical noise immunity test.....	27
5.9.1 Purpose.....	27
5.9.2 Test procedure	27
5.9.3 Report	28
5.10 Water droplet immunity test	28
5.10.1 Purpose.....	28
5.10.2 Test procedure	29

- 5.10.3 Report 29
- 5.11 Optical noise immunity test 29
 - 5.11.1 Purpose 29
 - 5.11.2 Test procedure 30
 - 5.11.3 Report 30
- 5.12 Power consumption test 30
 - 5.12.1 Purpose 30
 - 5.12.2 Test procedure 30
 - 5.12.3 Report 30
- 5.13 Perpendicular touch/hover distance test 30
 - 5.13.1 Purpose 30
 - 5.13.2 Test procedure 30
 - 5.13.3 Report 31
- Annex A (informative) Electrical performance measuring methods of touch sensor 32
 - A.1 Resistance 32
 - A.1.1 General 32
 - A.1.2 Test samples 32
 - A.1.3 Measurement equipment 32
 - A.1.4 Procedures 32
 - A.1.5 Data analysis 33
 - A.1.6 Report 33
 - A.2 Trans-capacitance 33
 - A.2.1 General 33
 - A.2.2 Test samples 33
 - A.2.3 Measurement equipment 33
 - A.2.4 Procedure 33
 - A.2.5 Data analysis 34
 - A.2.6 Report 34
- Figure 1 – Composition of test equipment 9
- Figure 2 – Concept of performance measurement 9
- Figure 3 – Example of manual test tool (left), positioning without triggering a touch event (middle) and recording a touch event (right) 10
- Figure 4 – Examples of test bars 10
- Figure 5 – Location of edge area and centre area 12
- Figure 6 – Point grid 12
- Figure 7 – Accuracy definition 13
- Figure 8 – Example of measurement result and calculation of accuracy 15
- Figure 9 – Repeatability in touch sensor module 16
- Figure 10 – Example of measurement result for repeatability 17
- Figure 11 – Dragging line for linearity test 18
- Figure 12 – Linearity definition 19
- Figure 13 – Example of measurement and calculation of linearity 20
- Figure 14 – Example of reproducibility test results 21
- Figure 15 – Reproducibility test procedure 22
- Figure 16 – Examples of measurements of reproducibility – Velocity dependence 23
- Figure 17 – SNR definition concept 24

Figure 18 – Dragging direction for reporting time measurement	25
Figure 19 – Reporting time interval measurement	26
Figure 20 – Latency measurement	26
Figure 21 – Example of the effect of external noise	27
Figure 22 – External noise injection	28
Figure 23 – Report of external noise immunity	28
Figure 24 – Example of water drop effect	29
Figure 25 – Water droplet test procedure	29
Figure 26 – Perpendicular touch/hover distance measurement.....	31
Figure A.1 – Diagrammatic representation of measurement of resistance	33
Figure A.2 – Diagrammatic representation of measurement of capacitance	34
Table 1 – Standard conditions for reference measurements and tests	8
Table A.1 – Specification of LCR impedance meter	32

INTERNATIONAL ELECTROTECHNICAL COMMISSION

TOUCH AND INTERACTIVE DISPLAYS –

**Part 12-10: Measurement methods of touch displays –
Touch and electrical performance**

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.
- 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 62908-12-10 has been prepared by IEC technical committee 110: Electronic display devices.

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

FDIS	Report on voting
110/861/FDIS	110/872/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.

A list of all parts in the IEC 62908 series, published under the general title *Touch and interactive displays*, 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.

TOUCH AND INTERACTIVE DISPLAYS –

Part 12-10: Measurement methods of touch displays – Touch and electrical performance

1 Scope

This part of IEC 62908 specifies the standard measuring conditions and methods for determining touch performance of a touch sensor module. This document is applicable to touch sensor modules, where the structural relationship between touch sensor, touch controller, touch sensor module, display panel, touch display panel, and touch display module is defined in IEC 62908-1-2.

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 60068-1, *Environmental testing – Part 1: General and guidance*

IEC 62908-1-2¹, *Touch and interactive displays – Part 1-2: Generic – Terminology and letter symbols*

¹ Under preparation. Stage at the time of publication: IEC/AFDIS 62908-1-2:2017.