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INTERNATIONAL STANDARD

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

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FOREWORD

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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- withdrawn,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.

The contents of the corrigendum of Novembre 2018 have been included in this copy.

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60068-1 and IEC 62908-1-2 apply.

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

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

4 Measuring conditions

4.1 Standard measuring environmental conditions

Measurements shall be carried out under the standard environmental conditions:

- temperature: 25 °C ± 3 °C,
- relative humidity: 25 % RH to 85 % RH,
- atmospheric pressure: 86 kPa to 106 kPa.

When different environmental conditions are used, they shall be noted in the measurement report.

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

4.2 Standard atmospheric conditions for reference measurements and tests

If the parameters to be measured depend on temperature, pressure and humidity and their dependence on temperature, pressure and humidity is unknown, the atmospheres to be specified shall be selected from the following values, as shown in Table 1. The selected values shall be noted in the relevant specifications.

Table 1 – Standard conditions for reference measurements and tests

Temperature [a] °C	**Relative humidity** [a, b] % RH	**Air pressure** [a] kPa
20, 25, 30, and 35 ± 3	45 to 75	86 to 106
[a] Including extreme values. [b] Absolute humidity ≤ 22 g/m^3.		

4.3 Standard positioning equipment and setup

Standard positioning equipment for touch performance shall be the positioning machine equipped with a test bar, a moving arm, and a stage onto which the touch sensor module is placed, as shown in Figure 1. The positioning machine shall move its arm and stage to place the test bar on the touch sensor module.

There are three types of positions associated with a given test: target, actual and reported positions. The target position is a desired measurement location in physical space referenced to a fixed datum on the touch sensor module surface. The actual position is the actual location of contact during test, referenced to the same fixed datum, which may differ from the target position due to test bar placement error. The reported position is the location reported by the touch controller.

As shown in Figure 2, the reported positions from the touch controller are analysed to define performance measures with respect to the target positions.

The touch sensor module and the stage shall be aligned correctly while setting up the measurement equipment, because a misalignment between them may introduce coordinate shifts or rotation between the actual touch positions and target positions; each positioning machine has its inherent accuracy, which means that an actual touched position does not coincide with its target position. The performance measurements based on target positions may include errors due to the accuracy of the positioning machine. The touch sensor module under test shall be attached to the stage and connected to the electrical interface. The test bar of the selected diameter shall be attached to the moving arm.

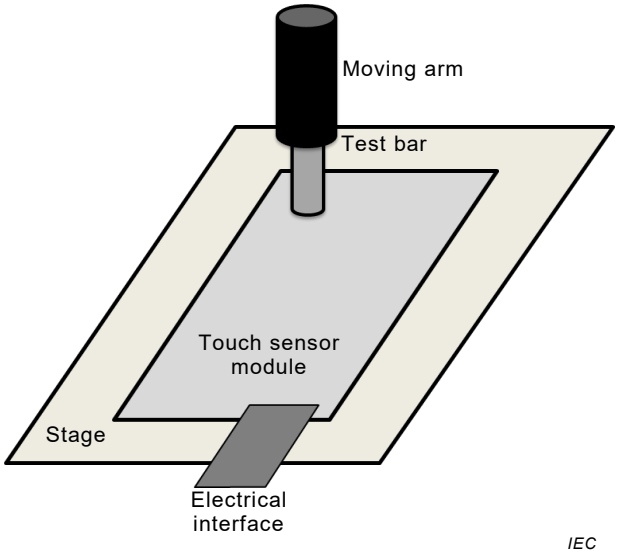


Figure 1 – Composition of test equipment

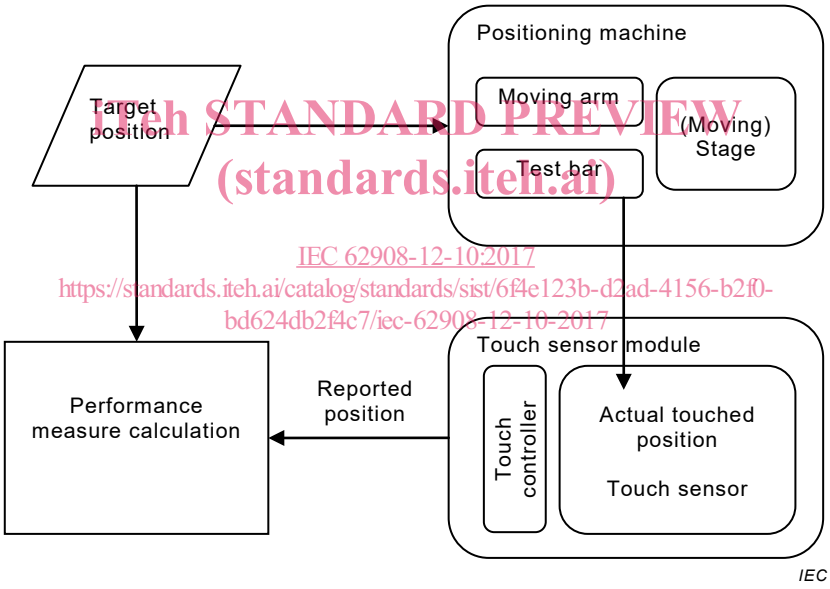


Figure 2 – Concept of performance measurement

4.4 Human operator alternative to standard positioning equipment

Under certain circumstances, for example if the display under test is too large for suitable positioning equipment to be available, a suitably designed test arm may be manually positioned to enable completion of a subset of the tests described in this document. In this situation, the test arm needs to be designed carefully to minimise the reasonable achievable error between actual and target positions when conducting measurements. An example of such a test arm may consist of a rod with a sliding tip (Figure 3, left), whose materials are chosen so that contact between the rod and the display does not trigger a touch event (Figure 3, middle), whereas contact between the sliding tip and the display does trigger a touch event (Figure 3, right). Such a test arm may be placed accurately and reliably by the human operator with the sliding tip away from the display, subsequent to which a measurement may be made by sliding the tip into contact with the display.

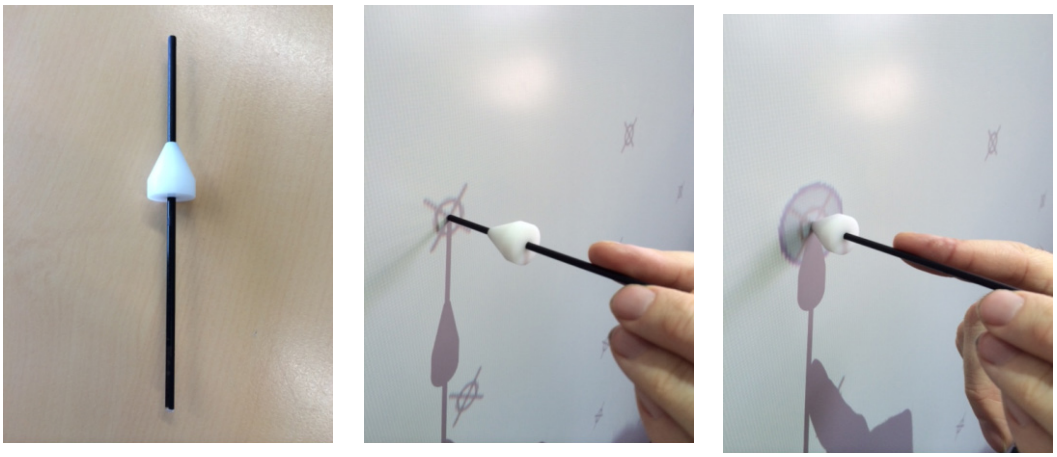


Figure 3 – Example of manual test tool (left), positioning without triggering a touch event (middle) and recording a touch event (right)

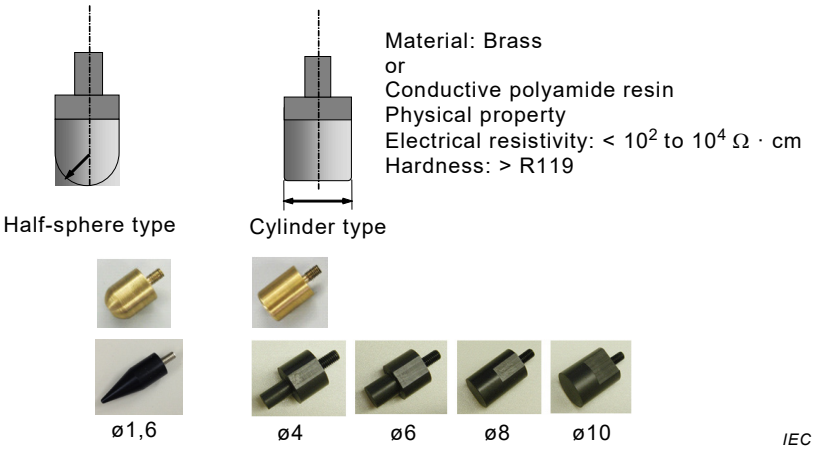
4.5 Test bar size, shape and material parameters

The parameters of the test bar shall be size, shape, and material. Examples of suitable sizes and shapes of the test bar are shown in Figure 4. Care shall be taken to ensure that material parameters for the test bar are appropriately chosen given the device category under test.

When the touch sensor module is a capacitive touch system, the test bar shall be electrically conductive and shall additionally be grounded in order to avoid potential performance degradation due to electrical noise, unless otherwise stated. A test bar may have an insulating layer on the base to model the effect of a gloved finger.

For reflection-based optical systems, the reflectivity of the contact end of the test bar shall be chosen to be spectrally representative of human skin.

In all cases, the appropriate properties (including size, shape and material) of the test bar shall be reported.



NOTE ø (test bar diameter) = 4 mm, 6 mm, 7 mm, 9 mm, or 12 mm.

Figure 4 – Examples of test bars