

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500 V DC – Equipment for testing, measuring or monitoring of protective measures –

Part 17: Non-contact AC voltage indicators

Sécurité électrique dans les réseaux de distribution basse tension au plus égale à 1 000 V C.A. et 1 500 V C.C. – Dispositifs de contrôle, de mesure ou de surveillance de mesures de protection –

Partie 17: Indicateurs de tension alternative sans contact



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTRICAL SAFETY IN LOW VOLTAGE DISTRIBUTION SYSTEMS
UP TO 1 000 V AC AND 1 500 V DC – EQUIPMENT FOR TESTING,
MEASURING OR MONITORING OF PROTECTIVE MEASURES –****Part 17: Non-contact AC voltage indicators****FOREWORD**

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

FDIS	Report on voting
85/790/FDIS	85/803/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

A list of all parts of the IEC 61557 series, published under the general title *Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500 V DC – Equipment for testing, measuring or monitoring of protective measures*, can be found on the IEC website.

This International Standard is to be used in conjunction with IEC 61557-1:2019.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

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- reconfirmed,
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INTRODUCTION

The purpose of this document is to specify the minimum construction and performance requirements of the non-contact AC voltage indicator in normal use and in case of reasonably foreseeable misuse to reduce the risk of hazard during and after the voltage test.

The most reasonably foreseeable misuse of the non-contact AC voltage indicator is that the operator uses it to check the absence of hazardous voltages followed by an unsafe interpretation of the negative indication with respect to the current situation.

The assessment of the absence of hazardous live voltage is performed by using a 2-pole -voltage detector in compliance with IEC 61243-3.

ELECTRICAL SAFETY IN LOW VOLTAGE DISTRIBUTION SYSTEMS UP TO 1 000 V AC AND 1 500 V DC – EQUIPMENT FOR TESTING, MEASURING OR MONITORING OF PROTECTIVE MEASURES –

Part 17: Non-contact AC voltage indicators

1 Scope

This part of IEC 61557 defines minimum performance requirements for non-contact AC voltage indicators to reduce the risk of electric shock for the testing person and bystanders caused by the wrong interpretation of the indication.

Products designed and manufactured in accordance with this document are for use by (electrically) skilled persons only. Non-contact AC voltage indicators are not designed for testing the absence of the operating voltage.

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 61010-031:2015, *Safety requirements for electrical equipment for measurement, control and laboratory use – Part 031: Safety requirements for hand-held probe assemblies for electrical measurement and test*
IEC 61010-031:2015/AMD1:2018¹

IEC 61326-1:2020, *Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements*

IEC 61557-1:2019, *Electrical safety in low voltage distribution systems up to 1 000 V a.c. and 1 500 V d.c. – Equipment for testing, measuring or monitoring of protective measures – Part 1: General requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61557-1 and the following 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>

¹ A consolidated version of this document exists, comprising IEC 61010-31:2015 and IEC 61010-31:2015/AMD1:2018.

3.1**non-contact AC voltage indicator**

hand-held and battery-powered probe without direct contact with the live part, indicating the potential between the live part and the human body, which is usually close to the earth potential

3.2**protective fingerguard**

part of the enclosure that indicates the limit of safe access and reduces the risk of the operator touching hazardous live parts

[SOURCE: IEC 61010-031:2015, 3.1.3]

3.3**sensitivity range**

range of voltage where the non-contact AC voltage indicator is triggering

4 Requirements**4.1 General**

The requirements of IEC 61557-1:2019, Clause 4 and the following requirements apply.

4.2 Influencing quantities – Operating uncertainty (*B*), percentage operating uncertainty (*B* [%])

IEC 61557-1:2019, 4.2 does not apply.

4.3 Rated operating conditions

The following rated operating conditions shall apply:

- a) ambient temperature range from: -10 °C to $+45\text{ °C}$;
- b) maximum relative humidity 95 % at temperatures up to 31 °C , decreasing linearly to 50 % relative humidity at 45 °C ;
- c) distance through air between live conductor and probe tip: $\leq 2\text{ mm}$;
- d) position within a solid angle of 30° around the vertical axis between probe tip and conductor;
- e) capacitance greater than or equal to 100 pF between the hand-held part and reference earth, see Figure 2.

4.4 Battery test facility

In addition to IEC 61557-1:2019, 4.4, the following applies.

Non-contact AC voltage indicators shall have a self-test capability. As a minimum, the self-test function shall confirm correct operation of the batteries and of the voltage indication.

4.5 Safety

The requirements in accordance with IEC 61557-1:2019, 4.5, do not apply. The following requirements shall apply instead.

All electrical safety aspects are covered by IEC 61010-031.

The hand-held parts of the non-contact AC voltage indicator and the probe tip shall be separated by a protective fingerguard, see Figure 1.