

INTERNATIONAL STANDARD

NORME INTERNATIONALE



Live working – Minimum approach distances for a.c. systems in the voltage range 72,5 kV to 800 kV – A method of calculation

Travaux sous tension – Distances minimales d'approche pour des réseaux à courant alternatif de tension comprise entre 72,5 kV et 800 kV – Une méthode de calcul



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INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX

ICS 13.260; 29.240.20; 29.260.99

ISBN 978-2-83220-717-8

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**LIVE WORKING –
MINIMUM APPROACH DISTANCES FOR A.C. SYSTEMS
IN THE VOLTAGE RANGE 72,5 kV TO 800 kV –
A METHOD OF CALCULATION**

FOREWORD

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International Standard IEC 61472 has been prepared by technical committee 78: Live working.

This third edition cancels and replaces the second edition of IEC 61472 published in 2004. It constitutes a technical revision.

This document has been prepared according to the requirements of IEC 61477: *Live working – Minimum requirements for the utilization of tools, devices and equipment*, where applicable.

Significant changes with regard to the second edition are the following:

- clarification of the scope;
- review of the definitions;
- clarification of the methodology of determining whether live working is permissible and the calculation of the minimum approach distances;

- modification of the basic equation for calculation of the minimum approach distance;
- introduction of Table 1 for altitude correction factor simplification k_a ;
- introduction of criteria in presence of composite insulator and clarification on the use of insulator factor k_i ;
- review of the informative Annex F on the influence of floating conductive objects on the dielectric strength;
- review of the informative Annex G on live working near contaminated, damaged or moist insulation.

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

FDIS	Report on voting
78/1004/FDIS	78/1010/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.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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LIVE WORKING – MINIMUM APPROACH DISTANCES FOR A.C. SYSTEMS IN THE VOLTAGE RANGE 72,5 kV TO 800 kV – A METHOD OF CALCULATION

1 Scope

This International Standard describes a method for calculating the minimum approach distances for live working, at maximum voltages between 72,5 kV and 800 kV. This standard addresses system overvoltages and the working air distances or tool insulation between parts and/or workers at different electric potentials.

The required withstand voltage and minimum approach distances calculated by the method described in this standard are evaluated taking into consideration the following:

- workers are trained for, and skilled in, working in the live working zone;
- the anticipated overvoltages do not exceed the value selected for the determination of the required minimum approach distance;
- transient overvoltages are the determining overvoltages;
- tool insulation has no continuous film of moisture or measurable contamination present on the surface;
- no lightning is seen or heard within 10 km of the work site;
- allowance is made for the effect of conducting components of tools;
- the effect of altitude, insulators in the gap, etc, on the electric strength is taken into consideration.

For conditions other than the above, the evaluation of the minimum approach distances may require specific data, derived by other calculation or obtained from additional laboratory investigations on the actual situation.

2 Terms, definitions and symbols

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

2.1 Terms and definitions

2.1.1

damaged insulator

insulator having any type of manufacturing defect or in-service deterioration which affects its insulating performance

2.1.2

electrical distance

D_U

distance in air required to prevent a disruptive discharge between energized parts or between energized parts and earthed parts during live working

[SOURCE: IEC 60050-651:–, 651-21-12]