

Safe distance between phases of outdoor 10kV busbars



AI Overview

For 10kV outdoor busbars, the recommended minimum phase-to-phase air clearance is approximately 100–120 mm, with creepage distances adjusted for environmental conditions.

Air Clearance

The air clearance is the shortest distance through air between two conductive parts. For a 10kV system, IEC 61439 and IEC 60664-1 recommend a minimum phase-to-phase air gap of around 100–120 mm under standard pollution degree 3 and overvoltage category III conditions, which are typical for outdoor industrial installations. This distance prevents flashover and ensures dielectric withstand during peak voltages.

Creepage Distance

Creepage distance is the shortest path along the surface of an insulating material between two conductive parts. Outdoor busbars are exposed to pollution, moisture, and dust, so the creepage distance must be increased accordingly. For 10kV systems, a creepage distance of 250–300 mm is generally recommended for high-pollution environments. Insulation coatings such as PVC dipping or epoxy can help reduce the required creepage distance while maintaining safety.

Insulation and Busbar Type...

Article Content

Aug 15, 2025

Minimum Spacing Between Busbars | Information by Electrical ...

I'm being asked to verify minimum spacing between the busbars, as there is a concern by connecting our lugs

Apr 12, 2026

Maximum Busbar Support Distances | PDF | Stress (Mechanics)

1) The document discusses parameters for calculating the distance between busbar supports, including short circuit level, busbar

Nov 02, 2025

Safety Distance for Low-Voltage Busbars

Proper planning of safety distances in low-voltage busbar design and installation is critical for ensuring electrical performance,

Mar 13, 2026

IEC Standard For Busbar Clearance : Electrical

The IEC standard for busbar clearance plays a critical role in the design and safety of

May 19, 2026

Requirement for spacing between bus bars in 600V switchgear

Could anyone steer me in the direction of the minimum distance required by code (N. America) between copper

Feb 24, 2026

Safety Clearance Recommendations for Electrical Panel

Clearance Tables includes working space and clearance around indoor electrical panel, Circuit Board (NES 312.2),

Oct 29, 2025

IEC Phase-to-Phase Clearance Standards | PDF | Insulator ...

The document also specifies that minimum clearances should be 20% higher if parts may be subject to phase opposition and at least

Mar 22, 2026

Minimum Space Separation | UpCodes

These distances vary based on nominal voltage ratings and whether the installation is indoors or outdoors. The table provides

Jun 07, 2026

11KV Clearance Requirements in Substations

This document provides guidelines on minimum clearance requirements and standards for electrical substations. It outlines

Apr 29, 2026

Safe distance between phases of outdoor 10kV busbars

Bare copper busbars: Minimum clearance $\geq 20\text{mm}$ to avoid phase-to-phase or phase-to-ground faults. The IEC standard for busbar

Dec 18, 2025

Bus Spacings in Metal-Enclosed Switchgear

When considering bus spacings, two dimensions are important. The first is clearance, or the distance through air between

Oct 21, 2025

Minimum Electrical Clearance Standards

This document provides information on minimum electrical clearances for various voltage levels according to different standards and

Aug 07, 2025

132kV Outdoor Metered Substation Design Guide

Introduction This document has been issued to provide guidance for designers preparing design submissions for 132kV outdoor

Jun 06, 2026

Minimum Clearance As Per IEC 61936-1-2014

The document provides minimum clearance distances in air for different voltage ranges from 1 kV to 245 kV. It lists the highest

Aug 26, 2025

Distance of outdoor 10kV bare busbar

Adequate spacing prevents short circuits and enhances system safety: Bare copper busbars: Minimum clearance $\geq 20\text{mm}$ to avoid

Jul 01, 2026

IEC Phase to Phase Clearance Standards | PDF | High Voltage

It lists clearance distances for indoor and outdoor electrical installations at different voltage levels from phase to earth, phase to

Dec 20, 2025

Clearance and Creepage Distances in Bus Bar System Design

Clearance and creepage distances are essential considerations in designing bus bar systems, as they play a vital role in ensuring

Nov 21, 2025

Electrical Safety Standards for LV/MV/HV (Part-1)

Electrical safety standards for LV/MV/HV includes water safely clearance on electrical fires, minimum approach

Jun 01, 2026

Minimum distance requirement between bus bars and enclosure per

The closest distance I have between the bus bars and the panel itself is 0.6" with the panel doors closed. This

Jan 11, 2026

Minimum Clearance As Per IEC 61936-1-2014

It lists the highest voltage, rated short-duration power frequency withstand voltage, rated lightning impulse withstand voltage, and

Jan 22, 2026

Safety Clearances and Creepage Distances in Electrical Plant and

Clearance means clear minimum distance between two conducting points separated by air/gas/oil. Clearances should be more than

Sep 09, 2025

Medium Voltage technical guide

Introduction b The dimensions of busbars are determined taking into account normal operating conditions. The operation voltage (kV)

Apr 22, 2026

Electrical Safety Standards for LV/MV/HV (Part-2)

Electrical Safety Standards for LV/MV/HV introducing Northern Ireland Electricity (NIE), 6/025 ENA - Clearances of

May 29, 2026

Substation Clearance Requirements Guide

Substation Clearance Requirements Guide This document provides guidelines for minimum electrical clearances and safety

Apr 25, 2026

Busbar Clearances and Creepage Distances:

Learn how to correctly calculate busbar clearances and creepage distances per IEC 60664-1 & IEC 61439. A

Jan 10, 2026

Busbar Design Standards for MV Switchgear

Busbar design within Medium Voltage (MV) switchgear is a critical aspect, fundamentally

Nov 02, 2025

Minimum Electrical Clearance As Per BS:162.

Clearance between conductors and Trolley / Tram wires (IE Rule 78) Low and Medium Voltage High Voltage Line Up to 11KV High

Jan 26, 2026

Safe distance between phases of outdoor 10kV busbars

It lists clearance distances for indoor and outdoor electrical installations at different voltage levels from phase to earth, phase to

Feb 16, 2026

Phase to Phase Clearance as per IEC 61439: Standard & Chart

A Phase to Phase Clearance Calculator helps determine the minimum safe spacing required between two energized

Mar 11, 2026

Section 7 Switchgear and controlgear assemblies

For main switchboards rated at above 1kV, a minimum clearance distance of 25 mm is required for busbars and other bare conductors.

Contact Us

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