

Bus-connected transformer

Article Overview

A bus-connected transformer is linked to its power source via a rigid bus system, often an isolated-phase bus, ensuring high-current transfer with minimal losses and maximum safety.

Overview

A bus-connected transformer uses a busbar system to connect its windings, bushings, tap changers, and external circuits. The bus serves as a rigid, current-carrying link designed to handle high currents while maintaining low impedance, controlling heat rise, and withstanding mechanical forces during short circuits. These connections are critical in power plants and industrial facilities where reliability and safety are paramount.

Types of Bus Systems

- **Isolated-Phase Bus (IPB):** Each phase conductor is enclosed in its own grounded metal housing, separated by air, and supported by insulators. Induced currents in the housing cancel the magnetic field of the phase conductor, reducing external magnetic fields and short-circuit forces. IPB is commonly used between generators and step-up transformers in large power plants.
- **Segregated Phase Bus (Seg):** Phases are separated but not fully enclosed individually. Offers moderate protection and reduced phase-to-phase faults.
- **Non-Segregated Phase Bus (Non-Seg):** All phases share a common enclosure. Simpler and less costly but with higher risk of phase-to-phase faults.
- **Cable Bus:** Flexible cables replace rigid busbars, suitable for lower current or space-constrained applications

Article Content

Nov 05, 2025

The essentials of LV/MV/HV substation bus overcurrent and

Using metal-enclosed bus duct or insulated cable not directly exposed to lightning contributes to reliability. To further

Jul 17, 2026

8 typical transformer protection schemes with correctly

Protection schemes and relays selection This technical article shows application hints for

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Standard cubicle configurations for a medium voltage

Where: Earth switch Voltage transformer (fused and withdrawable) A metering cubicle

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bus duct between transformer and frequency converter

The fewer the connections, the better. Making the individual bus bars connect directly to the drive power module

Nov 12, 2025

Metal Enclosed Electrical Bus - The Lifeline to the

Understanding the bus type connected to your transformer and the standard by which the bus is designed,

Jan 31, 2026

Coupling Transformers in a Bus Line

I'm trying to figure out how to model a transformer in order to estimate the number of transformers on a bus line. Each transformer is

Dec 24, 2025

Installing busduct or cablebus for padmounted transformer

I have a customer owned transformer that will be located right outside of the building and the switchgear will be right

Mar 23, 2026

SDG& E Relay Standards - Updating Tertiary Bus and Reactor

The new tertiary bus differential relay used transformer tertiary bushing CTs, along with the neutral-connected reactor breaker CTs.

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Power Plant Electrical Distribution Systems

Learning Objectives Upon completion of this course one should be able to understand the role of the following equipment in a power

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Configuration of LV circuits

1 transformer and 1 generator, 1 transformer and 1 UPS. An automatic transfer switch (ATS) is used to avoid the

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Different Bus-Bar Schemes in Electrical Substations -

In this type, all incoming and outgoing bays such as lines, transformers, and feeders are directly connected to a single bus. Due to its

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Bus Design In Aboveground Substations

Cable bus Short sections of overhead or underground cables can be used at substations, although this use is normally

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What is a Bus PT (Potential transformer) in electrical

A Bus Potential Transformer (PT), also known as a Bus Voltage Transformer (VT), is a

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Design and Experimental Validation of an Independent DC Bus

The Independent DC Bus Structure Multiport Power Electronic Transformer (IDBS-MPET) employs a parallel connection of dual

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Zigzag transformer

A zigzag transformer winding is a special-purpose transformer winding with a zigzag or "interconnected star" connection, such that

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nVent ERIFLEX FleXbus System

nVent ERIFLEX FleXbus System nVent ERIFLEX FleXbus System is an innovative and patented connection solution between two

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ISOPHASE BUS

Potential transformer compartments employ draw-out construction with interlocking features to protect against hand touch access to

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TRANSFORMERS & BUSWAYS SOLUTIONS

Connection interfaces: Elements used for connecting the busbar to the electric board or transformer.

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Style Guide

One bay unit includes circuit breaker, disconnect(s), measuring transformers and the local control and interface cabinet in one

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Transformer Sizing Calculator

Our transformer sizing calculator allows you to obtain the minimum single or three-phase transformer size required based on the load

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How to Calculate Bus Size Connected to a Transformer

Learn how to calculate bus size connected to a transformer with simple formulas, practical examples, and electrical

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The basics of busway distribution systems

NEMA Definition Busway is defined by the National Electrical Manufacturers Association (NEMA) as a prefabricated

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Substation busbar: The heart that conducts energy for

1. Introduce In the electrical system, the transformer station plays an extremely important role,

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Metal Enclosed Electrical Bus

Importance of metal enclosed electrical bus, an often-overlooked system critical component spanning from the generator to the main

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Application of electrical busbar in Transformers

In this article, we'll explore the application of electrical busbars in transformers, focusing on their design, benefits, and impact on

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Isolated Phase Bus

Safe, reliable isolated phase bus systems for medium voltage demands in multiple generation applications.

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Guide to Improved Earthquake Performance of Electric Power

SUBSTATION BUS CONFIGURATIONS Most substation are organized similarly to one of four standard configurations. These are

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Current Transformer Connection: The Complete Wiring

Whether you are dealing with IEC standard (P1/P2) or IEEE standard (H1/H2) transformers, this guide

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