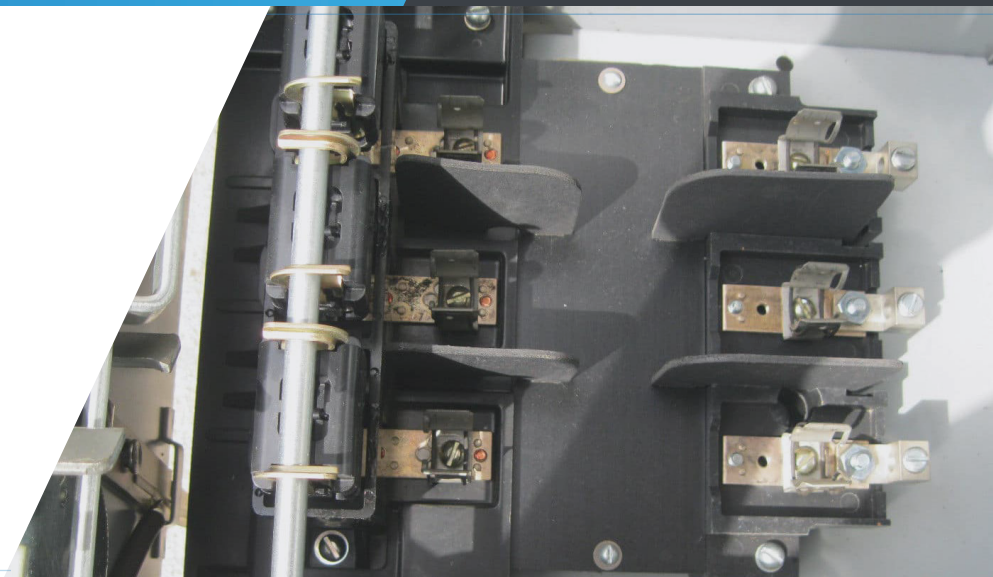




# WHAT YOU NEED TO KNOW ABOUT BUS PLUGS



Busways with bus plugs are convenient, low-cost, and reliable tools for distributing power in industrial facilities. Whether you're using modern connections or obsolete, legacy-style busways, [electrical.com](https://www.electrical.com) can supply the electrical parts you need to keep your industrial equipment running and protected.

## BUS PLUGS

Systems to distribute electrical power through industrial settings are far different from those in light commercial, office, and residential settings. That's because systems in industrial facilities often involve:

- **High-voltage loads, specialty transformers, and switchgear**
- **Dedicated power supplies and demanding power-conditioning requirements**
- **Delicate control electronics near electromagnetically noisy machine drives**
- **Floor plans that must be open, reconfigurable, and free of cords that might present safety and power-loss hazards**

One option for distributing electrical power through an industrial facility is to use networks of ceiling- and wall-mounted conduits loaded with insulated cables to trail to each machine or system requiring power.

However, a more suitable arrangement for many operations (one that's far more common in many industries) involves busways or bus ducts — long conducting tracks (bus bars) in sheet-metal-enclosed rails. Like conduit-based systems, busway systems also hang from the ceilings of large industrial facilities. Their primary advantage is that an enclosed (but unjacketed) conducting bar can be tapped at any point along its run. As we'll explore later in this article, other busway advantages include simplicity, ruggedness, and cost-effectiveness.

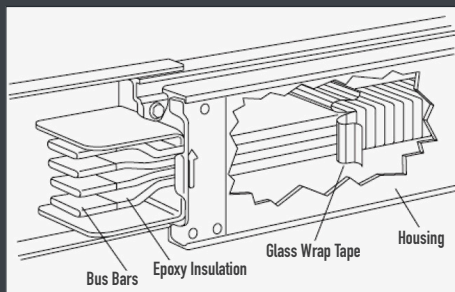


**Bus plugs are essential for distributing power from a busway down to industrial equipment.**



EASY-TO-MANAGE, HEAVY DUTY CONNECTIONS

## THE CONSTRUCTION AND PURPOSE OF BUS PLUGS



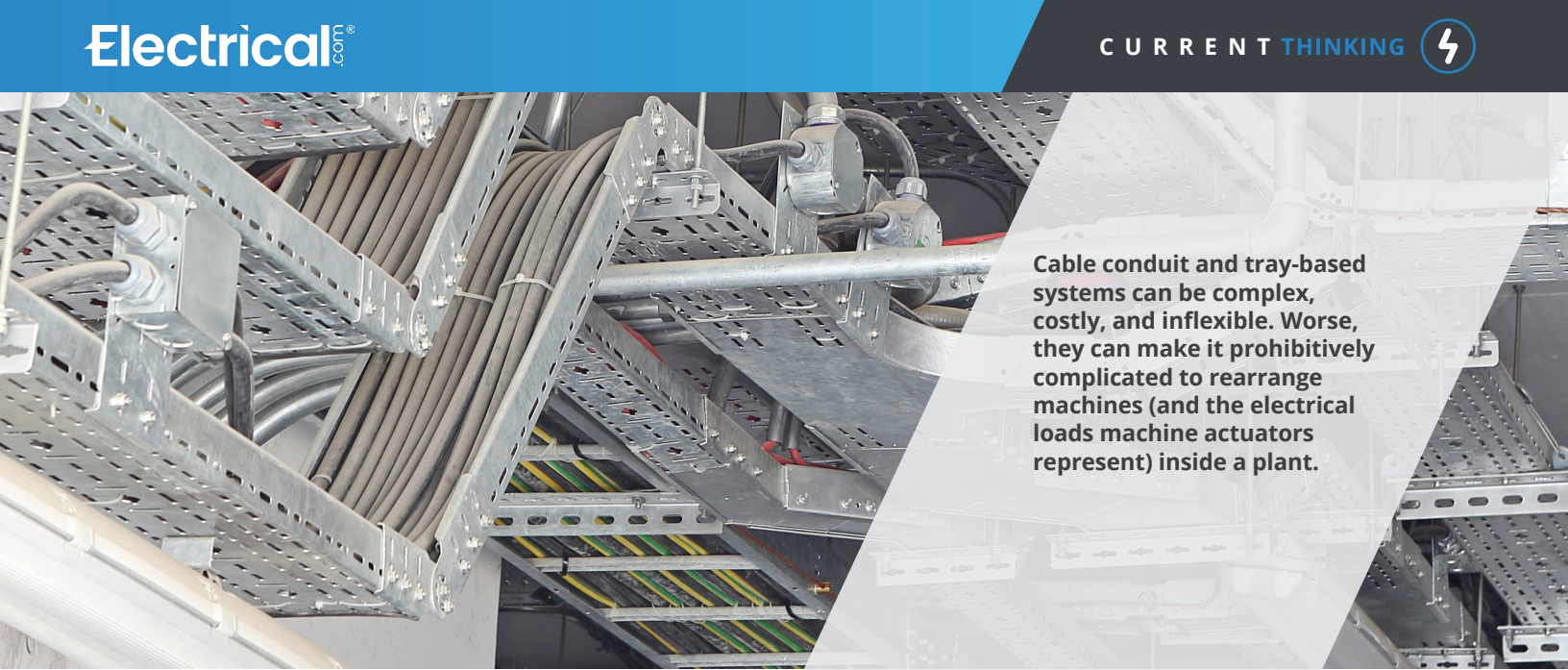
Bus plugs are large electrical power connections that contact bus duct or busway conductors to serve connected electrical loads — thereby supplying localized power to industrial equipment.

**A typical bus plug consists of:**

- **Copper conductor plates**
- **A plug or bolt-in clamps to physically contact the busway**
- **A metal casing or enclosure**

Bus plugs provide the correct electrical load to equipment while offering a modicum of circuit protection to machinery as well.





Cable conduit and tray-based systems can be complex, costly, and inflexible. Worse, they can make it prohibitively complicated to rearrange machines (and the electrical loads machine actuators represent) inside a plant.

## BENEFITS OF USING BUSWAYS AND BUS PLUGS

Busway-based power distribution far outperforms cable- and conduit-based installations in many ways.

### 1. Flexibility

Busways and bus plugs can support the reconfiguration of plants — for example, when machines (and the electrical loads they represent) must be relocated in a facility. That's in contrast to industrial power cables, which may be quite difficult to unload from conduits and reroute — assuming that cable lengths are still sufficient to reach machines in their new locations.

Flexible manufacturing is a growing trend in automation. It goes hand in hand with relatively frequent plant reconfiguration — especially to support the production of ever-smaller batch sizes.

Unlike cable-based power distribution, busways and bus plugs support the addition of new equipment to production lines as needed.

### 2. Safety

Busways tapped with bus plugs are safer and more secure than cable-based systems. The metal casings of both plugs and busways completely encase conductors to prevent the electrocution of plant personnel. In contrast, the terminals of installed cables may pose a hazard to technicians and other personnel if proper mains supply shutdown procedures aren't carefully followed. Cables are also more susceptible to damage due to abrasion, chemical breakdown, corona discharge, and flexing fatigue. Unlike busways with bus plugs, cables may also present tripping hazards if at any point they run along the plant floor. They are doubly dangerous near hot, sharp, hard, and heavy portions of industrial equipment.

### 3. Ease of installation

Routing, suspending, and connecting busways and bus plugs is faster and easier than running cable-based power distribution through a facility — especially since the latter often necessitates cutting holes in building supports and walls. Easier (and faster) routing and mounting makes power bus installation less expensive than installing traditional cables and conduits.



EASY-TO-MANAGE, HEAVY DUTY CONNECTIONS

## BUS PLUG VARIATIONS AND REQUIREMENTS

Bus plugs come in two types. The most suitable for a given application depends on whether the application uses circuit breakers or fuses.

**FUSIBLE BUS PLUGS** – work in systems with fuses. They are named for how they accept the insertion of common industrial fuse types (such as H, R, T, or K types) to self-destruct (and open a circuit) in overcurrent conditions. Fusible plugs are typically offered with ratings of 30 to 1200 A and up to 600 V.

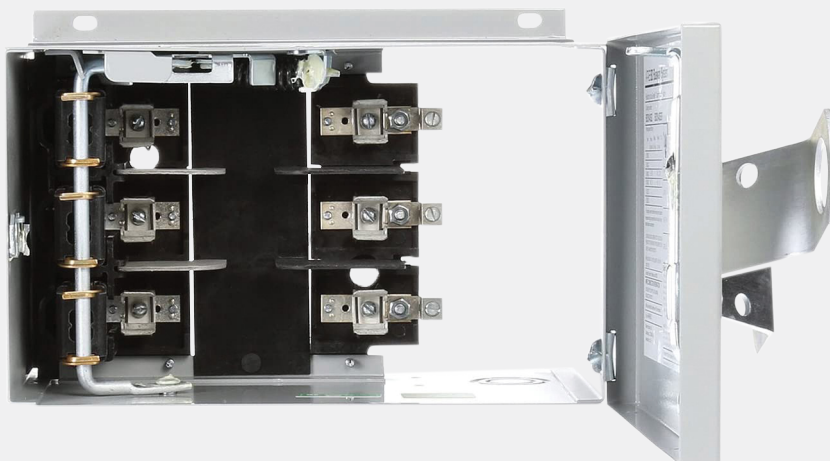
**NONFUSIBLE BUS PLUGS** – also called breaker type bus plugs — utilize an internal circuit breaker. Protection in overcurrent conditions is provided by the internal circuit breaker to protect equipment downstream of the bus plug. Unlike fuses, the circuit breaker is not consumed in an overcurrent situation and can be reset to quickly restore power. Circuit breaker bus plugs are typically offered with ratings of 15 to 1600A and up to 600 V.

Both fusible and nonfusible bus plugs come in different configurations for compatibility with different busway designs.

**STANDARD BUSWAYS** – A standard busway has mechanical lugs to accept the connection of equipment cabling. Bus plugs either plug into these directly or connect through bolt-on clamps.

**RECEPTACLE BUSWAYS** – Busways with receptacles have either single, double, or quad plug-in receptacles. Fixed-mount busways have receptacles fixed to the base of each plug-in unit. Cord-mounted busways have receptacles with cords fixed to the base of each attached device.

This Siemens BD series bus plug is a fusible type. Regardless of whether an installation uses fusible or nonfusible bus plugs, plugs must be rated for electrical load voltages and currents.



## LAST THOUGHTS

Before specifying or purchasing bus plugs for a given application, check the current and voltage of the facility busway and the electrical power requirements of the equipment to be served. The applications team at **electrical.com** is always happy to help identify suitable solutions.

Email **support@electrical.com** or call 877-999-7077 to chat with one of our electrical supply experts — and to get parts delivered at lightning speed. We ship around the globe from many warehouses across the U.S.

**Electrical.com** supplies a wide array of electrical components for new and legacy installations, including busway systems and bus plugs. Because the **electrical.com** team has extensive experience with nearly every type of power distribution equipment, we're able to offer education and technical guidance as well as components. We'll help you find the most suitable electrical equipment for a given installation.



**877-999-7077**