

The live wire in the distribution box is split into multiple circuits

Overview

Electricity enters the box from the main power line. Inside the box, the power is split into multiple circuits —each one leading to a different area, like your kitchen, workshop, or machine line. A power distribution box (also called PDU or distro) directs electricity from a main source to multiple circuits. Key components include circuit breakers, fuses, bus bars, and internal wiring for safety and. A “multiwire branch circuit” consists of two or more circuit phase conductors with a common neutral conductor. Except as permitted in. A Multiwire Branch Circuit (in the electrical code) is defined as a branch circuit that consists of two or more ungrounded conductors (two or more "hot" wires) that have a voltage between them (they are not on the same electrical phase and so are connected to different buses in the electrical.

Assuming the junction box has the proper capacity, I want to run a separate circuit through that box so as to split-off a circuit which will then go two different ways to power up an outlet on one wall and two other outlets on a different wall.

Switchboards are essential for: Power distribution. PRO TIP: Wiring a panel is complicated, so many electricians divide the task into steps—cutting wires to length, stripping wire ends, bending wires toward a bus, tightening bus screws—and perform each step on all wires before going on to the next step. This greatly speeds a task because each step.



Article Content

May 11, 2026

Organizing a Panel Box

In other words, each of the cable's two hot wires will feed a different circuit, while the circuits share the cable neutral (or "common neutral"). This setup is appropriate only if the two hot wires are connected ...

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The Dangers of Shared Neutrals: How To Avoid Being Shocked

This setup uses a single neutral wire for multiple circuits to save on materials. Typically, you would see a black and a red wire each acting as hot wires for different circuits, sharing a ...

Dec 19, 2025

12/3 going into junction box. Two 12/2 circuits coming out...?

OP is asking about a multi-wire branch circuit in which two separate split phases can share a neutral. This lets you run two 20 amp circuits at 120v with 3 12ga current carrying wires.

Apr 29, 2026

How to Wire Multiple Circuits in a Junction Box

This article looks at common 120 volt and 240 volt house wiring circuits and the circuit breakers that are installed identifying the types and amperage sizes used in most homes.

Mar 05, 2026

Multi-Wire Branch Circuits Code Requirements Explained

Multiwire branch circuits are permitted and can be considered as multiple circuits. All conductors must originate from the equipment with the branch-circuit overcurrent protective device, ...

Oct 10, 2025

Power Distribution Boxes Explained Simply

Electricity enters the box from the main power line. Inside the box, the power is split into multiple circuits —each one leading to a different area, like your kitchen, workshop, or machine line. ...

Apr 13, 2026

A Comprehensive Guide to Electrical Switchboard Wiring

Live Wire (Phase Wire): Carries electricity from the power source to the switchboard.

Neutral Wire: Returns the current back to the power source, completing the circuit.

Oct 01, 2025

Branch Circuits, based on the 2023 NEC

Receptacles that serve countertop surfaces must be supplied by at least two small-appliance branch circuits, either or both of which can supply receptacle outlets in the same kitchen, dining room, ...

Sep 26, 2025

Multiwire & Split-Wired Electrical Circuit Wiring

In plain English, a "multiwire branch circuit" or "split-wired receptacles" means that two hot wires are sharing a neutral wire. Our photo (above-left) illustrates how a shared neutral circuit can be easily ...

Jul 22, 2026

Can Multiple Circuits Share a Junction Box? Insights from Magnify ...

Sharing junction boxes can be an efficient way to manage multiple circuits in a confined space. Understanding when it's appropriate to do so and the necessary considerations for sizing and ...

Contact Us

For more information, pricing, or custom solutions, please contact us:

Website: <https://www.iiss.co.za>

Email: sales@iiss.co.za

Phone: +27 63 174 2895

Address: Unit 8, Innovation Park, 15 Rivonia Road, Sandton, Johannesburg,
2196, South Africa

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