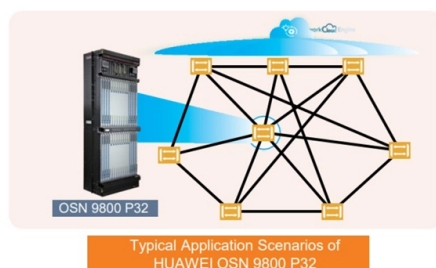


Household parallel wiring in distribution box



Overview

In a parallel circuit, both the hot and neutral wires run continuously through each junction box along the route, with branches leading off to individual outlets, switches, and light fixtures.

Key Takeaways

Parallel wiring (jumper connections) in household distribution boxes is unsafe and prohibited; each circuit breaker should have a dedicated wire from the main switch.

What Parallel Wiring Means

Parallel wiring, often called a jumper connection, occurs when multiple wires are connected together to feed several circuit breakers from a single terminal. For example, a wire from the main switch may connect to the first breaker, and then additional wires “jump” from the top of one breaker to the next to supply multiple circuits. While this may seem convenient, it is explicitly prohibited by national standards due to safety hazards.

Hazards of Parallel Wiring

Overloading: The wire closest to the main switch carries the sum of currents from all downstream breakers. This can exceed the wire's rated capacity without tripping the breakers, creating a hidden overload. **Heat buildup:** Thick wires needed for jumpers can crowd the distribution box, reducing heat dissipation and increasing fire risk.

Non-compliance: Using jumpers violates electrical codes and can lead to inspection failures or legal issues. For example, a 4 mm² copper wire has a maximum current capacity of 25A. If it carries the combined load of multiple circuits, it may overheat even if individual breakers are rated lower.

Correct Wiring Method

The safe and standard approach is to run separate wires from the main switch to each circuit breaker. Each wire should only carry the current for its respective circuit, ensuring proper protection and compliance with safety standards. Key points include: Main MCB: Connects directly to the incoming phase and neutral supply.

RCC

R (Residual Current Circuit Breaker): Protects against leakage and electric shock; the output feeds individual MCBs.

Individual MC

Each branch circuit receives a dedicated wire from the RCCB or main switch, avoiding jumpers. Neutral and Earth: Distributed through separate neutral and earth bars to each subcircuit.

Summary

Parallel wiring in a household distribution box is unsafe and non-compliant. Always use dedicated wires for each circuit breaker, ensure proper sizing according to load, and follow national electrical standards. This approach prevents overloads, improves heat dissipation, and ensures reliable protection for all household circuits.

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