Lighting cable routing



Overview

Lighting, Cable Routing, and Conduit Layout Planning for Residential. Learn how to decide where to locate DBs and sub-panels for efficient cable routing.

Key Takeaways

Proper cable routing ensures safe, efficient, and code-compliant lighting installations by protecting wires from damage, maintaining correct spacing, and using appropriate cable types.

Planning and Safety

Before starting any wiring project, turn off the power at the main breaker and verify the circuit is dead using a voltage tester. Plan the route of your cables to minimize length, avoid obstacles, and ensure accessibility for future maintenance. Calculate the total load of your lighting fixtures to prevent overloading the circuit, keeping it below 80% of the breaker's rating for continuous use.

Cable Selection

Use cables suitable for your lighting system. For standard residential lighting, 14 AWG copper NM cable is common in the US, while in the UK, 1. 0mm² or 1.

5mm² twin and earth cable is typical. Choose cables rated for the voltage, current, and environmental conditions, such as moisture or heat exposure.

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For LE

D lighting, consider cables with higher temperature ratings due to heat generation.

Routing Through Structures

Ceilings and Attics: Run cables through the center of joists or drill holes in framing members, keeping at least 1. 25 inches from edges to prevent nails or screws from damaging the cable. Walls: Run cables vertically or horizontally along studs, using conduit or clips to secure them.

Avoid running cables near sharp edges or where they may be pinched. Floors: If running cables under floors, use conduit or route them above sub-floors. Avoid cutting into concrete unless conduit is pre-installed.

Wiring MethodsDaisy-Chaining (Parallel Wiring): Connect multiple fixtures in parallel so each receives full line voltage. Run the cable from the switch to the first fixture, then from fixture to fixture.

Loop-

In Systems (UK): Either loop-in at the ceiling rose or at the switch. Loop-in at the switch is common in modern installations, with a single cable running from each switch to its light.

Connections and Protection

Strip only enough insulation to expose conductors, leaving the cable jacket secured in junction boxes. Connect hot (brown/black), neutral (blue/white), and ground (green/yellow or bare copper) wires using wire nuts or push-in connectors. Protect cables from physical damage using conduit, clips, or by routing through safe areas of framing.

Leave extra cable length (about 150mm/6 inches) at each connection point for flexibility.

Additional Tips

Mark cable routes for future reference. Avoid running cables over insulation that may cause overheating unless the fixture is IC-rated. Maintain consistent spacing of clips (around 300mm) to secure cables neatly.

By following these guidelines, you ensure that your lighting installation is safe, durable, and compliant with electrical standards, reducing the risk of fire, electrocution, or damage to the wiring system.

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