

POWER DISTRIBUTION 101:

KNOW YOUR SMART CIRCUIT BREAKERS

01 WHAT IS A SMART CIRCUIT BREAKER?

A smart circuit breaker is a **networked switch** that remotely controls the flow of electricity in your home. Like standard circuit breakers, smart models prevent electric circuits from being damaged by an **overcurrent/overload** or **short circuit**. However, they often come with additional features, including **real-time energy monitoring**, **responsive load management**, and **customizable controls**.

02 SMART CIRCUIT TECHNOLOGIES

Smart circuit technologies come in different formats:

+ Individual circuit breaker replacement: Currently, smart circuit breakers can only replace standard models in a brand-compatible electrical panel. This approach may be appropriate for households with lower energy usage and is more affordable than a smart panel add-on or upgrade.

+ Smart panel add-on: A smart panel add-on connects to the main electrical panel. It can provide extra battery backup, circuit control, and flexible access to power at a lower cost than a complete smart panel upgrade.

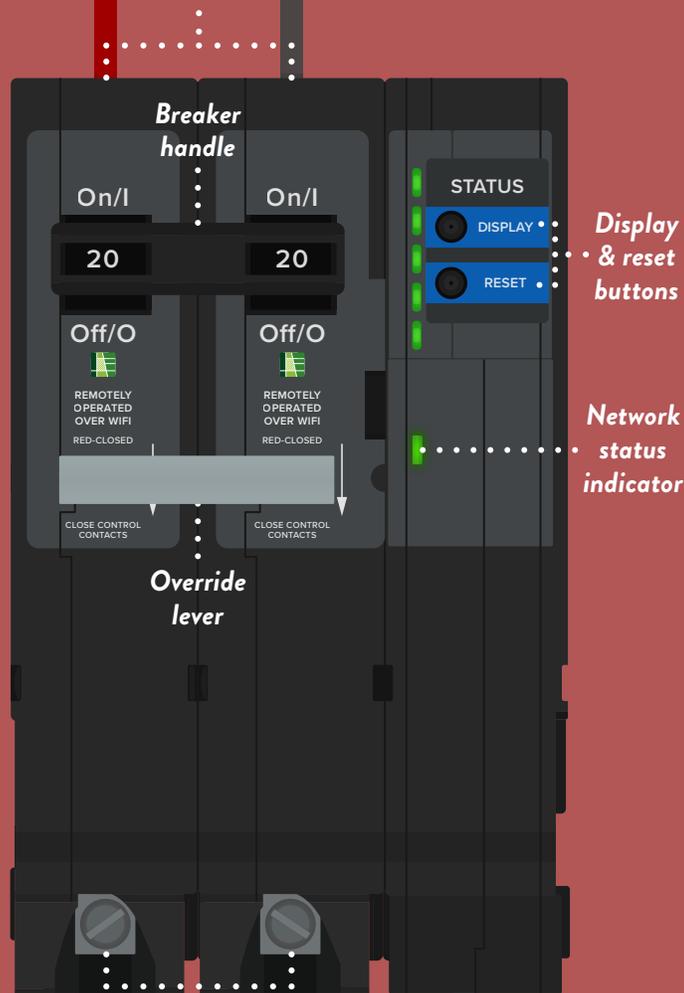
+ Smart panel upgrade: Homes with rooftop solar, a battery, electric vehicle (EV) charging, and/or multiple high-powered appliances may need to replace their existing electrical panel with a smart one. You may be able to upgrade to a smart panel that manages overall electric loads instead of upgrading the service capacity or size.

03 WHY SMART CIRCUIT BREAKERS?

- Pros**
- + Optimizes energy use through **real-time monitoring & tracking**
 - + Offers **flexible load management & control**
 - + **Lower installation costs** than a smart panel add-on or upgrade
 - + May integrate with **existing electrical infrastructure & software**
 - + Strengthens system **resilience** during outages

- Cons**
- + Initial **learning curve**
 - + Not all smart circuit breaker brands are **interchangeable**—check your electrical panel door to see which circuit breakers are compatible
 - + Requires **professional installation**

Electricity from the utility grid enters the circuit through the **input terminals**



Electricity leaves the circuit through the **output terminals** & travels to existing outlets throughout the home

Smart circuit breakers can connect to the **neutral bar** in an electrical panel using a **pigtail wire** (as shown) or **plug-on clip**