Smart Home

Smart Home

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What is a smart home?

A smart home is a residence that uses internet-connected devices to enable the remote monitoring and management of appliances and systems, such as lighting and heating.

Smart home technology -- also often referred to as home automation or domotics from the Latin word *domus,* meaning home -- provides homeowners security, comfort, convenience and energy efficiency by letting them control smart devices, often using a smart home app on their smartphone or another networked device.

A part of the internet of things (IoT), smart home systems and devices often operate together, sharing consumer usage data among themselves and automating actions based on the homeowners' preferences.

WhatIsASmartHome.mp4

How does smart home technology work?

A smart home isn't a collection of disparate smart devices and appliances, but rather ones that work together to create a remotely controllable network.

All devices -- such as lights, thermostats, security systems and appliances -- are controlled by a master home automation controller, often called a smart home hub. This hub is a hardware device that acts as the central point of the smart home system and can sense, process data and communicate wirelessly. It combines all the disparate apps into a single smart home app that homeowners can control remotely. Examples of smart home hubs include Amazon Echo, Google Home and Wink Hub. While many smart home products use Wi-Fi and Bluetooth to connect to the smart home network, others depend on wireless protocols such as Zigbee or Z-Wave.

Smart home devices can be either programmed to follow specific schedules or commands or they can be set to respond to voice commands through home assistants such as Amazon Alexa or Google Assistant. For example, a smart thermostat can learn the homeowner's habits and automatically adjust the temperature based on their specific schedule.

Examples of smart home technologies

Nearly every aspect of life where technology has entered the domestic space -- including lightbulbs, dishwashers and other appliances -- has seen the introduction of a smart home alternative:

- **Smart TVs.** These TVs connect to the internet to access content through applications, such as on-demand video and music. Some smart TVs also include voice or gesture recognition.
- **Smart lighting systems.** In addition to being able to be controlled remotely and customized, smart lighting systems can detect when occupants are in the room and adjust lighting as needed. Smart lightbulbs can also regulate themselves based on daylight availability.
- **Smart thermostats.** Smart thermostats, such as Google Nest, come with integrated Wi-Fi, letting users schedule, monitor and remotely control home temperatures. These devices also learn homeowners' behaviors and automatically modify settings to provide them with maximum comfort and efficiency. Smart thermostats can also report energy use and remind users to change filters.
- **Smart door locks and garage door openers.** Homeowners can use smart locks and garage-door openers to grant or deny access to visitors. Smart locks can also detect when residents are near and unlock the doors for them.
- **Smart security cameras and systems.** With smart security cameras and doorbells, such as Ring, residents can monitor their homes when they're away. Smart motion sensors can identify the difference between residents, visitors, pets and burglars and can send notifications to authorities if suspicious behavior is detected.
- **Smart pet and lawn care.** Pet care can be automated with connected feeders. Houseplants and lawns can be watered using connected timers.
- **Smart kitchen appliances.** Brands such as LG, GE and Samsung offer smart kitchen appliances of all sorts. These appliances include smart coffee makers that can brew a fresh cup automatically at a programmed time; smart refrigerators that keep track of expiration

dates, make shopping lists or even create recipes based on ingredients currently on hand; slow cookers and toasters; and, in the laundry room, washing machines and dryers.

- **Smart household monitors.** Household system monitors can, for example, sense a power surge and turn off appliances, sense water failures or freezing pipes and turn off the water so the home doesn't flood.
- **Smart plugs.** These connect to wall sockets to transform simple home devices, such as lamps and ceiling fans, so they can be controlled remotely via mobile apps and voice assistants such as Alexa.

A multitude of devices and appliances can be seamlessly integrated into a smart home system.

Smart home pros and cons

Smart technology offers numerous advantages, ranging from the convenience of running household appliances such as the washing machine while at work, to the comfort of remotely adjusting the thermostat on a chilly winter day.

Common advantages of a smart home include the following:

- **Provides assurance.** Homeowners can monitor their homes remotely, countering dangers such as a forgotten coffee maker left on or a front door left unlocked.
- **Accommodates user preferences for convenience.** For example, users can program their garage door to open, the lights to go on, the fireplace to turn on and their favorite music to play once they arrive home.
- **Offers peace of mind.** IoT devices enable family members or caregivers to remotely monitor the health and well-being of seniors, allowing them to safely remain at home longer, rather than moving to an assisted residence.

- **Improves efficiency.** Instead of leaving the air conditioning on all day, a smart home system can learn homeowner behaviors to ensure the house is cooled down by the time they return home.
- **Saves resources and money.** With a smart irrigation system, the lawn is watered only when needed and with the exact amount of water necessary. With home automation devices and a smart system setup, energy, water and other resources are used more efficiently, which helps save both natural resources and money for the consumer.
- **Manages tasks.** Smart virtual assistants, such as Google Home or Amazon Echo, can accomplish tasks through speech recognition and voice commands. For example, homeowners can use voice commands to turn on music, search the web and control their household smart devices.

However, home automation systems have struggled to become mainstream, in part due to their technical nature. Common disadvantages of a smart home include the following:

- **Requires a reliable internet connection.** An unreliable internet connection or a network going down in the event of an outage can leave the devices and gadgets connected to a smart home inoperable.
- **Perceived complexity.** Some people have difficulties or a lack of patience with technology. Smart home manufacturers and alliances are working on reducing complexity and improving the user experience to make it enjoyable and beneficial for users of all technical levels.
- **Lack of standards.** For home automation systems to be truly effective, devices must be interoperable regardless of manufacturer and use the same protocol or, at least, complementary ones. As it's a relatively new market, there's no gold standard for home automation yet. However, standard alliances are partnering with manufacturers and protocols to ensure interoperability and a seamless user experience.
- **Questionable security.** IoT devices introduce security challenges because most of them lack built-in encryption. In addition, they can serve as access points for the broader network's sensitive data, increasing the attack surface. According to a recent report from consumer IoT market research firm Parks Associates, 55% of consumers are concerned about the security of their smart home devices. If hackers can infiltrate a smart device, they could potentially turn off the lights and alarms and unlock the doors, leaving a home defenseless to a break-in.
- **Lack of data privacy.** Many smart homeowners also worry about data privacy. According to the Parks Associates' research report, about 72% of consumers expressed worry or strong concern regarding the security of their personal data collected and transmitted by smart home devices. Likewise, they're equally concerned about the potential unauthorized access or control of smart devices without their permission. While smart home device and platform manufacturers collect consumer data to better tailor their products or offer new and improved services to customers, trust and transparency are critical to manufacturers looking to gain new customers.
- **Expense.** Even though prices are coming down, many smart home devices are still expensive, and an entire house makeover could cost thousands of dollars.

How to set up a smart home

Newly built homes are often constructed with smart home infrastructure in place. Older homes, on the other hand, can be retrofitted with smart technologies.

Zigbee and Z-Wave are two of the most common home automation communications protocols in use today. Both use mesh network technologies and short-range, low-power radio signals to connect smart home systems. Though both target the same smart home applications, Z-Wave has a range of 30 meters versus Zigbee's 10 meters, with Zigbee often perceived as the more complex of the two. Zigbee chips are available from multiple companies, while Z-Wave chips are only available from Sigma Designs. Also, Matter -- the newest smart home standard that was launched in November 2022 -- is gaining momentum. Developed by the Connectivity Standards Alliance -- previously the Zigbee Alliance -- Matter is supported by major smart home manufacturers including Amazon, Apple and Google. This IP-based protocol is specifically designed to solve the compatibility challenges of smart homes, providing a framework that facilitates seamless communication across devices, apps and cloud services.

Some smart home systems can be created from scratch, for example, using a Raspberry Pi or other prototyping board. Other systems can be purchased as a bundled smart home kit -- also known as a smart home platform -- that contains the pieces needed to start a home automation project.

While setting up a smart home can sometimes be complex, homeowners should consider the following general steps:

1. **Invest in a strong, reliable internet connection.** Because smart home connectivity relies heavily on an internet connection, it's important to ensure the homeowner has reliable and fast internet service.
2. **Select the hub.** It's important to decide which hub to use for a smart home. For example, if the homeowner wants a fully automated smart home, a hub that can centrally control every device is most likely required. However, in other cases, a virtual assistant that can link to other devices on the same network could suffice. Most average hubs might not include extra capabilities such as built-in voice control, even if they're compatible with a wide range of devices. On the other hand, smart speaker hubs, such as Amazon Echo, let users provide voice commands and accomplish various tasks, such as inquiring about the weather or requesting a grocery list.
3. **Start with the basics.** Start with basic items such as smart plugs, smart bulbs and switches for the smart home, as they're quick to set up and can easily automate many different things around the house. For example, smart plugs can automate fans, lights, lamps, slow cookers, curling irons and space heaters.
4. **Secure the devices.** Because most IoT and smart home devices don't have in-built security or encryption, it's important to set up strong passwords and multifactor authentication to prevent unauthorized access to these devices.
5. **Add more devices.** As the homeowner becomes more comfortable with creating a smart home, they can add more devices, such as security systems, cameras and video doorbells, to the mix.

In simple smart home scenarios, events can be timed or triggered. Timed events are based on a clock, for example, lowering the blinds at 6 p.m., while triggered events depend on actions in the

automated system; for example, when the owner's smartphone approaches the door, the smart lock unlocks and the smart lights go on.

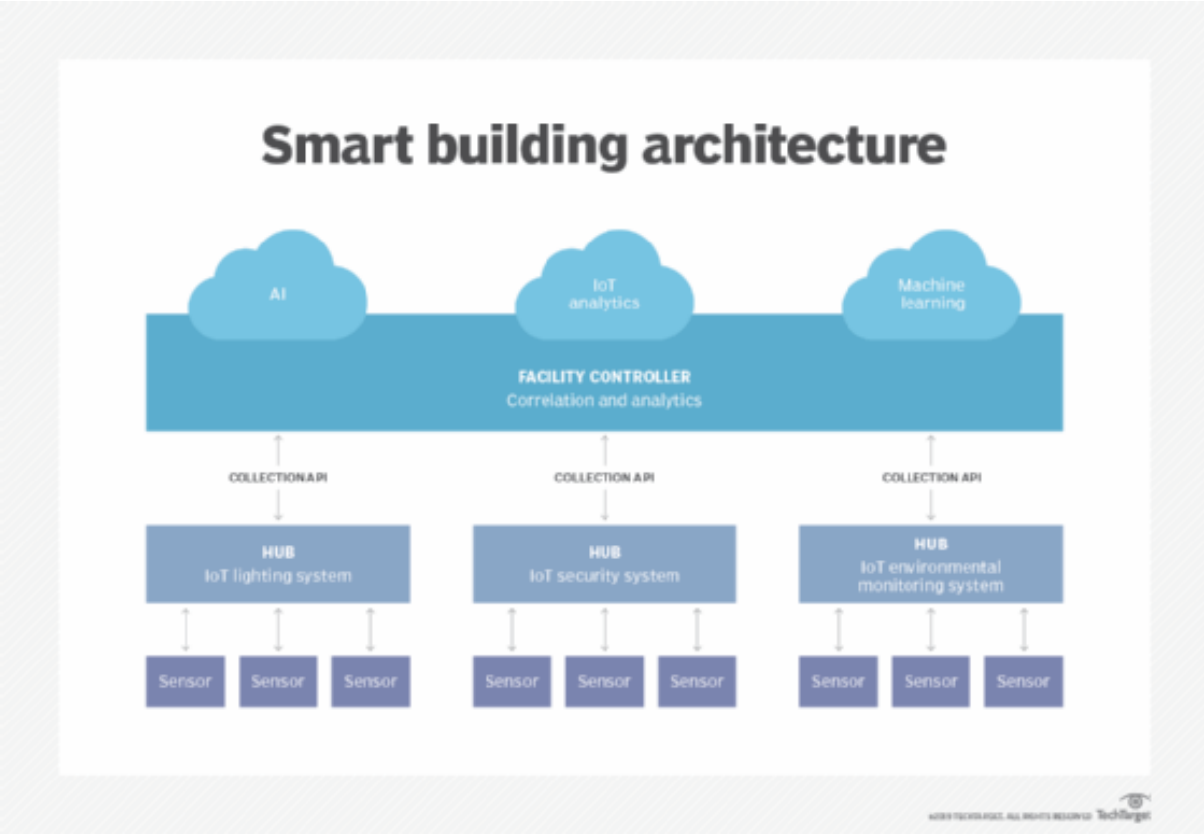
Machine learning and artificial intelligence are becoming increasingly popular in smart home systems, enabling home automation applications to adapt to their environments. For example, voice-activated systems, such as Amazon Echo or Google Home, contain virtual assistants that learn and personalize the smart home to the residents' preferences and patterns.

Smart buildings

While every smart home is a smart building, not every smart building is a smart home. Enterprise, commercial, industrial and residential buildings of all shapes and sizes -- including offices, skyscrapers, apartment buildings and multi-tenant offices and residences -- are deploying IoT technologies to improve building efficiency, reduce energy costs and environmental damage, ensure security and improve occupant satisfaction.

Many of the same smart technologies used in the smart home are also deployed in smart building technology, including lighting, energy, heating and air conditioning, and security and building access systems.

For example, a smart building can reduce energy costs using sensors that detect how many occupants are in a room. The temperature can automatically adjust, turning on cool air if sensors detect a full conference room, or turning the heat down if everyone in the office has gone home for the day.



AI and machine learning are increasingly being used to set up smart home systems and buildings.

Smart buildings can also connect to the smart grid. Here, smart building components and the electric grid can *talk* and *listen* to each other. This technology can manage energy distribution more efficiently, handle maintenance proactively and power outages can be responded to more quickly.

Beyond these benefits, smart buildings can provide building owners and managers with the benefit of predictive maintenance. Janitors, for example, can refill restroom supplies when usage sensors monitoring the soap or paper towel dispensers indicate they are low. Maintenance and failures also can be predicted in building refrigeration, elevators and lighting systems.

The origins of the smart home

Smart home technology has come a long way in the past few decades. The following timeline shows significant events in the history of smart home technology:

- **1975.** With the release of X10, a communication protocol for home automation, the smart home, once a pipe dream a la *The Jetsons*, came to life. X10 sends 120 kHz radio frequency bursts of digital information onto a home's existing electric wiring to programmable outlets or switches. These signals convey commands to corresponding devices, controlling how and when the devices operate. A transmitter could, for example, send a signal along the house's electric wiring, telling a device to turn on at a specific time. However, because electrical wiring isn't designed to be free from radio-band *noise*, X10 wasn't always fully reliable. Signals would be lost and, in some cases, signals wouldn't cross circuits that were wired on different polarities, created when 220-volt service is split into a pair of 100-volt feeds, as is common in the U.S. Additionally, X10 was initially a one-way technology, so while smart devices can take commands, they can't send data back to a central network. Later, however, two-way X10 devices became available, albeit at a higher cost.
- **1984.** The American Association of Home Builders coined the term *smart house* to promote the concept of technology in home design.
- **2005.** Home automation company Insteon introduced technology that combined electric wiring with wireless signals. Other protocols, including Zigbee and Z-Wave, have since emerged to counter the problems prone to X10.
- **2007.** The first smart TVs were released. They offered integrated internet-connected services, such as streaming and access to user-generated content.
- **2011.** Newly founded Nest Labs released its first smart product, the Nest Learning Thermostat. The company also created smart smoke and carbon monoxide detectors and security cameras. After being acquired by Google in 2015, Nest became a subsidiary of Alphabet Inc.
- **2012.** SmartThings Inc. launched a Kickstarter campaign, raising $1.2 million to fund its smart home system. Following additional funding, the company entered the market in August 2013 and was acquired by Samsung in 2014.
- **2014.** Amazon Echo, Amazon Alexa and Apple HomeKit were introduced, making a giant leap in voice-enabled smart devices.
- **2016-2018.** The arrival of smart speakers, such as Google Home, Google Nest, Apple HomePod and Sonos signaled a significant shift in how users interacted with smart home devices.

- **Today.** Home automation trends continue to evolve, with more connectivity options and features.

Future developments in smart device technology will combine language models and virtual assistants, such as ChatGPT. Some companies are already using this technology to build their own personal assistants, while Amazon is currently working on a significant language model called large language model to improve Alexa.

When selecting the appropriate IoT communication protocol, it's important to recognize that not all protocols fit every device or deployment. Explore the top 12 IoT protocols and standards to find the best one for your needs.

This was last updated in August 2023

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Smart Home: A Complete Guide for a Connected House

Oleg Roberman / 29th March, 2023 / Trends

There was a time when returning home felt like an extended working day, with all the tiresome and exhausting housework. But we all want our home to be a place that glows with comfort, rest, and safety.

This description could be an alternative smart home definition because it's exactly what a connected house implies. It is a home that serves you, rather than making you a servant; a place where you can feel cozy and secure. But along with these qualities, you can experience even more advantages of a smart home, both for your wallet and for nature.

No wonder the concept of a smart house became so popular, and this market will grow up to $182,442 million globally by 2025. And by 2027, people worldwide are expected to spend over $200 billion on smart home gadgets, which makes this industry a highly profitable niche for forward-looking business owners.

Wish to find your place in connected house software development? We've prepared an extensive guide on how to turn your home into a smart home, along with some examples to inspire you for creating your own innovative solutions. Read on to dive into this modern trend of a controllable and self-service home environment.

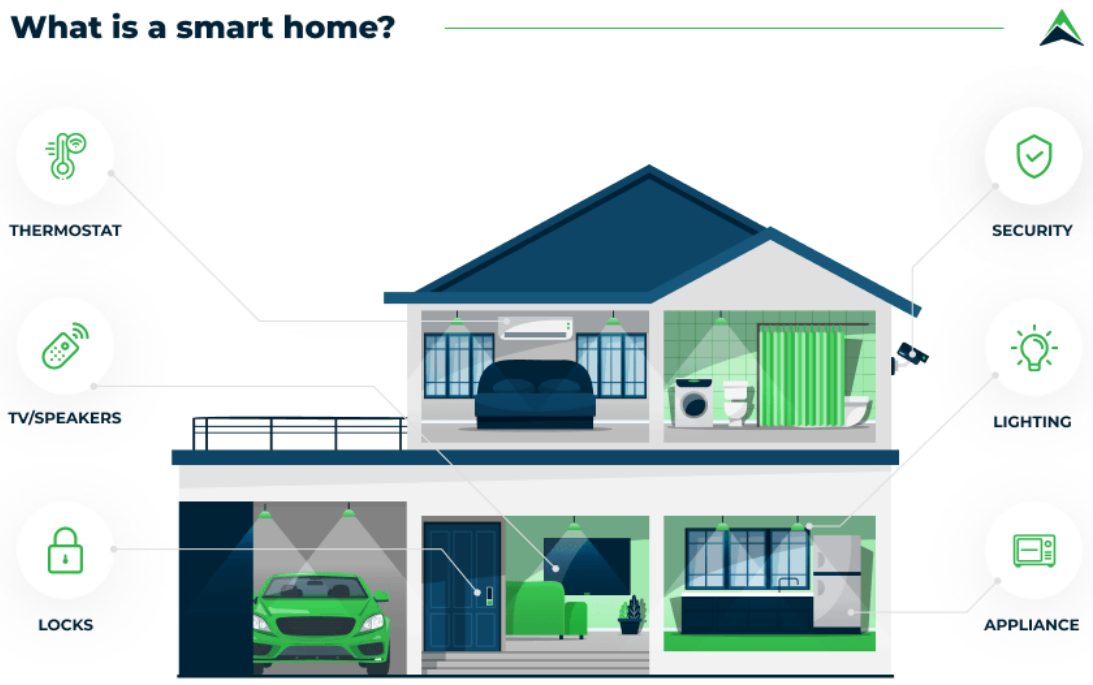
What is a smart home?

A smart home is an intelligent home setup that connects home gadgets (so-called IoT devices) through an Internet connection into one smart home ecosystem. These devices can gather information and transfer it to a special app, or perform certain actions automatically or as directed by the owner.

That means, people don't need to clutter their minds with every detail of their home or care about chores if their place is equipped with smart home technologies, as nearly everything in their home can be manageable or self-controlled.

That is, smart home owners can specify the perfect temperature of their room for a smart thermostat distantly to feel comfortable right after stepping over the threshold of their home, or schedule a connected kettle to boil the water at a fixed time to get a nice hot cup of tea first thing in the morning.

Nowadays, automation is often built in the original housing construction, so in the years ahead, more homes will be intelligent by default. However, it's not widespread as of yet, so if a customer equips his or her home with IoT devices, it can still be considered a smart home.



How does a smart home work?

In connected homes, different smart home appliances connect to a dedicated mobile application and are manageable and adaptable. Essentially, any device in your customer's home can become smart, from switchers and doorbells to fridges and surveillance cameras.

Smart home devices gather info about the surroundings and can be prompted to action by some mechanisms or controlled via an application. Apart from the app, people can control their homes via voice assistants.

In general, there are three levels of how smart homes work on the resident's side:

- **monitoring** — smart devices track motions, light, temperature, humidity, and other metrics, and transfer this data to the app,
- **management** — the residents of connected homes can command their devices distantly via dedicated software,
- **automation** — smart tech for the home can be set to function in a given period or under the influence of other factors like the reactions of other gadgets.

What are the components of a smart home?

To make a home intelligent and self-driving, you need to connect IoT-powered hardware to an ecosystem through an Internet connection.

Let's take a closer look at the components you need to make a smart home.

Network

Smart home products are connected to the Internet with the help of communications protocols.

You may choose one from several options according to the goals you might have:

- **Wi-Fi** is fast and readily available in most homes. However, separating home devices from the common traffic or connecting products with high protection requirements may be a challenge, and you may want to consider alternative options.
- **Z-Wave** is another popular protocol among the owners of smart homes. It focuses on low power consumption and less interference.
- **ZigBee** is great for those who seek an even more secure option, as it has symmetrical encryption that provides a higher protection level.
- **Bluetooth** can also be used for a smart home system, although it's less commonly used for this kind of technology.

Ecosystems

A smart home system requires a hub that allows users to interact with their devices. Usually, people tend to stick to one ecosystem and search for compatible gadgets. Most of them can be run via voice assistants, which leaves owners a choice to exploit products either through an app or voice commands.

You can choose the best smart home ecosystem for your smart home solution among the most popular options:

- **Google Nest** — This platform uses Google Assistant that can command smart home devices or is installed directly in them (for instance, when it comes to Google brand products such as Chromebooks). The ecosystem supports multiple users while serving them separately.
- **Amazon Alexa** — A popular ecosystem with the Alexa voice assistant. The Amazon smart home system allows you to easily connect new devices, group them, and set automated routine actions.
- **Apple HomeKit** — This ecosystem works with Siri, and is said to provide a highly protected smart house system. However, in contrast with other options, Apple HomeKit isn't universal, and users need to have at least one device with iOS to make it work properly.
- **SmartThings** — A smart home ecosystem by Samsung. Although it's considered not as user-friendly as other systems, users like it for its stability and compatibility with a variety of devices. If you want to utilize Z-Wave and ZigBee protocols, SmartThings will also be a great choice for you.
- **Others**: IFTTT, Logitech, Yonomi, Control4, Smart Life, etc.

Hardware

Intelligent devices and appliances are hardware smart home components. Connected house developers try to turn as many home items as possible into custom and manageable ones. Today, every room can be supplied with a smart device for almost any purpose. The best smart home system usually includes intelligent lights, locks, doorbells, plugs, and thermostats.

Smart home benefits

When building a smart home, people often imagine that they turn their apartment into a sci-fi home that can serve them and allow them to get rid of monotonous housework.

We're quite close to this image, however, an intelligent home can also bring other advantages.

- **Convenience** — While homeowners are away and can't or don't want to do housework on their own, they can brew some tea, do the cleaning, set the perfect climate, or see how their kids are doing using a single app. Also, living in a smart home means you can afford to spend time on other valuable things while keeping your home life in order and comfortable.
- **Control** — A smart home can be managed without a direct presence there, as every action or change can be seen and commanded via an app. So, users will have no more worries about whether they've locked their apartment or turned off a device: they can just check and solve it on their phone.
- **Cost-efficiency** — Such smart home technologies as IoT thermostats and light bulbs can save costs on utility bills, especially electricity that is used for heating, cooling, lighting, and other things that can be easily overused when not controlled.
- **Sustainability** — Smart house devices can make a home more eco-friendly, pretty much for the same reason as saving money. It's fairly easy to stop using energy excessively when your home is fully automated.
- **Safety** — With a smart security system, every home can turn into an impregnable fortress, as advanced sensors and cameras are on guard round the clock.

Examples of smart home technologies

In a modern connected home, you can find smart home technology for nearly any task, whether it's making coffee or keeping an eye on your pet when you're away.

Here are some examples of technologies you can offer to your customer's smart home ecosystem.

1. Access & security controls

Home protection devices are good at keeping a home secure, so they are often listed as top smart home solutions. Smart cameras, motion detectors, and smart video doorbells notify your users remotely when someone is approaching their home.

Smart locks give them access to the doors even if they are away, so they can open the door on someone's request or make it lock up automatically if it was accidentally left unlocked.

Examples: Reolink Argus 3 Pro, August Smart Lock Pro, Ring Video Doorbells.

2. Appliances

A smart home can assist you in cleaning, cooking, and storing products, if not do it itself. Smart appliances for a home can replace ordinary vacuum cleaners, instant pots, toasters, fridges, coffee machines, or even stirrers.

With the help of a smartphone, a homeowner can check and manage the temperature in the refrigerator, keep the home clean without wasting time on it, or cook a perfect dish with fully controllable appliances.

Examples: Uncommon Goods Automatic Pan Stirrer, Samsung Smart Refrigerators, Smarter Coffee Makers.

3. Climate controls

Smart technology for a home environment is becoming increasingly popular, as it helps people create and control the perfect climate in their rooms with one tap.

Such climate control appliances as thermostats, humidifiers and air purifiers also allow homeowners to track air quality on a smartphone by sending data on temperature, humidity levels, and pollution rates to a dedicated app.

Examples: Ecobee Smart Thermostats, Levoit Smart Humidifiers, Dyson Air Purifiers.

4. Energy management systems

Although a majority of connected home devices are aimed at making life easier and more comfortable, the best smart home systems also include solutions for saving resources such as electricity and water.

These systems make sure there are neither leaks in the home nor excessive energy consumption, so users can both spend less money on their bills and live more sustainably.

Examples: Flo Smart Water Monitor, Sense monitor, Sensital Energy Management System.

5. Devices for entertainment

Smart TVs and speakers are kinds of smart home devices many people are already using. By using a voice hub, homeowners can turn on their TV, music, podcasts, and other fun things. There are also alternative systems for managing entertainment devices, such as gesture control devices.

Examples: singlecue, Samsung Smart TVs, Amazon Echo.

6. Environmental alarms

Nowadays, smart homes offer an advanced security system that can detect early signs of fire and hazardous chemical air pollution. Such devices as smart fire detection and alarm systems, radon, and carbon monoxide detectors monitor air quality round the clock and send notifications to your phone when danger is detected.

Examples: Nest Protect Smoke & CO Alarm, RadonEye Home Radon Detector, Screwfix Carbon Monoxide Detectors.

7. Health care systems

The healthcare market is famous for keeping pace with the latest IoT technologies, i.e. smartwatches and fitness bands. However, you can also find solutions for a smart home such as intelligent scales that can measure not only weight but muscle and fat mass, water rate, and other indicators.

Moreover, some businesses offer full-fledged medical alert systems for a connected house.

Examples: GetSafe Medical Alert System, Fitbit Aria Air Smart Scales, Withings Blood Pressure Monitor.

8. Lighting controls

Today, smart lights are probably the basic components of modern smart home systems. They allow people to control the light remotely, set auto turn on/off, synchronize it with the time of the day, adjust the color and brightness, and more features.

Not only does this technology help people create the desired atmosphere, but smart bulbs and switches also allow them to cut spending on electricity bills.

Examples: Wyze Smart Light Bulbs, CYNC Wired Smart Switches, Brilliant Smart Dimmer Switch.

9. Other

The market for smart home devices is versatile, and people can find nearly everything they need to live a more convenient and safe life.

For instance, pet owners may want to replace an old feeder with an intelligent one or complement their pet care with a smart pet camera. And if your target client is a new parent, it’s a great idea to offer him or her an advanced baby monitoring system to always keep his or her kid in view.

Examples: PetCube Play, Nanit Baby Sleep Monitor, Owlet Home Smart Automatic Pet Feeder.

Learn how to make your home smart

Although connected homes stuffed with sensors, cameras, and automated household appliances seemed to be a fantasy in the past, today these technologies are much more accessible and common. They have enabled people to make their homes help them and nearly maintain themselves, saving homeowners' time and money while adding a new level of convenience and comfort.

If you want to learn how to develop new smart home technologies, the Eastern Peak team is ready to accompany you on the way to bringing your business to the market of connected house software. Contact us to get a free consultation.

Frequently Asked Questions

How does a connected home work?

A smart home is a system of intelligent devices and appliances that connect to a dedicated ecosystem through the internat. Residents of connected homes get data gathered by these devices and command appliances using a mobile application.

What are the benefits of a connected home?

A connected house is an automated and manageable space that serves its owner and is fully under his or her control. It allows people to spend less on bills and live sustainably. Moreover, smart security systems always keep the home protected.

What are examples of smart homes?

Currently, the market offers solutions for every aspect of living in a connected house. Smart homes may include solutions for home protection such as smart cameras, locks, and even environmental alarms, automated appliances from a vacuum robot to a smart fridge, climate control devices, gadgets for entertainment and health care, energy management systems, etc.

What devices can be installed in a connected house?

Nowadays, people can equip almost every corner of their connected house with an intelligent device. Smart security systems, light bulbs, robot vacuums, and thermostats, are some of the most common smart home technology examples, although you can find even more specific items such as smart stirrers or baby cameras.

Read also:

- 13 Cool Examples of Internet of Things Applications and How to Develop One
- How to Develop an Internet of Things Application for Pet Care: A Go-to-Market Guide
- How Can IoT Benefit the Environment? Top 9 Ideas for Your Eco Startup

A smart home is a residence equipped with interconnected devices that allow for remote control and monitoring of appliances, security features, and other systems through a smartphone or other networked device. These devices are often networked together and can communicate with each other, enabling automation and increased efficiency.

Key features and functions of a smart home:

- **Remote control and automation:**

Smart homes allow homeowners to manage various aspects of their homes remotely, such as adjusting the temperature, controlling lights, and managing security systems.

- **Interconnected devices:**

Many smart home devices are designed to work together, allowing for seamless integration and automation.

- **Increased efficiency and energy savings:**

Smart homes can help optimize energy consumption by automating tasks like adjusting thermostat settings and controlling lighting.

- **Enhanced security:**

Smart home security systems, such as smart locks, cameras, and alarms, provide increased protection and peace of mind for homeowners.

- **Convenience and ease of use:**

Smart homes offer a more convenient and user-friendly experience by automating tasks and allowing for remote control.

- **Integration of AI and voice assistants:**

Some smart homes incorporate AI-powered voice assistants, allowing homeowners to control their homes with simple voice commands.

Examples of smart home devices and features:

- **Lighting control:**

Smart lighting systems allow you to control lights remotely, set schedules, and even create different lighting moods.

- **Climate control:**

Smart thermostats can learn your preferences and automatically adjust the temperature, saving energy and increasing comfort.

- **Security systems:**

Smart locks, cameras, and alarm systems provide enhanced security and remote monitoring capabilities.

- **Home entertainment:**

Smart TVs, speakers, and streaming devices can be integrated into a smart home system, allowing for centralized control and enhanced entertainment experiences.

- **Appliances:**

Many appliances, such as refrigerators, dishwashers, and ovens, can be connected to a smart home system and controlled remotely.

What Is a Smart Home?

What is a smart home and what are the benefits?

A smart home means your home has a smart home system that connects with your appliances to automate specific tasks and is typically remotely controlled. You can use a smart home system to program your sprinklers, set and monitor your home security system and cameras, or control appliances like your refrigerator or air conditioning and heating.

At Constellation we love how energy-efficient smart homes are, because they save you precious time and money while also conserving energy!

What are the benefits of a smart home?

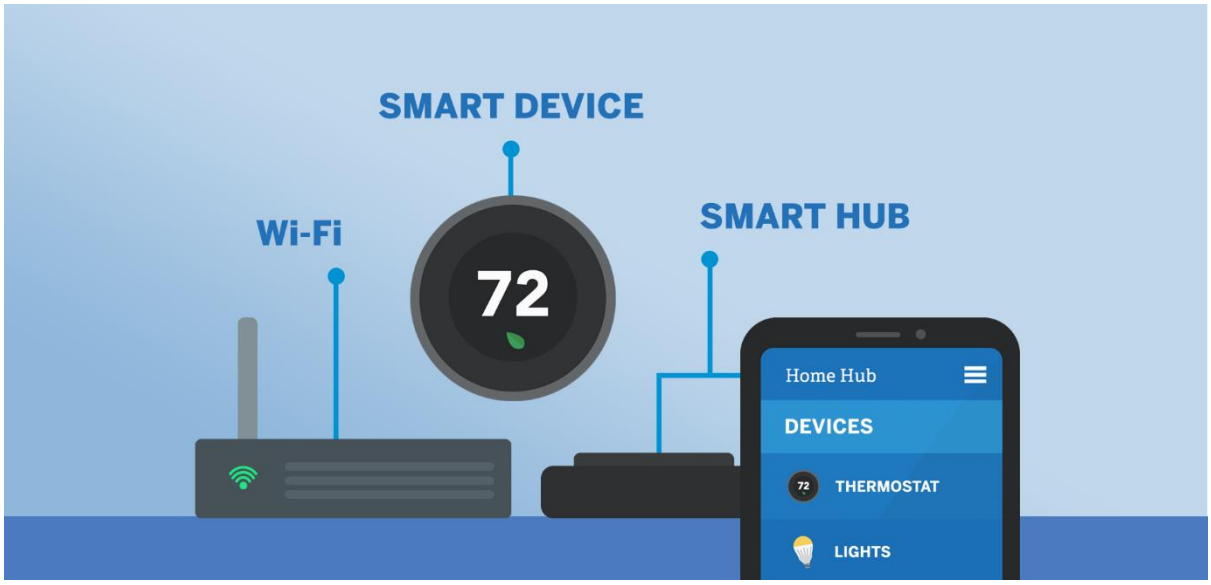
Many Americans are looking into smart homes ideas, how smart homes work, or specific task automation for benefits like these:

- Smart homes allow you to have greater control of your energy use, all while automating things like adjusting temperature, turning on and off lights, opening and closing window treatments, and adjusting irrigation based on the weather.
- Smart homes provide insights into energy use that can help you become more energy efficient and mindful of ecological factors.
- Smart homes can pinpoint areas where you're using more energy than you need to, allowing you to cut back in those areas and save money.

And while it might sound like just another passing fad to some, the smart home—like the smartphone—is here to stay. With over 80 million smart home devices delivered worldwide in 2016, some predict that number will grow to over 130 million smart home devices by the end of 2017.

Are smart home devices energy efficient?

Smart home devices are not always energy efficient, but most can be utilized in ways that help you conserve energy. When you have smart home appliances, lights, or a smart thermostat, you control when and how these will turn on and function. Therefore, you have more control over your energy usage and are more likely to change your energy consumption habits.



How do smart homes work?

When smart homes first became an option, the answer was a bit hazy. But as bigger players join the industry, they're making it easier for consumers to understand and acquire the technologies needed to get started.

What you need to turn your regular home into a smart home are 1) a wifi connection, 2) smart home appliances (or smart home devices) and 3) a smart home system to connect, monitor, and control these devices.

What is a smart device?

A smart device is any electronic device that can be connected to your smart home system, that can interact with other devices, and that can make some decisions on its own. Televisions, stoves, alarm systems, doorbells, garage doors and stereos are examples of smart devices. Smart devices can be bought separately and over time, making it easy to slowly transform your house into a smart home.

What is a smart home system?

The smart home system is the “hub,” so to speak, of your smart home. Either through a wall-mounted unit or software accessible via the Internet, a smart home system gathers unique information from each of your smart devices or appliances and allows you to control all your devices in one place. Because the smart home market is still emerging, there are several different options for smart home systems or home automation hubs, most of which are only compatible with specific other systems—so be sure to confirm compatibility before purchasing.

How do you make your home a smart home?

The short answer is either “all at once” or “one step at a time.” Still, there are a few things everyone will have to do in order to get ready for their new-and-improved home appliances and smart devices.

1. **Upgrade your WiFi.** Since all smart home devices use the Internet to communicate, you’ll want to make sure you have WiFi strong enough to handle information sharing. For larger homes, you may want to even consider getting multiple routers.

2. **Do your research.** There are so many smart systems and smart home devices available that it’s a smart idea—pun intended—to familiarize yourself with a few different options before settling on one.

3. **Identify your needs.** Figure out exactly what you’re looking for from a smart home, and then pick the areas you want to start addressing right now. From there, it’s a cinch to pull from your research the smart home system and smart devices and appliances that will meet your needs. There’s nothing worse than buying a fancy new gadget only to have it gathering dust in a corner a few weeks later because it’s not really something you need right now--especially a costly one!

What are some smart home ideas?

If you’re looking around your house wondering what regular devices you have now that can be turned into a smart device, it’s better to ask “What *can’t* be turned into a smart device?” If it can be plugged in, chances are there’s a company out there making a smart version of it. To get you started, here’s a short list of smart home ideas that we here at Constellation really love:

- **Keep your home safe with smart locks.** Replace your current front-door lock with a smart lock to lock and unlock your door remotely, check to make sure you locked the door after you’ve already left, and keep a record of who has come and gone.

- **Monitor your home with smart security alerts.** A multitude of smart home devices can alert you to safety or security issues remotely. Get alerts no matter where you are for leaks, for leaving the garage door open, for smoke, for when someone rings your doorbell, or for if you left something plugged in that really should have been turned off before you left the house.
- **Manage your home temperature and save energy with a smart thermostat.** A smart thermostat can learn your habits and automatically adjust the temperature based on your unique schedule. It also lets you manually and remotely adjust temperatures through an app.
- **Delegate tasks through a smart assistant.** A virtual assistant—think Google Home or Amazon Echo—allows you to use voice commands to do things such as turn on music, search the Web and control your household smart devices.
- **Streamline your chores with smart appliances.** Smart TVs, dishwashers, refrigerators, and washers and dryers all allow remote access and control, and can alert you to information that's relevant to each appliance. For example, your washing machine can detect when energy consumption is the lowest in your area and turn on during that time, or your refrigerator can scan your groceries, letting you know when the eggs are about to expire or how much milk you have left!
- **Control your home lighting with smart light bulbs.** Smart lights allow you to control the lighting in every room of your house from your mobile device. Did your seven-year-old forget to turn off the lights in the kitchen? You can do it on the way to school right from your phone. Or configure your lights to turn on and off at set times, and never worry again if someone forgot to turn off the lights before you leave for the day.
- **Get the best of both worlds with a smart and sustainable home.** For example, installing an electric car charging station in your garage allows you to upgrade your home and also lean into a more sustainable lifestyle!

The new world of smart home technology is an exciting one, and the possibilities and combinations are becoming endless. As the smart home industry continues to grow, so will the offerings available and their impact on your daily life.

Smart Homes: Everything You Need To Know

Smart home devices can automate many routine tasks around a home, adding convenience, enjoyment, and even safety to the homeowners' life, depending on which smart home products are installed. But with so much smart home technology available, the thought of setting up a smart home system can be daunting.

In this guide, we explain how to make a smart home. We cover what a smart home is, the different types of smart home devices, costs, advantages, and disadvantages, how to set up a smart home system, and things to consider before buying.

What is a Smart Home?

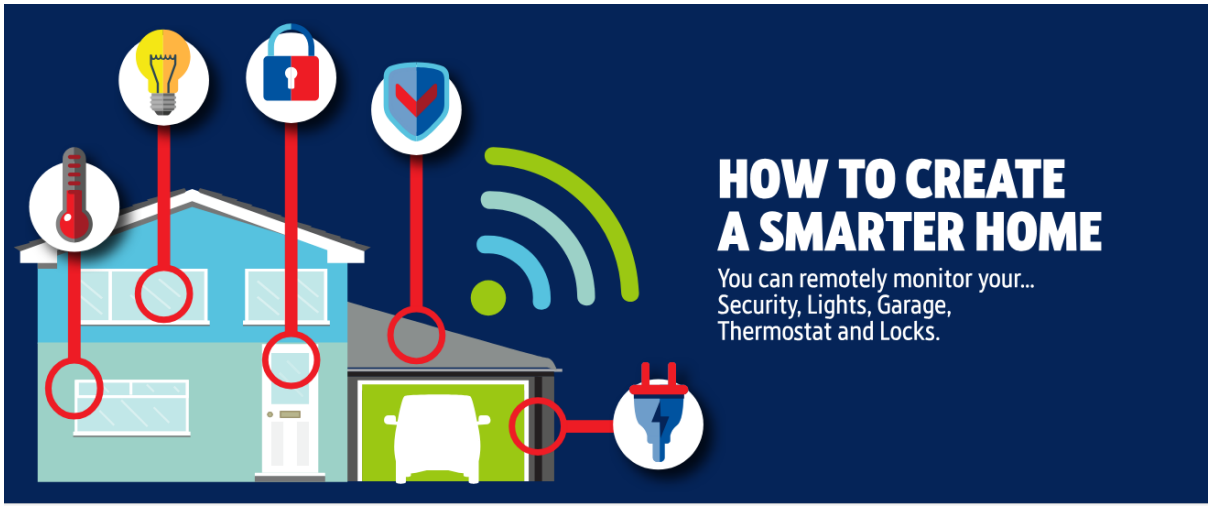
A smart home uses internet-connected technology to allow homeowners to control, automate and monitor appliances and systems in their homes remotely. It involves setting up one or more smart devices, connecting them to the internet and controlling them through an app on a smartphone or tablet, through a website or via a smart speaker.

Smart devices include light bulbs, thermostats, TVs, kitchen appliances, security systems, doorbells and much more. They can be used on their own or as part of a smart home control system where multiple smart devices interact with each other.

A smart home can do many clever things depending on the smart home technology installed. For example, smart security devices allow homeowners to protect and monitor their homes when they're not there. And a smart thermostat can turn heating on automatically when the homeowner is about to return home.

But life can get even more convenient when different smart home systems work together. For example, smart lights can be programmed to turn on automatically when a front door is opened with a smart lock. Setting up a morning routine could involve having lights, the radio and a coffee maker turn on with a voice command while sitting in bed. In addition, smart lights can come on in a hallway at night when activated by a smart motion sensor.

Here's an example of what a smart home system could look like



How to Create a Smart Home System

To create a smart home system, first choose which ecosystem (the technology that controls the smart system) you want to use. The most popular smart home ecosystems include Google Assistant, Amazon Alexa, Apple HomeKit, and Samsung SmartThings.

Once the smart home system has been decided, start with buying a smart home hub that runs on that ecosystem. The home hub could be a smart speaker, a smart display or a dedicated smart hub. This central hub device will control all the other smart home devices installed.

When the smart home hub is chosen, you can add compatible smart home devices to the system. You can see a list of the best smart home devices in the next section.

A smart home system can be installed into any type of home. If you're building a new home, you have the flexibility to choose wired smart home devices that can be installed while the building works are going on. But there are also many wireless smart devices available, designed for easy DIY installation. So, it's possible to set up a smart home system in a new build or convert a home to a smart home when the property is older.

Best Smart Home Devices

Smart Speakers

A smart speaker is often one of the first smart home devices homeowners buy. It connects to the internet and allows users to communicate with a voice assistant such as Alexa, Siri, or Google.

Smart speakers commonly utilise the brand's Smart Home Platform such as Google Home, Amazon Alexa & Apple Home, allowing the homeowner to run automations, routines and schedules, play music, send reminders about important events, act as an alarm, and much more.

Some smart speakers can be used as a smart home hub to connect and control smart home devices when your device needs a Zigbee, Matter or Thread connection protocol. If using a smart speaker as a smart home hub, please check if the smart speaker supports Zigbee, Matter or Thread connection and your Zigbee, Matter or Thread smart devices are also compatible with the smart speaker.

Smart Heating

Smart heating products include smart thermostats, smart thermostatic radiator valves, smart heating controls, and smart electric radiators.

Smart heating works by connecting the heating system to the internet so it can be controlled remotely using a smart device. Depending on the set-up, smart heating systems can alert the homeowner if there's a draft, turn the heating off or down if no one's home, and turn it on when they're about to return. It can also adjust the temperature in different rooms or zones independently to the rest of the house, respond to weather reports, and more.

Check out our smart heating guide for more information.

Smart Lighting

Smart lighting products include smart light bulbs, smart downlights, smart LED strip lights, smart PIR security lights, smart light switches, and smart outdoor lighting.

They allow homeowners to control lights remotely or with their voice when at home. For example, automating lights to turn off and on when away from home for security purposes. Change brightness and colour settings with a voice command for convenience. Or programme lights to turn off in an unoccupied room to save energy.

Check out our smart lighting guide for more information.

Smart Electrical

Smart electrical products include smart switches, smart sockets, smart relays, smart DIN rail switches, smart plugs, smart extension leads and smart wireless scene switches.

Check out our smart plugs & switches guide for more information.

Smart switches, smart sockets, smart plugs, and smart extension leads allow homeowners independent control via their phone, voice and even remotely with some smart plugs and smart extension leads featuring energy monitoring.

Smart relays and smart DIN rail switches come in various specifications depending on the use case. The capabilities of different smart relays can range from remotely controlling the garage door and all the way to converting non-smart light switches into smart.

Smart DIN rail switches also come in various specifications and channel options. Some smart DIN rails provide dimming control and energy consumption monitoring, to others with dry contacts offering a wide range of voltage support and control of motorised valves.

Smart Electric Vehicle (EV)

As more people switch from petrol and diesel cars to electric, the demand for electric vehicle charging is rising. A smart EV Charger allows the homeowner to charge their electric vehicle and manage their charging schedules via their phone, remotely or even control by their voice. Some smart EV chargers even connect to their energy tariff to automatically optimise their charging when it's cheapest.

Check out our Electric Vehicle Charging Guide for more information

Smart Security

Smart security products include smart CCTV systems and smart CCTV cameras, digital door locks, smart burglar alarms, smart PIR sensors, and smart doorbells.

They allow homeowners to protect and monitor their homes from wherever they are in the world. So, if there is a break-in, the emergency services can be alerted straight away.

You can learn more about smart security in our smart security guide.

Smart Hubs and Routers

A smart hub is a device used as a control centre for other smart devices within a home. The smart hub connects to the home's internet router through an ethernet cable. Then all smart devices connect to the smart hub through Wi-Fi. They allow homeowners to control all their smart devices from one app, remotely or with their voice when at home. But not all smart devices require a smart hub to work, so always check first.

A smart router is similar to a standard internet router but with the added benefit of being able to control the internet through an app on a smartphone or tablet. They have features such as setting up parental controls, blocking access to certain websites, changing passwords, and sharing internet access. They also act as a Wi-Fi extender which is ideal for homes with a weak Wi-Fi signal.

Smart Fire, Smoke, and Carbon Monoxide Detectors

Smart fire, smoke and carbon monoxide detectors add an extra layer of security over their standard versions because they can alert the homeowner to an emergency when they aren't home.

This means emergency services can be called immediately, potentially saving their property from more extensive damage. And, when used in conjunction with a smart CCTV camera, the homeowner can check live camera footage to make sure it's not a false alarm.

Smart Home Kits

A smart home kit provides an easy way to get started with automating a home. Each kit contains two or more smart devices designed to work together, and they come in various combinations. For example, you can buy kits with several smart bulbs and a remote control. There are kits with a hub, smart plugs and an energy monitor. And kits with a hub, smart sockets, and a remote control.

Browse our range of smart home kits to get an idea of what's available.

Smart Watering Systems

Unlike standard watering systems that work to a pre-set schedule, smart watering systems connect to the internet so they can be controlled remotely using a smart device. And they are much smarter too. Depending on the device, they can monitor the weather and soil conditions to adjust the watering schedule accordingly. That means plants are never under or overwatered, so the homeowner saves money and has a healthier-looking garden.

Smart Kitchen and Laundry Appliances

Many types of smart kitchen and laundry appliances are available, all designed to make life more convenient. And they all differ in their capabilities. A few examples are smart refrigerators that send an alert if the door is left open, produce a shopping list, or tell you how often it's been accessed. Smart ovens allow users to turn them off and on remotely, control the temperature and monitor the cooking status via an app. Smart dishwashers and washing machines check the progress of the wash, send alerts when it's finished and run diagnostics to check the machine is running efficiently.

Smart TVs

Unlike standard TVs, smart TVs connect to the internet through Wi-Fi or an ethernet cable. So, besides having all the functions of a traditional TV, they also allow the user to watch video streaming services, browse the internet, play games, make video calls, and access apps.

Other Smart Home Devices

The smart home devices listed above are the most popular, but many other products have smart functionality too, and the list is increasing all the time.

Other smart home devices include baby monitors, coffee machines, robot vacuum cleaners, window shades, garage door openers, slow cookers, and much more.

In addition to that, there are smart electrical devices available, such as smart plugs, sockets, switches, extension leads, and smart remote controls. When used with an ordinary electrical item, that item becomes a smart device too. Read more in our guide to smart plugs and switches.

There's also a clever piece of technology called an inline on/off relay, which is wired in and allows you to connect and control multiple lights via Bluetooth. For example, add several LED light strips around a kitchen. Then, rather than finding space to install a switch for each one, the inlay on/off relay can control them all.

Another handy smart device is an energy saving power meter socket. It plugs into the wall, then any electrical appliance can be plugged into it. The socket then monitors and measures the energy use and costs of running that appliance, helping homeowners lower bills and reduce emissions.

How Much is a Smart Home?

The costs to set up a smart home can vary significantly depending on which smart home devices are purchased, how many there are, and how they are connected.

If you want to know how to set up a smart home on a budget, you can start with something as simple as a smart light bulb or smart speaker which can be a good low cost starting point. The system can then be built upon, with new smart home kit being added over time.

Smart home devices are more affordable when bought individually, and the costs can quickly stack up. But, setting up a smart home should be seen as an investment because there are many benefits which we'll run through later in this guide.

Smart Home Factors to Consider

1. Compatibility

Smart home devices are often only compatible with specific ecosystems, such as Google Assistant, Amazon Alexa, Apple HomeKit, and Samsung SmartThings.

Some devices will connect to more than one of these systems, while others (devices using Apple HomeKit in particular) will only connect with one. So, choose which ecosystem to use first, then check the smart home device's information to ensure it says 'works with Alexa, Google Assistant, Apple HomeKit, or SmartThings' accordingly.

2. Wi-Fi versus Bluetooth

Most smart home devices connect to the internet via Wi-Fi, so they can be controlled from anywhere in the world, as long as there's an internet connection.

Some smart home devices only connect to their control system (i.e., smartphones, tablets, or speakers) through Bluetooth. Unlike a Wi-Fi connected device, the smartphone needs to be in the vicinity of a Bluetooth connected device for it to work, so the device can't be controlled when the user is away from home.

3. Strength of Wi-Fi

Wi-Fi connected smart home devices rely on a strong internet connection to work. If you are setting up multiple devices around a home, you might find some areas where the Wi-Fi signal is weak. This is particularly common when setting up outdoor smart home devices such as watering systems,

lighting, or CCTV cameras. To boost the Wi-Fi signal to reach these areas, choose a good central location for your router, and install Wi-Fi extenders if necessary.

4. Security and privacy

As with all things connected to the internet, smart home devices could be subject to hacking, and personal data could be shared with unwanted third parties. However, smart home devices can be made safer by taking precautions. For example, stick with established brands, use a strong password, set up two-factor authentication and keep the software up to date. Also, check the manufacturer's privacy policies and choose what data can be collected and shared.

How to Set up a Smart Home

Smart home set-up can seem a little daunting when you start. Simply start with the smart home hub (a smart speaker, smart display, or dedicated smart hub). Then add the chosen smart home devices one by one, following the manufacturer's instructions. Once these are in place and connected to the hub, you can start to organise the system and set up commands as follows:

Set up grouping

Organise smart home devices into rooms or zones so that certain devices work together. For example, group the lights and TV in the living room and set a 'goodnight' command that turns them both off when going to bed.

Set up automatic and intelligent settings

Automatic settings allow you to set up things such as automatically turning on the coffee machine when you say, 'good morning'. Or you can program devices to use intelligent settings such as geotargeting, which works by tracking the location of the connected smart device via GPS. This can be used, for example, to switch the heating on when the homeowner is within 15 minutes of arriving home.

Set up routines and schedules

Set up timers so that systems, such as the heating, go on and off at set times. These timers can be overridden by the automatic and intelligent settings if the user schedules changes.

Set up IFTTT (if this, then that)

IFTTT is a powerful app that allows the user to connect and integrate multiple smart home devices that would otherwise not be compatible with each other. Use it to set up triggers that lead to action. For example, when someone unlocks the front door with a smart lock (the trigger), the system turns the lights on in the hallway (the action).

Advantages of a Smart Home

Saving energy and money

Smart heating and lighting systems allow greater control and flexibility over the amount of energy used. As a result, they help save energy by, for example, automatically turning the heat down and lights off in rooms not being used. This, in turn, saves money on utility bills.

Saving water

Smart watering systems help save water by only watering for as long as necessary. This helps save money on water bills.

Added home security

Smart lighting allows homeowners to make their property look occupied when no one is home. And smart security systems enable them to monitor their homes or see who's at the front door from anywhere.

Convenience

Control smart home systems remotely from anywhere in the world with a smartphone or at home with just your voice.

Ease of operation

Smart home devices are easy to operate using a simple app or voice control.

Disadvantages of a Smart Home

The hassle of installation

Most smart home devices are designed for easy DIY installation. But some items may require specialist help, such as wiring in CCTV cameras and light switches or plumbing in radiator valves.

The initial expense

If you want to set up a large smart home system all at once, the costs can be high. However, it's possible to build the system up over time to spread the costs.

Potential internet security problems

Any internet-based system can be hacked, but as explained in the previous section, these risks can be mitigated by taking necessary precautions.

FAQs on Smart Homes

What should I add to my smart home?

There are many smart home devices available, and the ones you choose will depend on your needs and what's important to you. A smart speaker is a great place to start as it works alone and can be used as a smart home hub to connect other smart devices. Build on your smart home from there. For example, if security is important to you, add a smart doorbell or CCTV cameras and light bulbs. If saving money is a priority, add a smart thermostat to control your heating.

How much bandwidth does a smart home use?

The amount of bandwidth a smart home uses will depend on the quantity and type of smart home devices installed. As a guide, 10-12 smart devices will use around 5 Mbps. However, if those smart devices show video footage, they will use 10Mbps.

How to make your smart home secure?

To make your smart home systems secure, use a strong password, set up two-factor authentication and keep the software up to date. Also, check the manufacturer's privacy policies and choose what data can be collected and shared.

What is a smart home control system?

A smart home control system works as a central hub that connects all the other smart home products to the internet. A smart home control system could be a smart speaker, a smart display or a dedicated smart home hub.

SMART LIGHTING GUIDE

Introduction

Smart lighting is a convenient way to control lighting in a home. But its benefits go much further than that.

This smart home lighting guide explains all the clever features and benefits of smart lighting. But first, we start with the basics: what smart lighting is, how it works, and the types of smart lighting available. We also cover smart lighting costs and installation and answer your frequently asked questions.

What is Smart Home Lighting?

Smart home lighting is a simple and customisable way of lighting a property. It promotes efficient light usage and therefore helps to reduce energy bills.

Smart lighting systems are connected to the internet and controlled via an app on a smartphone or tablet, or a smart speaker, such as Alexa or Google Home. The system can be controlled remotely from anywhere. And lights can be scheduled to turn off and on, adding additional security when away from home.

Types of Smart Lighting System

Different types of smart lighting are available to make up a smart lighting system. Some products can be used independently, and others can be used together.

Shop Smart Lighting

Smart Light Bulbs

Installing smart light bulbs is the easiest and cheapest way to incorporate smart lighting into a home. Like traditional bulbs, a smart bulb is a wireless light bulb that fits into any existing light fixture. The bulb is connected to and controlled by an app on a smartphone, tablet, or AI speaker.

Smart bulbs can work independently of any other smart lighting product. They're commonly used in secondary lighting, such as lamps and accent lights, rather than primary lighting, such as the main overhead room light. This is because main lights can be switched on and off at the wall. So, if the switch is off, any automation set up for the bulb will fail.

There are many types of smart bulbs available. Some connect to a smart device through Wi-Fi, and some only connect via Bluetooth. A Bluetooth connected bulb can't be controlled when away from home because the smart device needs to be near the bulb to work.

Smart bulbs are dimmable, and light colours range from a single white light to warm and cool white lights and multi-coloured lights. They also come in all the usual bulb shapes, from standard bulbs to candle bulbs and spotlight bulbs.

Smart Downlights

Smart downlights are typically installed in a recess within a ceiling, and they must be wired into the mains electricity, just like any light fitting. Once installed, the light is connected to and controlled by an app on a smartphone, tablet, or smart speaker.

Smart downlights can work independently of any other smart lighting product. But they can also work in groups or with other smart light fittings. Some smart downlights require a smart hub to control them.

Most smart downlights are dimmable and have a variable white light. But there are some available with multi-colour changeable lights.

Smart LED Strip Lights

Smart LED strip lights are ideal for creating mood lighting. The LED lights are set on an adhesive backing which can be stuck to any solid surface. The strip can be cut down to size, and once it's in place, the lights are simply plugged into the mains. Once installed, the smart LED strip light is connected to and controlled by an app on a smartphone, tablet, or smart speaker.

Smart LED strip lights can work independently of any other smart lighting product, and they don't require a smart hub. They're ideal for bordering and accentuating a feature in a room and can often be linked with gaming and entertainment systems to create an atmosphere that matches the game, music or TV.

Smart LED strip lights are available in lengths ranging from 1m to 5m. Some are connected to a smart device through Wi-Fi, and some are connected via Bluetooth. They all have a vast range of colour options, which is what makes them so perfect for mood lighting.

Smart PIR Security Lights

Smart PIR security lights are outdoor lights with built-in motion sensors, CCTV cameras and 2-way audio. Once installed, the light is connected to and controlled by an app on a smartphone, tablet, or smart speaker. The motion sensor detects movement, which turns the light and camera on. Some smart PIR floodlights include a siren, some have spotlights while others have floodlights. The homeowner also gets a notification so they can view the camera and talk to potential intruders from anywhere in the world.

Smart PIR security lights work independently of any other smart lighting product. They don't require a smart hub and wired or wireless lighting is available.

Smart Light Switches

Smart light switches are best used to control the primary light fixtures in a home, i.e., the main overhead lights. This is because they work alongside existing standard light bulbs rather than smart bulbs. Once installed, the switch is connected to an app on a smartphone or tablet. The switch, and therefore the light connected to it, can then be controlled remotely through the app or smart speaker. But they can also be controlled through touch, just like a standard light switch.

There are different finishes of smart switches available, from white to stainless steel. Some make the lights dimmable, but compatibility varies depending on the light bulb used, so always check first. And they are available in various sizes depending on the number of lights you want to control, from 1-gang, 1-way switches to 4 gang-2 way switches.

Smart Outdoor Lighting

As well as security lighting, other smart outdoor lighting is available, which is designed to either illuminate an outdoor area or add ambience. Once installed, the light is connected to and controlled by an app on a smartphone, tablet, or smart speaker.

Smart outdoor lights can work independently of any other smart lighting system, but some require a smart hub to work.

There are several types of smart outdoor lighting available. First, there are smart PIR floodlights, which are perfect for areas that need to be well lit. There are also multi-coloured, colour changing smart garden spike lights which can be put into the ground in plant beds to create a beautiful scene.

How Does a Smart Home Lighting System Work?

A smart home lighting system works by connecting smart lighting products to an app on a smart device, either through Wi-Fi or Bluetooth. They allow the homeowner to control the connected smart lighting product through smartphones, tablets, or smart speakers, such as Alexa or Google Home. And when they're connected through Wi-Fi, they can be controlled from anywhere in the world.

Smart lighting components include smart light bulbs, smart downlights, smart LED strip lights, smart PIR security lights and smart switches.

To convert normal lights to smart lights, you simply replace regular light fittings, switches, and bulbs with smart versions. You can start with just one smart light bulb or expand the system and add additional smart lighting products around the home.

Most smart lighting products don't need to be connected to a smart hub. However, a smart hub will be required if you're connecting many smart lights or other smart home products to the same system, so they work together. Most smart hub brands only work with their own brand of components, so always check compatibility before you buy.

When it comes to smart switches, it's important to note that they should not be used with smart light bulbs or other smart light fixtures. This is because a smart switch controls the light bulb or light fitting that's connected to it. So, the bulb or light itself doesn't need to be smart as well.

Smart Home Lighting Features to Consider

Smart home lighting products come with many different features. But what's available differs between brands and models. Check out the possible features below before buying to ensure you get a smart lighting system that meets your needs:

Brightness control

Most smart light bulbs, downlights, and LED strip lights have a dimmable function which means you can control their brightness. There are also options that coordinate with daylight hours (i.e., the brightness gradually turns up as the day gets darker) and mood (i.e., dimming the light for relaxing or winding down before bedtime).

Colour control

Many smart light bulbs and smart LED strip lights have multiple colour options and a range of white light options, from cool white to warm white. The colour can be changed remotely via the app to suit the mood. More advanced bulbs can be connected to an entertainment system. The bulb colour can be adjusted automatically to match what is being watched on the TV for an immersive viewing experience.

Timing control

Most smart lighting products can be pre-set to turn on and off at chosen times. This is an excellent security feature as lights can be set up to come on when the homeowner is away, making it look like someone's home to deter burglars.

Remote control

Smart lighting products connected to smart devices via Wi-Fi (rather than Bluetooth) can be controlled from anywhere in the world as long as there's an internet connection. So, in addition to setting up timers when the homeowner is away on holiday, they can also turn the lights on at times when they weren't expecting to be away. For instance, if they are going to be late home from work.

Voice control

Most smart home lighting products can be controlled by voice commands through compatible smart speakers such as Alexa or Google Home. This feature is even more convenient than adjusting the lighting through an app because there's no need for the phone to be at hand. For example, ask Alexa to dim the lights when getting into bed to read, then ask her to turn them off when it's time to sleep.

Group light control

All smart lighting products can be used independently from each other. But multiple products can also be connected to a smart hub and can be grouped, so they work together. For example, group downlights in a kitchen so they go on and off together. Or set them up as two groups to light different parts of the room.

IFTTT support

IFTTT stands for 'if this, then that'. It relates to an automated smart home system that allows multiple smart home products to work together based on a pre-set number of triggers and actions. For example, smart lighting could be connected to smart motion sensors, so lights come on automatically when someone is in a room, then go off when it's empty. Or they can be linked to contact sensors, so lights come on when a door is opened. Not all smart lighting products can connect to smart home systems, so always check compatibility before buying.

Smart Home Lighting Costs to Consider

The cost of smart lighting will vary significantly depending on the type, the brand, and the features it comes with. The size of the system is also a factor. If you're considering changing all the lights in a home, the bigger the property, the higher the cost. And you may also need to buy a smart hub if you want to connect all the products, or other smart home products, to one system.

On the plus side, some smart lighting products are designed for DIY installation, so there's no need to pay a professional. Installing a smart bulb, for example, is as easy as changing a light bulb. And smart LED strip lights simply stick onto a hard surface and are plugged into a plug socket.

Browse our range of smart home lighting products starting with smart light bulbs here to get a better idea of current deals and prices to best suit your budget.

Benefits of Smart Light Bulbs

Smart lighting has many benefits:

Save energy

Smart light bulbs and smart light fittings all use LED lights which are approximately 75% more efficient than incandescent lights. So, if you are swapping out old incandescent lights, there will be an immediate saving. But even when replacing standard LED lights, energy can still be saved with smart lighting. For example, lights can be dimmed, so they don't use as much electricity. And, when combined with smart sensors, lights can be turned off when no one is in a room.

Improved wellbeing

It's well known that blue light can disrupt our circadian rhythm – the natural process our bodies go through to regulate our sleep/wake cycle. Over time this can lead to health problems related to lack of sleep. However, some smart lighting products have been developed to help combat that – they change colour during the evening to warm hues that can aid sleep.

Longevity

Smart light bulbs use LED lights that have been developed to last for many years. Most last between 15,000 and 25,000 hours, which means, depending on how long the bulb is used each day, they could last between 15 to 25 years. So, they hardly ever need to be changed compared to incandescent bulbs that only last between 250-2000 hours.

Security

Smart home lighting plays an important part in home security. First, some smart outdoor lights are specifically designed for security, such as smart PIR security lights and smart PIR floodlights. These have built-in motion sensors and cameras, and they send an alert to a smart device if movement is detected. Indoor smart lighting also helps because lights can be scheduled to come on and off to deter burglars when no one's home.

Convenience

Smart lighting can be controlled remotely through a smartphone or by voice command through a smart speaker. This is very convenient because it means you don't even have to leave your seat to dim the lights or switch them off.

How to Install Smart Home Lighting?

Smart home lighting products are installed in the same way as standard lighting products, but with the added step of connecting them to an app on a smart device.

For smart home lighting installation, smart light bulbs are the easiest. They simply fit into an existing light fitting. And smart LED strip lights come with self-adhesive backing that sticks to any hard surface, then they can be plugged into a socket.

If you're looking to install a smart switch, smart PIR security and floodlights, outdoor lights, or downlights, these must be wired into the mains electric, so we recommend using an electrician to do this job.

Once all the components are fitted, download the manufacturer's app on a smartphone or tablet, then follow the instructions to connect them to the app and a smart speaker.

An extensive home lighting system may also require a smart hub. If this is the case, the smart hub usually connects to your internet router with an ethernet cable. When installing smart lights, these components connect to the hub, and the hub connects to the app on the smart device. The exact setup will differ for each brand, so always follow the manufacturer's instructions.

FAQs on Smart Lighting

Can you use smart lights outside?

Yes, you can use smart lights outside. But be sure to buy lights specifically designed for outdoor use. Outdoor smart lights available include smart PIR security lights, smart PIR floodlights, smart floodlights and smart garden spike lights.

Can you use smart bulbs in any lamp?

Yes, smart bulbs come in various sizes, shapes, wattages, and fitting types. So, whatever type of bulb your lamp requires, there will be a smart bulb to fit it.

What should I look for in a smart light bulb?

Smart bulbs are straightforward to buy, and in most cases, you simply need to find one that fits your light fixture. But also consider the features available. For example, do you want a white bulb or one with multi-colours? And will the bulb be part of a connected smart home system? In which case, you'll need one that connects to a compatible smart hub.

Do smart bulbs slow down Wi-Fi?

On its own, a smart bulb won't slow down Wi-Fi speed. But 20 or more smart bulbs connected to a Wi-Fi router could slow it down slightly. So, if you want to use 20 or more smart bulbs in your smart home lighting system, we recommend you buy bulbs that can be connected to a smart hub. The bulbs then connect to the hub, which frees up the amount of traffic going through the internet router.

Can you dim smart bulbs?

Yes, many smart bulbs are dimmable. Their brightness can be controlled through a connected app on a smartphone or tablet or by voice control through a smart speaker such as Alexa or Google Home.

SMART HEATING GUIDE

Introduction

Smart heating systems are gaining in popularity as people look for a way to heat their homes more conveniently and efficiently.

If you're thinking about installing smart home heating systems, this guide will tell you everything you need to know before buying. First, we cover what smart heating is, the types of smart heating systems available and how it all works. We'll then look at smart thermostats, how they work, their cost, features, advantages, and disadvantages, and how to install them.

What is Smart Heating?

Smart heating is a home heating system that's connected to the internet via Wi-Fi and controlled remotely through a smartphone, tablet, or PC. And the convenient thing about smart heating is that you don't have to be at home to control it.

The most essential component of smart heating is the smart thermostat, as the system's primary function is to adjust the heating temperature and switch it on and off. But smart home heating systems go beyond just that.

They come with all sorts of clever features, such as detecting open windows, turning the heating off if no one is home, turning it on when they're about to return, and much more. We'll cover these features in more detail later in this guide.

Other smart heating products include radiator valves, central heating control packs, and electric radiators. And there are many different brands available.

Types of Smart Heating System

Different types of smart heating products and accessories are available that make up a smart heating system. Some can be used independently, and others need to be used together.

Smart Room Thermostats

Smart room thermostats connect the central heating system to the internet so the heating can be controlled through smartphones, tablets, and PCs.

Some smart thermostats are wired, and some are wireless thermostats that can be used independently of any other smart heating products (look for thermostats that state that a smart hub isn't required). They simply replace the current manual room thermostat and control the heating for the whole house.

Other smart thermostats are designed to be connected to other smart heating products (look for thermostats that state a smart hub is required). For example, when multiple thermostats are required to control the temperature independently in different rooms. These smart thermostats work alongside a smart central heating control pack (which includes the smart hub) and smart radiator valves.

Smart Radiator Valves

Smart radiator valves are devices that connect to plumbed in radiators to control their temperature output. They work in the same way as smart thermostats: connecting the radiator to the internet to control the temperature from a smart device. And they allow the temperature to be managed in each room independently.

Most smart radiator valves need to be connected to a smart hub, which can be purchased separately (e.g., the Hive Hub) or as part of a smart central heating control pack. But some also come with their own smart hub.

Smart Central Heating Control Packs

Smart central heating control packs are kits that connect the heating system with the internet. As a minimum, the pack consists of a smart hub (that connects to Wi-Fi and talks to all the other components in the system) and a smart thermostat. Some packs contain more than one thermostat, and some also include smart radiator valves.

A smart central heating control pack can be used to control the temperature in each room independently. Start with the control pack and buy additional smart thermostats and smart radiator valves depending on the number of rooms.

Several brands are available, and most smart central heating control packs are only compatible with their own brand of thermostats and radiator valves. So, always check compatibility before you buy.

Smart Electric Radiators

Smart heating controls aren't just for plumbed heating systems. They are available for electric systems, too, in the form of smart electric radiators.

Smart electric radiators are radiators that connect to the internet so you can control heating from smartphones, tablets, and PCs. They work independently of any other smart heating system and allow the temperature to be managed in each room individually.

How Does Smart Heating Work?

Smart heating works by connecting a heating system with the internet so it can be controlled remotely using a smart device through Wi-Fi.

Smart heating components include:

- Smart room thermostats
- Smart central heating control packs
- Smart radiator valves
- Smart electric radiators.

Once smart heating components are installed, download an app (each smart heating manufacturer will have their own) and follow the instructions to connect it to the system.

Most can also be connected to a smart speaker, such as Alexa or Google Home, so the system can be voice-controlled. And, if you don't have a smart device, some smart heating systems can connect to a website via a PC. Connectivity does vary for each brand, so always check before you buy.

Once the components and the app are set up, program the system via the app: when the heating needs to switch on and off and the temperature setting. These are the system's primary functions, much like a standard system. But a smart heating system allows more flexibility than that. The pre-set functions can be over-ridden, even when no one is home. Some smart heating systems can learn habits and adjust the heating accordingly, such as tracking movement, turning the heating off when nobody's in, and much more.

Smart heating controls can be connected to most types of heating systems as follows:

Boilers:

Just like a standard heating system, the boiler in a smart heating system is controlled by a thermostat. This means that smart heating works with most boilers, whether they run on gas, LPG or oil. There are some exceptions, though, so it's always best to check. Connecting the boiler to a smart heating system is often as simple as swapping the old manual thermostat for a smart thermostat.

If you're upgrading the whole heating system and need advice on buying a new boiler, check out our boiler buying guide.

Solar thermal panels:

Solar thermal panels work by taking energy from the sun and transferring it into a hot water cylinder that heats the water up then pumps it around the radiators. The system is also connected to a boiler which kicks in when the energy from the sun isn't sufficient to heat the water enough. This system is

controlled by a thermostat, which makes it compatible with smart heating systems as the old manual thermostat can simply be swapped for a smart thermostat.

Check out our guide to solar water heating for more information.

Heat pumps:

A heat pump is a unit that's used to heat a home instead of a boiler. It extracts heat energy from outside, then brings it inside to provide heating. Heat pumps are controlled by a thermostat, which makes them compatible with smart heating systems. If a heat pump is already installed, the old manual thermostat can simply be swapped for a smart thermostat. Not all smart thermostats are compatible with heat pumps, though, so always check compatibility before you buy.

You can learn more about heat pumps in our guide: What is a heat pump and how does it work?

Underfloor heating:

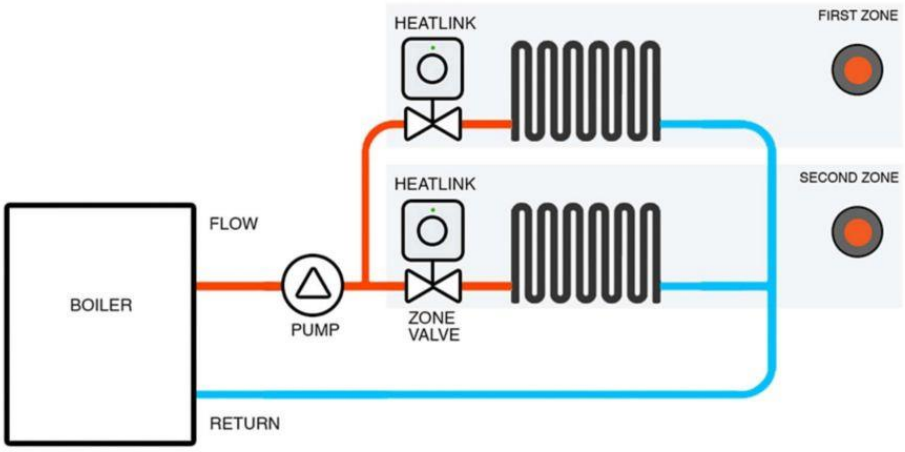
There are two types of underfloor heating: electric and warm water. As both types are controlled by a thermostat, they are both compatible with a smart heating system. If underfloor heating is already installed, the old manual thermostat can simply be swapped for a smart thermostat. Not all smart thermostats are compatible with underfloor heating, though, so always check compatibility before you buy.

Read our underfloor heating systems guide for more information.

As you can see, the main component of smart heating systems is the thermostat because it controls the temperature. So, let's look at smart thermostats in more detail.

How Does a Smart Thermostat Work?

Smart thermostats connect to a boiler (or other heating systems) via the existing thermostat's wired connection. The smart thermostat then connects to the internet and communicates with an app on a smartphone, tablet or computer via Wi-Fi. The app works as a programmer to control heating remotely.



Smart Thermostat Features

The most basic feature of a smart thermostat is controlling when the heating is switched on and off and the temperature setting. But there are many other clever features available, depending on the model.

Other features of a smart thermostat include:

Multi-room and zones

This feature allows the temperature to be controlled in each room individually. Or you can set up heating zones – for example, you could have upstairs and downstairs as two different zones, so they can be heated independently. This feature is perfect for large homes because the heating can be turned off or down in rooms or zones that aren't being used, reducing energy bills. There needs to be a smart thermostat and smart radiator valve in each room or zone for this setup.

Smart learning

Some smart thermostats can program themselves by learning the household's routine and habits, such as when people are home and the temperatures they like. The thermostat can also learn how a home heats up. It works by tracking heating use for a few days and then programming itself accordingly. And if the household doesn't like the settings it has chosen, they can be overridden in the app.

Smart motion sensors and GPS tracking

Some smart thermostats have built-in motion sensors to detect when a home or room is unoccupied. They turn the heating off or down accordingly, then turn it back on or up when it detects occupancy again. Some smart thermostats go one further than this with GPS tracking. The GPS tracking feature is usually called geolocation or geofencing. It allows the smart thermostat to track people in a household via their mobile phones. When no one is home, it can turn the heating off. And when it senses that someone is nearly home (based on a pre-set distance), it will turn the heating back on, so the house is warm when they arrive. This feature is ideal for people who are in and out of their homes at irregular times.

Weather responsive

Weather responsive smart thermostats check the weather using data from weather services and adjust their settings accordingly. For example, if a cold snap is forecast, the remote heating controls could turn the heating on earlier than usual or raise the temperature slightly. And, if it's sunny outside, the thermostat will turn the temperature down by a few degrees, saving energy and money.

Hot water control

Some smart thermostats can control hot water as well as heating. This feature works with a hot water tank installed in the home. It isn't beneficial with a combi boiler since they supply hot water on demand anyway. This feature is useful when going away on holiday. The water can be turned back on remotely as the household returns home. Some smart thermostats have this function available, but the manufacturer charges an additional fee to use it.

Open window and draught detection

This feature can detect cold draughts in a room when the heating is on and notify the connected smart device. This means the window or draught can be dealt with, so heat isn't lost, and the room can then heat up to the correct temperature.

Energy reports

Some smart thermostats send a monthly energy report, showing energy use, such as how many hours the heating was used for, and comparing it month by month. This helps understand heating bills better. Some also suggest adjustments that can be made to help save energy and money.

Safety and holiday modes

Most smart thermostats have this feature. It monitors a home's temperature while the occupants are away on holiday and only turns the heating on if it drops below a safe limit. For example, to stop pipes freezing in a cold snap.

Smart Thermostats Costs to Consider

The cost of smart thermostats varies depending on the brand and their features. When working out the cost for a smart heating system, remember to factor in all the elements, including costs for:

- The smart thermostat (or multiple thermostats if you plan to set up multi-room or zones)
- A smart central heating control pack (great for multi-room/zones)
- Smart radiator valves
- Installation costs if you would rather use an installer than DIY
- Extra subscriptions to the manufacturer to use some features

Browse our range of smart thermostats to get the full insight into current costs and deals to best suit your needs.

Advantages of Smart Heating

Smart heating has many benefits:

Save energy and money

Smart thermostats allow greater control and flexibility of heating systems. They help save energy by, for example, turning the heating off when no one's home. Turning down the heat in rooms not being used. And sending notifications when a window is open so it can be closed to stop heat escaping. All these energy-saving features also help to save money on heating bills. But, of course, the amount saved will depend on the features available on the thermostat chosen.

Integration with home tech

Smart heating connects to Wi-Fi, so the heating system becomes part of the smart home. It integrates with any smartphone or tablet through an app. And most can also be controlled through voice assistants, like Alexa and Google Home. They can even link smart heating to a calendar, so it knows when people are away from home.

Remote heating controls

With smart heating, you're not tied to a control panel. Instead, you control heating remotely through a smart device, even when not at home. So, for convenience, heating can be turned off when no one's home or turned on before they return.

Ease of use

Programming heating from an app is much simpler than programming a control panel, which typically means referring to a manual. In addition, apps are more intuitive to use and can be programmed from the comfort of a sofa as often as needed.

Disadvantages of Smart Heating

There aren't many disadvantages to installing smart heating, but there are a few:

The hassle of installation

Swapping an old manual thermostat to a smart thermostat is a simple job a competent DIYer can do. But if you're installing multiple thermostats and radiator valves, the installation becomes more complicated, requiring wiring in electrics and plumbing.

The benefits depend on occupancy

A smart heating system won't make much difference if the home's occupants aren't there very much. And on the opposite end of the scale, it won't make a difference if they are home most of the time.

Initial expense

The upfront cost of purchasing and installing smart home heating can be quite high. Particularly when setting up multi-room or zones. The cost of the thermostat alone is significantly greater than buying a standard thermostat.

Potential security problems

As with any internet connection point in a home, smart heating systems have the potential to be hacked. Therefore, internet security precautions should be taken, including choosing a secure password for the system.

How to Install a Smart Thermostat?

Installation of a smart thermostat can be a simple job if you're swapping an old thermostat for a new one. However, it becomes more complicated if multiple thermostats need to be wired into the system or smart radiator valves need to be installed. If that's the case, it may be a job best left to a professional installer.

Every smart thermostat will have its own set of installation instructions, but as a general guide, swapping an old thermostat for a new smart thermostat will involve some electrical rewiring, replacing the front and backplate of the existing thermostat, and detaching and reattaching wiring. Our top tip is to always ensure to turn the power off and take a photo of the old thermostat so you have a record of where the wires go.

FAQs on smart heating

How much money can you save on a smart thermostat?

The amount of money you will save using a smart thermostat will vary depending on your heating habits and the features available on the smart thermostat. There is no guarantee that you'll save money at all, but the best savings can be made if you have an irregular routine in terms of the times of day you leave and return home.

Are smart thermostats safe?

As with all things connected to the internet, a smart thermostat could be subject to hacking. And any data stolen from a smart thermostat could be useful to a thief interested in your daily comings and goings. However, smart thermostats can be made safer by ensuring they are set up with a strong password and internet security is set up.

Are smart thermostats and smart meters the same?

No, smart thermostats and smart meters are not the same. A smart thermostat controls the heating in a home. Whereas a smart meter is a device installed by an energy company to monitor gas and

electric usage and send data electronically to the energy company. Smart meters do not integrate with home smart devices.

Will a smart thermostat work if my internet goes down?

Your heating will stay on if your internet goes down, and your smart thermostat will run on the pre-set schedule. However, you won't be able to control the heating from the app or online. If you want to adjust the heating, you'll need to do it manually on the thermostat.

Do smart thermostats work with Alexa and Google Home?

Yes, most smart thermostats work with Alexa and Google Home. However, there are a few exceptions, so always check before buying.

SMART PLUGS & SWITCHES GUIDE

Introduction

Investing in smart plugs and switches is an easy and cost-effective way to turn electrical devices into smart home devices. But, before you buy, it’s essential to understand all the options.

This smart plugs and switches buying guide explains what they are and how they work. We’ll also cover the types available, set-up, features, costs, advantages, and disadvantages.

What is a Smart Plug?

A smart plug is a plug with built-in technology that allows it to be connected to the internet through Wi-Fi. The plug's power supply, and therefore the power supply of any electrical item plugged into it, can then be controlled remotely through a smartphone or tablet or with a smart speaker using voice commands.

What does a smart plug do?

Smart plugs allow users to turn electrical items on and off at any time, automate them with schedules or set timers. They can also be connected to other smart home devices as part of a larger smart home system.

Smart plugs are helpful all around the home. For example, they can be used with lamps to turn lights on when no one's home. They can provide peace of mind that products such as hair straighteners are switched off. They can turn the radio and a coffee machine on with a voice command in the morning. And they're ideal for use in hard-to-access plug sockets. Some smart plugs can also monitor energy usage to help control electricity bills.

How do Smart Plugs Work?

Smart plugs work by plugging them into a wall socket, downloading the relevant app on a smartphone or tablet, and following the on-screen instructions to connect them.

Some smart plugs also require a smart hub, which acts as a go-between for the plug and the internet router. Most smart plugs connect to their app through Wi-Fi, while others use Bluetooth.

Once a smart plug is set up, any electrical device can be plugged into it, allowing the user to control the device through the app or a smart speaker. And when they're connected through Wi-Fi, they can be controlled from anywhere in the world as long as there's an internet connection.

Instead of a smart plug, you can install a smart power socket. It works in the same way but must be wired into the electrics. Smart plugs and sockets do the same thing, so always use one or the other, never both.

Types of Smart Plugs

There are many different types of smart plugs and sockets available from a wide range of brands. They include:

Wi-Fi smart plugs

Wi-Fi smart plugs are plugs that connect to the internet through Wi-Fi so they can be controlled using a smartphone or tablet from anywhere in the world. They can also be controlled by voice commands through a smart speaker when the user is at home. Some smart plugs also come with smart remote controls, or these can be purchased separately.

Smart plugs are ideal for renters, in particular, because they simply plug into a wall socket – no installation is required.

Bluetooth smart plugs

A Bluetooth smart plug is a wireless electric plug that connects to the internet and is controlled through smartphones, tablets, or smart speakers. Instead of using a Wi-Fi connection, it connects to the smartphone or tablet using Bluetooth. This means Bluetooth smart plugs can only be controlled when at home.

What are Smart Sockets?

Wi-Fi smart sockets are plug sockets that connect to the internet through Wi-Fi so they can be controlled using a smartphone or tablet from anywhere in the world. They can also be controlled by voice commands through a smart speaker when the user is at home. Smart sockets must be wired into the electrics, which is best carried out by an electrician.

Smart sockets are hardwired in place of a "regular" socket, and they come in a variety of different finishes. The features available for smart sockets vary but can include built-in energy monitoring, setting timers and schedules, automation, and a countdown function.

Smart Extension Leads

As with a standard extension lead, a smart extension lead allows a single socket to be turned into multiple sockets, with the added benefit of being automated or controlled remotely. Some smart extension leads also come with remote controls. Ports are often surge-protected and can be controlled individually.

What are Smart Switches?

Smart switches are wall switches with built-in technology that allows them to be connected to the internet through Wi-Fi. Once set up, the switch can then be controlled remotely through a smartphone or tablet or with a smart speaker using voice commands.

What does a smart switch do?

Smart switches allow users to turn electrical appliances or lights on and off at any time, from anywhere, and to automate them with schedules or set timers. They can also be connected to other smart home devices as part of a larger smart home system.

Smart switches are ideal for controlling a home's primary lights or for use with wired-in kitchen appliances controlled with a switch.

Smart switches replace standard switches, so they must be wired into the electrics. They work through an app on a smartphone or tablet. Simply download the app and follow the on-screen instructions to connect them.

Types of Smart Switches

Smart switches come in many different types, brands, sizes and features. Here's a run-down of what's available:

Brands

Popular brands include Energenie, Lightwave, Philips Hue, and TCP, but many more are available. If you're buying more than one smart switch, it's best to stick to a single brand. And always check their compatibility with any existing smart technology in the home.

Dimmer

Some smart switches have a dimmer function, so the lights can be dimmed via a smart device or voice command. This is an excellent feature to avoid harsh bright lights in the evening.

Number of ways

Smart switches can be 1, 2, 3 or 4-way. A 1-way switch is turned on or off from a single switch. 2-way switches are also turned on or off, but they can be controlled by two different switches. For example, lights above stairs are controlled by one switch at the bottom and one at the top.

Number of gangs

The number of gangs on a smart switch refers to the number of switches on a single plate. Each switch operates a different light or appliance.

Finishes and colours

Smart switches come in a range of finishes and colours so homeowners can match them with their décor. Some examples are white, stainless steel, black nickel, and chrome.

Screwed or screwless

The front plate of a screwed smart plug must be screwed on, which means the screws are visible. A screwless smart plug has a clip-on front plate which means there are no visible screws.

How to set up Smart Plugs, Switches and Sockets

Setting up smart plugs and switches is a relatively simple process. However, smart switches and sockets need to be wired into the electrics. Most require a neutral wire connection to operate, but

not all standard switches and sockets have them. So, we recommend that a qualified electrician does the wiring part of the process.

Once smart plugs are plugged into the wall socket, or smart sockets and switches have been wired in, the process is simple. It includes downloading the relevant smart plug or switch's app onto a smartphone or tablet, creating an account, or logging in and following the steps to pair the app with the smart item, connecting it to the Wi-fi or Bluetooth, and then setting up schedules or relevant connections with a smart speaker for example.

Smart plugs and switches can also be set up to work with other smart home gadgets, such as smart lighting, smart heating, smart security and other smart home products.

Find out how to integrate smart home devices and the other types of smart home technology available in our Smart homes guide.

Advantages of Smart Plugs, Switches & Sockets

Convenience

Turn lights and appliances on and off remotely. Group devices in rooms or zones and control them with one command.

Works with voice commands

Link the smart plug or switch to a smart speaker. Always check compatibility before buying. For example, the product information should say 'works with Alexa, Google Assistant, Apple HomeKit or SmartThings'.

Increases home security

Check to see if lights or appliances have been left on when not at home or turn lights on when away to deter burglars.

Helps lower electricity bills

A smart plug with the energy monitoring feature lets you see how much energy is used. So, users can reduce usage or switch energy-guzzling appliances for energy-efficient ones.

Links with other types of smart devices

Automate multiple everyday tasks to make life easier. For example, link a smart switch that controls a hall light to a smart motion sensor, so lights turn on if someone activates the sensor at night. Not all smart home devices work together, so check compatibility before buying. Or use an app called IFTTT (If this, then that), which allows users to connect and integrate multiple smart home devices that would otherwise not be compatible.

Easy to use

Set everything up in an app and use the app or voice commands to control all devices.

Makes hard to reach sockets accessible

Use smart plugs and sockets behind furniture and control them through an app or voice commands. If you're using a smart plug, check the size fits before buying (see disadvantages).

Disadvantages of Smart Plugs, Switches & Sockets

Smart plug sizes

Smart plugs are generally larger than standard plugs, so they may be too bulky to fit behind furniture. If that's the case, use a smart socket instead.

Digital data security risks

As with all things connected to the internet, smart plugs and sockets could be subject to hacking, and personal data could be shared with unwanted third parties. However, they can be made safer by taking precautions. For example, use a strong password, set up two-factor authentication and keep the software up to date. Also, check the manufacturer's privacy policies and choose what data can be collected and shared.

Bluetooth connections limit usage

Wi-Fi smart plugs and sockets can be controlled from anywhere in the world, as long as there's an internet connection. However, with a Bluetooth connection, users have to be in the vicinity of the plug or socket, so they can only be controlled while at home. If remote control is important to the user, choose a Wi-Fi connected device

Smart Plugs, Switches and Sockets Costs to Consider?

Installing smart plugs and switches is one of the most low-cost ways to set up a smart home system. However, their costs will vary depending on the type, brand, functionality, and the technology they're compatible with (i.e., Amazon Alexa, Google Assistant, Apple Homekit or Samsung SmartThings).

The number of smart plugs and switches needed is also a factor when considering costs. But a lot of brands sell multipacks which usually offer good cost savings. Browse our range of smart plugs, smart switches and smart sockets to get an idea of current costs to suit your budget.

FAQs on Smart Plugs and Switches

Are smart plugs secure?

Any device connected to the internet could be at risk of hacking. But you can mitigate the risks and make a smart plug secure by using a strong password, setting up two-factor authentication and keeping the software up to date. Also, check the manufacturer's privacy policies and choose what data can be collected and shared.

How to set up a smart plug

The set-up of smart plugs varies depending on the brand. But they are usually straightforward to set up. In most cases, simply push the smart plug into a wall socket, download the manufacturer's app and follow the instructions to connect the smart plug to the Wi-Fi and set up the controls.

Do smart switches work without Wi-Fi?

Yes, smart switches do work without Wi-Fi. However, they'll lose some of their smart functionality. They'll still turn on and off to pre-set schedules, and they can be controlled manually like any non-smart switch. But without Wi-Fi, they can't be controlled through the app or a voice command.

Can I use a smart plug with just my phone?

Yes, you can use a smart plug with just a phone. But be sure to buy a smart plug that states ‘smart hub not required’.

What devices work with smart plugs?

Any electrical item that has a plug will work with a smart plug. The best items to use with them are ones that don’t require any other manual input to make them work. For example, use smart plugs with lamps, radios, hair straighteners, TVs, coffee machines, kettles, heaters and fans.

SMART SECURITY GUIDE

Introduction

We all want to feel safe and secure in our homes and protect our property when we’re not there. And installing smart security is one way of achieving that. But what exactly is smart security, and how will it help?

This guide tells you everything you need to know about smart security before buying. What smart security is, the types of smart security systems available, how they work, their features and their costs. We also explain how they differ from traditional alarm systems and how to install them.

What is Smart Security?

Smart security is the collective name for home security devices that connect to the internet through Wi-Fi. They allow homeowners to protect and monitor their homes using an app on a smartphone or tablet. And the great thing about smart security is that people can check in on their homes from wherever they are. So, if there is a break-in or a fire, for example, the emergency services can be alerted straight away.

There are several types of smart security systems available, which we will cover in more detail in the next section. They each play their own part in securing the home, such as offering protection from intruders, surveillance, accessibility, and fire, smoke and carbon monoxide protection.

Types of Smart Security System

Different types of smart security products and accessories are available to make up a smart security system. Some can be used independently, and others need to be used together.

Smart Cameras and Smart Camera Systems

A smart camera system is a home surveillance kit that connects to the internet through Wi-Fi and monitors a home through cameras. Smart cameras are placed throughout the house, and images can be viewed via an app on a smartphone or tablet.

The system is often sold as a kit that consists of a hard drive that records and stores the footage, two or more smart cameras and the fixtures and cables needed to install it. Additional smart cameras can be purchased separately to cover a wider area of the home, or standalone smart cameras are also an option, if only one camera is required. There are also options for smart security cameras that store footage only on the cloud.

Smart Doorbells

A smart doorbell is a doorbell with a built-in camera that uses Wi-Fi to connect to an app on a smartphone or tablet. The doorbell sends an alert when someone is at the door and provides a visual of who is there. They also often feature 2-way audio, so visitors can be communicated with whilst the homeowner is away from the property, for example with ring doorbells. And smart home video doorbells can also provide an extra level of security by detecting and capturing unusual activity.

Smart doorbells work independently of any other smart security system. There are wired and wireless versions available, and they are sold with all the fixtures and cables needed to install them.

Keyless Door Locks

Keyless digital door locks allow doors to be locked and unlocked without a key from anywhere. Depending on the model, they can be controlled by several methods: a PIN code keypad, key card, key tag, remote fob and a smartphone. The smartphone control is ideal for letting in friends, family or a tradesperson while no one is home.

Keyless door locks work as standalone items. But some can also be connected to a compatible smart home alarm system. They trigger the outside siren and send a notification to the smart device if someone tries to tamper with the lock.

Smart Fire, Smoke and Carbon Monoxide Alarms

Smart fire, smoke and carbon monoxide alarms work just like the standard version of these alarms. Except, they also connect to an app on a smartphone or tablet via an internet connection and Wi-Fi. So, instead of just sounding an alarm if fire, smoke or carbon monoxide is detected, they also send a notification to a smart device. This is invaluable if the homeowner is away because it means the emergency services can be called immediately.

Some smart fire, smoke and carbon monoxide alarms work as standalone items. But some only work alongside a compatible smart home alarm system. They trigger the outside siren and send a notification to the smart device.

Smart Burglar Alarms and Accessories

A smart alarm system is a system that uses Wi-Fi to connect several intruder detecting components to a siren. Once set up, the system connects to an app on a smartphone or tablet. It can be turned on and off via the app and send notifications if the alarm is triggered.

Smart home alarm systems are sold as a kit. They typically consist of a smart hub, smart motion sensors, smart door sensors, smart window sensors, a keypad, an external siren and all the fixtures and cables needed to install it. There are also wireless smart alarm systems available that are easier to install. And you can purchase additional smart security alarm accessories to expand on the kit, such as extra motion and door/window sensors, key fobs and sirens.

Smart home alarms can be used independently but also work well with smart camera systems. So, if the alarm is triggered when the homeowner is away, they can check the camera footage to see what is happening.

Smart Sensors

Smart sensors must be used as part of a smart burglar alarm system. There are two types of smart sensors available:

- **Smart PIR sensors:**

These are smart motion sensors that are best placed at entry points of a home. The siren is triggered if motion is detected while the alarm is on.

- **Smart open/close sensors:**

These sensors are made up of two parts to form a connection when a door or window is closed. The siren is triggered if they are opened while the alarm is on.

Smart sensors are connected to the smart alarm system via Wi-Fi. Then the whole system connects to a smartphone or tablet via an app to alert the homeowner if the alarm is triggered.

Smart sensors are sold separately, allowing you to purchase the correct amount needed to cover all windows, doors and entry points in a home. They are all battery operated and have a wireless connection for easy installation. But each brand will only be compatible with its own brand of smart alarm system, so always check compatibility before buying.

How Does a Smart Home Security System Work?

Smart home security works by connecting different smart home security devices to the internet through Wi-Fi. They allow the homeowner to monitor the security of their property remotely using a smart device.

Smart security components include smart camera systems, smart cameras, smart doorbells, keyless door locks, smart fire, smoke and CO alarms, smart burglar alarms and smart sensors.

Once smart security components are installed, download an app (each smart security manufacturer will have their own) and follow the instructions to connect the system.

Smart security systems can be simple or complex, depending on the level of security needed. As a minimum, a smart doorbell will allow the homeowner to monitor activity at their front door – the primary entry point to the home. But the system can be expanded to a full home security system that covers the whole property – with smart home cameras, motion sensors, door and window sensors and an alarm.

Smart Home Security Features to Consider

Smart home security devices come with many different features. But what's available differs between brands and models. Check out the possible features below before buying to ensure you get a system that meets your needs:

- **Indoor and outdoor smart cameras:**

Not all smart security cameras can be used outdoors. So, if you're installing outside cameras, ensure they are weatherproof.

- **Wired and wireless smart camera and alarm systems:**

All components in a wired system are connected to the mains power and to the security system's hub with wires. Wireless systems connect components (i.e. cameras and motion sensors) to each other and to the hub via Wi-Fi. However, not all wireless systems are completely wire-free. Some components must be wired into the mains or connected to a plug socket for power. But there are battery-operated wireless components available, which are completely wire-free.

- **Outdoor sounders for smart security camera systems:**

Some smart cameras come with an outdoor siren, so an alarm will sound if an intruder is detected in the home.

- **One-way or two-way audio smart cameras and doorbells:**

Many smart home cameras and doorbells have built-in speakers and/or microphones. One-way audio cameras only have a microphone to allow the user to listen in on what's going on. Two-way audio cameras have a speaker and microphone to enable the user to have a conversation with their visitor.

- **Cloud storage for smart cameras:**

Video recordings take up a lot of storage space on a hard drive. So, smart camera systems that only rely on their hard drive for storage won't save much data. Instead, some smart camera systems have

cloud storage. This means files can be stored remotely and safely and can be downloaded and viewed from anywhere in the world through an internet connection. But there is often an additional charge for this service.

- **Multiple logins for smart security systems:**

If more than one adult lives in a property, multiple logins for the home security system are essential. This will allow users to turn alarms and smart camera systems on and off as they come and go, independently of each other.

- **Motion detection for smart cameras:**

Smart cameras can record continuously. However, some also have built-in motion detectors. This means that rather than recording an empty room, recording will only be triggered when motion is detected, and an alert will be sent to the connected smart device.

- **Night vision for smart cameras:**

Night vision smart cameras use infrared technology to produce excellent quality video in low-light or no-light conditions. Most smart security cameras come with built-in night vision. But the distance they cover varies significantly. Some only cover a range of a few meters (which would be fine for an indoor camera), and some can cover 20m, 30m, 45m or more. These distances are ideal for outdoor cameras, but always check that the cameras you buy cover your needs.

- **Multi-zone set up for smart camera and alarm systems:**

Some systems allow the user to set up zones that can be controlled independently. For example, set up separate zones for upstairs and downstairs, so only the downstairs zone is switched on overnight. Or set up a zone for pets that's free of movement detectors.

- **Geo technology for smart security cameras and alarm systems and locks:**

Geo technology allows users to set up certain notifications that trigger when they are away from home. The technology works by tracking the location of the connected smart device via GPS. This can be used, for example, to alert the user that they forgot to turn on the smart camera or alarm system when they left home. Or that they failed to lock the door. Those things can then be done remotely from a smart device.

- **Disarming accessories for smart alarm systems:**

Some smart alarm systems have extra accessories, such as a key fob or keypad, that can quickly disarm the alarm. This is useful if cleaners or dog walkers etc. need to enter the property while the homeowner is away.

- **Compatibility with other smart devices:**

Some smart security systems can be connected to a smart speaker, such as Alexa or Google Home, so the system can be voice-controlled. Others can be connected to other smart home systems via a compatible smart hub. These systems can, for example, turn on lights when the occupants arrive home and open the front door. Or turn on a radio if motion is detected when the alarm is switched on. Connectivity does vary for each brand, so always check before you buy.

Smart security Costs to Consider

The cost of smart security will vary significantly depending on the type and size of the system and the features it comes with. When working out the cost, remember to factor in all the components you want to include, such as:

- A smart security camera system kit – a single kit will contain the hub and a set number of smart cameras
- Extra smart home cameras – if you want to cover a larger area than the smart camera kit allows for
- A smart doorbell
- A keyless door lock
- Smart fire, smoke and carbon monoxide detectors
- A smart burglar alarm kit – a single kit will contain the hub and a set number of motion, door and window sensors
- Extra smart motion sensors, smart door sensors and smart window sensors – if you want to cover a larger area than the smart burglar alarm kit allows for
- Paid for features – such as cloud storage, software updates or customer support.

Browse our smart security products, starting with smart camera systems to get a better idea of exact product costs to best meet your needs.

Difference Between Smart and Traditional Alarm Systems

Smart security systems have many benefits over traditional alarm systems, such as:

- Alerts are received via a smartphone when the user is away from home, giving real-time updates on activities and allowing them to respond immediately. A traditional alarm relies on neighbours or passersby to respond.
- There's no need to pay for professional monitoring as you can do with a traditional alarm system. Instead, smart security allows homeowners to monitor their homes themselves.
- They are more technologically advanced, with sophisticated features and the ability to sync with other smart devices.
- They can be controlled remotely through a smartphone. Unlike a traditional alarm system, if you forget to turn a smart alarm system on before leaving the house, it can be done remotely from a smartphone.
- They are easy to install as a DIY project. Traditional alarm systems usually require professional installation, which incurs extra costs.

Compare our full range of security cameras, cctv and surveillance systems to help secure your home.

How to Install Smart Home Security?

Installation of a smart home security system is usually a simple job that can be carried out by a competent DIYer. Particularly when installing a wireless system. However, a qualified electrician may be needed if any part of the system needs to be wired in.

Every smart security system will have its own set of installation instructions. But as a general guide, you'll need to first set up the smart hub, download the app onto a smartphone or tablet and follow the set-up instructions. All the system components can then be set up around the home: attach smart door and window sensors to doors and windows. Fix smart cameras, motion detectors, smoke alarms etc., into their appropriate positions. And then, each component can be linked to the app on the smartphone.

FAQs on Smart Security

Can my smart alarm get hacked?

As with all things connected to the internet, a smart alarm could be subject to hacking. However, smart alarms can be made safer by ensuring they are set up with a strong password and two-factor authentication. Also, ensure you have internet security set up and always carry out software updates for the system.

Is a smart doorbell safe?

Smart doorbells are safe if you take suitable internet security measures to protect them from hackers. These measures include changing the default password to your own strong password, adding two-factor authentication, keeping it up to date with software updates and having internet security set up.

What should I look for when buying a security system?

When buying a security system, look for one that has everything to cover all your needs. For example, do you want smart cameras, just an alarm or both? Will it need to connect to other smart devices, such as Alexa, Google Home or smart lights and plug sockets? The components for most smart security and smart home systems are only compatible with their own products. So, the best home security system for you will be one that has all the components you need.

Can I watch CCTV without the internet?

Yes, you can watch CCTV without the internet. However, you won't be able to watch it remotely through a smartphone or tablet. Instead, you will need to connect the smart hub, where video footage is stored, to a TV or monitor.

Where is the best place to put a security camera?

The best place to put security cameras is at access points to your home, i.e. at the front or back door or a side gate or garage. Inside cameras can face these points, so anyone entering will be captured. Outside cameras can be placed above the access points, facing away from the property, but ensuring they capture anyone who approaches them.

Best Smart Lights for 2025: Brighten Up Your Home With These Lamps, Bulbs and More

Written by **Ry Crist**

Written by **Chris Wedel**

Article updated on February 25, 2025 at 9:23 AM PST

If you're switching to a smart home, there are quite a few upgrades you can make. Lights may not be the most exciting, but it affects how your home looks and feels. It's also a good (and cheap) place to start your smart home journey. Who doesn't want to turn on the lights with just their voice? This kind of efficiency is so futuristic and cool. Other smart light options can also brighten up your garden or front yard, and smart lights are some of the best gifts for smart home-savvy people and are one of the more affordable ways to enter the smart home world. But with all the options out there, which ones should you choose?

Our Picks

Best white-light smart bulb

Wiz Tunable White LED Smart Bulb

$9 at Amazon

Best smart BR30 floodlight

Philips Hue White Floodlight LED

$30 at Amazon

Best color-changing smart bulb

Govee LED Smart Light Bulbs

$20 at Amazon

Best smart light strip

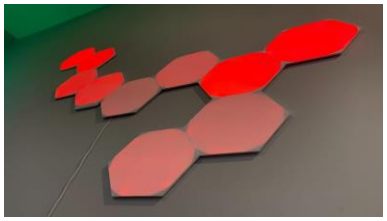
Govee RGBIC LED Strip Lights M1

$100 at Amazon

Best smart light switch

Lutron Caseta In-Wall Dimmer Switch

$100 at Amazon



Best color-changing light panels

Nanoleaf Shapes - Hexagons

$150 at Amazon

Best smart lighting accessory

Lutron Aurora for Philips Hue

$40 at Amazon

Best smart TV back lights

Govee Envisual TV LED Backlight T2

$140 at Amazon

Best outdoor smart lights

Ring Pathlight Solar

$30 at Amazon

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This color-changing Philips Wiz Connected LED works with Alexa and Google, and costs just $13.

Ry Crist/CNET

You can build smart lighting systems with affordable white smart bulbs for under $10 each. If you'd like to add a pop of color to your space, you can even try color-changing bulbs and solar-powered outdoor lights, which can be pretty cheap if you know where to look. Dimmable smart light switches and other accessories are also available for under $50. But if you're OK with spending a little more cash, brands like Nanoleaf offer colorful wall pieces.

There's a lot of variety when it comes to smart bulbs. That's why it's important to know what to look for when it comes to upgrading your smart home systems. Once you've got that clear, that's where we come in. We've put together a list of LED smart bulbs, wall panels, strip lights, smart switches, Bluetooth bulbs and all the accessories you need. After testing a bunch of options, these are our favorite picks for the best smart lights.

Best smart lights

Best white-light smart bulb

Wiz Tunable White LED Smart Bulb

Pros

- Affordable
- Good range of tunable whites
- Can act as motion sensor
- Matter compatible

Cons

- Motion setup can be tricky
- Matter is hit and miss

If you've been led to believe that you need to spend a lot of money to get the best smart light bulb, you've been misinformed. As it turns out, one of the cheapest smart bulbs is one of the best smart lights, and that comes from Wiz. While the brand name may not ring a bell for you, its sibling company that's under the Signify umbrella likely is familiar -- Philips Hue.

Wiz does make color-changing bulbs that are also quite good, but here we are focusing on the brand's high-quality tunable white bulbs. These are a typical-shaped bulb, A19, with an E26 base with an incandescent equivalent rating of 60 watts. In terms of how bright this bulb can get, you'll get plenty of output from the Wiz Tunable White LED Smart Bulb is rated at 800 lumens with a color range from a warm 2700K to a cool 6500K.

There are multiple ways to control this bulb: Use the Wiz app on your phone, Google Assistant, Alexa, Siri or IFTTT. While these smart home platform integrations aren't necessarily unique, Matter support is a bit more novel -- at least right now. These options mean that you'll have a lot of flexibility in where and how you manage your Wiz smart bulbs. One of the ways people use these smart home platforms is for automation, like connecting to a smart sensor to turn on the lights when motion is detected. With these new Wiz bulbs, that ability is fully built into the light with the need for a secondary sensor.

Read more: Best Cheap Home Security Devices

There are some downsides to the Wiz bulb, and that is in the motion automation feature and Matter connectivity. As for what Wiz calls Spacesense, this feature mostly works well, but in order for bulbs to link together and interact properly for motion detection, you have to ensure that bulbs are at least 6.5 feet (or 2m) apart. I've also had some inconsistencies with the reaction time for the feature. It's not a deal-breaker for me, but it's worth noting. As for Matter, that is more of an issue for the new smart home device standard and hopefully improves with a future update.

$9 at Amazon

Specs & Configurations

Available connectivity2.4GHz Wi-Fi and Matter

DisplayedWhites from 2700K - 6500K

Smart home platform compatibilityGoogle Assistant, Amazon Alexa, Siri, IFTTT

Form factorA19 light bulb

Price$10

Other white-light smart LEDs worth considering

If you want something a little more advanced than the Wyze Bulb, then consider going with Philips Hue LED bulbs. At $13 each, Philips Hue White LED bulbs are a lot more affordable than you might expect, and the newest Bluetooth versions of the Philips Hue bulbs can pair directly with Alexa or Google Assistant without the need for the Hue Bridge. The same goes for the Lifx Mini White LED, which works with Alexa, Google Assistant, Siri, and IFTTT. As of this writing, that one's $19 on Amazon.

See Lifx on Amazon

Want something more decorative? Philips has vintage-style LED bulbs with fake filaments twisted inside (you've probably seen bulbs just like them at your local hipster dive bar). They'd be a good pick for exposed-bulb setups where you aren't hiding your light source under a lampshade.

See Philips on Amazon

If you prefer Google Assistant, then you might be better off with a C by GE smart bulb. These LED smart bulbs are designed to pair seamlessly with your Google Home smart speaker and Google Nest Hub smart display. You don't need a hub, and you don't even need the GE smartphone or tablet app -- just turn the LED lights on and sync them with your setup right from the Google Home app. From there, you'll enjoy some of the snappiest and most responsive voice control we've tested.

See C by GE at Amazon

Best smart BR30 floodlight

Philips Hue White Floodlight LED

Pros

- Can get very bright
- Doesn't require Hue Bridge

- IP44 water resistance

Cons

- Miss out on some smart features without the Hue Bridge
- No Matter support
- Pricey

There aren't as many smart floodlights as classic, A-shaped smart LED bulbs, but your options are growing. That includes a pretty significant new addition from Philips Hue, which recently released a floodlight version of the popular Hue White smart LED bulb described above. Plus, with this bulb offering IP44 water resistance, you can use it outdoors as well as inside.

I like the Philips Hue White floodlight for all of the same reasons I like the regular-size bulb. It's bright at 1,200 lumens, so this LED smart bulb is efficient, and it's a bit expensive -- but it's part of a very good smart lighting platform that works with everything. Like the rest of Hue's new bulbs, the new floodlight uses both Bluetooth and Zigbee, so you can skip the Hue Bridge and just pair directly with your smartphone or with Amazon Alexa or Google if that's all you want. However, if you go the route of skipping the Hue Bridge, you'll lose out on many of the smart features.

$30 at Amazon

Specs & Configurations

Available connectivityBluetooth and Zigbee

Colors displayed16 million colors plus whites

Smart home platform compatibilityGoogle Assistant, Amazon Alexa, Siri, IFTTT

Form factorBR30 light bulb

Price$55

Learn more

Philips Hue White Floodlight LED review

Other smart BR30 floodlights worth considering

If you're an Amazon Alexa user looking for something cheap, then Sengled leads the way with a smart floodlight that can pair directly with the Echo Plus or the Echo Show -- if you don't have one of those, you'll need the Sengled hub plugged into your router. You'll find those bulbs on Amazon in a two-pack that costs $22.

Sengled makes floodlights that change colors, too (and obviously, so does Philips Hue). But if it's a color bulb that you want, I say it's worth it to go with Lifx, an Australian startup that routinely aces our color quality tests with bold and bright shades that look terrific. The company's lights all use your Wi-Fi network to talk directly to your router, so they don't need a hub, they come with an excellent, full-featured app and they're compatible with Siri, Alexa and Google Assistant (and IFTTT) right out of the box.

A color-changing Lifx floodlight costs $30 at Amazon. That's not cheap, but Lifx floodlights are also a few hundred lumens brighter at peak settings than any competitor we've tested to date. Couple that with the color quality, and you're looking at a very worthy upgrade pick.

See Lifx at Amazon

Best color-changing smart bulb

Govee LED Smart Light Bulbs

Pros

- Easy to set up and use
- Excellent color saturation
- Lots of customization options in the app

Cons

- Missing Matter support
- No Zigbee or Z-Wave

I've been using Govee lighting products for a few years now, and one thing that has always stood out to me is the accessibility of the devices and the vibrant colors produced. Though the brand is mostly known for its wide variety of lighting products, like floor lamps and wall-mounted lights, all put out bright, great-looking colors and can connect with Alexa, Siri, or Google Assistant with absolutely no need for a hub. It is a downer that these bulbs aren't ready for Matter though.

At $16 each, though regularly on sale, Govee LED Smart Light Bulbs are as impressive bright as they are colorful. The full-featured app is a bright spot, too, with easy app control of your lights via a convenient color dial and lots of nice extras like animated effects and an auto-scheduling Day & Dusk mode. Govee packs customization options in the app for all its lighting products, and the bulbs are no exception, with plenty of preset lighting scenes to go along with the color wheel and other effects.

$20 at Amazon

Specs & Configurations

Available connectivityBluetooth and 2.4GHz Wi-Fi

Colors displayed16 million colors plus whites

Smart home platform compatibilityGoogle Assistant, Amazon Alexa, IFTTT

Form factorA19 light bulb

Price$17

Other color-changing smart bulbs worth considering

Lifx gives it a pretty good run for the money, but on the whole, Philips Hue still boasts the best smart lighting platform money can buy. If that matters to you more than the Lifx bump in brightness and color quality, then a Philips Hue bulb is probably worth the extra cash. The newest color-changing Hue bulbs with Bluetooth radios that let you use them without the Hue Bridge sell for $55 for a single bulb (currently $41 at a discount).

See Philips Hue on Amazon

If you're just controlling your home's lights using the Alexa or Google Home app, then the platform strengths of Lifx and Philips Hue are a little less important -- and you can probably afford to go with something less expensive. Again, I like Sengled bulbs for use with Alexa and Google Assistant. The brand offers color-changing smart bulbs for about $20 apiece. If you really want a bargain, then check out the Wiz Connected LED. At just $11 each, it's one of the least expensive color-changing bulbs that money can buy, and while the colors aren't super bright, it gets the job done, complete with Alexa and Google Assistant compatibility, plus a surprisingly full-featured app.

See Sengled on Amazon

See Philips Wiz at Home Depot

Want an option less expensive than Lifx or Philips Hue products that'll work with Apple HomeKit and Siri? Check out the color-changing Sylvania Smart Plus smart LED light bulb, currently available for about $15 each.

See Sylvania on Amazon

Best smart light strip

Govee RGBIC LED Strip Lights M1

Pros

- Incredibly bright light strip
- Very vivid colors
- Matter compatible
- Highly customizable

Cons

- No Zigbee or Z-Wave

Lifx is a pretty clear winner when it comes to color-changing light strips too -- namely, the 16.4-foot Lifx Z light strip. It doesn't come cheap, but the colors look just as great as you'll get from Lifx bulbs, and it's capable of putting out multiple colors at once, which gives you a lot more room to create

custom scenes and animated effects. None of the top competitors make bulbs that can put out more than one color at a time, not even Philips Hue.

The Lifx Z starter kit usually retails for a fairly steep $90 or more. I bought one on sale a few years ago for the back of my living room TV -- I had to tape it in place after the TV's heat wore down the strip's adhesive backing, but apart from that, we love the thing.

$100 at Amazon

Specs & Configurations

Available connectivityBluetooth, Matter, and 2.4GHz Wi-Fi

Colors displayed16 million colors plus whites

Smart home platform compatibilityGoogle Assistant, Amazon Alexa, IFTTT

Form factorLight strip

Price$100

Learn more

Govee RGBIC LED Strip Lights M1 review

Other smart light strips worth considering

Another very impressive light strip is the Lifx Lightstrip Color Zones. While it is a bit more pricey than Govee's offering, coming in at $65 for the 80-inch kit, Lifx has long been known to offer exceptional colors from its lighting products. For a less expensive option, while I haven't tested it just yet, Sengled's Zigbee light strip is one of your newest options, relatively speaking, if you can find one. Just know that you'll need a Zigbee hub to control your lights -- Sengled's hub, the SmartThings Hub, or an Amazon Echo Plus or Echo Show will all do the trick.

See the Sengled Light Strip at Amazon

The Sylvania Smart Plus Light Strip is even less expensive and available on Amazon right now for around $10. It uses Bluetooth to pair directly with your smartphone without the need for a hub, and while it doesn't offer native support for Alexa or Google, it does support Siri. It isn't as bright as Lifx's strip and it puts out only one color at a time, and the Siri voice controls were occasionally laggy in my tests, but it's a reasonable budget pick for HomeKit households, especially at its current price.

See the Sylvania Light Strip at Amazon

Best smart light switch

Lutron Caseta In-Wall Dimmer Switch

Pros

- Gain physical control over your smart lights
- Works with multiple smart home brands
- Offers light dimming

Cons

- Requires a neutral wire
- Has to be hardwired

If you've got a hardwired light that you'd like to be able to automate, you can swap the bulb out for a smart bulb -- or you can just smarten things up at the switch. That's an especially cost-effective approach if it controls several bulbs at once.

Among all of the smart switches that we've tested at the CNET Smart Home, our favorite has long been the Lutron Caseta. Lutron is a lighting aisle mainstay, and its light switches use a proprietary signal called Clear Connect. That means that they require the Lutron Bridge in order to connect with your router, but the good news is that Clear Connect is about as swift and reliable as wireless protocols come.

Aside from the strong performance, Lutron's Caseta switches come in a variety of colors and designs, and apart from the dimmable version seen here, you can also get standard on/off switches, wall-mounted remotes that can serve as a second for three-way setups, audio control switches that sync with Sonos and fan controls for automating a ceiling fan. If you really want to go big, you can add Lutron's luxurious automated shades to your setup, too. Whatever you choose, all of it is compatible with just about everything, too: Alexa, Google, Siri, Nest, IFTTT -- you name it.

A single Lutron Caseta with the mandatory Lutron Bridge and a Pico remote that you can mount in the wall or take with you around the house is available on Amazon right now for $100. That's a fair price for a solid foundation that you can build on whenever Lutron stuff goes on sale.

$100 at Amazon $100 at Best Buy

Specs & Configurations

Available connectivityClear Connect

Colors availableWhite

Smart home platform compatibilityGoogle Assistant, Amazon Alexa, Siri

Price$80

Learn more

Lutron Caseta In-Wall Dimmer Switch review

Other smart light switches worth considering

Smart light switches are an alternative to smart lights that can provide many of the same features you'd get from a bulb, aside from color changing. While more expensive to get started than just a light bulb, depending on how many lighting fixtures you have in your home, they could be cheaper than buying a bunch of bulbs. We intend to add options to this section as there are more solid choices in this category.

For now, if you just want something simple and inexpensive, you should check out TP-Link's Kasa line of switches, all of which can connect with both Alexa and Google without the need for a hub. For my money, I like the $20 version (now $13) that'll dim the lights. If you want a more premium option, then consider the ultra-smart Lutron Caseta Diva Smart Dimmer.

See the TP-Link Kasa Dimmer on Amazon

Best color-changing light panels

Nanoleaf Shapes - Hexagons

Pros

- Fun lighting effects
- Touch controls
- Vivid colors

Cons

- Flaky connectivity
- Pricey

If you want to go all out with smart lighting -- maybe for a game room or a kids' room -- then you might consider color-changing Wi-Fi LED smart light panels for your walls. The Toronto-based brand Nanoleaf got there first with its triangular Aurora panels before following them up with square-shaped, touch-sensitive Nanoleaf Canvas panels, too. Now, the brand has a third-gen set of panels up for sale -- hexagons. And unless you strongly prefer triangles or squares, those hexagons are the ones you want.

The panels can display a wide variety of animated effects, including a library with hundreds of user-created options that are free to try for yourself. They also feature a built-in microphone that lets them animate in rhythm with whatever music you're listening to or whatever game you're playing.

You can turn them on and off with a tap and choose between presets with the built-in buttons on the base panel, but they also support lighting controls with voice commands via Siri, Alexa and Google Assistant.

In addition, the new Hexagon panels are easier to stick to the wall thanks to new, detachable mounting plates. At around $150, they aren't cheap, but they're fun and dynamic and perfect for a kids' room or a gaming room.

$150 at Amazon

Specs & Configurations

Available connectivityWi-Fi and Thread

Colors displayed16 million colors plus whites

Smart home platform compatibilityGoogle Assistant, Amazon Alexa, Siri, IFTTT

Form factorWall panel

Price$150

Learn more

Nanoleaf Shapes - Hexagons review

Other color-changing light panels worth considering

For a while, Nanoleaf was the only notable name in the category of illuminated wall tiles for a little while. However, Govee has stepped up to fill that gap, and some may argue that Nanoleaf has been beaten in some ways. The Govee Glide Hexa Light Panels start at $180 on Amazon for 10 panels. You'll get vivid colors and plenty of customization options too.

Best smart lighting accessory

Lutron Aurora for Philips Hue

Pros

- Easy to install
- Get a physical switch for Philips Hue bulbs
- No app required

Cons

- Doesn't work with all Zigbee lights

- Pricey

Smart bulbs are great, but do you know what's not so great? The fact that turning things off at the switch cuts their power, and cuts your power to control them via voice, app or automation. That's an all-too-common smart home headache, especially if you're living with kids or houseguests.

Thankfully, Lutron came up with a clever solution last year. It's called the Aurora, and it's designed to pair wirelessly with Philips Hue lights. You literally snap it in place over top of whatever dumb light switch is wired to your Hue lights. That locks it into the on position and lets you turn devices on and off at the wall without actually cutting power to the bulbs -- that way, your automations and voice controls will keep on working even when the lights are switched off.

$40 at Amazon $40 at Best Buy

Specs & Configurations

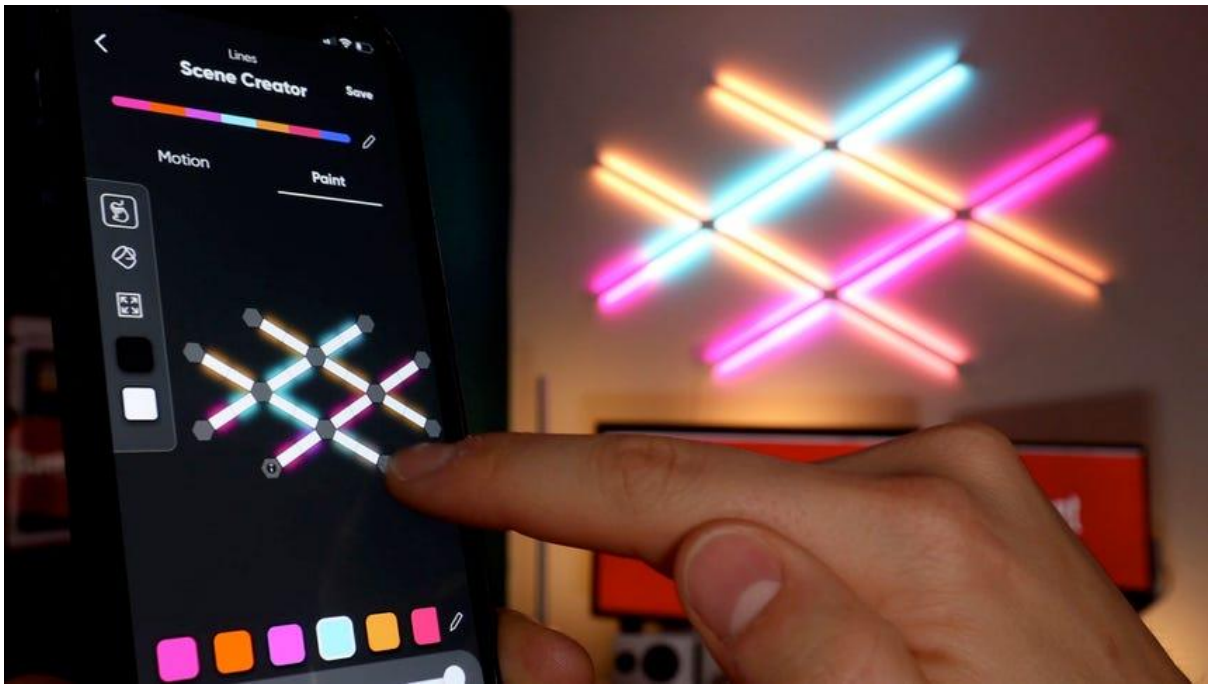
Available connectivityZigbee

Colors availableWhite

Price$40

Learn more

Lutron Aurora for Philips Hue review



Other smart lighting accessories worth considering

Philips Hue's users are the most spoiled when it comes to accessory options. In addition to the Aurora, you could add one of Philips Hue's wireless dimming remotes to your setup, or maybe motion sensors -- Hue offers both an indoor and an outdoor version.

My favorite of the bunch, though, was the Philips Hue Tap. Unfortunately, Philips Hue stopped offering it. Now, you can choose from a couple of options that work well and have a long battery life. I have two of the Philips Hue Smart Wireless Dimmers, which allow you to power on and off your lights and toggle between scenes. The other option is the Philips Hue Wireless Smart Light Switch Button, which is a single customizable button that lets you set up different button presses to execute different actions for your lights.

See the Hue Tap on Amazon

If you like that finger-powered approach but would rather have it in a light switch design that you can mount on your wall, then check out the Click smart switch from RunLessWire, previously known as the Illumra. Like the Tap, it needs no batteries or wires and comes with four programmable buttons that also support Apple HomeKit devices.

Best smart TV back lights

Govee Envisual TV LED Backlight T2

Pros

- Vivid colors
- Dual camera increases accuracy
- Fits TVs up to 100"

Cons

- LED strip isn't RGBICWW
- Camera has to be mounted on top of TV

If you haven't experienced TV bias lighting, then you're missing out. Bias lighting is illumination that comes from the backside of your TV, generally shining against the wall. With the Govee Envisual TV LED Backlight T2, you get active lighting that matches what is happening on your TV screen. The effect causes a deeper immersion of whatever is being viewed on the screen. This is thanks to an RGBIC LED strip, I would rather RGBICWW for better whites, reacting to what the dual-lens camera watching your television screen sees.

The camera module mounts on top of your TV, which is a bit of an eyesore, but you quickly stop noticing it, like the hole-punch camera in smartphones. After sticking the LED strip to the back of your TV, which can be up to 100 inches, and connecting everything to the control box, you're ready to start enjoying a more immersive TV viewing experience.

The dual camera setup means a more accurate representation in the LED light strip to what is happening on the screen. Everything works with the Govee Envisual TV LED Backlight T2, from watching sporting events to blockbuster movies.

$140 at Amazon

Specs & Configurations

Available connectivity2.4GHz Wi-Fi, Bluetooth

Colors displayed16 million colors plus whites

Smart home platform compatibilityGoogle Assistant, Amazon Alexa, IFTTT

Form factorLED strip light

Price$140

See the Click Smart Switch on Amazon

Best outdoor smart lights

Ring Pathlight Solar

Pros

- Solar powered
- Works with other Ring products
- Simple setup

Cons

- Requires Ring Bridge

Outdoor lighting is key to a safe and secure home, so upgrading to smart outdoor lights that double as motion detectors and sync with your security system makes a lot of sense. For my money, the best way to get there is with Ring, which offers a full portfolio of affordable outdoor smart lights, all of which can sync up with your Ring cameras and sync up with Alexa for voice control, too.

My favorites of the bunch are the Ring Pathlights, especially the new solar-powered version pictured above. At just $30 a pop on Amazon, each one includes a built-in motion sensor that can turn on a light or a group of lights whenever someone passes by, and they can trigger your Ring cameras to start recording, too. That's a great way to build a smart home that's aware of what's going on outside.

You'll need a Ring Bridge in your home in order to use them, but you can currently get one bundled with two solar-powered smart Pathlights for $80.

$30 at Amazon

Specs & Configurations

Available connectivity: proprietary long-range communication protocol

Colours available: Black

Smart home platform compatibilityAmazon: Alexa

Form factor: Outdoor path light

Price: $30

Learn more

Ring Pathlight Solar review