

# Smart lighting



What is smart lighting?

---

Why smart lighting?

---

Where can you enjoy smart lighting?

---

How does it work?

---

Our smart lighting products

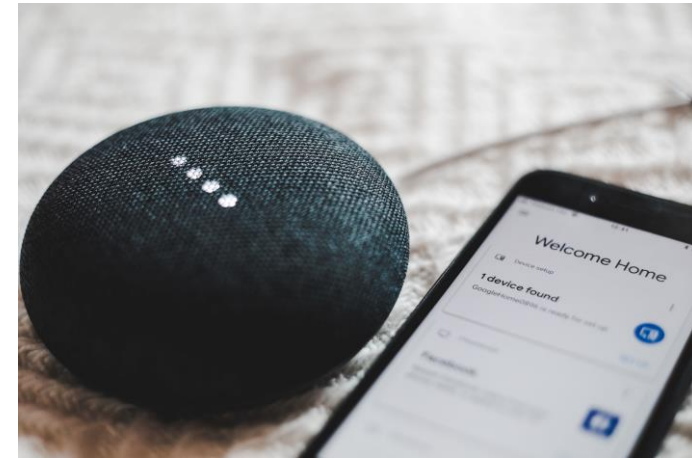
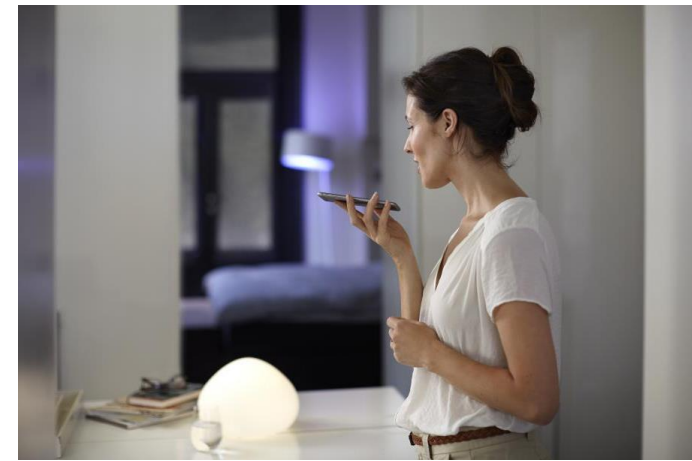
# Smart devices are all around us

**Every household, on average, will have 50 connected devices in 2021**  
(*Economic Times*)

**Every second, 127 devices hook up to the internet for the first time**  
(*McKinsey Digital*)

**Worldwide IoT spending surpassed \$1 trillion in 2020 alone**  
(*Sdx central*)

**The Smart Home IoT market will grow to \$53.45 billion by 2022**  
(*Statista*)



# A smart home, cheaper and more flexible

**80% of home-owners have regret on choice and position of switches**  
(*Livios*)

**Comparison cabled smart home vs IoT smart home leads to 37% cost save**  
(*Comparing KNX – IoT house*)

**Household penetration will be 14.6% in 2021 and is expected to hit 26.8% by 2025**  
(*Statista*)



# ► What is smart lighting?

---

Why smart lighting?

---

Where can you enjoy smart lighting?

---

How does it work?

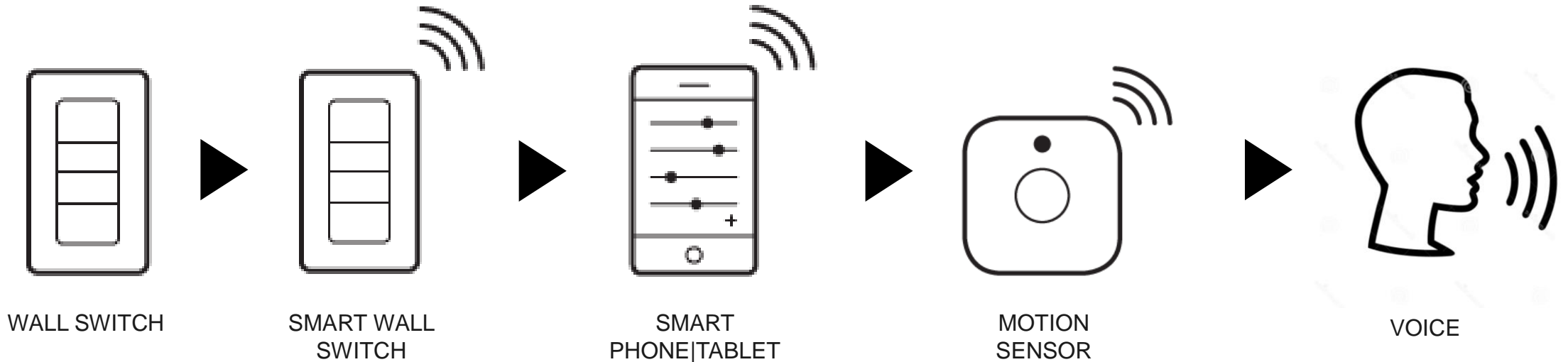
---

Our smart lighting products

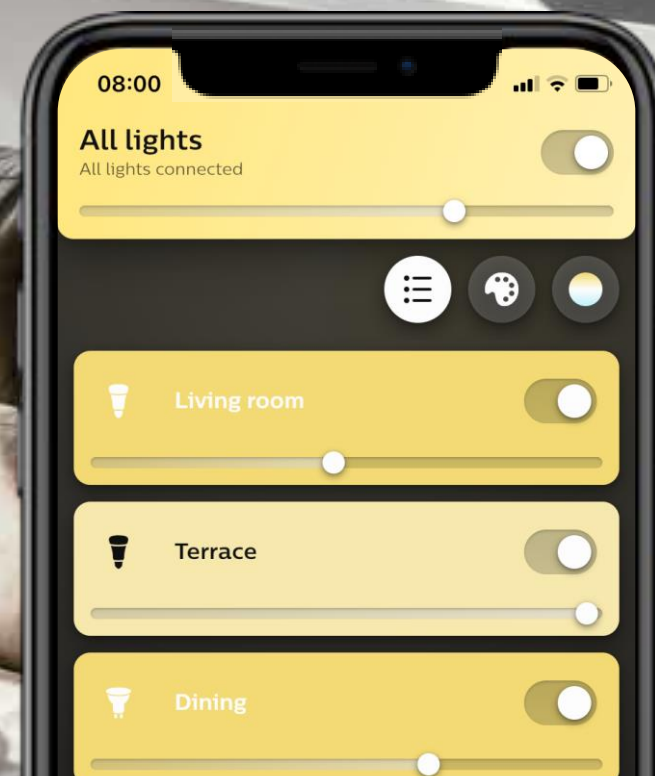
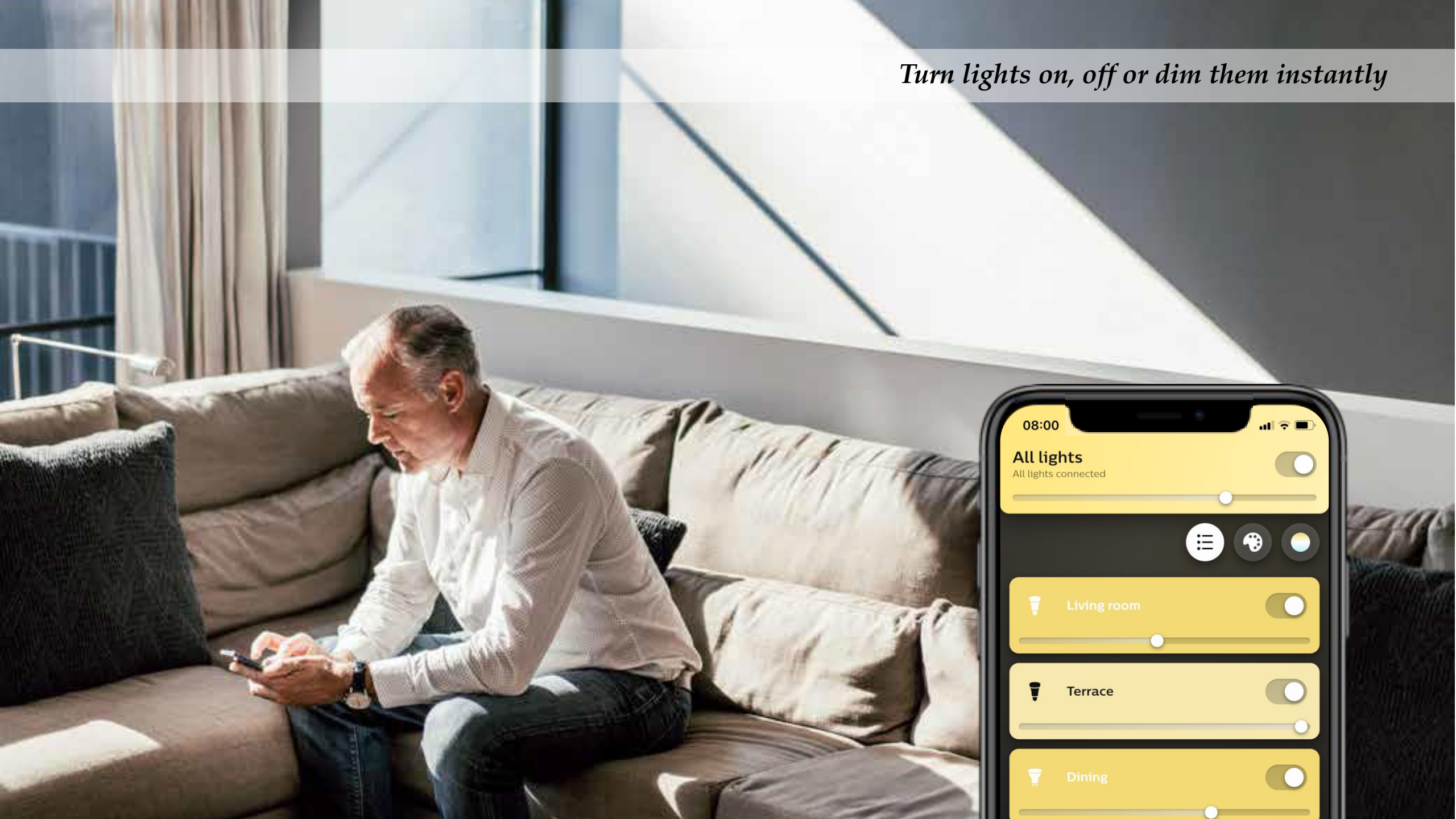


# Smoothly control the lights

Use an app, smart switches, sensors and/or voice to manage your smart luminaires and change the way you experience light.



*Turn lights on, off or dim them instantly*

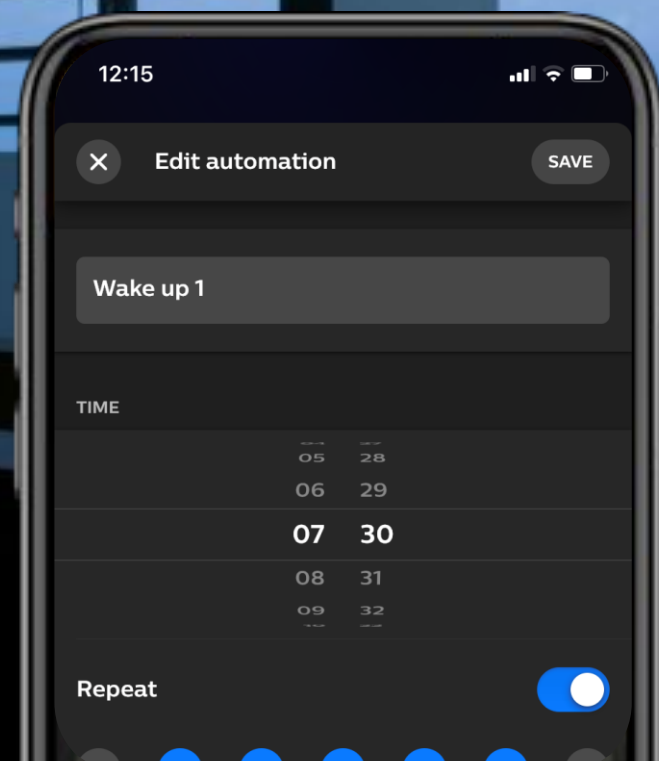




*Create the right atmosphere to match your mood*

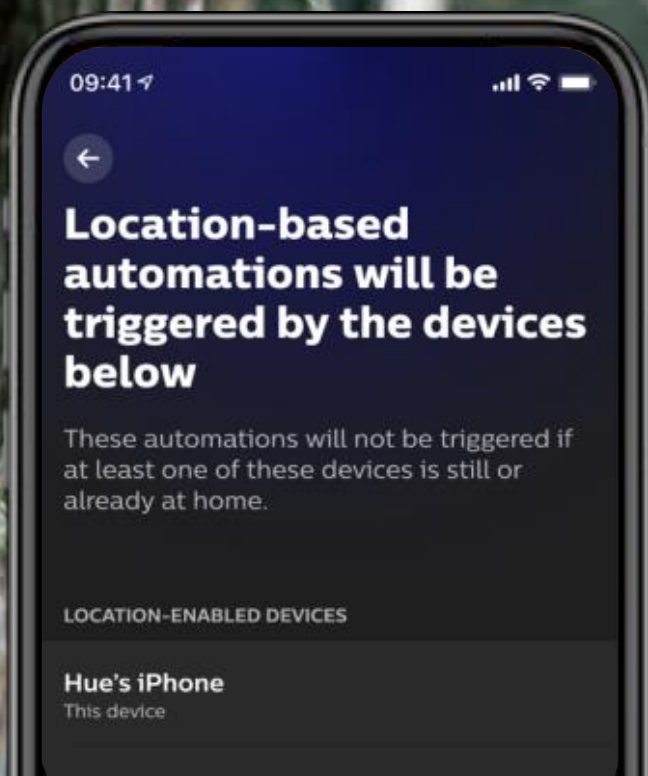


Set light schedules for daily routines, like wake-up, go-to-sleep, arrive home...





*Manage your lights anywhere*



*Tap into the world of smart home*



What is smart lighting?

---

► **Why smart lighting?**

---

Where can you enjoy smart lighting?

---

How does it work?

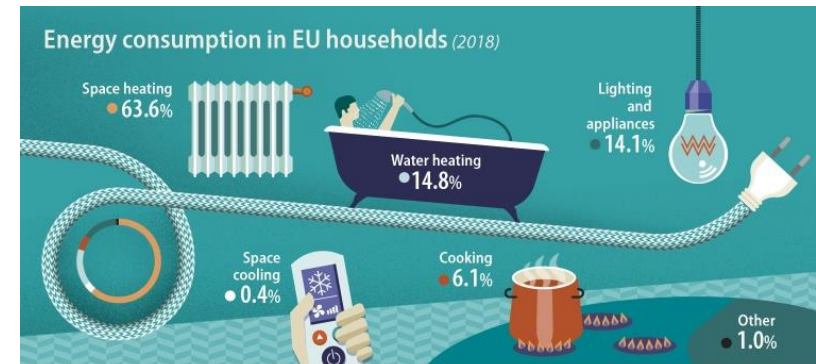
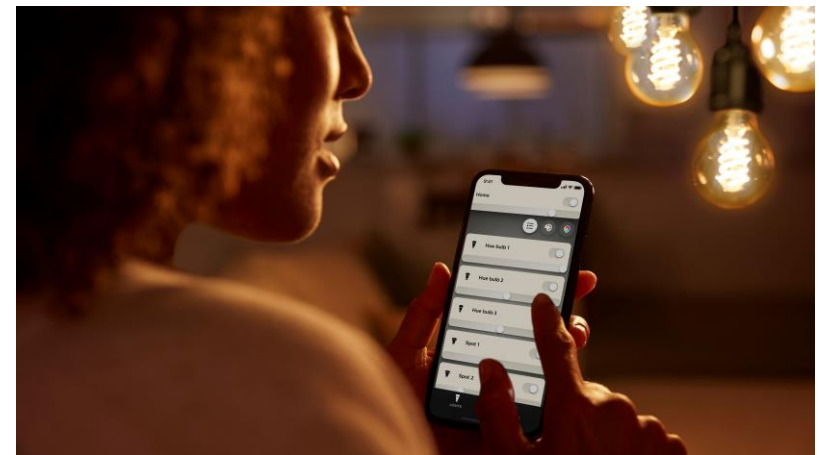
---

Our smart lighting products



# Save energy with smart lighting

With conventional lighting, an average household consumed 14% of it's annual energy consumption via lighting. This can be reduced with 80% via usage of LED. With smart or connected lighting another 20% can be reduced on the remaining electricity consumption by lighting. Regulating according to daylight or human presence; switching on/off at preset timings; automated off when leaving the house. These are some easy examples how energy is saved through smart lighting.



[ec.europa.eu/eurostat](http://ec.europa.eu/eurostat)



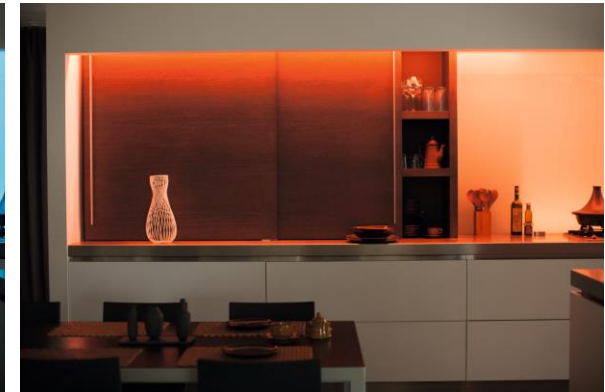
# Improve your wellbeing with smart lighting

These days the established lighting brands can guarantee a qualitative and good lighting atmosphere.

Moreover, we see tunable white bulbs and color bulbs rising to offer light recipes both for health and well being.

Home office concentration through a higher light level with daylight colors.

Soft glowing light to help you unwind and relax... There are no limits to the available preset or own defined recipes. Truly lighting tailored to your life, all the time.



# Stay safe with smart lighting

Arriving on your driveway where the lights are already on, upon your arrival?

A house that can switch the lights on/off as per your routines, whilst you are not even there?

A gentle light that guides you in your corridor when you walk to the bathroom at night?

All these features are preset in the app. None of them require extra components or costs. They are there and can ensure that you feel safe, when you are home or not.



What is smart lighting?

---

Why smart lighting?

---

► **Where can you enjoy smart lighting?**

---

How does it work?

---

Our smart lighting products



# 8 uses cases, multiple smart lighting solutions



Retrofitting a home  
with smart LED  
lighting



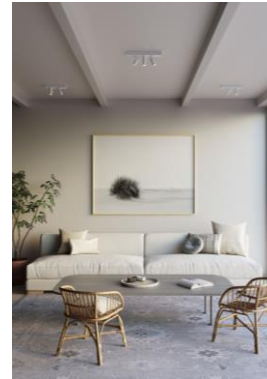
Light your outdoors  
smarter



Upgrading to smart  
lighting



Dim 48V track  
fixtures with 3  
wires



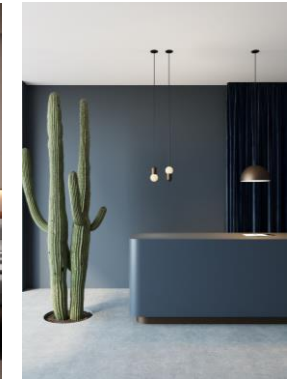
Smart surface-  
mounted fixtures



Smart surface-  
mounted profiles



Linear lighting with  
remote control



Build smart





RETROFIT LUMINAIRE

Use case – 1

## Retrofitting a home with smart LED lighting

### APPLICATION

Have been thinking about getting your home up to date with LED lighting? But you're unable to change wiring or switches?

.



Use case – 1a

## Retrofitting a home with smart LED lighting

**TECHNOLOGY (Philips Hue with Bluetooth)**

All luminaires with GU10 or E27 sockets can be retrofitted to incorporate Philips Hue bulbs.



RETROFIT LUMINAIRE



PHILIPS HUE BULB



Use case – 1a

# Retrofitting a home with smart LED lighting

## HOW IT WORKS (Philips Hue with Bluetooth)

1. Install the Philips Hue. bulb into your retrofit luminaire
2. Turn on your wall light switches
3. Download the Philips Hue Bluetooth app and find your lights
4. Optionally add a dimmer switch



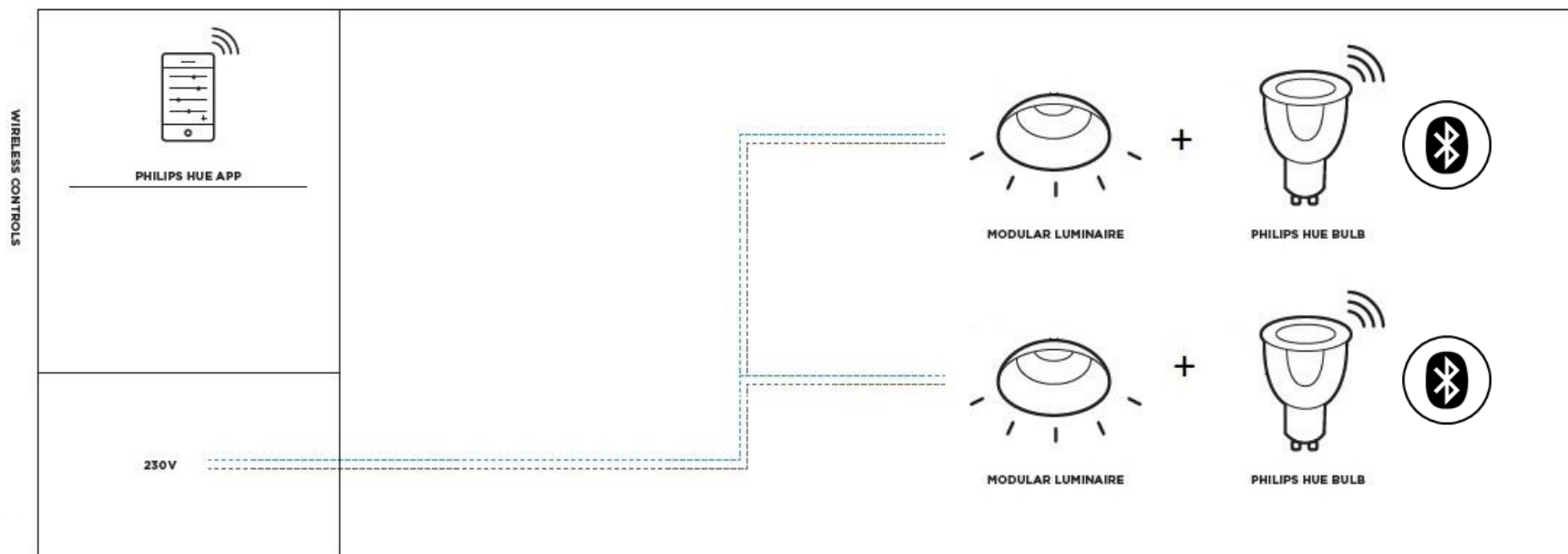
RETROFIT LUMINAIRE



PHILIPS HUE BULB



# Wiring diagram







Use case – 1b

## Retrofitting a home with smart LED lighting

### TECHNOLOGY (Philips Hue with Bridge)

All luminaires with GU10 or E27 sockets can be retrofitted to incorporate Philips Hue bulbs. Adding a Philips Hue Bridge unlocks the full suite of smart lighting features.



RETROFIT LUMINAIRE



PHILIPS HUE BULB

---

### REMOTE INSTALLATION *(e.g. technical room..)*



HUE BRIDGE



WI-FI ROUTER





Use case – 1b

# Retrofitting a home with smart LED lighting

## HOW IT WORKS (Philips Hue with Bridge)

1. Install the Philips Hue bulb into your LED retrofit luminaire
2. Turn on your wall light switches
3. Connect your Bridge to the Wi-Fi router
4. Download the Philips Hue app and find your lights
5. Optionally add smart switches, sensors..



RETROFIT LUMINAIRE



PHILIPS HUE BULB

### REMOTE INSTALLATION *(e.g. technical room..)*



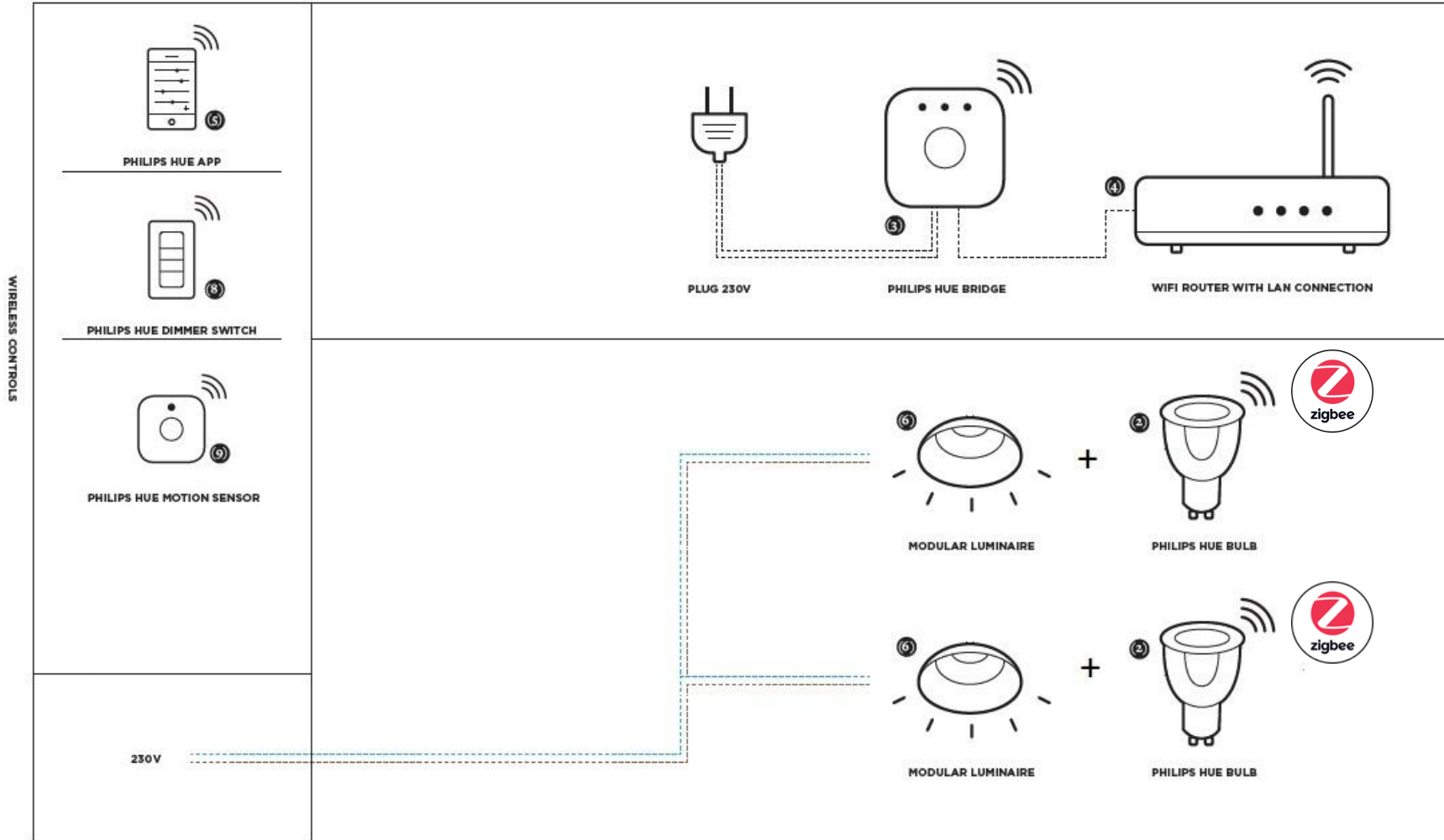
HUE BRIDGE



WI-FI ROUTER



# Wiring diagram





RETROFIT LUMINAIRE

Use case – 2

## Light your outdoors smarter

### APPLICATION

Want to transform your outdoor terrace into a cozy retreat with the touch of a button? Or let your lights turn on as you walk by?

.



RETROFIT LUMINAIRE



PHILIPS HUE BULB

---

**REMOTE INSTALLATION**  
(e.g. technical room..)



HUE BRIDGE



WI-FI ROUTER

Use case – 2



## Light your outdoors smarter

### TECHNOLOGY (Philips Hue with Bridge)

All luminaires with GU10 or E27 sockets can be retrofitted to incorporate Philips Hue bulbs. Adding a Philips Hue Bridge unlocks the full suite of smart lighting features.



RETROFIT LUMINAIRE



PHILIPS HUE BULB

**REMOTE INSTALLATION**  
(e.g. technical room..)



HUE BRIDGE



WI-FI ROUTER

Use case – 2



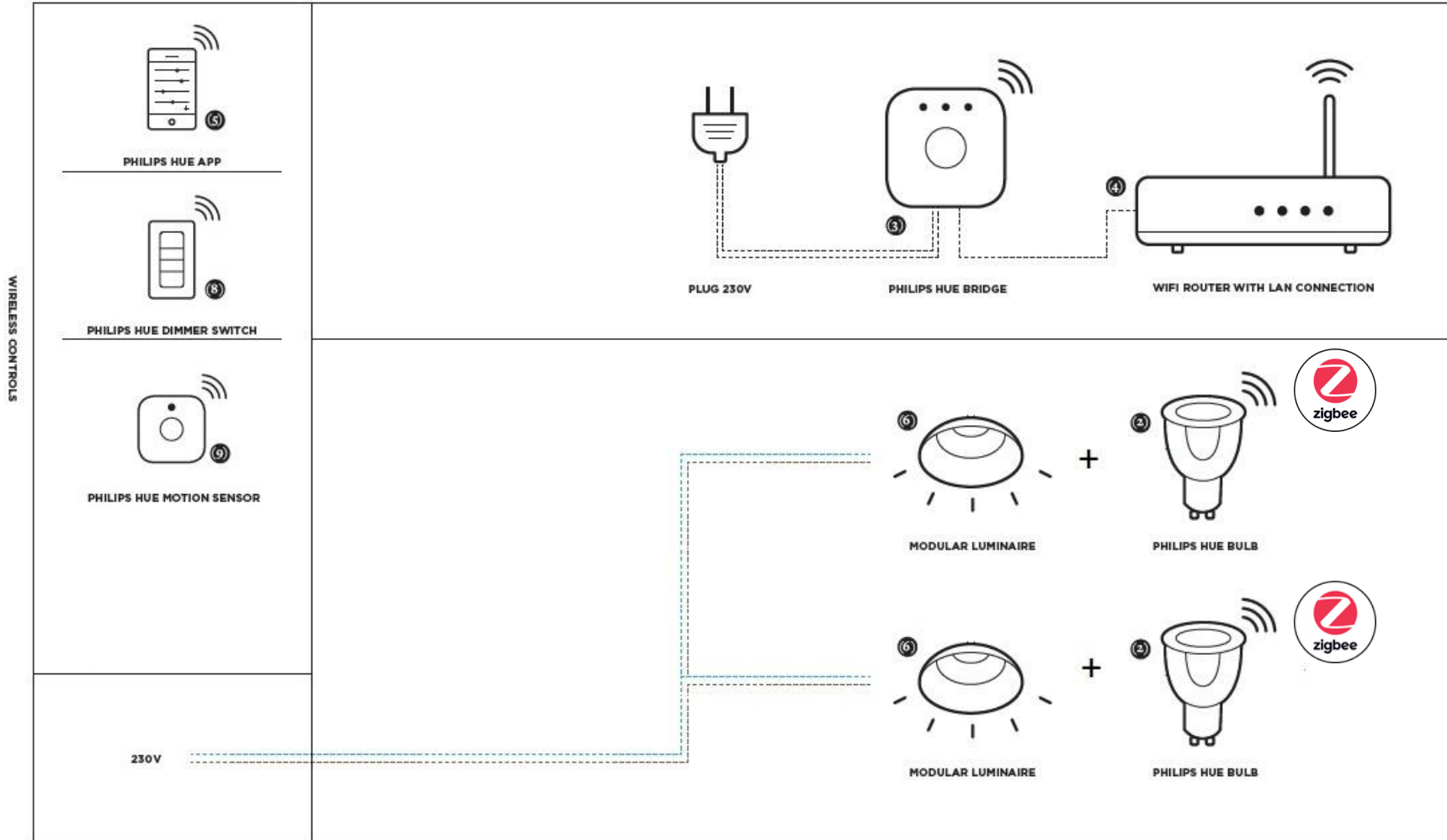
## Light your outdoors smarter

### HOW IT WORKS (Philips Hue with Bridge)

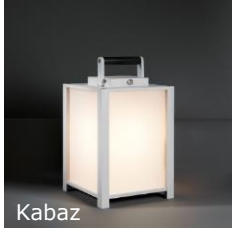

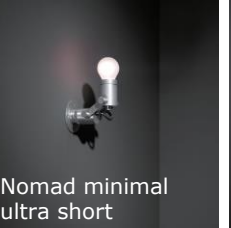
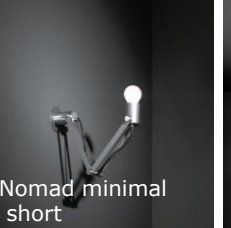



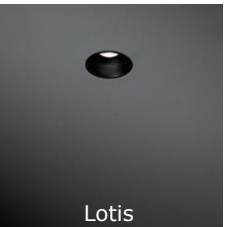
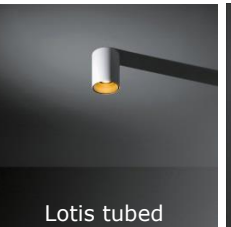
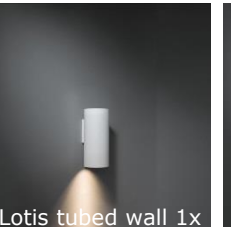
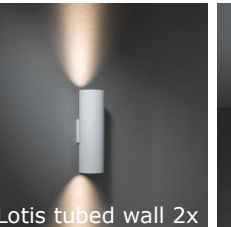
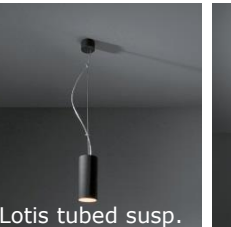

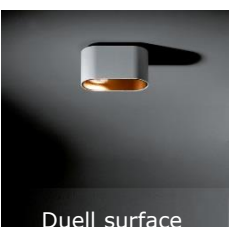
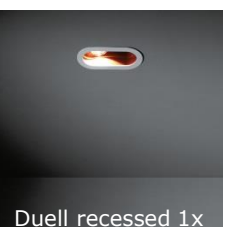
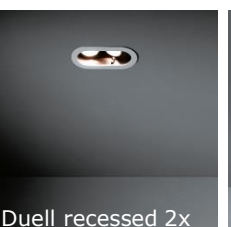
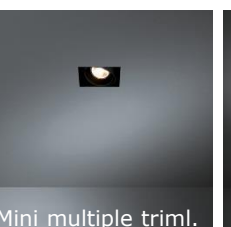
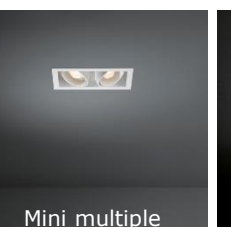
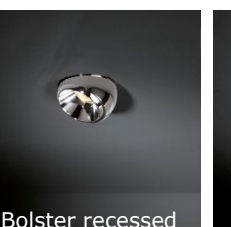

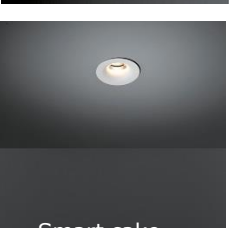
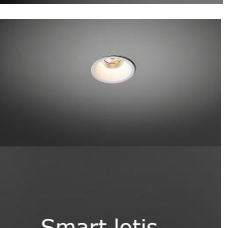
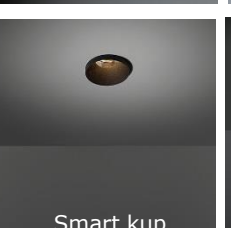
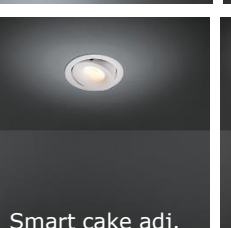
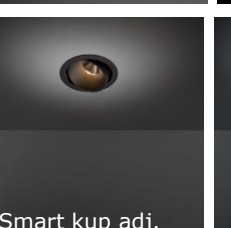
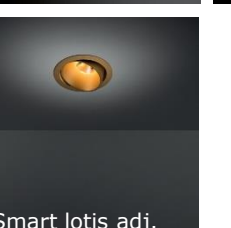
1. Install the Philips Hue bulb into your LED retrofit luminaire
2. Turn on your wall light switches
3. Connect your Bridge to the Wi-Fi router
4. Download the Philips Hue app and find your lights
5. Optionally add smart switches, sensors..



# Wiring diagram



# Modular luminaires with E27 | GU10 fitting

E27	 Kabaz	 Kabaz wall	 Nomad minimal ultra short	 Nomad minimal short	 Nomad minimal tall	 Tulip	
	 Asy lotis	 Lotis	 Lotis tubed	 Lotis tubed wall 1x	 Lotis tubed wall 2x	 Lotis tubed susp.	 Lotis square
	 Duell surface	 Duell recessed 1x	 Duell recessed 2x	 Mini multiple triml.	 Mini multiple	 Bolster recessed	 Bolster foot
GU10	 Smart cake	 Smart lotis	 Smart kup	 Smart cake adj.	 Smart kup adj.	 Smart lotis adj.	



LED LUMINAIRE

---

**REMOTE INSTALLATION**  
(e.g. false ceiling, technical room..)



1-10V LED DRIVER

Use case – 3

## Upgrading to smart lighting

### APPLICATION

Want to upgrade your existing LED luminaires and drivers with the power of smart lighting?

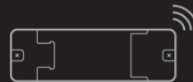


LED LUMINAIRE

**REMOTE INSTALLATION**  
(e.g. false ceiling, technical room..)



1-10V LED DRIVER



HUE DIM MODULE

**REMOTE INSTALLATION**  
(e.g. technical room..)



HUE BRIDGE



WI-FI ROUTER

Use case – 3a



## Upgrading to smart lighting

**TECHNOLOGY (Philips Hue with Bridge)**

Add a Hue 1-10V dim module, between the 230V power network and the LED driver.





Use case – 3a

# Upgrading to smart lighting

## HOW IT WORKS (Philips Hue with Bridge)

1. Install a connected dim module between the 230V power network and the driver
2. Turn on your wall light switches
3. Connect your Bridge to the Wi-Fi router
4. Download the Philips Hue app and find your lights
5. Optionally add smart switches, sensors..



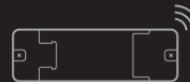
LED LUMINAIRE

### REMOTE INSTALLATION

(e.g. false ceiling, technical room..)



1-10V LED DRIVER



HUE DIM MODULE

### REMOTE INSTALLATION

(e.g. technical room..)



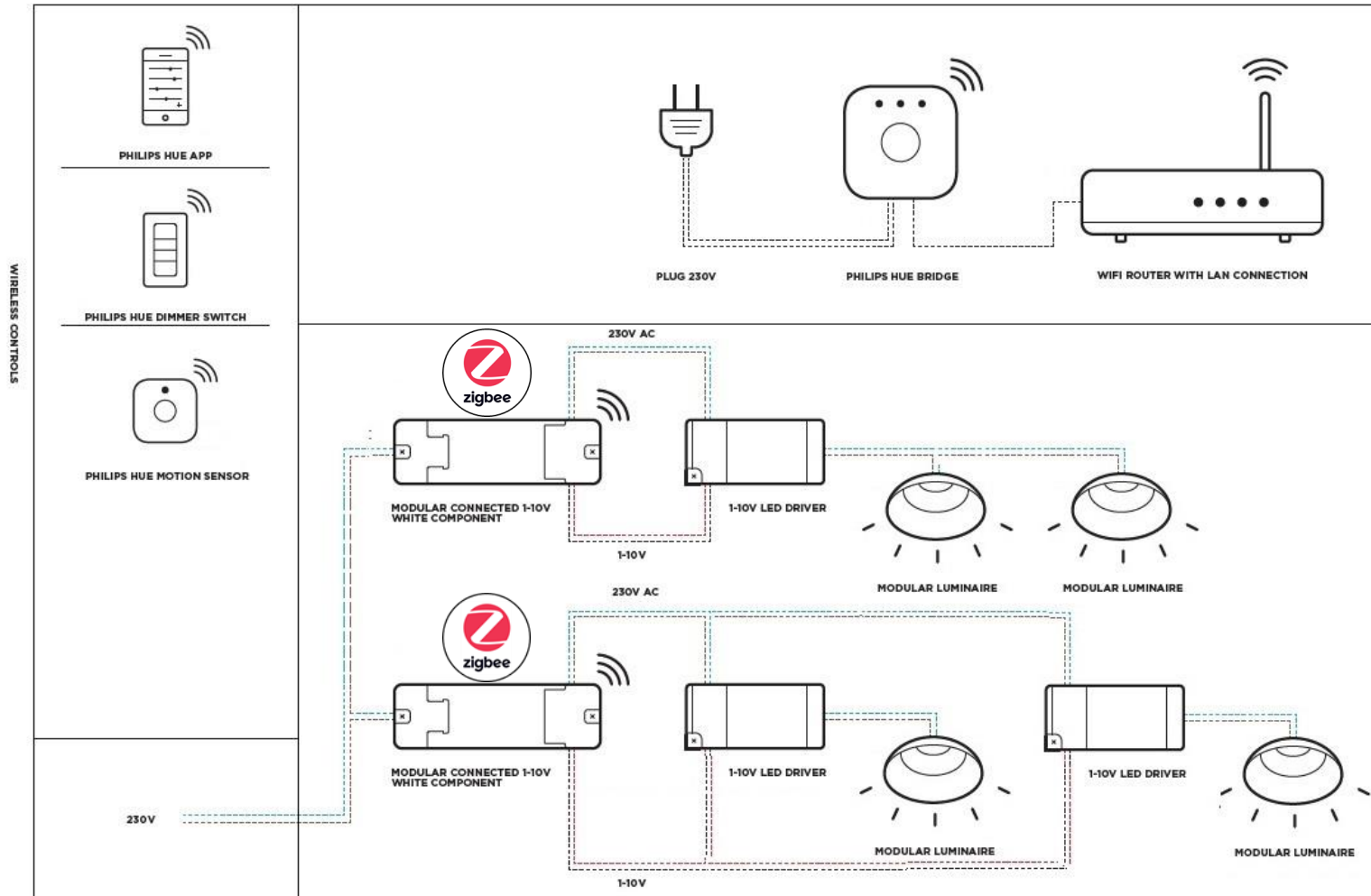
HUE BRIDGE



WI-FI ROUTER



# Wiring diagram



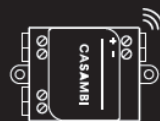


LED LUMINAIRE

**REMOTE INSTALLATION**  
(e.g. false ceiling, technical room..)



1-10V LED DRIVER



CASAMBI DIM MODULE

Use case – 3b



## Upgrading to smart lighting

### TECHNOLOGY (Casambi)

Add a Casambi Tre, 1-10V or Dali dim module, between the 230V power network and the LED driver.





Use case – 3b

# Upgrading to smart lighting

## HOW IT WORKS (Casambi)

1. Install a Casambi dim module between the 230V power network and the driver
2. Turn on your wall light switches
3. Download the Casambi app and find your lights
4. Optionally add a smart switch



LED LUMINAIRE

### REMOTE INSTALLATION

(e.g. false ceiling, technical room..)



LED DRIVER



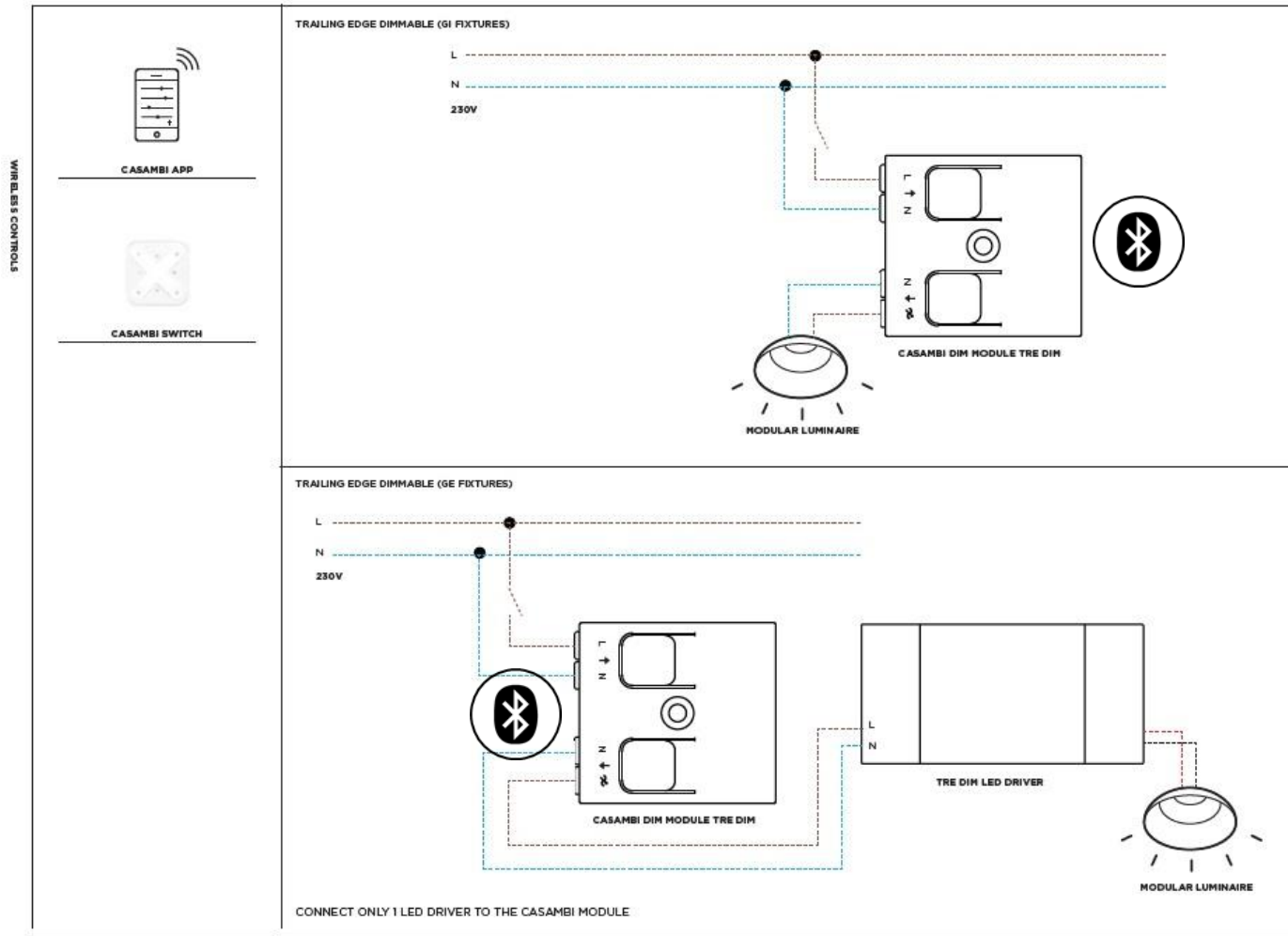
CASAMBI DIM MODULE





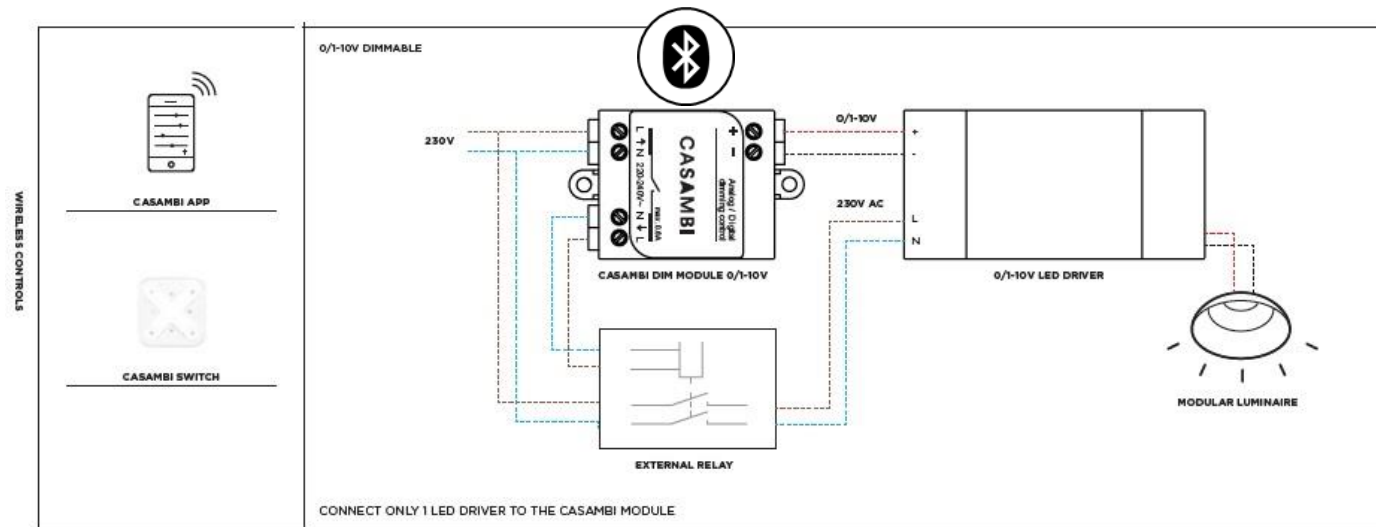


# Wiring diagram – trailing edge



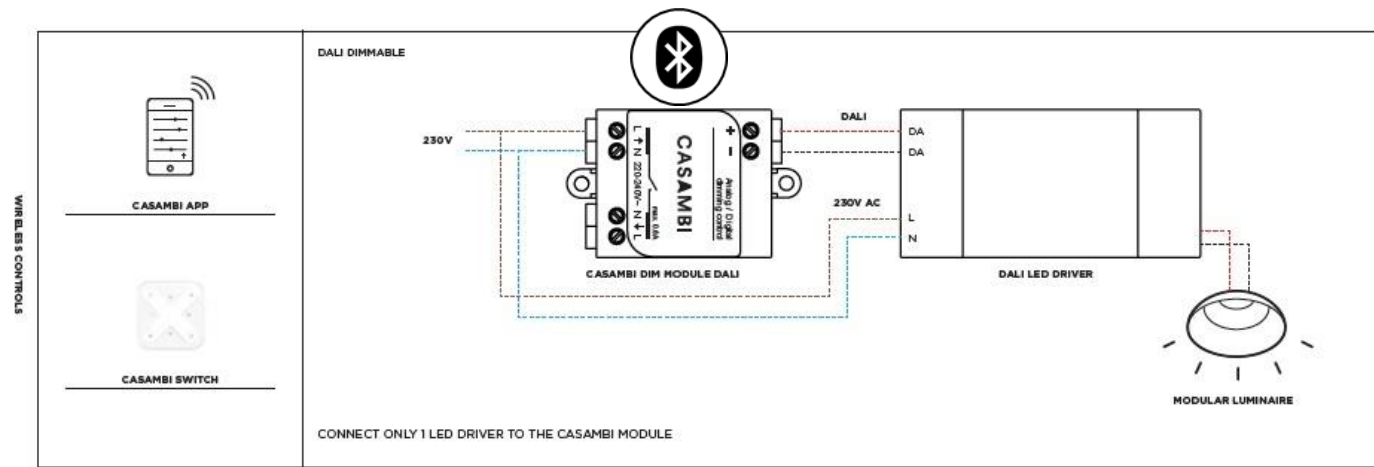


# Wiring diagram – 1-10V





# Wiring diagram – DALI





48V TRACK SYSTEM (dali luminaires)

Use case – 4

## Dim 48V track fixtures with 3 wires

### APPLICATION

Want to light up multiple areas in a space with only one 3-wire power cable? And also want to dim each area individually?





48V TRACK SYSTEM (dali luminaires)



CASAMBI DIM MODULE

OR

#### REMOTE INSTALLATION

(e.g. false ceiling, technical room..)



CASAMBI REMOTE DIM  
MODULE

Use case – 4



## Dim 48V track fixtures with 3 wires

### TECHNOLOGY (Casambi)

Insert a Casambi track 48V dim module to a 48V track system with DALI luminaires or place it remote.



48V TRACK SYSTEM (dali luminaires)



CASAMBI DIM MODULE



OR

#### REMOTE INSTALLATION

(e.g. false ceiling, technical room..)



CASAMBI REMOTE DIM  
MODULE



Use case –4



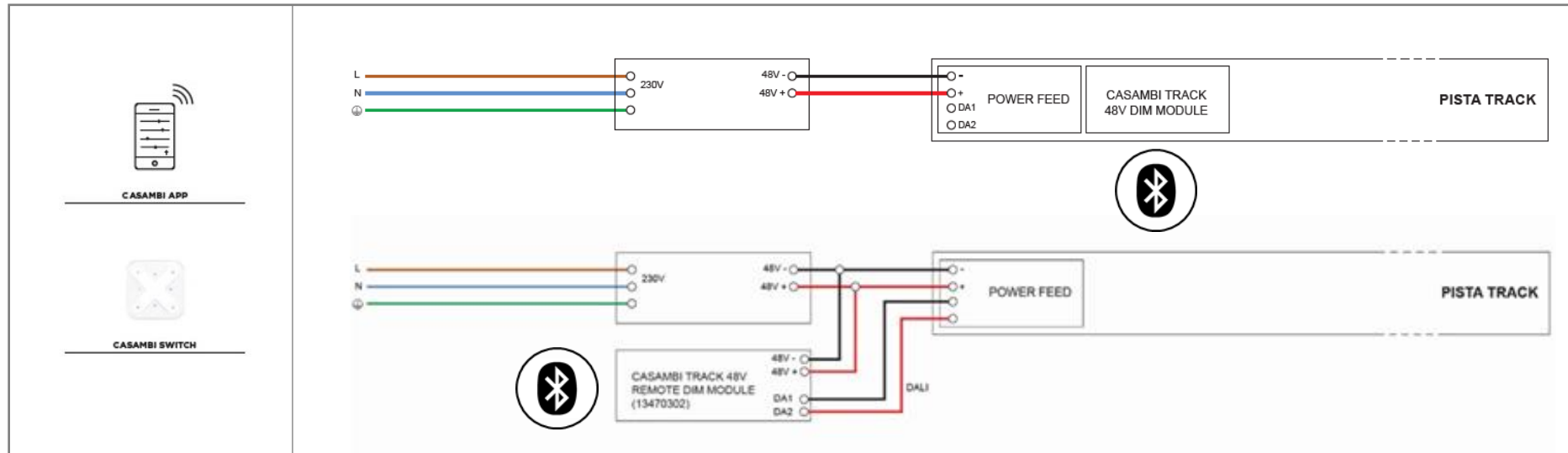
## Dim 48V track fixtures with 3 wires

### HOW IT WORKS (Casambi)

1. Install a Casambi dim module in the 48V track or place it remote
2. Turn on your wall light switches
3. Download the Casambi app and find your lights
4. Optionally add a smart switch



# Wiring diagram





Use case – 5

## Smart surface-mounted fixtures

### APPLICATION

You have a 3-wire power supply connected to a wall switch. The driver needs to be integrated into the surface-mounted fixture.





SURFACE-MOUNTED FIXTURE



Use case – 5



## Smart surface-mounted fixtures

### TECHNOLOGY (Casambi)

Go for a surface-mounted fixture that incorporates a Casambi driver inside



SURFACE-MOUNTED FIXTURE

Use case – 5



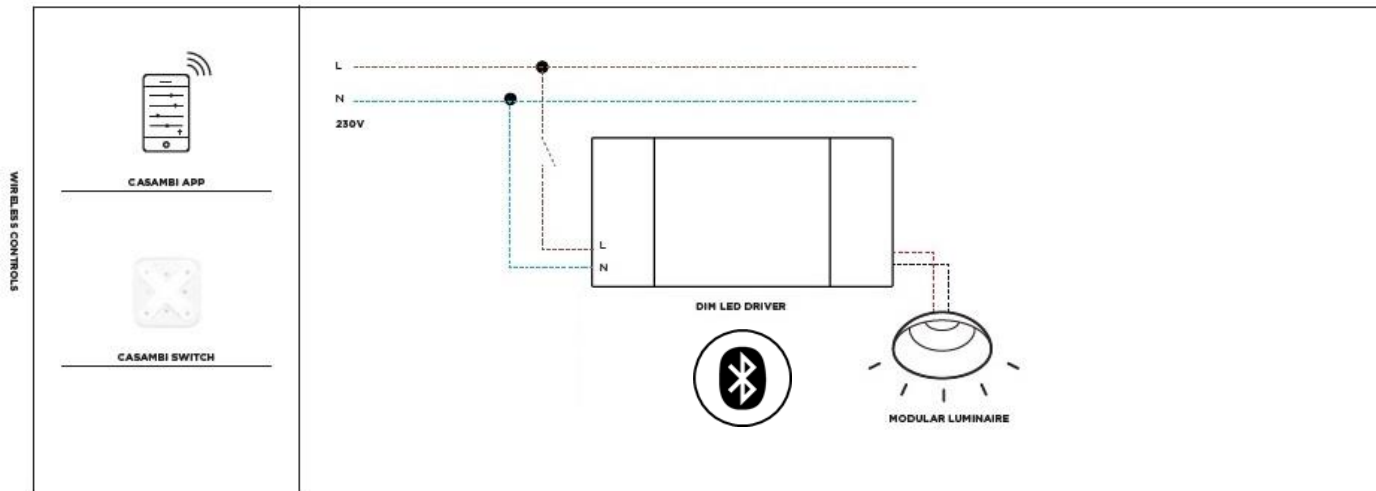
## Smart surface-mounted fixtures

### HOW IT WORKS (Casambi)

1. Install the Casambi-enabled surface mounted fixture
2. Turn on your wall light switches
3. Download the Casambi app and find your lights
4. Optionally add a smart switch



# Wiring diagram





Use case – 6

## Smart surface-mounted linear lighting

### APPLICATION

You have a 3-wire power supply connected to a wall switch. The driver needs to be integrated into the surface-mounted profile.





Use case – 6

## Smart surface-mounted linear lighting

**TECHNOLOGY (Casambi)**

Go for Como Corner in combination with a DALI driver and Casambi DALI dim module.



SURFACE-MOUNTED PROFILE





SURFACE-MOUNTED PROFILE

Use case – 6



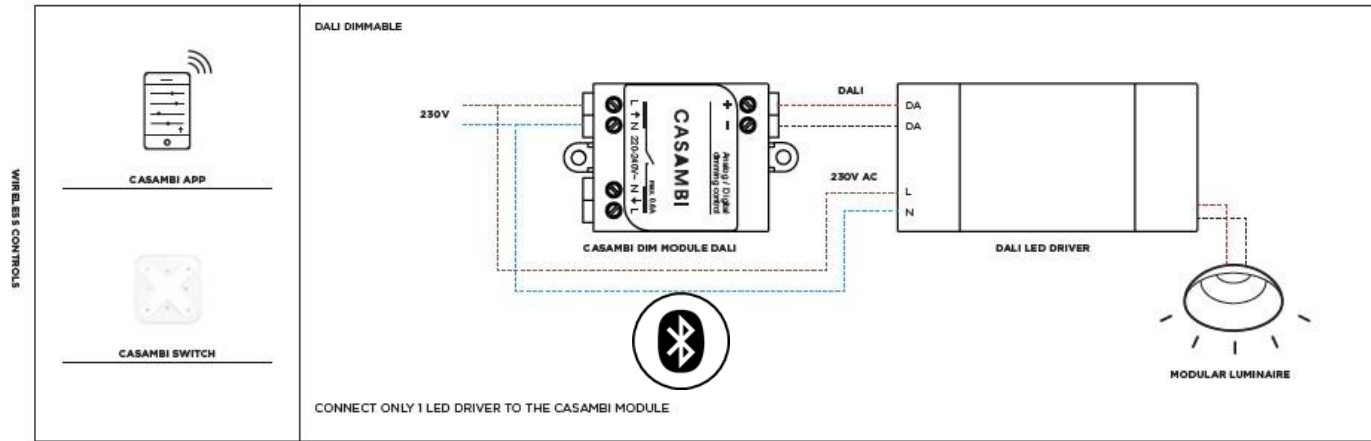
## Smart surface-mounted linear lighting

### HOW IT WORKS (Casambi)

1. Install the Casambi-enabled surface mounted profile
2. Turn on your wall light switches
3. Download the Casambi app and find your lights
4. Optionally add a smart switch



# Wiring diagram





Use case – 7

## Linear lighting with remote control

### APPLICATION

Adding linear lighting to a space with the flexibility to install the controls remote?

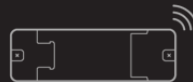


LED LUMINAIRE

**REMOTE INSTALLATION**  
(e.g. false ceiling, technical room..)



1-10V LED DRIVER



HUE DIM MODULE

**REMOTE INSTALLATION**  
(e.g. technical room..)



HUE BRIDGE



WI-FI ROUTER

Use case – 7a



## Linear lighting with remote control

**TECHNOLOGY (Philips Hue with Bridge)**

Add a Hue 1-10V dim module, between the 230V power network and the LED driver.





LED LUMINAIRE

### REMOTE INSTALLATION (e.g. false ceiling, technical room..)



1-10V LED DRIVER



HUE DIM MODULE

### REMOTE INSTALLATION (e.g. technical room..)



HUE BRIDGE



WI-FI ROUTER

Use case – 7a

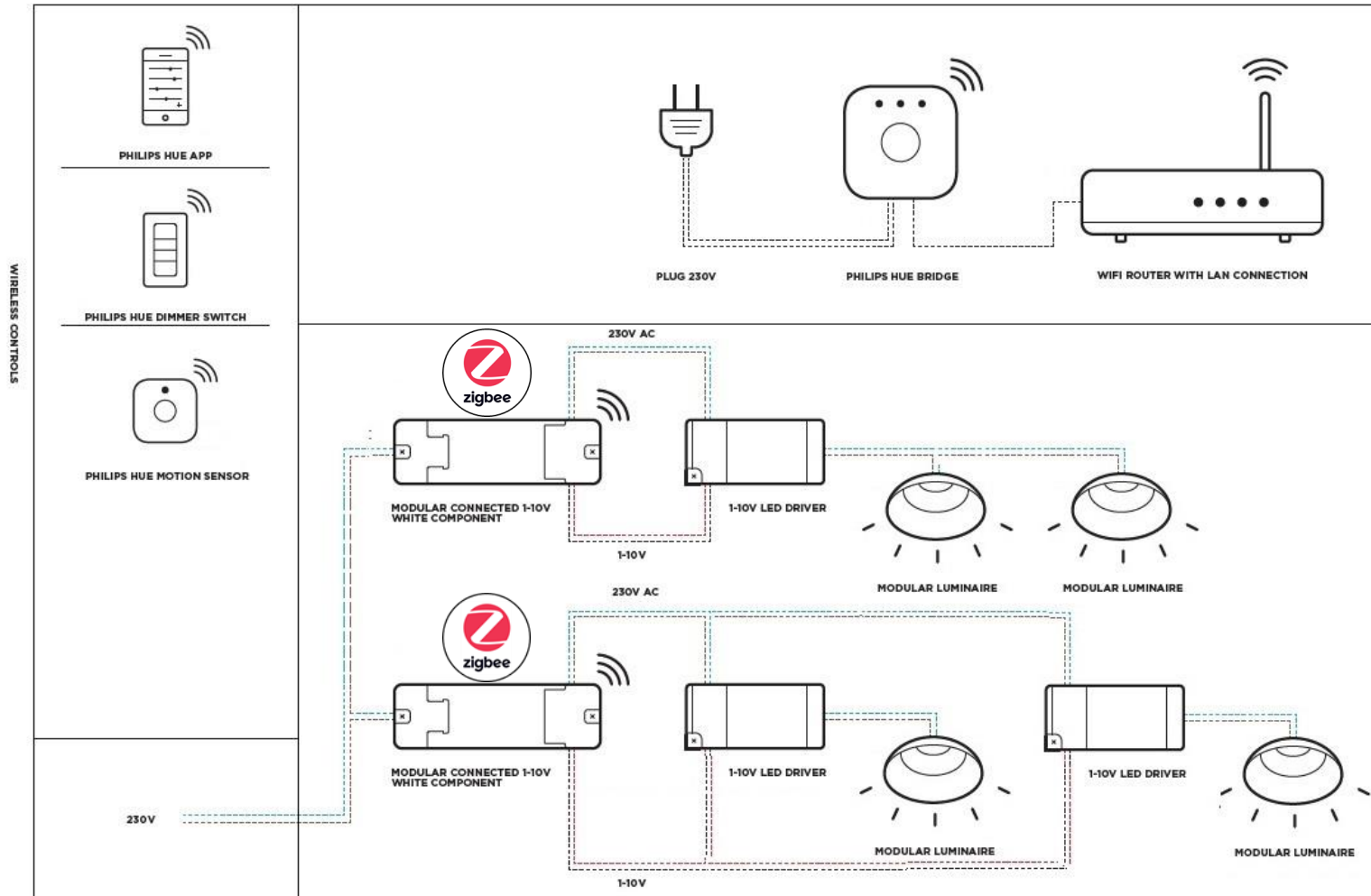


## Linear lighting with remote control

### HOW IT WORKS (Philips Hue with Bridge)

1. Install a connected dim module between the 230V power network and the driver
2. Turn on your wall light switches
3. Connect your Bridge to the Wi-Fi router
4. Download the Philips Hue app and find your lights
5. Optionally add smart switches, sensors...

# Wiring diagram





LED LUMINAIRE

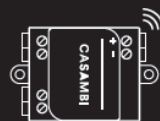
---

**REMOTE INSTALLATION**

*(e.g. false ceiling, technical room..)*



LED DRIVER



CASAMBI DIM MODULE

Use case – 7b



## Linear lighting with remote control

### TECHNOLOGY (Casambi)

Add a Casambi Tre, 1-10V or Dali dim module, between the 230V power network and the LED driver.





Use case – 7b

## Linear lighting with remote control

### HOW IT WORKS (Casambi)

1. Install a Casambi dim module between the 230V power network and the driver
2. Turn on your wall light switches
3. Download the Casambi app and find your lights
4. Optionally add a smart switch



LED LUMINAIRE

#### REMOTE INSTALLATION

(e.g. false ceiling, technical room..)



1-10V LED DRIVER

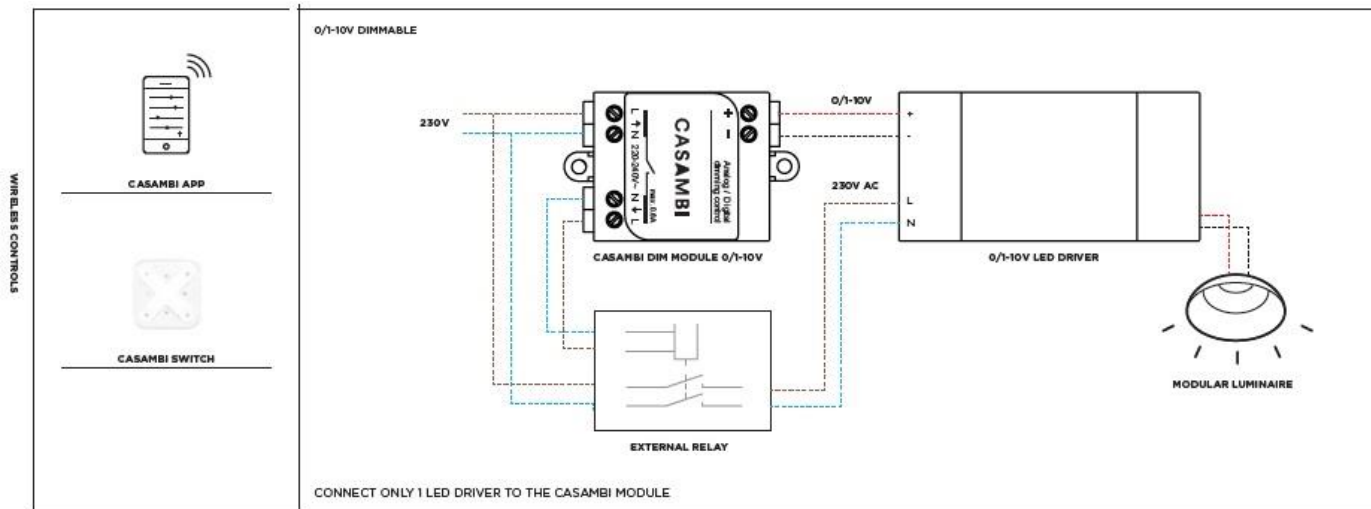


CASAMBI DIM MODULE





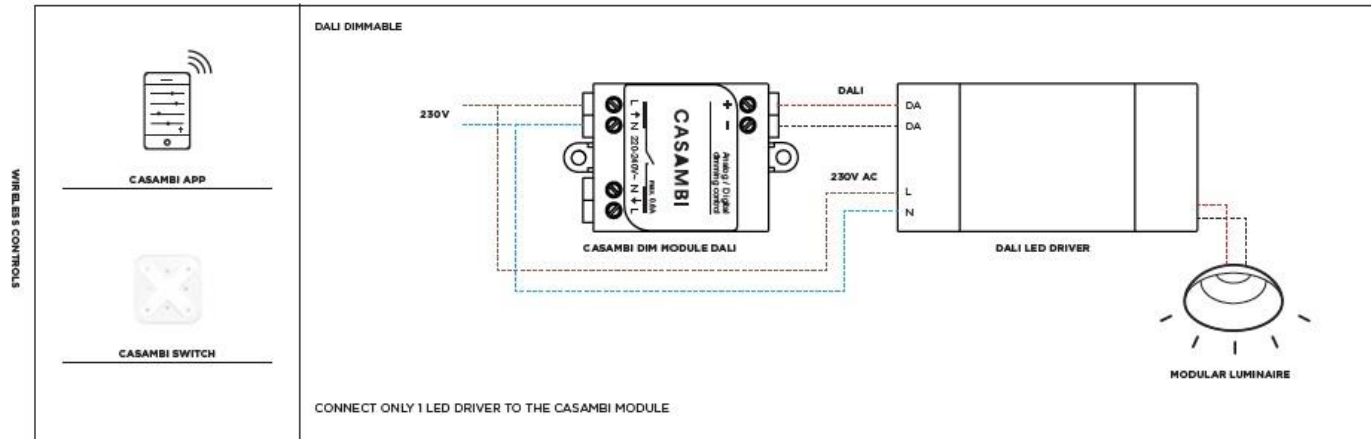
# Wiring diagram – 1-10V







# Wiring diagram – DALI





Use case – 8

## Build smart

### APPLICATION

Building a home from scratch and eager tap into the power of connected lighting?



LED LUMINAIRE

**REMOTE INSTALLATION**  
(e.g. false ceiling, technical room..)



1-10V LED DRIVER



HUE DIM MODULE

**REMOTE INSTALLATION**  
(e.g. technical room..)



HUE BRIDGE



WI-FI ROUTER

Use case – 8a

## Build smart

### TECHNOLOGY (Philips Hue with Bridge)

Add a Hue 1-10V dim module, between the 230V power network and the LED driver.





LED LUMINAIRE

**REMOTE INSTALLATION**  
(e.g. false ceiling, technical room..)



1-10V LED DRIVER



HUE DIM MODULE

**REMOTE INSTALLATION**  
(e.g. technical room..)



HUE BRIDGE



WI-FI ROUTER

Use case – 8a

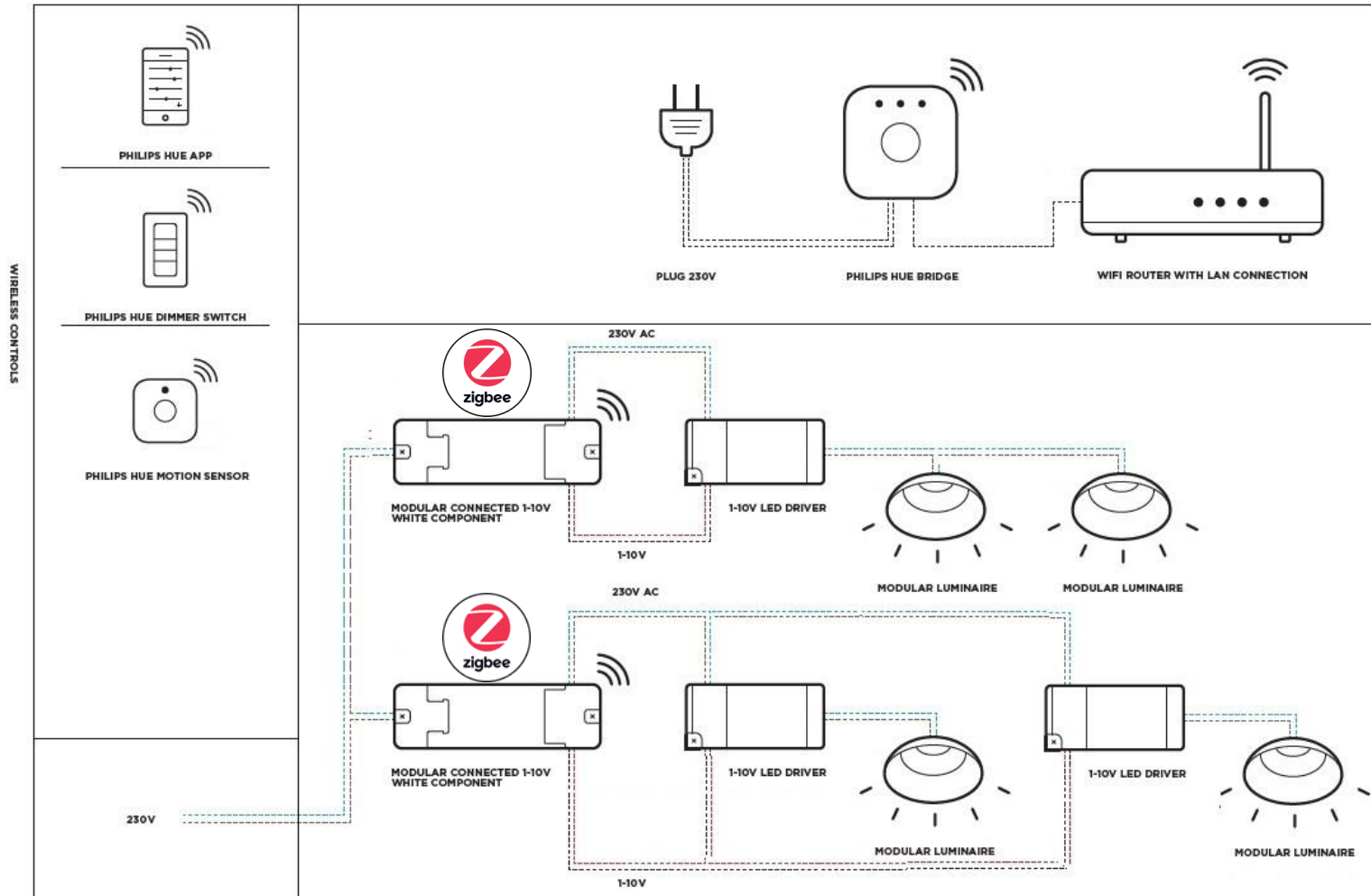


## Build smart

### HOW IT WORKS (Philips Hue with Bridge)

1. Install a connected dim module between the 230V power network and the driver
2. Turn on your wall light switches
3. Connect your Bridge to the Wi-Fi router
4. Download the Philips Hue app and find your lights
5. Optionally add smart switches, sensors...

# Wiring diagram







LED LUMINAIRE

---

**REMOTE INSTALLATION**

*(e.g. false ceiling, technical room..)*



CASAMBI LED DRIVER

Use case – 8b



## Build smart

### TECHNOLOGY (Casambi)

Recessed, surface-mounted or suspended fixtures directly connected to a Casambi driver.





LED LUMINAIRE

---

**REMOTE INSTALLATION**

*(e.g. false ceiling, technical room..)*



CASAMBI LED DRIVER

Use case – 8b



## Build smart

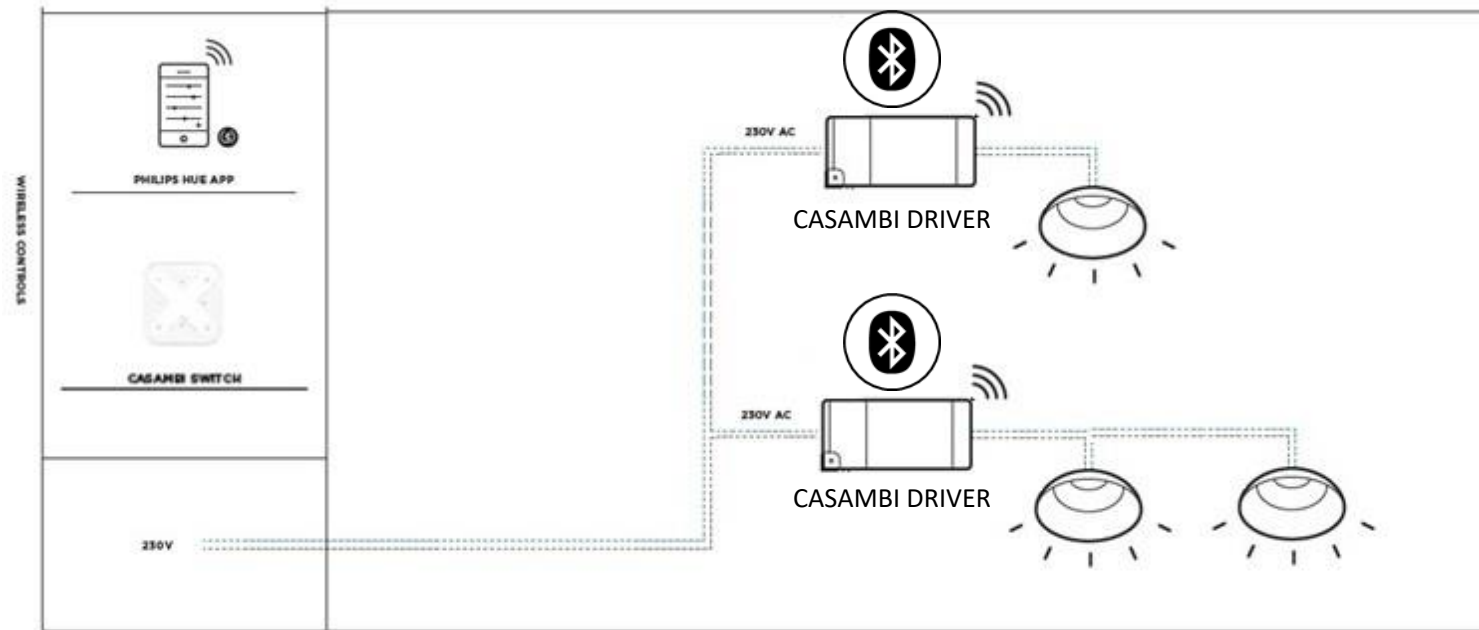
### HOW IT WORKS (Casambi)

1. Install the fixture and connect it to a Casambi driver
2. Turn on your wall light switches
3. Download the Casambi app and find your lights
4. Optionally add a smart switch





# Wiring diagram



What is smart lighting?

---

Why smart lighting?

---

Where can you enjoy smart lighting?

---

► **How does it work?**

---

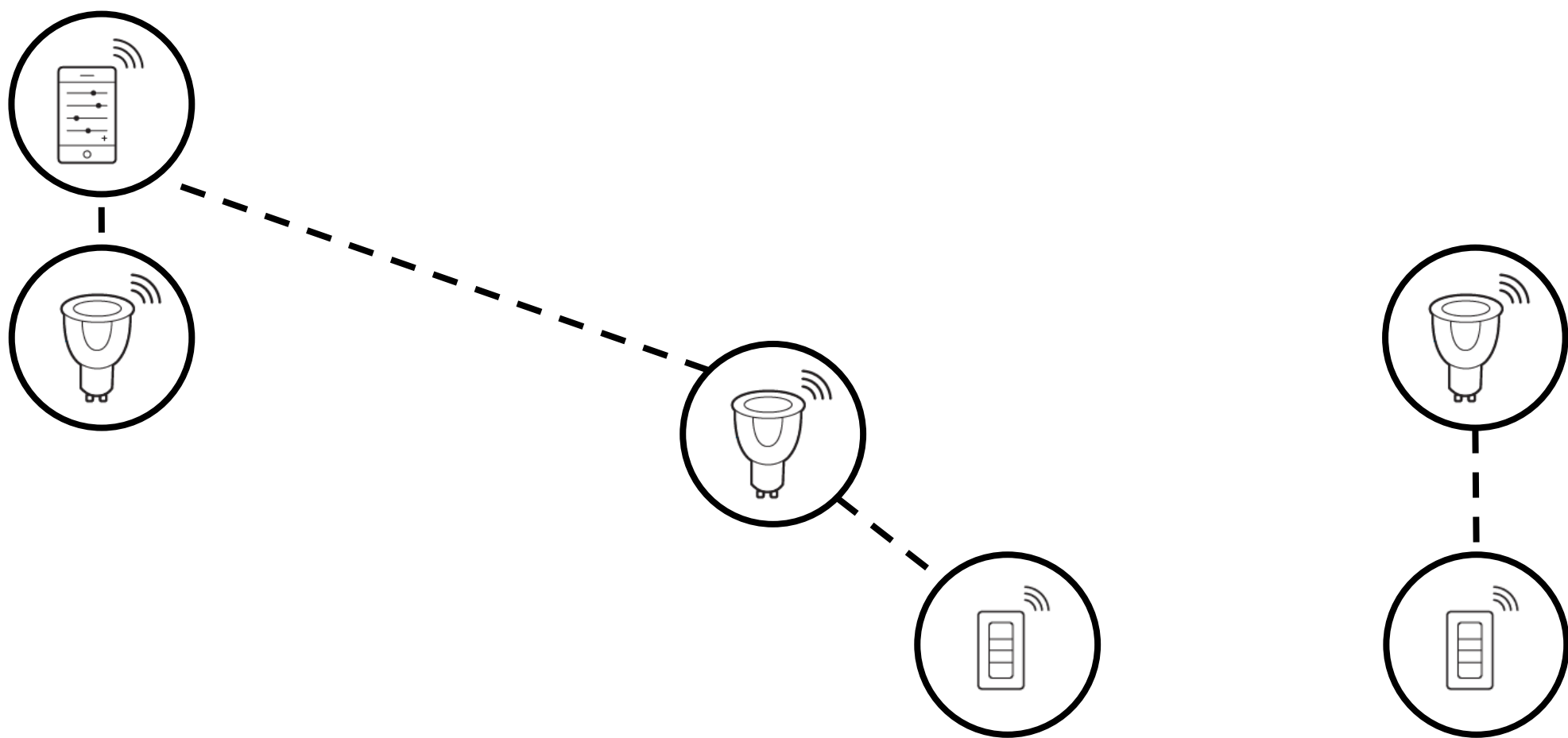
Our smart lighting products

## Connected lighting | wireless protocols

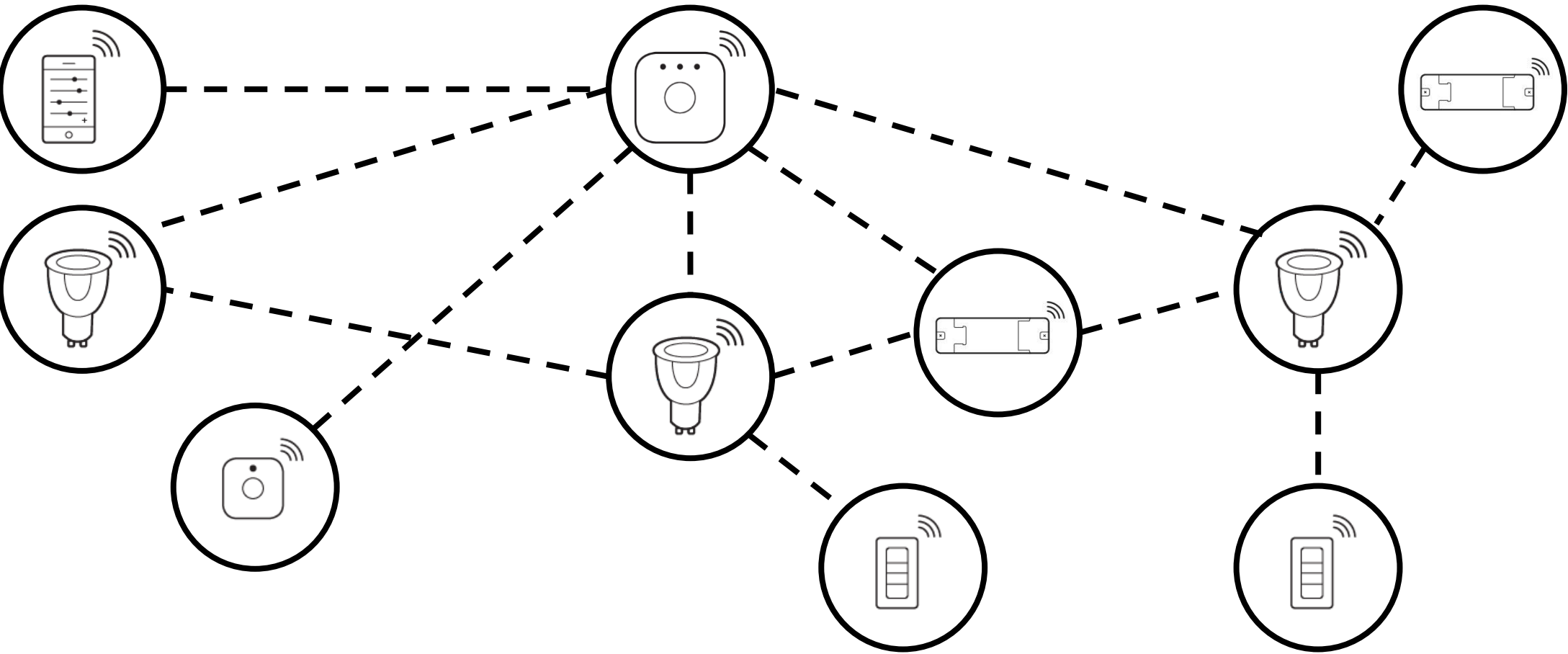




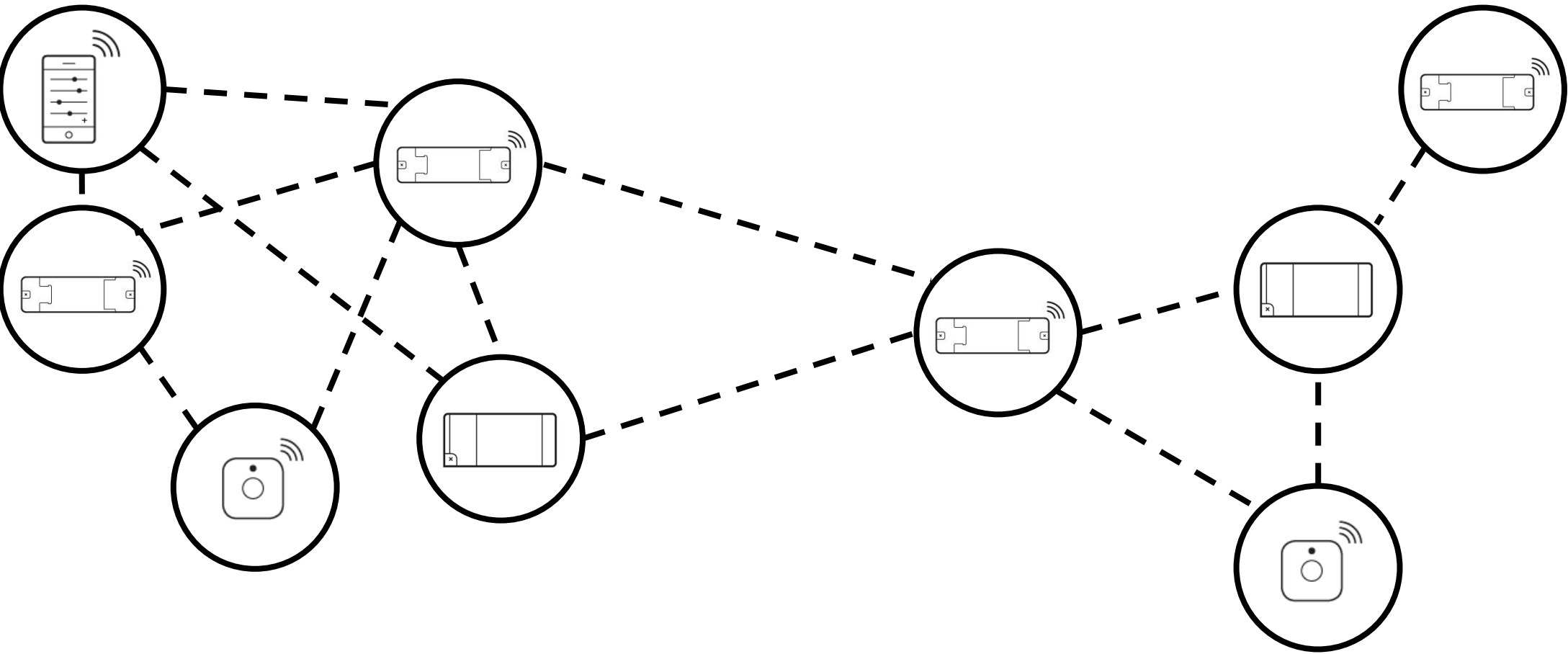
# Philips Hue Bluetooth | point-to-point



# Philips Hue ZigBee | mesh network



# Casambi Bluetooth | mesh network



## ZigBee vs Bluetooth Low Energy (BLE)



**±14m**

**Connection to nodes via gateway (requires WiFi)**



**±7m**

**Direct connection to nodes via Bluetooth**

What is smart lighting?

---

Why smart lighting?

---

Where can you enjoy smart lighting?

---

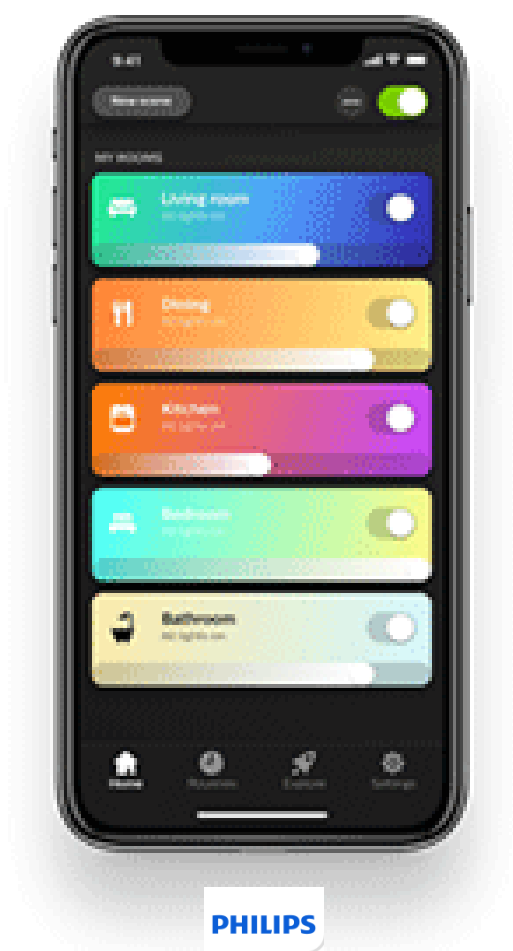
How does it work?






---

► **Our smart lighting products**



# We connect with Philips Hue & Casambi



		
BULB	MODULE	MODULE
White / tunable white / RGB	White	White
Bluetooth 	Wifi 	Bluetooth 
230V dimming	0-10V/1-10V	0-10V/1-10V/DALI/TRE dim
	Connect to LED driver	Connect to LED driver or Casambi LED driver
	Size may be constraint for installation	Size suitable for installation in small spaces
	Strain relief	Connection box required for installation in false ceiling
Away-from-home made easy (requires Bridge)		Away-from-home possible (requires additional gateway)
Compatible with Philips/Modular luminaires and bulbs		Compatible with multiple brands (Flos, Deltalight, Xal, ...)
Not compatible with CASAMBI app		Compatible with HUE app (limited functionality)
No integration in 48V track		Integration in 48V track
Part of a bigger eco platform (smart thermostat, music, games, ...)		Bigger ecosystem is focused on lighting

# Hue bulbs offered by Modular

**WHITE**  
2700K  
dimmable



Hue White GU10



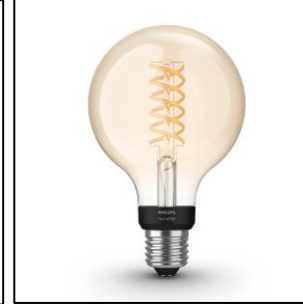
Hue White E27



Hue White E27 Edison



Hue White E27 ST64



Hue White E27 G93

**WHITE AMBIANCE**  
2200K – 6500K  
dimmable



Hue White Ambiance GU10



Hue White Ambiance E27

**WHITE & COLOR  
AMBIANCE**  
2000K – 6500K  
RGB  
dimmable



Hue White & Color Ambiance GU10



Hue White & Color Ambiance E27

# Hue LEDstrips offered by Modular

**WHITE & COLOR  
AMBIANCE**  
2000K – 6500K  
RGB  
dimnable



Hue Lightstrip plus 2m



Hue Lightstrip plus 2m + 1m



Hue Lightstrip plus extension 1m

**OUTDOOR  
WHITE & COLOR  
AMBIANCE**  
2000K – 6500K  
RGB  
dimnable



Hue Lightstrip 2m



Hue Lightstrip 5m



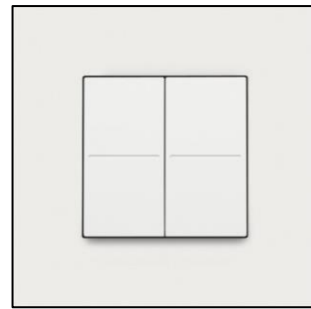
# Hue controls offered by Modular



Bridge



Dimmer switch



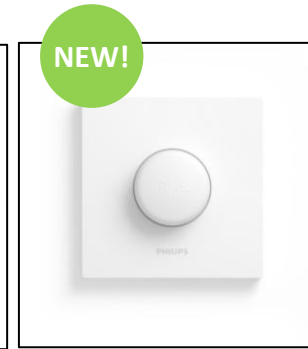
Niko switch



Motion sensor



Outdoor motion  
sensor



Smart button



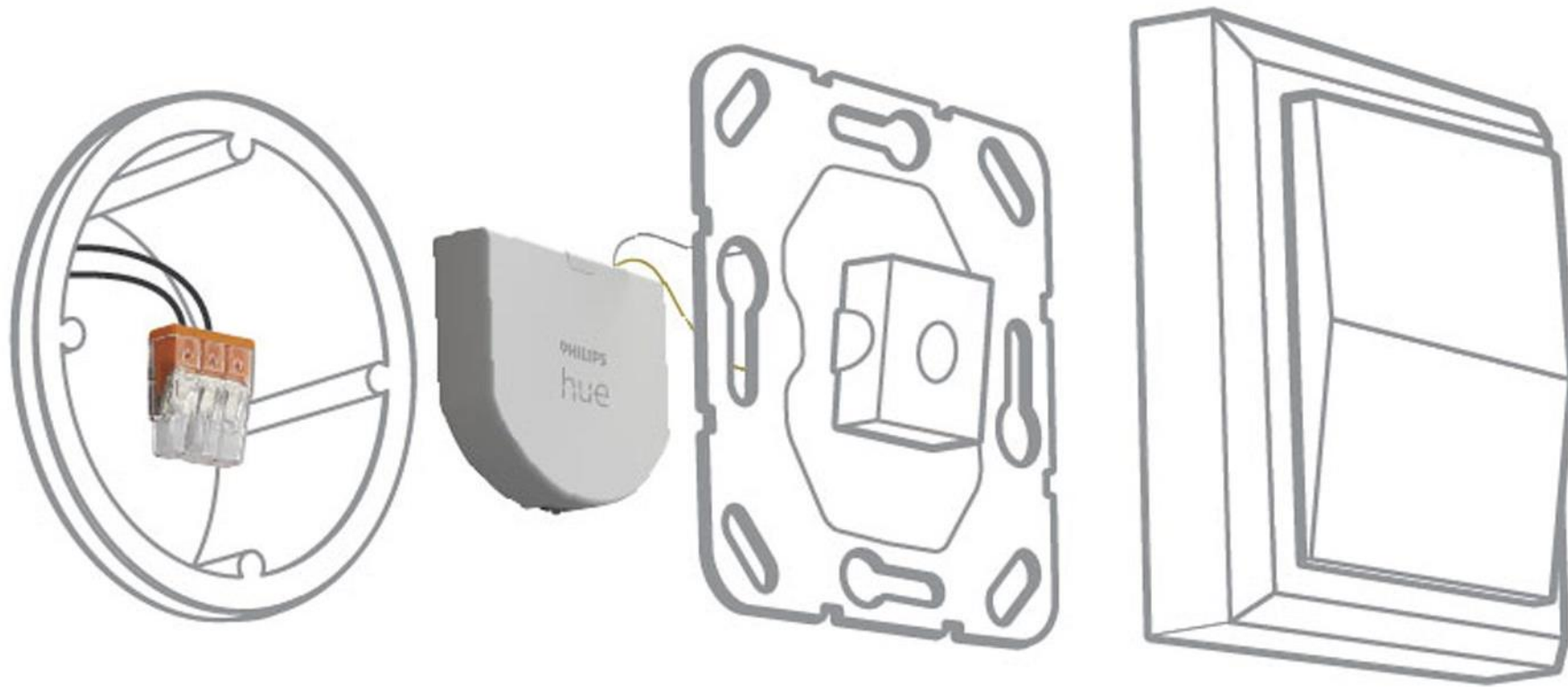
Wall switch module



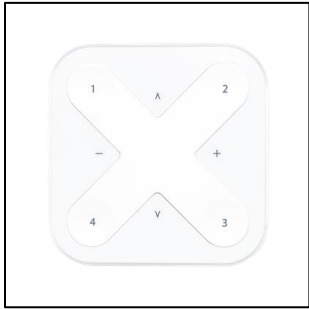
Hue dim circuit  
module



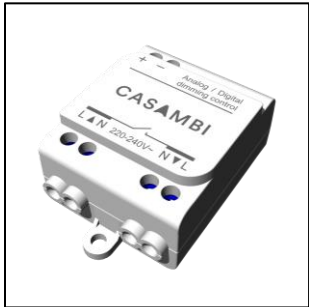
# Wall switch module



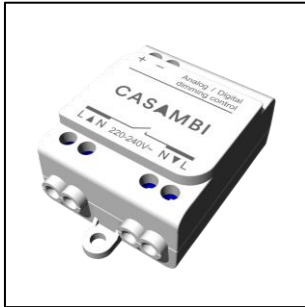
# Casambi products offered by Modular



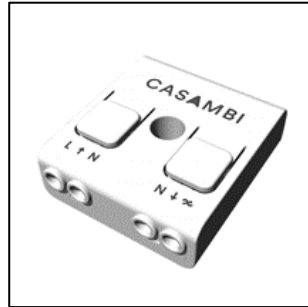
Casambi switch



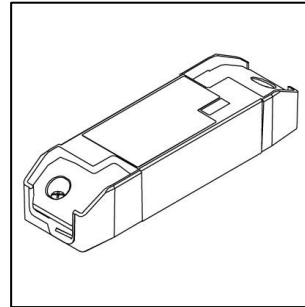
1-10V dim module



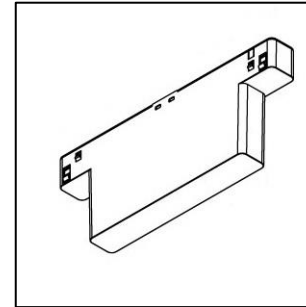
DALI dim module



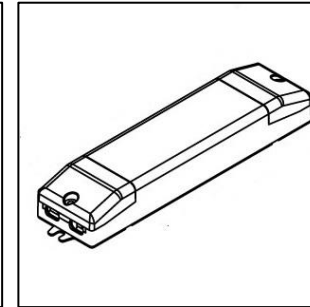
TrE dim module



Casambi driver



Track 48V dim  
module



Track 48V remote  
dim module

# Questions & Answers

# How does it work?

*Can Philips Hue Bluetooth bulbs be controlled by the Philips Hue Bridge and Philips Hue app?*

All Philips Hue Bluetooth feature ZigBee technology. So, they can also be used with the Philips Hue Bridge and Philips Hue app.

*Do ZigBee and Bluetooth Low Energy differ in response time?*

No, there shouldn't be a noticeable difference in response time between the two wireless protocols. Response time is mostly determined by the system's architecture (e.g. number of nodes, distances between the nodes..) and local circumstances (e.g. concrete or metal building materials, interference with other radio signals..).

# Smart lighting products

*Will we offer Casambi enabled 24V drivers for linear smart lighting?*

We are researching available options. Such drivers will only be added to our portfolio if they meet our quality standards.

*Can a Philips Hue wall switch module be used in combination with an existing twofold switch?*

No, a Philips Hue wall switch module is required per light circuit.



