PassivEnergy™
User Guide

The smart way to manage
your energy at home

passivenergy™

⚠ Please note, PassivEnergy must be installed by a PassivSystems™ approved professional installer.

Your Install Reference No:

Your Installer's Contact No:

Part No: PSL_UI_PUG_002.v2.1

The small print

Privacy Policy
PassivEnergy can only be installed if you have opted in to your service provider's privacy policy.

A copy of PassivSystems' Privacy Policy can be found at www.passivsystems.com/privacystatement.aspx

Retain your Installation CD
At installation, you will have been given detailed Installation Instructions on a CD for all hardware elements of your system. Please keep this somewhere safe so it can be referred to by a professional installer when undertaking future work.

Servicing
Do not attempt to service PassivEnergy yourself as opening or removing covers may expose you to dangerous voltage or hazards. Please refer all servicing to a PassivSystems qualified installer.

Open Source
Parts of this system include open source software. For full details please visit www.passivsystems.com/opensource.aspx.

Trademarks
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Contents

Hello
smart home

Welcome to PassivEnergy – the smart new way to manage energy in your home. PassivEnergy gives you greater control, greater comfort and can lower your energy bills and carbon footprint. And the best bit? We've worked hard to make it really easy to use.

The simplest way to understand how the PassivController works is to start using it. This Guide is a supplement to exploring its features.

If you don't find the answers you need here, do give your local PassivSystems qualified installer a call. Their details are stored in your Controller. Just go to MENU , MORE and ABOUT to find them.

Please note that the Controller screens in this guide may differ from the screens on your Controller. Functionality may differ slightly too. (The latest User Guide can always be found online at www.passivsystems.com).

A system designed to take care of all your energy needs

PassivEnergy can help you control your central heating and hot water. If you have them, it will also monitor the performance of your solar panels.

Our smart boiler heating and hot water service revolves around the way you live your life. In the past you may have had to guess when you needed the boiler to come on in the morning to make your home more comfortable, and battle with fiddly on/off timers for hot water. Forget all that. Just tell PassivEnergy what you're doing and we'll take care of the rest.

Our solar PV monitoring service keeps track of how much energy you are generating. If you have appointed a third party to maintain your panels, they can also view your system's performance online through PassivLiving, our secure energy system monitoring portal.

PassivController Occupancy Button

Wall mounted Occupancy Button

Occupancy

Almost everything in PassivEnergy revolves around occupancy. When using our system, your home will always be in one of four occupancy states:

In means there are people at home and that they're awake.

Asleep means everyone at home is in bed.

Out means no-one is at home for a while today.

Vacation means no-one is at home for more than one day.

All you need to do is to tell PassivEnergy when you plan to be **IN**, **ASLEEP**, **OUT**, or on **VACATION**. You can set up your home's daily or weekly schedule and PassivEnergy will take care of the rest. If you then come home early one day, or decide to have an early night, you simply tell the system by pressing the OCCUPANCY button on your Controller. If you have purchased our nifty wall-mounted Occupancy Buttons as part of your system, you can press these instead (most likely to be by your bed and/or your front door).

Choices

Once you've got the hang of **OCCUPANCY**, almost everything else in PassivEnergy is based on you making a number of simple choices. How warm do you want the house when you're **IN**? What about when you're **OUT**? If we are taking care of your hot water, how hot do you like it?

Zones

If you've got a larger house, your central heating system might be split into separate **ZONES**. This helps make your home more energy efficient, and PassivEnergy can take advantage of that – letting you set occupancy **SCHEDULES** and **TEMPERATURES** separately for each **ZONE**.

The PassivController

The PassivController is your window into PassivEnergy. You can use it to control everything the system does, just by touching the screen.

PassivController lives on a cradle that keeps its battery charged, but you can pick it up and walk around with it if you like. The batteries will last about four hours, so try to return it to the cradle when you're not using it.

We've designed it to be robust, but please let us know if you drop the controller, or if it falls into the kitchen sink. It's not waterproof!

Home screen

When you're not using the PassivController, it returns to the **HOME** screen. You can also get here by touching the ⊙.

If you have purchased our solar monitoring service, you can toggle between this screen and the Electricity generation screen.

A ⬭MENU button gets you to everything that's not on the **HOME** screen. We'll look at that on page 10.

A ⬭ZONE button (if you have **ZONES**) says which **ZONES** you're dealing with. Just touch it to look at another **ZONE** or all **ZONES** in one go.

An ⬭OCCUPANCY button lets you quickly change between **IN**, **OUT**, and **ASLEEP** (for **VACATION**, touch ⬭MENU then ⬭SCHEDULE). When you change occupancy this way, it overrides your **SCHEDULE**, and stays that way until your **SCHEDULE** specifies a different **OCCUPANCY** state (we'll talk more about the **SCHEDULE** on page 11). The **HOME** screen also lets you know when that change will happen.

A ⬭DURATION button allows you to override when the occupancy period ends: either as per your **SCHEDULE** or **ALWAYS**.

⚠1 is an alert warning with a short summary of the problem. Press this area for further details and a solution.

TEMPERATURE buttons let you quickly make it warmer or cooler (overriding your normal preferences). The large digits show the temperature the system is set to, the small digits show what it is now. The temperature you set here only lasts until your occupancy changes. If you want to change it permanently, go to the **TEMPERATURES** screen (see page 16).

If this says "heating is off" and it should not be, check your heating settings by pressing **MENU**, then **HEATING**.

If you have a monitored tank (see page 17) and we are managing your hot water for you, the hot water tank status bar lets you see how much hot water you have right now and **BOOST** the tank to heat more water should you need it. If your tank is unmonitored, the **HOME** screen lets you see when you last heated hot water.

Menu

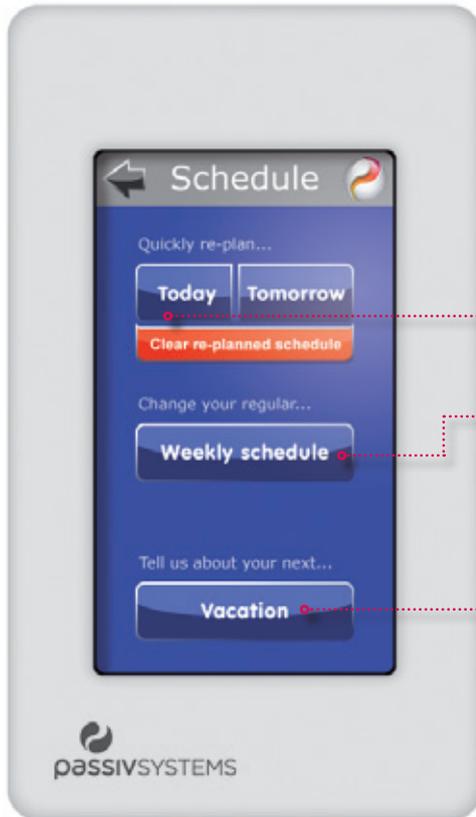If you touch the MENU button on the **HOME** screen, you'll come here.

To go back, you can either touch the ☯ which always takes you straight **HOME**, or touch the BACK arrow which takes you back just one step.

The MENU is your way into all the different things PassivEnergy can do. Each function has a large button.

Different versions of PassivEnergy have different capabilities, so you might see a different set of buttons, but the basic features should be the same.

Because PassivEnergy has more functions than can fit on one screen, The MORE button takes you to a second set of buttons.

Schedule

Almost everything in PassivEnergy revolves around the **OCCUPANCY** of your home, (**IN**, **OUT**, **ASLEEP**, **VACATION**). **OCCUPANCY** tells PassivEnergy what to do at any time, whether it's the heating, hot water, or anything else.
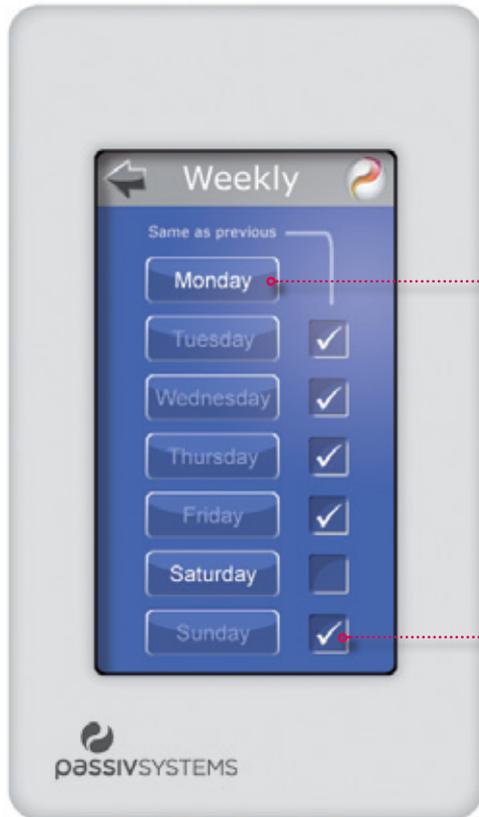
You can set up a weekly **SCHEDULE** to tell PassivEnergy about your regular pattern of **OCCUPANCY** (when your home is normally occupied, when it'll be empty, and when you'll be asleep).

You can also tell PassivEnergy about one-off exceptions to your regular **SCHEDULE**. If you do this, the orange button appears to let you cancel the change, or you can leave it to return to the regular **SCHEDULE** by itself.

Finally, you can tell PassivEnergy about the next time you'll leave the house vacant. This will override your regular **WEEKLY SCHEDULE**, setting the house to **VACATION** for the whole time you're away.

Note: If you've got more than one **ZONE** in your home, you'll be asked which **ZONE** you want to create or change the schedule for. If your whole home is managed as one, you'll go straight through to the next screens.

Weekly schedule

PassivEnergy understands your life's weekly* pattern. To tell it how you live, touch (MENU) then (SCHEDULE).
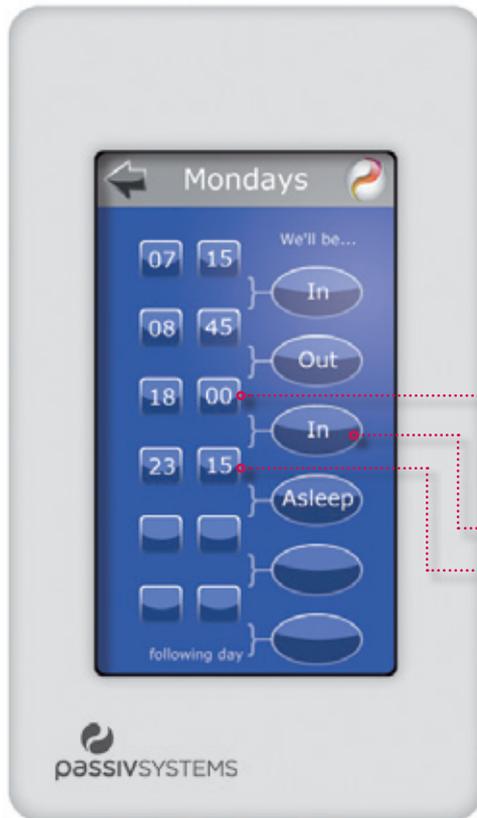
You can set a different **SCHEDULE** for each day. Just touch the button.

You can tell PassivEnergy that a day has the same **SCHEDULE** as the one before by ticking the "Same as previous" ✓ .

If you look carefully at the example, you'll see that this home runs the same way Monday to Friday, then a different way at the weekend. This means that only Monday and Saturday have **SCHEDULES** set. Tuesday to Friday are the same as Monday, and Sunday is the same as Saturday.

*If you're a shift worker, or someone whose life follows a pattern that's not weekly, later versions of PassivEnergy will let you explain your more complex schedule to the system.

Daily schedule

If you choose a day from the **WEEKLY SCHEDULE**, you can tell PassivEnergy what you normally do on that day. You can set up to six periods a day.

Just touch the buttons to tell the system...

• when each period starts.

• what **OCCUPANCY** state the house will be in.

• when that period finishes (and the next one starts).

In the example, the family gets up at 07:15, leaves for school/work at 08:45, comes home at 18:00, and then goes to bed at 23:15. If your life is more complex than this, you can use the additional blank spaces to tell PassivEnergy about further daily events.

Remember that PassivEnergy controls your heating automatically, so these are not your boiler on/off times. These are the times you plan to wake up, go out, and so on. If you've set your preferred temperatures, we'll do the rest.

Vacation

If you plan to take a holiday and will leave your house vacant, you can tell PassivEnergy about your **VACATION** up to a year in advance.

Just set the time and date when your break starts, and the time and date you expect to return. PassivEnergy will work out the year(s) automatically.

When your planned **VACATION** starts, PassivEnergy will simply put your house into the **VACATION** state, overriding your regular **SCHEDULE**. If necessary it will heat the house to your preferred temperature for vacations, and adjust anything else you've set for that state.

When your **VACATION** ends, PassivEnergy will resume your regular **SCHEDULE** by advancing to the next **IN** period. If you come home early, touch the OCCUPANCY button on the **HOME** screen to get to this screen and then touch CANCEL VACATION . Your regular **SCHEDULE** will resume immediately.

Heating

This is where you control how PassivEnergy manages your heating. Don't forget that PassivEnergy runs your heating according to your **OCCUPANCY**, so if you want to control the times your heating is on, you should touch (MENU) then (SCHEDULE) instead.

You can decide whether you want PassivEnergy to control your heating automatically, or whether you want to turn it completely off. You may prefer to do this in summer if you definitely don't want any heating. When you do this, the message "Heating is Off" will be displayed on the home page.

If you set your heating to **AUTOMATIC**, PassivEnergy will control it according to the **OCCUPANCY** of your home. If you change your **OCCUPANCY** state, your heating will follow.

You can touch (TEMPERATURES) to say how warm you want your home to be in each of the four different states: **IN**, **OUT**, **ASLEEP**, **VACATION**.

If it needs to, PassivEnergy will fire your boiler before an occupancy. You can limit how early it does that here, if you prefer.

Temperatures

To tell PassivEnergy how warm you normally like to be, touch MENU , then HEATING , then TEMPERATURES .

You can choose your normal preferred temperature for each of the different **OCCUPANCY** states: **IN**, **OUT**, **ASLEEP**, **VACATION**.

Just touch the OCCUPANCY button to tell PassivEnergy which state you mean.

Then choose a temperature* by touching the + and − buttons. PassivEnergy will now heat your house to that temperature whenever you're **IN** (or **OUT**, or **ASLEEP**, or on **VACATION** as appropriate).

Remember, these are your normal preferences. If you want to temporarily change the current temperature, do it from the **HOME** screen.

* In case of frost, we suggest you set each temperature to at least 6°C
and set the heating to **AUTOMATIC** in the winter time.

Hot water

If you have purchased our hot water service, PassivEnergy will look after your hot water automatically.

Depending on the type of tank you have, you will either have a monitored hot water service (see Monitored Tank) or an unmonitored hot water service (see Unmonitored Tank).

There's no need to set a **SCHEDULE** like you may have done with your old hot water. PassivEnergy heats your hot water automatically for when you are **IN**.

Monitored tank

If we have placed sensors on your tank, we can measure its temperature closely. You can tell your system how hot you want your water.

You can also ask PassivEnergy to ignore your temperature request at certain times in the day. So, if you have solar hot water heating for example, you may ask PassivEnergy not to heat the tank in daylight hours, ensuring that you get all you can from solar before using fossil fuel.

Your **HOME** screen also tells you how much hot water you have right now so if you need an immediate **BOOST**, you can heat your tank at a touch of a button. You can also turn your hot water off entirely if you prefer (some people like to do this in the summer), in which case the system will only heat your hot water when you request a **BOOST** on the **HOME** screen.

Please note that, to keep your hot water healthy, we advise that your cylinder thermostat is set to at least 60°C and that you set your tank temperature to at least 60°C too.

Hot water

Unmonitored tank

If your tank isn't being monitored by us, it is because it is well insulated so your water, once heated, stays hotter for longer. Instead of inviting you to set preferred temperatures, the system simply asks you the maximum time you want your water heated for, and how much before your **IN** period you would like the system to start heating your water.

You can ask the system not to heat the hot water during a certain period in the day. So, if you have solar hot water heating for example, you may ask PassivEnergy not to heat the tank in daylight hours, ensuring that you get all you can from solar before using fossil fuel.

You can also turn hot water off entirely if you want to (some people like to do this in the summer), in which case the system will only heat your hot water when you request a BOOST on the **HOME** screen of the controller.

Please note that, to keep your hot water healthy, we advise that your cylinder thermostat is set to at least 60°C.

Solar PV system monitoring

You may also be using your PassivController to monitor your solar PV system's generation.

If you have subscribed to our solar PV monitoring service, simply click on the ⬯ button on your **HOME** screen to see how much energy your panels are generating right now and how much they have generated so far today.

Remember, further insight into your system's performance can also be found online at **www.passivliving.com**.

Additional detail

Messaging and alerts

PassivEnergy will sometimes show you messages and alerts about various things that might be happening, but they're designed to explain themselves.

Tailored to you

The PassivController is designed to put you in control. If you want to tailor the way the Controller behaves and displays information, tap the MENU button on the **HOME** screen, then MORE , then select PREFERENCES .

Installer support

We have also made it easy to find your local PassivSystems qualified installer.

If you have a query or want to know what else PassivEnergy can do for you, you can find their details by going to the **HOME** screen, selecting MENU , MORE , then ABOUT .

Control in the palm of your hand

...wherever you are

Away from home? The PassivEnergy iPhone app lets you control your heating (and soon, if you subscribe to the service, your hot water too) wherever you are.

The PassivEnergy iPhone app lets you remotely:

- Check and change the temperature of your home.
- Alter your PassivEnergy Occupancy schedule.
- Check, set and change vacation settings.
- Track how warm it is at home.

Please note that your home internet connection must be up and the PassivHub on for the PassivEnergy iPhone app to work.

If you haven't subscribed already visit our iPhone information page: **www.passivsystems.com/Homes/Services/RemoteControl.aspx** or talk to your PassivEnergy installer or service provider.
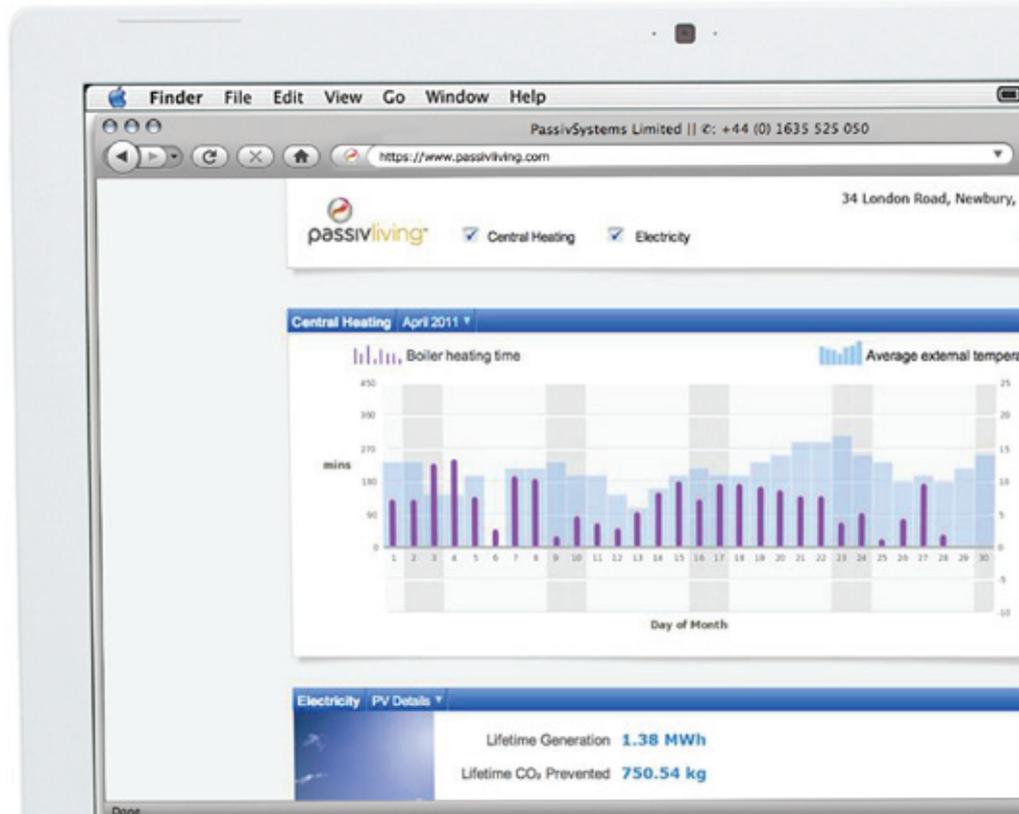
Your home's heartbeat on line

Introducing PassivLiving

PassivLiving is a secure portal that lets you view your home's heating and solar PV generation online. Depending on who installed your system and the level of service they are providing, you may have given third parties permission to view your systems via PassivLiving too. As our service develops we will be able to provide more refined remote diagnostic insight that could identify any faults in your heating, hot water or solar PV systems before they become expensive nightmares. We also hope to be able to give you tailored feedback on the way you use energy in the home so you can further cut down on unnecessary waste.
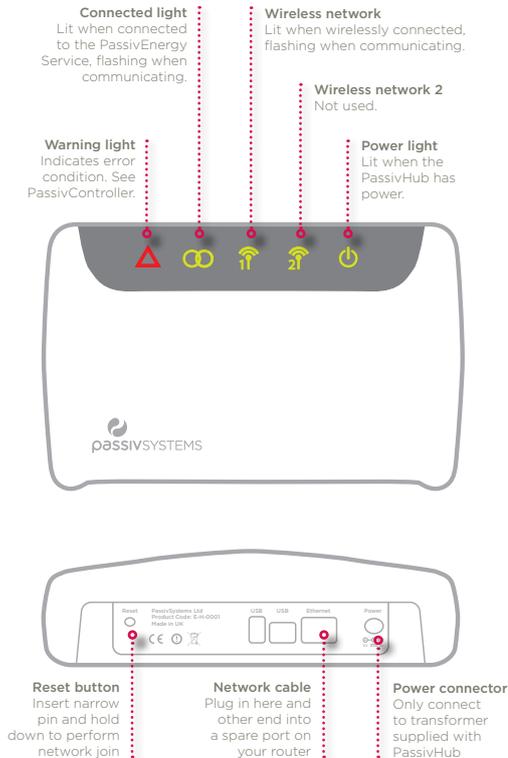
To set up your PassivLiving account simply visit: **www.passivliving.com**. Please note, you will need your unique Homekey reference to hand when you register. This will be sent to you by us as soon as your installer activates your PassivEnergy system. If you do not receive the email, please check your junk mail folder – we may slip into there if you have certain filters set. If you still can't find it, please drop us a line at: **support@passivsystems.com**.

Image displays Smart Boiler Heating Control Service and Essential Solar PV Monitoring

Getting to know your PassivHub

Connected light
Lit when connected to the PassivEnergy Service, flashing when communicating.

Wireless network
Lit when wirelessly connected, flashing when communicating.

Wireless network 2
Not used.

Warning light
Indicates error condition. See PassivController.

Power light
Lit when the PassivHub has power.

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Reset button
Insert narrow pin and hold down to perform network join

Network cable
Plug in here and other end into a spare port on your router

Power connector
Only connect to transformer supplied with PassivHub

Reset   PassivSystems Ltd
Product Code: E-H-0001
Made in UK
USB   USB   Ethernet   Power

PasssivHub is the heart and local brains of the PassivEnergy system. All other components of the system communicate wirelessly with PassivHub.

PassivHub requires a broadband connection for hourly weather feeds, software upgrades and to allow you operate your system remotely using the PassivEnergy iPhone app. We strongly recommend that PassivHub is left connected to your broadband router, and that your broadband router is left on. This will allow your hub to continually optimise your heating.

Notes: Loss of power/internet connection

1. Your PassivHub needs to be left plugged into a mains socket with the power turned on.

2. Your PassivHub will resume its normal operation as soon power is re-established.

3. Your PassivHub will operate without an internet connection, however compensation for external weather conditions, and remote access will be lost until the internet connection is re-established.

Version 1

Version 2

1. Top cover:
   Transparent strip
   is vanity cover.
2. Negative Battery
   terminal
3. Positive Battery
   terminal
4. EUID information
   label

Getting to know your Temperature Sensors

The temperature sensor is part of the PassivEnergy system and provides accurate temperature readings to ensure efficient control of your central heating.

Operation

The temperature sensor should be installed on an internal wall approximately 1.5 meters above floor level and should be in a position away from draughts, direct heat and sunlight. The two temperature sensors pictured are both currently used by PassivSystems.
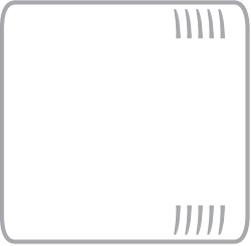
Changing the batteries

(Estimated battery life is 2 years).

Version 1

- Carefully remove the back cover of the sensor.
- Install the two AA batteries, being careful to observe the correct polarity.
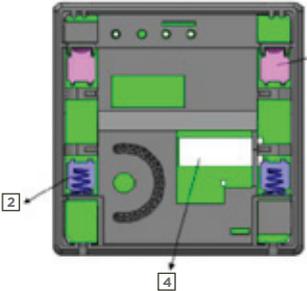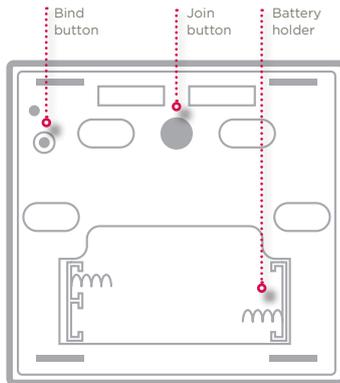- Replace the cover.

Version 2

- Undo the two retaining screws at the base of the wall plate.
- The temperature sensor should now be easily removed.
- Replace the two non-rechargeable AAA batteries, being careful to observe the correct polarity.
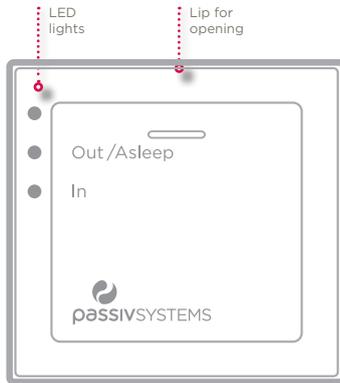- Replace the temperature sensor on the wall plate and tighten the screws.

LED lights — Lip for opening

Out /Asleep

In

passivSYSTEMS

Bind button — Join button — Battery holder

Getting to know your Occupancy Buttons

The Occupancy Button is part of the PassivEnergy system and provides you a convenient means to quickly change between two different system occupancy states.
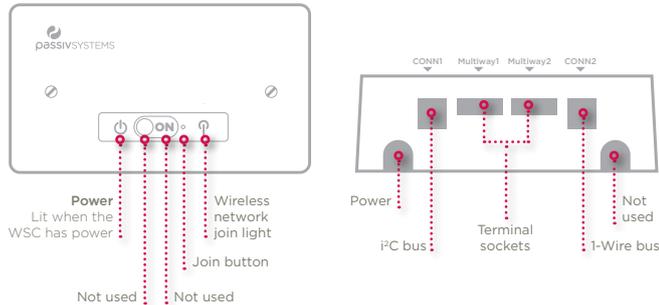
Operation

Occupancy buttons come in two variants: **IN/OUT** and **IN/ASLEEP**. Pressing the button switches the occupancy state, and the LED goes Green or Amber to indicate the new state.

LED lights	In/Out	In/Asleep
Green (energy saving)	You have selected **OUT**	You have selected **ASLEEP**
Amber (comfort)	You have selected **IN**	You have selected **IN**

Changing the batteries
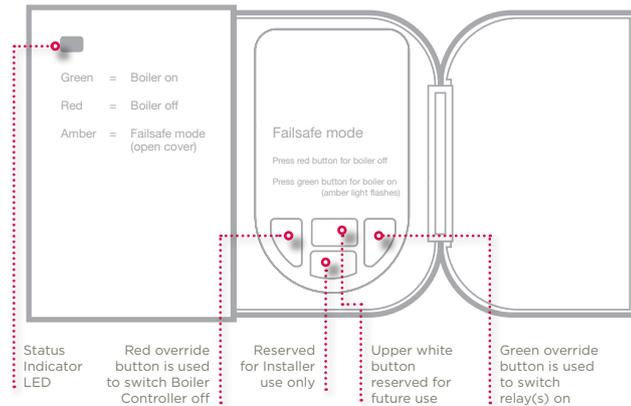
The Occupancy Button is powered by 2 AAA batteries.

• Use a thin screwdriver to flip off the front cover using the lip at the top of the button.

• Take care not to press either the Bind or the Join buttons when the cover is off.

• Remove both old batteries and replace with two new ones.

• Clip the front cover back into place.

Power
Lit when the
WSC has power

Wireless
network
join light

Join button

Not used   Not used

Power

i²C bus

Terminal
sockets

Not
used

1-Wire bus

Getting to know your Hot Water Controller

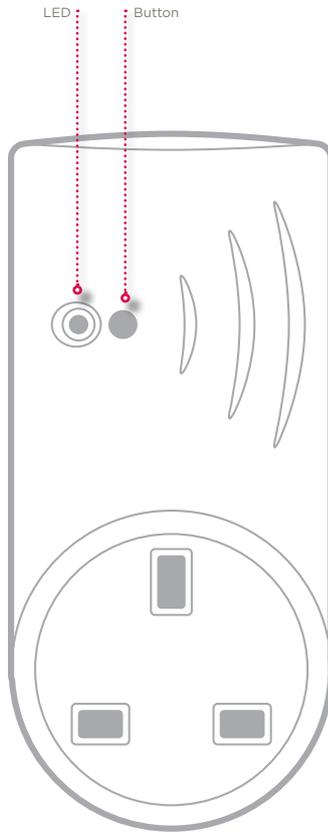Our Hot Water Controller allows PassivEnergy sensors to wirelessly connect to PassivHub.

Note: Installation and connection of this product should only be carried out by a suitably qualified person.

Green   =   Boiler on

Red   =   Boiler off

Amber   =   Failsafe mode
(open cover)

Failsafe mode

Press red button for boiler off

Press green button for boiler on
(amber light flashes)

Status
Indicator
LED

Red override
button is used
to switch Boiler
Controller off

Reserved
for Installer
use only

Upper white
button
reserved for
future use

Green override
button is used
to switch
relay(s) on

PLEASE NOTE The red and green override buttons on the receiver will only operate in failsafe mode. In normal operation pressing these buttons will have no effect.

Getting to know your Boiler Controller

Our Boiler Controller lets PassivEnergy intelligently control your boiler. It can be hard wired to a combi or a conventional boiler and is wirelessly controlled from PassivHub. The Boiler Controller comes in two variants: a 2 relay version (240V mains) and a 1 relay version (volt free).

LED   Button

Getting to know your Smart Plug

The Smart Plug acts as a Repeater in the ZigBee network of devices in your Home Area Network. This enables PassivHub to be able to communicate with more distant devices in the home.

In addition, it allows the amount of electricity being used by the socket into which the Smart Plug is plugged to be monitored by PassivEnergy. In the future this will be published in the PassivLiving portal.

The button also offers on/off functionality for the device plugged in. In the future, PassivSystems will offer sophisticated control functionality that could allow the electricity generated by your solar PV installation to be used by your appliances at an appropriate time.

A word
about tomorrow

PassivEnergy is a constantly evolving system.
Here is just a taster of what we are working on now:

Standby Control

Did you know that products on standby account for up to 8% of energy consumption within the home? Soon we will be offering special Standby power strips that can save energy from products with a standby mode (for example, TVs and PCs). Simply plug the electric appliances you want to control into the strips and PassivEnergy will manage them based on whether you are **IN**, **OUT**, **ASLEEP** or on **VACATION**.

Renewable energy sources in the home

We already monitor solar PV system performance for many of our customers. Soon we will be able to take care of air-source and ground-source heat pumps too. The government's Renewable Heat Incentive scheme launches in 2012. We will be on hand to ensure that the systems you install work as they should and integrate seamlessly with your existing heating and hot water systems.

To find out more, visit us at **www.passivsystems.com**

Thank you

You should find your Controller simple to understand and navigate. Remember, if you get stuck, just touch the ⟳ and start again. And if you get really stuck, call your local installer. Their contact details can be found if you go to ⬭ ABOUT ⬭ on your Controller's **MENU** screen.

We hope that PassivEnergy makes managing energy in your home easy. We hope it gives you a better sense of control. And we'd be really happy to know that it had made a difference to your home's carbon footprint and energy bills. If you have any feedback you'd like to share, we'd love to hear from you. Drop us a line at **tellus@passivsystems.com** and we'll get back to you.

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