Lightwave RF Glow

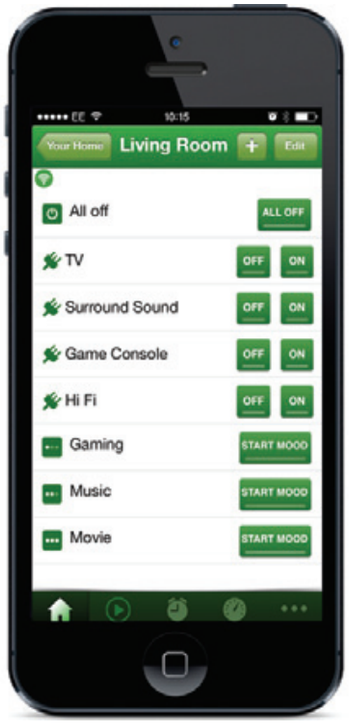
Version 2.3

Dimmer Switch (1 Gang)

Model No. LW400

Instruction Manual





Connect Series

www.lightwaverf.house

EC DECLARATION OF CONFORMITY

Responsible Authority:

LightwaveRF PLC,
Innovation Campus Birmingham
Faraday Wharf
Holt Street
Birmingham
B7 4BB

Tel: +44 (0)121 250 3625
Email: enquiries@lightwaverf.com

Model Number(s):	JSJSLW400
Description:	Dimmer Switch
Directives this equipment Complies with:	2006/95/EC The Low Voltage Directive N/A 2004/108/EEC The Electromagnetic Compatibility Directive 1999/5/EC R&TTE Directive 93/68/EEC CE Marking Directive

Standards Applied in order to verify compliance

Safety: BS EN 60730-1: 2011

Health:
R&TTE: EN 301 489-1 V1.9.2: (2011-09), EN 301 489-3 V1.4.1: (2002-08)
EN 300 220-1 V2.1.1: 2006, EN 300 220-2 V2.1.2: 2007
EMC: EN 301 489-1 V1.9.2: (2011-09), EN 301 489-3 V1.4.1: (2002-08),
EN 55022: 2010, EN 61000-3-2: 2006 +A1: 2009 +A2: 2009 Class A,
EN 61000-3-3: 2008, EN61000-4-2: 2009,
EN 61000-4-3: 2006 +A1: 2008 +A2: 2010, EN 61000-4-4: 2012,
EN 61000-4-5: 2006, EN 61000-4-6: 2009, EN 61000-4-11: 2004

For and on behalf of LightwaveRF PLC

Name J Shermer
Position Managing Director



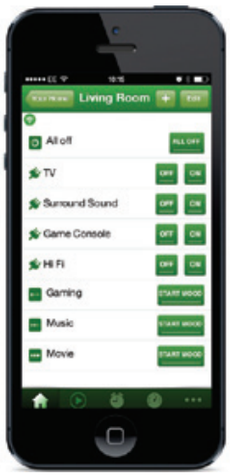
How do I get started?

Please refer to the following installation and setup instructions. This will guide you, step by step, through the installation and setup process.



What do I need?

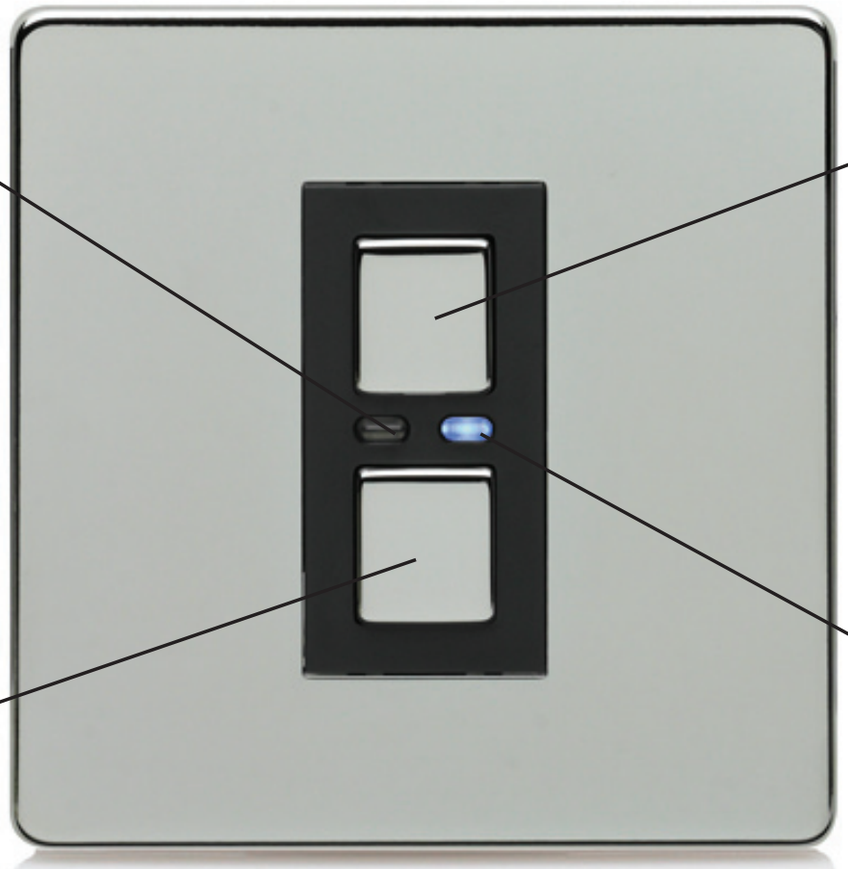
To install the dimmer, you will need to remove and replace the existing lightswitch. This is usually straightforward, but you must ensure that there is a suitably deep housing (backbox) and understand how to safely turn off the electricity supply. You will also need suitable electrical screwdrivers.



Help video & further guidance

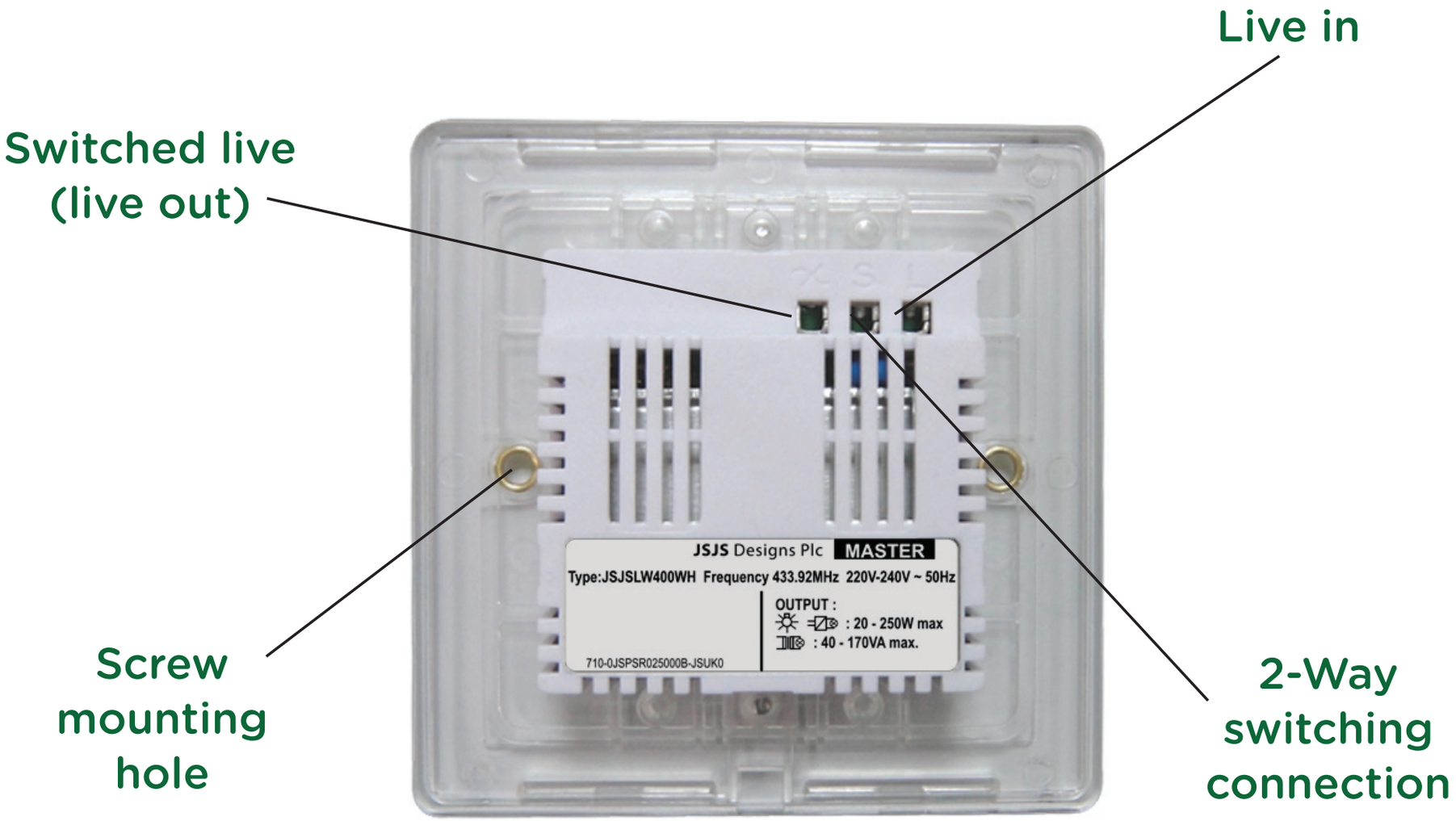
For additional guidance, and to watch a video that will help guide you through the installation process, please visit the support section on **www.lightwaverf.com**

Overview



IMPORTANT: All LightwaveRF products can be legally DIY installed in your own home; however, if in doubt, always consult a qualified electrician or heating engineer. It is important to install this product in accordance with the following instructions. Failure to do so may void your warranty.

Lightwave RF



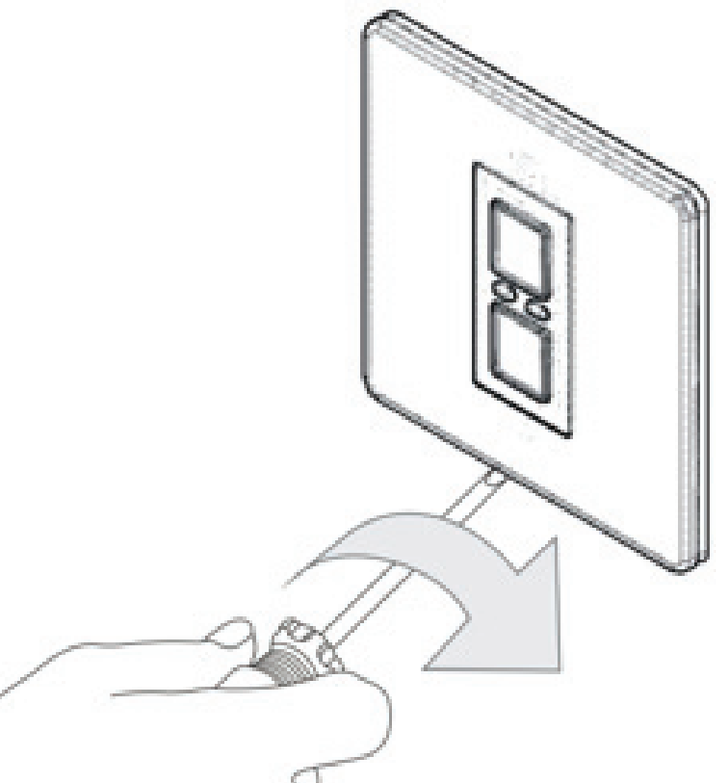
IMPORTANT: If conducting an insulation resistance test, all LightwaveRF products **must** be disconnected from the mains, or damage will occur.

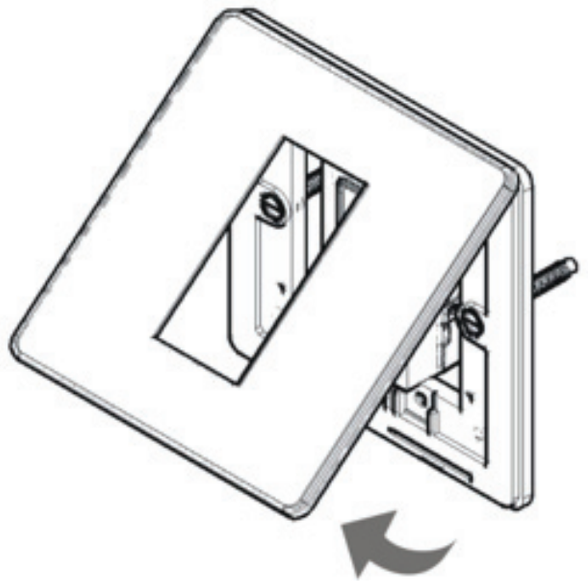
1. IMPORTANT: Turn off the mains electrical supply.

2. Ensure that the wall (back) box has a minimum depth of 35mm.

3. Remove and disconnect the existing lightswitch (if applicable). It may be useful at this point to mark out or take a photograph of the connections to the existing switch so that the correct wires can easily be transferred to the new dimmer. Some existing wiring configurations can be complex so take care.

4. Gently remove the dimmer faceplate by inserting a screwdriver into one of the bottom slots and lifting away from the unit as shown.



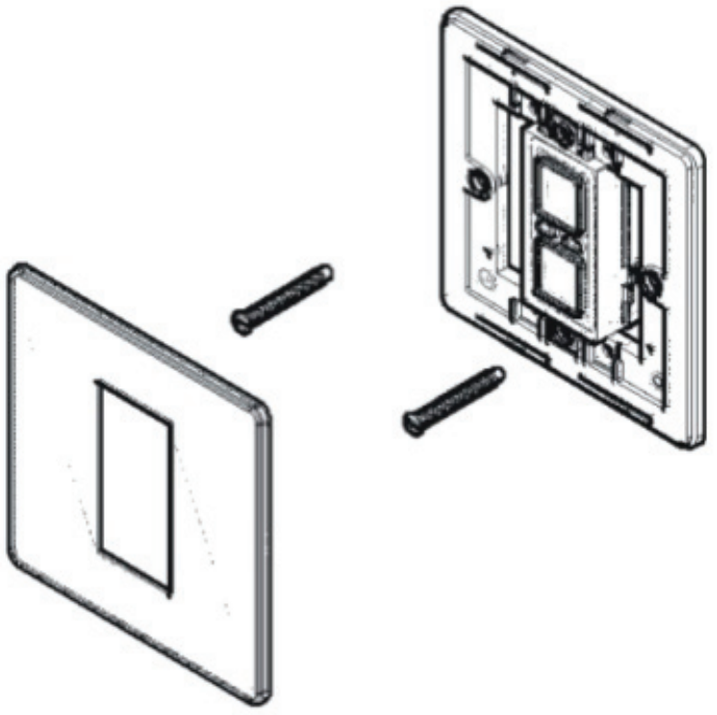


5. Connect the wiring as per the wiring diagram on the following page. Ensure that the terminals are properly tightened and that no bare wire is visible. Be aware that existing wiring circuits are not always correctly coloured, and that there may be other wired connections present in the back box; if in doubt, always seek the advice of a qualified electrician.

NOTE: LightwaveRF dimmers do **NOT** require a mains neutral wire to be connected; they only require 'live in' and 'switched live out'.

6. Any earth wires present must be attached either to the earth terminal located in the back box or capped with a strip connector. The dimmers are double insulated so are not required to be earthed directly.

7. Screw the dimmer switch to the mounting box and ensure that the screws are sufficiently tight to support the product, but do not over tighten as this may cause the chassis to bend. Ensure that the plastic spacer is correctly aligned and that no wires are trapped between the dimmer switch and the back box.

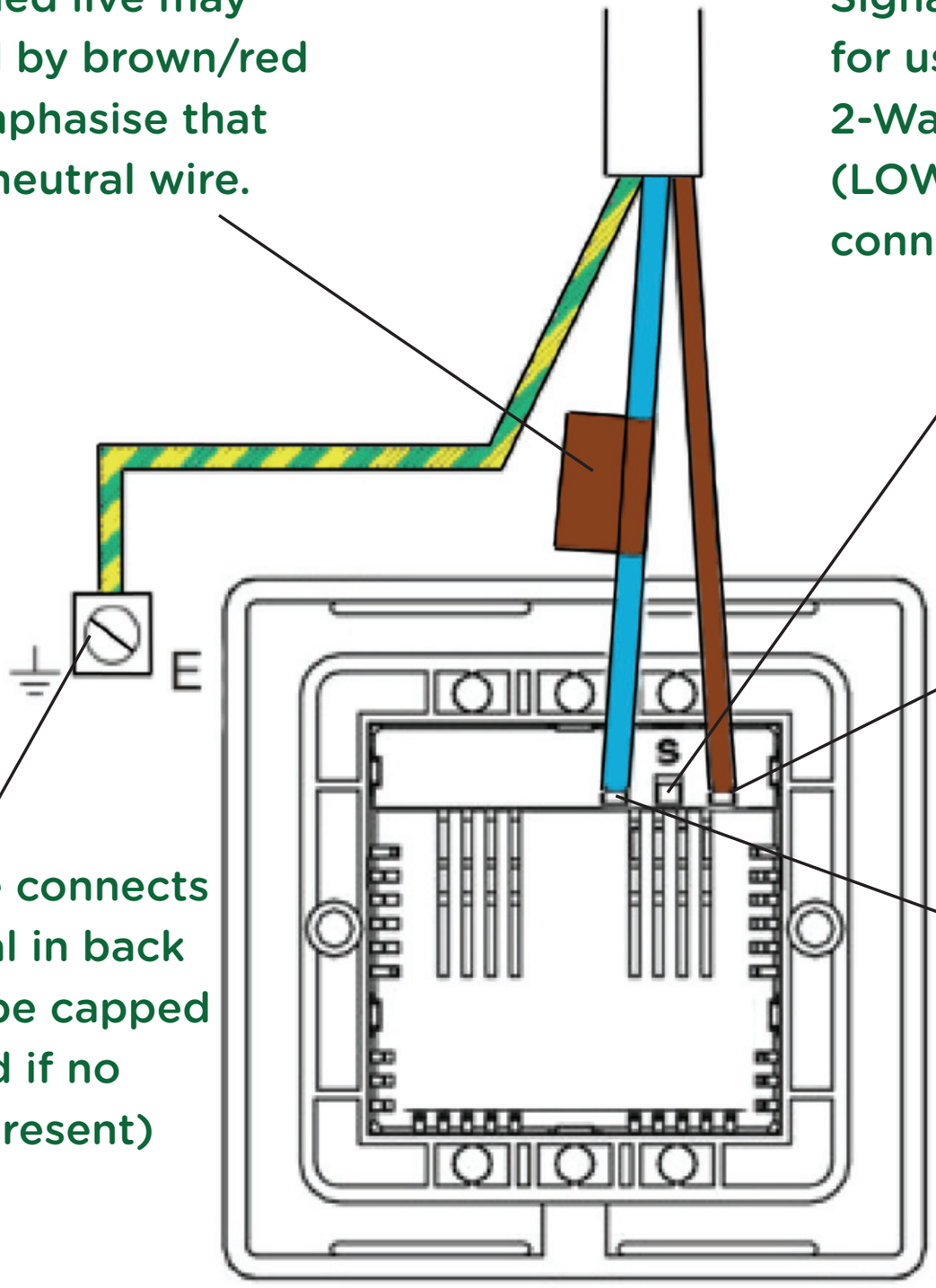


Installation

The switched live may be marked by brown/red tape to emphasise that it is not a neutral wire.

Signal cable connection for use with LightwaveRF 2-Way Dimmer only (LOW VOLTAGE: Do not connect to live mains!)

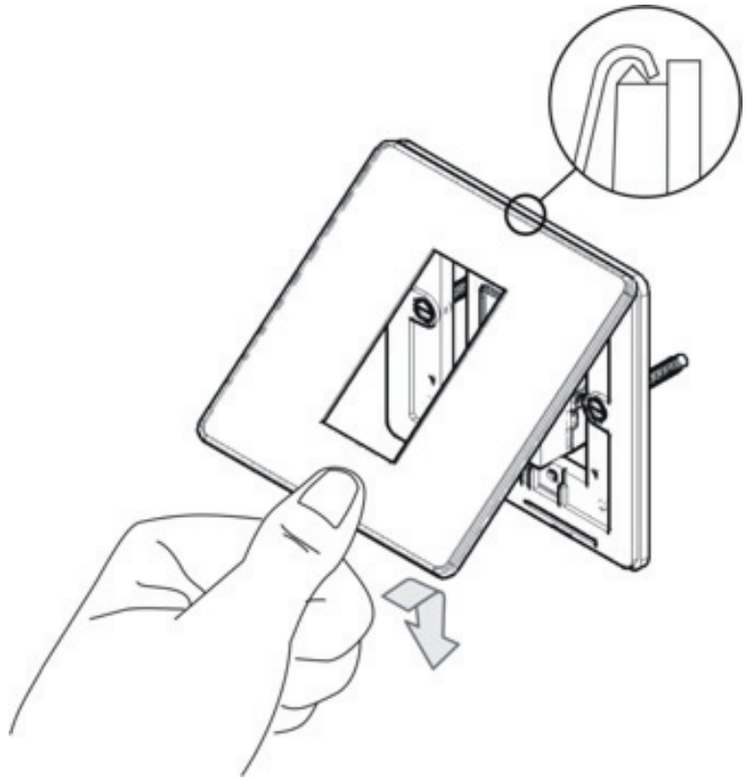
Live wire In. This should be brown or red in colour.



Earth wire connects to terminal in back box (can be capped off instead if no terminal present)

Switched live Wire Out. This should be blue or black in colour.

8. Replace the plate – a ‘click’ sound should be heard to signify that the plate has been correctly replaced.



Important things to consider

• In a multigang dimmer, to be able to operate any gang, mains electricity must always be connected to **all** of the dimmer terminals.

• It is recommended that LightwaveRF devices be positioned at least 30cm apart in order to prevent the risk of any radio conflict that could disrupt remote operation.

• Suitable lamps must be used with the dimmer or it will not function correctly. See next section for compatibility information.

Connecting to a 2-Way Dimmer

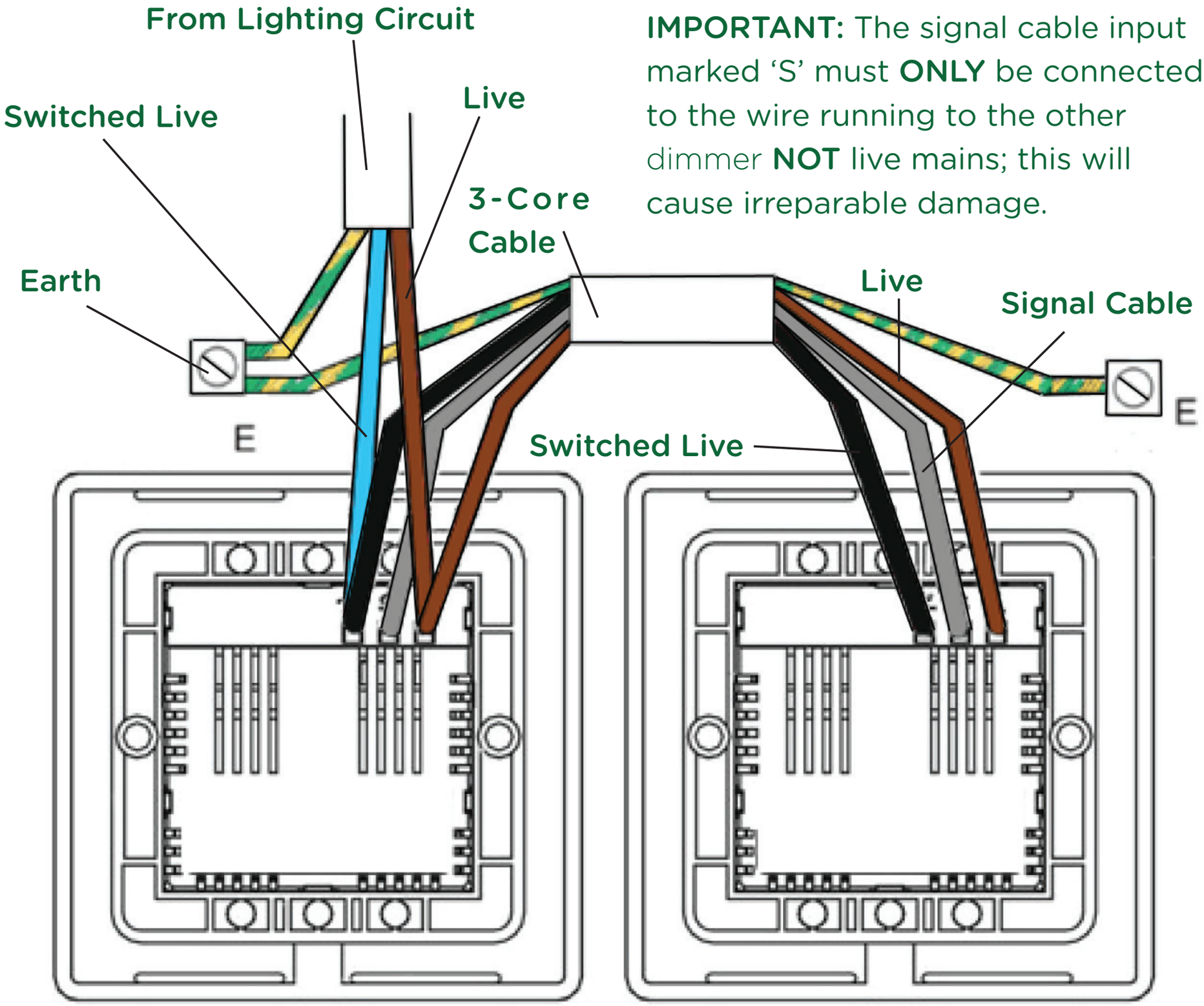
• Any LightwaveRF dimmer switch (and any gang in a multigang dimmer) can be used in conjunction with a LightwaveRF 2-way dimmer to perform 2-way switching. **For full instructions on how to install a 2-way dimmer, please consult the instruction booklet for the 2-way dimmer.**

Important: The dimmer **must** be used with a LightwaveRF 2-way dimmer and cannot be used with another LightwaveRF dimmer or a standard light switch. This will cause damage to the dimmer.

• Up to six 2-way dimmers (six gangs) can be connected to a standard LightwaveRF dimmer switch. Each 2-way can be connected directly to the standard dimmer, or connected to each other in a 'daisy-chain'. This provides an alternative to using intermediate switches (maximum cable length of 100m)

• The 2-way dimmers use standard 3-core connecting wires; however, because they are electronic dimmers, they utilise one of the cores as a signal cable ('S') running between the dimmers (as shown on the diagram). This is low voltage only and should not be connected to 230V mains.

Important: Never install and run power to a LightwaveRF 2-way dimmer switch before first installing and connecting the counterpart standard LightwaveRF dimmer. Serious damage could be caused to the unit.



IMPORTANT: The signal cable input marked ‘S’ must **ONLY** be connected to the wire running to the other dimmer **NOT** live mains; this will cause irreparable damage.

Compatibility

Ensuring the compatibility of your lamps (bulbs) with LightwaveRF Dimmers will ensure that you get the best experience from your lighting setup.

LightwaveRF dimmers are compatible with the following:

- Selected dimmable LED lamps (see www.lightwaverf.house for further guidance and information).
- Standard mains voltage incandescent & low energy incandescent lighting (min 20W, max 250W)
- GU10 and equivalent HI spot mains halogen lamps
- Dimmable electronic low voltage transformers (20W - 250W max.)
- Inductive transformers (40 – 170VA max.)

LightwaveRF dimmers are NOT compatible with the following:

- Wirewound transformers (generally older style)
- Electric motors
- Non dimmable LEDs
- CFLs
- CFL tube arrays

Adjusting the dimming range

On initial setup, LightwaveRF Dimmers are pre-programmed to allow a moderate range of dimming for any connected lamps. If desired, this range can be extended by following the instructions below.

The reason for allowing modifications to the dimming range is to maximise compatibility with dimmable LED lamps (bulbs). In some cases, LED lamps may flicker slightly at high or low brightness levels, especially if there is only a modest overall circuit load (under 10W). Stability can be achieved by a very slight adjustment to the dimming range of the LightwaveRF Dimmer.

The default setting (smallest dimming range) is the most stable for LEDs. If the LEDs perform normally at this setting (most cases), then the range can be increased (if desired) using the following method.

1. On the dimmer switch, press and hold down **both** the 'on' and 'off' buttons until the blue and amber LEDs flash alternately then release them. The dimmer switch is now in **linking mode**.



2. Tap the (top) ‘on’ button twice to enter Dimming Range Setup. The blue LED will flash to indicate that the setup menu has been accessed. The dimmer will automatically turn on at a high level of brightness. This indicates that the smallest (most stable) dimming range is currently selected.



Dimming Range Setup allows the dimmer’s range to be adjusted to one of five presets. If the dimmable LED lamps on the circuit perform properly at the initial setting (smallest range), then the range can be increased, one stage at a time, until flickering (if any) is observed. The optimum setting is the one which provides the greatest dimming range without any flicker.

3. Tap the ‘off’ button to gradually increase the dimming range (indicated by the incremental decrease in lamp light level). Keep going until flicker is observed. At this point, return to the previous stable increment (optimum level) by pressing the ‘on’ button.



4. Once the optimum level has been achieved, save the setting and leave setup by holding the on & off buttons until the blue LED flashes quickly.

Important things to consider

• Wattage ratings for the dimmers are **per gang**. This means that a total load of 250W (incandescent) can be put on each circuit connected to each gang.

• LightwaveRF dimmers utilise a tiny amount of power to drive the electronics that operate the RF radio and dimming components. As a result, it is normal to experience a 5-10% reduction in light output when using incandescent lamps (bulbs). In the vast majority of cases, this should not be noticeable as the drop is very small.

• **ONLY** dimmable lamps can be used even if the dimmers are used solely to switch between the on and off states without dimming. This is because the technology used in an electronic dimmer is fundamentally different to that of a simple on/off switch and requires compatible lamp technology.

• Electronic transformers can be used **only** if they are dimmable. Please check carefully that the loading and lamp compatibility is appropriate.

Manual operation

Manual dimming



• Tap the ‘on’ (top) button once to switch the dimmer on (blue LED indicator will illuminate). Press and hold the ‘on’ button to raise the light level.



• Tap the ‘off’ (bottom) button once to switch the dimmer off (amber LED indicator will illuminate). Press and hold to lower the light level.

NOTE: When the ‘on’ button is tapped to turn on the dimmer, the light level will return to that at which it was last at before the dimmer was turned off. The ‘on’ or ‘off’ buttons can then be pressed and held to customise the light level.

Linking the dimmers to the App or a remote

NOTE: This procedure also applies to other LightwaveRF controllers (e.g. Handheld Remote or Mood Controller) which can be linked to the dimmers.

LightwaveRF dimmers each have **6 unique memory slots** which means they can link with up to 6 LightwaveRF controllers in total. If you are using a smartphone/tablet/PC to control the dimmer via the Lightwave Link, this will always count as **ONE** controller and take up one memory slot even if you are using multiple smartphones/tablets.



1. On the dimmer switch, press and hold down **both** the 'on' and 'off' buttons until the blue and amber LEDs flash alternately then release them. The dimmer switch is now in **linking mode**.



2. Using the LightwaveRF App, press the 'connect' button (the App instructions will guide you through this). If using another controller, press the button that you intend to link. The blue light on the dimmer switch will flash to confirm that the App is now linked.

NOTE: Linking mode lasts for 12 seconds; if no signal is received from a remote handset during this time then the dimmer will automatically exit learning mode without linking the device.

If, when expecting a blue LED flash to confirm pairing, a slow amber LED flash is received instead, the dimmer switch memory is FULL and no further remotes may be linked with it unless one of the existing remotes is first unpaired (see below).

Unlinking controllers



Removing a single device:

1. On the dimmer switch, press and hold down **both** the 'off' and 'on' buttons until the blue and amber LEDs flash alternately then release them. The dimmer switch is now in **linking mode**.



2. Using the LightwaveRF Smartphone App, enter the edit menu and press the delete button next to the relevant device (the App instructions will guide you through this). If using another controller press the button that you intend to unlink. The amber light on the dimmer switch will flash to confirm that the App is now unlinked.

Device setup

Clearing the memory (will remove all linked controllers):

1. Press and hold down both the ‘on’ and ‘off’ buttons until the blue and amber LEDs flash alternately then release. The dimmer switch is now in **linking mode**.



2. On the dimmer switch, press and hold down the ‘off’ button again until the blue and amber LEDs flash simultaneously, then tap (don’t hold) the ‘off’ button a further time; the amber LED will flash to confirm that the memory has been cleared.



NOTE: Reliable range of remote operation is around 15 metres indoors and up to 100m outdoors (using a Lightwave Link). This figure may vary depending upon the environment; very thick walls, bodies of water or large metal objects may interfere with radio range.

If the distance between the transmitter and receiver is too great to achieve reliable operation, the LightwaveRF Signal Booster may be used in conjunction with this product to increase the range.

Remote operation

Dimming with the LightwaveRF App or a LightwaveRF controller

• Press the ‘on’ button on the App (or other LightwaveRF controller) once to switch the dimmer on (blue LED indicator will illuminate). Use the slider to raise or lower the light level (or press and hold the on or off button on any other LightwaveRF controller).



• Press the ‘off’ button on the App (or other LightwaveRF controller) once to switch the dimmer off (amber LED indicator will illuminate).



Locking the Dimmer Switch

• The dimmer can be ‘locked’ so that the manual buttons will not operate it. This can be achieved using the LightwaveRF App or a ‘Socket Locker’ remote. If it is locked on, then the dimmer will not turn off manually. If it is locked off, it will be possible to turn the dimmer on, but it will automatically turn off again after five minutes. A locked dimmer is signified by a slow flashing amber LED.

• To lock/unlock the dimmer, press the ‘unlock’ button on the Smartphone App or Socket Locker. If the Socket locker is misplaced, the dimmers can be reset by turning of mains power to the circuit for a period of 30 seconds.

Understanding flashing LED sequences on the dimmer



Flashing blue & amber alternately: Socket in Linking Mode



Quickly flashing blue: Socket successfully linked



Quickly flashing amber: Socket unlinked / memory cleared



Slowly flashing amber: Socket memory full / socket locked



Blue & flashing amber: Socket successfully locked / unlocked







1. (Easy): Family safety

Products Required: Dimmer Switch, PIR Motion Sensor

Here we have a LightwaveRF Dimmer Switch paired to a PIR Motion Sensor. When somebody is detected by the sensor, it triggers the Dimmer automatically and turns the light on. So, when one of the kids needs to use the bathroom in the middle of the night, the path is safely lit for them. The light is then set to turn off once no movement has been detected for a period of time. So, when the little one is safely back in bed, the sensor will turn off that light that is always normally left on!

Lightwave RF









2. (Intermediate): Scene lighting

Required: Dimmer(s), Mood Controller, Plug-ins

Dimmer switches & Dimmable Plug-ins enable you to control all of your lounge ceiling lights and socket powered lamps individually or together as a group. The Mood Controller allows you to set and recall your own favourite lighting scenes at the touch of a button. You can dim all the lights for watching a movie or create a relaxed mood for entertaining guests. At the end of the evening, press the ‘all off’ button to turn off all lights and lamps. Adding the Lightwave Link allows scene lighting to be controlled via a smartphone.

Lightwave RF









3. (Advanced): Simulated occupancy

Required: Dimmer(s), Power Sockets or Plugins, Link

This setup gives you control over your devices from anywhere in the world. Here we have ceiling lights controlled by dimmers and lamps plugged into Lightwave Power Sockets or Plug-in Sockets. Via the Lightwave Link, every light can be controlled using a smartphone wherever you are. So, when you're away on holiday, you can turn on lights to make it look like someone's home. You can even set them to come on automatically at different times each evening - enough to fool even the most watchful of intruders!

Troubleshooting

Problem: ***The dimmer will not operate the light and the LEDs on the dimmer do not light up.***

Solution: First, check that there is power to the dimmer. Make sure that the connected lamps are functioning correctly; the dimmer switch will not run unless it has a functioning lamp(s) to complete the circuit. Ensure that the maximum LED/incandescent loading has not been exceeded (if so this may have damaged the dimmer). Check that the wiring is correct; it is important that the live and switch live wires are attached to the correct terminals - a common mistake is to reverse these connections. If these measures fail, contact technical support via www.lightwaverf.com.

Problem: ***The switch is powered (amber or blue LEDs on), but it will not link to a LightwaveRF handset or controller.***

Solution: Check the controller battery strength: if the battery strength is low, it will not produce enough power to drive the RF radio signal. Tap any 'on' button on the controller to transmit a signal. A strong battery signal is indicated by the LED light on the controller remaining lit for 1-2 seconds after releasing the button. A low battery is indicated if the LED light turns off immediately. If this happens, please replace the battery.

Troubleshooting

Problem: ***The LED/CFL lamps that I am using flash / do not dim properly.***

Solution: Ensure that the lamps being used are dimmable; non dimmable lamps are not compatible with LightwaveRF Dimmers. If the lamps are dimmable yet the problem persists, the LED/CFL lamps may not be compatible with the dimmers. Please contact technical help (via www.lightwaverf.house) for further advice.

Problem: ***The dimmer will not consistently operate remotely.***

Solution: The controller/Lightwave Link may be encountering interference or may be at the edge of its reliable range of operation. Ensure that there are no thick walls, large pieces of metal or bodies of water in the path of the transmission. If the problem persists, try moving the controller/Link closer to the dimmer, or consider using a LightwaveRF Signal Booster to extend the range by relaying the signal between controller and dimmer.

Problem: ***The dimmer keeps turning off automatically/wont turn off and displays flashing amber & blue lights.***

Solution: The dimmer is **locked**. This may have been done using a Socket Locker or from the LightwaveRF App. If it is locked on, then the dimmer will not turn off manually. If it is locked off, it will be possible to turn the dimmer on, but it will automatically turn off again after five minutes. To unlock the dimmer, press the unlock button on the Socket Locker or Smartphone App. If this is not possible, the dimmers can be reset by turning off mains power to the circuit for a period of 30 seconds.

FAQs

Q. ***Does the dimmer have a 'standby' power consumption?***

A. The dimmer has a standby power consumption of approx. 0.5W. This is because the in-built radio receiver requires power in order to receive commands. This rate is low and well within government energy guidelines.

Q. ***How do I know that the dimmer switch will fit?***

A. The dimmer is the same size as a standard lightswitch - it will fit all back boxes (standard lightswitch housing) over 35mm deep.

Q. ***Is it legal for me to to install the dimmer?***

A. Yes, it is fully legal to install LightwaveRF in your own home.

Q. ***Is there a maximum number of bulbs I can control with the dimmer?***

A. You can control any number of bulbs as long as they do not exceed the maximum loading in total. Note: Max. load differs for LED/incandescent.

Q. ***How many devices can I have on the LightwaveRF system?***

A. Each device has 6 memory slots for up 6 controllers (one of these can be the Lightwave Link allowing up to 6 smartphones to control up to 240 devices.

Q. ***Can I use LED bulbs?***

A. Yes as long as the bulbs are dimmable variants and compatible.

FAQs

Q. ***Can I use non dimmable bulbs if I don't dim them?***

A. No. The bulbs must be dimmable even if they are not dimmed; the technology in the bulb must be compatible with that of the dimmer.

Q. ***What if I need a switch to operate on/off only?***

A. A LightwaveRF Relay in conjunction with a Wire-free Switch can be used for on/off switching in place of the dimmer (see www.lightwaverf.house).

Q. ***Can I separate and change individual switches in multigang dimmers?***

A. Multigang dimmers are not designed to have their switch modules separated and interchanged; disconnecting and removing dimmer modules will invalidate the warranty.

Q. ***Can I expect a drop in light output with a LightwaveRF dimmer?***

A. LightwaveRF dimmers utilise a tiny amount of power to drive the electronics that operate the RF radio and dimming components. As a result, it is normal to experience a 5-10% reduction in light output when using incandescent bulbs. In the vast majority of cases, this should not be noticeable to the naked eye.

Q. ***Is it normal for the dimmer to get warm when it is turned on?***

A. Yes, it is perfectly normal for dimmer switches to feel warm to the touch if left on for a period of time. It is completely safe.

Specification

RF frequency: 433.92 MHz

Input rating: 220-240V~ 50Hz.

Output rating: 3W~250W max.

Incandescent Load: 20W min 250W max.

Back Box Depth: 35mm min.

Earthing Requirement: Not essential (double insulated)

Standby Energy Use: Less than 1W

Wiring: Neutral wire NOT required

Warranty: 2 year standard warranty

Version 2.3



Lightwave RF Glow

MEGAMAN®

2 Quadrant Park
Mundells
Welwyn Garden City
Herts
AL7 1FS
01707 386035

www.lightwaverf.house