

Logic Plus LED Intelligent Dimmer Switch

K1523LV, K1524LV

Grid Plus LED Intelligent Dimmer Switch

K4511LV



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Please leave this leaflet with the end user for future reference.

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A. SAFETY INSTRUCTIONS

- This product must be installed according to these instructions and in accordance with the current IEE Wiring Regulations (BS 7671). If necessary, consult your local building regulations.
- To prevent electrocution, do not work on any appliance live. Turn off the mains supply before commencing work.
- If this product has a metal front plate it must be earthed.
- To prevent fire hazard do not exceed the rated load specified for the product.
- The minimum box depth required for white plastic dimmers when using the supplied pattress is 16mm.
- For single white plastic dimmers without a pattress, as well as all other dimmers with front plates of at least 9mm deep, the minimum box depth required is 25mm.
- Double dimmer in a one-gang plate require a minimum box depth of 35mm.
- All dimmers with a front plate less than 9mm deep require a minimum box depth of 35mm.
- For Grid Plus dimmer, the minimum box depth required is 40mm.
- Dimmer switches must not be used in bathrooms, washrooms or any location subject to splashes of water condensation or dampness.
- Waste electrical products should not be disposed of with the household waste. Please recycle where facilities exist. Check with your Local Authority or retailer for recycling advice.
- The mains supply to this dimmer must be protected by a type B or C MCB with rating not higher than 10A.

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B. GENERAL INFORMATION

- Dimmers are available with one or two modules mounted on the same front plate. Dependent on power output, they are also available in one or two gang front plates with single or double dimmers.
- The control knob(s) has a push on/push off action. Rotation of the knob(s) will vary the light setting.
- The terms one-way and two-way switching refer to the mode of switching required in an installation.
- One-way switching is used in installations where a circuit is controlled by just one switch. e.g. controlling one light from a single switch which is either on or off. See **Figure 1**.
- Two-way switching is applied to installations where a circuit is often controlled by two switches, e.g. controlling a light circuit from two switches located some distance apart, one switch at one end of the room and another switch at the other end.
- MK intelligent dimmers have two-way switching, which allows their use in either one or two-way applications.
- In a two-way installation as shown in **Figure 2**, only one dimmer must be used. A standard 2-way switch must be used in the other position.
- As long as the rotary control knob is not turned, when pressed, the dimmer will switch on at the previously set light level. This is also true in the two-way set up described above and shown in **Figure 2**, even when operated by the remote switch.
- To avoid damage to the dimmer, do not operate outside its maximum and minimum wattage (W), or Volt-Ampere (VA) ratings. These ratings are given on the rear of the dimmer, on the packaging and in the Specification section on page 7.
- The dimmers should not be installed where an ambient temperature is outside the 0°C & 40°C limits.

NOTE: It is normal for the front of the dimmer to become quite warm in use, the temperature reached being dependent upon the lamp load and the ambient temperature.

- MK dimmers employ the latest technology, using micro-controller based circuitry to provide the features described in the following section.

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C. FEATURES

NOTE: - For correct operation, it is very important that the total load MUST NOT be less than the minimum Power/Load rating AND MUST NOT be greater than the maximum Power/Load rating marked on the dimmer for each load type. The rating is shown in Watts (W) & Volt-Ampere (VA) on the back of each dimmer.

Soft Start When the dimmer is switched on, the brightness of the lights will be gradually increased over a period of 1 to 3 seconds until a pre-selected level (set by the control knob) is attained.

This feature alone will help to greatly extend the life expectancy of filament lamps, by avoiding the initial power surge.

Overload Protection If any of the dimmers are overloaded, the output to the lamp(s) will be automatically reduced to provide protection against damage to the dimmer and to the installation. An Intelligent Power Monitoring System (IPMS) is used to provide protection from overloading by either reducing the power level to the load(s) or by switching off the power to the load(s), depending upon the severity of the overload, as follows: - (Note: The first figures given are the approximate load on the dimmer as a percentage of its maximum Power/Load rating.)

Up to 125	The Load will receive the maximum rated power of the dimmer continuously.
>125 to 200	The output power to the load(s) will be reduced to the minimum set level of the dimmer within 20 seconds after switch on.
>200	The output to the load(s) will be switched off after a short delay.

Normal operation will resume after the dimmer is switched off and turned back on, with the load adjusted to be within its maximum and minimum Power/Load ratings.

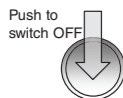
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D. MINIMUM BRIGHTNESS ADJUSTMENT

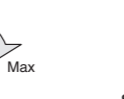
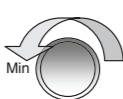
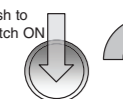
The light output of some LED lamps may appear to be too dim or invisible when the dimmer knob is at the minimum dim level. Follow the steps below to adjust the minimum brightness level. This feature is primarily for adjusting the minimum brightness level of the LED lamp although it can be used for other load types. For a double gang dimmer, the light level of each gang has to be adjusted separately.

Step 1 Access To Programming Mode

- Push the dimmer knob so that it is in OFF state.
- Set the dimmer knob to minimum level.



- Turn on the dimmer and immediately rotate the knob 3 times in full rotary span within 5 seconds.



NOTE: - Wait for 3 seconds, the lamp will then dim to minimum before automatically brightening to about 30% level.

Turning/pushing the dimmer knob before the end of automatic brightening will end access to programming mode.

- Dimmer enters programming mode.

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Step 2 Adjust Brightness Level and Exit Programming Mode

- Rotate the dimmer knob anticlockwise to adjust the lamp to the desired brightness level.

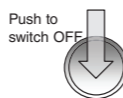
NOTE: - Some LED lamps may not work properly if the brightness level is set too low thus it is recommended to keep the brightness level of the lamp at a visible level.

The dimmer will exit programming mode automatically without saving the new setting if there is no dimmer knob movement for 15 seconds. The dimmer will restore its factory default light level.



Turn anticlockwise to adjust the brightness level.

- Confirm the new setting and exit programming mode by turning OFF the dimmer.



Step 3 Success indication (Programming Complete)

- The next time the dimmer is turned on the lamp will automatically brighten to the maximum level before dimming to the brightness level corresponds to the knob level.

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E. SPECIFICATION

Nominal mains supply voltage220 to 240V a.c.
 Max. acceptable mains fluctuation198 to 264V a.c.
 Mains frequency50Hz ± 3Hz
 Ambient temperature range0°C to 40°C

These dimmers are designed to work with a large number of following loads:-

- Dimmable LED bulbs for incandescent replacement with E27, E12 or bayonet bases. Note: Please refer to the MK web site for a list of compatible LED lamps.
- Mains rated Halogen lamps with GU10 BASE.
- Wire Wound Low Voltage Lighting Transformers (laminated or toroidal) of good quality.
- Electronic Low Voltage Lighting Transformers, which are specified for leading edge dimming.

NOTE: Transformers must be suitable for dimming; using the leading edge phase delay type of dimmers.

Under no circumstances exceed the minimum or maximum Power/Load ratings given in the chart shown on page 8.

WARNING: These dimmer switches are **NOT** suitable for use with any kind of Fluorescent lamps (e.g. Fluorescent Tube Lights or Energy Saving lamps). Do not mix different load type in the same load circuit.

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Load Types and loadings

Dimmers	LED Lamp Rating per Dimmer Module/circuit	LED lamps per Dimmer Module/circuit (Max)	Power/Load Ratings per Dimmer Module/circuit with				Transformers per Dimmer Module/circuit (Max)	
			Mains Tungsten GLS or Mains Halogen Lamps		Electronic or Wire Wound LV Transformers			
			Min W	Max W	Min W or VA	Max W or VA		
Logic Plus K1523LV K1524LV	4	70	10	40	300	40	240	4
Grid Plus K4511LV	4	70	10	40	240	40	180	3

- On front plates mounting multiple dimmers, the minimum / maximum W and VA ratings given are for each dimmer module/circuit.
- The minimum load of the transformer should not be less than the **Min. Power/Load Rating** of the dimmer, even if the transformer has a lower Min. power/Load rating (e.g. 20W or VA).
- If the transformer is loaded with more than one lamp to achieve the minimum load in accordance with the Min. Power/Load Rating, then on failure of one or more of the lamps, the total load may fall below the **Min. Power/Load Rating** of the dimmer, which could result in the system not functioning correctly.

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F. INSTALLATION

INSTALLING THE DIMMER IN A ONE-WAY SITUATION

The steps below marked with an asterisk (*) are only applicable to Grid Plus Dimmers.

1. Make sure the previous sections of these instructions are fully understood and complied with prior to installing the dimmer.
2. Please note: the colour codes used in the UK prior to April 2004 are as follows: -
Live = RED Neutral = BLACK

In all other areas of the EU, as well as new build installations in the UK after April 2004, the colour codes used are: -

Live = BROWN Neutral = BLUE

The first colour indicated in the following text will be that used prior to April 2004. The second colour, shown in brackets, is the colour used after April 2004.

3. Some products have the fixing screws clipped to the rear of the product. These should be unclipped before installing the product.
4. Ensure the mounting box is firmly fixed to the wall.
5. If the mounting box has four fixing lugs, it may be necessary to bend the top and bottom lugs back, so as to clear the Grid frame or Logic Plus dimmer moulding.
6. If replacing an existing dimmer or switch, always take careful note of the cables and terminal descriptions before removing the old switch. This should make it far easier to install the new dimmer.
7. A one way installation is where simple on or off switching and dimming of one light is required from a single switch.
8. To ensure good thermal management and therefore reliability, please be sure to comply with the following advice:-

- i) In multi row installations, the dimmers should be mounted in the lower rows wherever possible. This will ensure the dimmer will operate more reliably.
- ii) Do not mount dimmers one above the other in adjacent columns. Stagger the position of the dimmers as much as possible.
- iii) Do not exceed the maximum Load rating of any dimmer, as printed on the back of

the dimmer.

- *9. Screw the Grid mounting frame to the back box. Do not tighten the screws at this stage. Use the provided fixing screws.
- *10. Prior to installation, remove the rotary control knob by gently pulling it away from the body of the dimmer.
11. Strip back the outer cable sheath and trim the inner cables to the appropriate length.
12. Carefully strip the inner cable insulation to expose 8mm of the conductor.
13. All live conductors should have red (brown) sleeving. This is achieved by fitting a short length of sleeving over the end of any lead that has black insulation.
14. Use a 3mm blade screwdriver for the terminals.
15. Ensure each wire is connected to the appropriate terminal, as shown in the typical diagram - Figure 1.
16. When an earth lead is installed, ensure it is connected to the terminal in the mounting box. A length of green/yellow sleeve must be fitted over all earth conductors.
17. If an earth terminal is not present on the dimmer or mounting box and earth protection is not required, then any earth wire must be fully insulated by an appropriate means.
18. Using the screws provided, mount the Logic Plus dimmer onto the back box, making sure the screws are not over tightened so as to prevent damage or distortion to the front plate. Adjust so the front plate is square on the wall.
- *19. If the product has a metal front plate, an earth lead MUST be connected between the earth terminal on the dimmer and the earth terminal in the back box. Again a length of green/yellow sleeving must be used over the bare earth conductor.
- *20. Carefully push the wired unit back into the Grid mounting frame, until the latches have fully engaged and the module is secure (as shown in Fig. 4). Ensure cables are not trapped or pinched.
- *21. It is possible to remove a module by placing the blade of a screwdriver in the top clip, where it engages with the frame and carefully levering it out. See Fig. 5.
- *22. When all the modules have been fitted, the Grid mounting frame can be adjusted

to set the front plate squarely. Adjust the Grid frame by hand before tightening the frame fixing screws.

- *23. Locate the front plate and fit it to the Grid frame using the Front plate fixing screws. Do not over tighten the screws so as to prevent damage or distortion to the front plate as well as damage to the threaded holes in the Grid frame.
- *24. Refit the control knob onto the shaft and gently push it into place.
25. When carrying out insulation resistance testing, first disconnect the dimmer. Failing to do this could damage the dimmer and could also give spurious insulation readings.

Load Adjustment For Grid Plus Dimmers

Front plate size, Number of gangs	2	3	4	6	8	9	12	18	24
Max. Power/Load per row - Tungsten GLS Lamps - W	400	480	480	480	480	480	480	720	720
Max. Power/Load per row - Mains Tungsten Halogen lamps or Low Voltage Transformers - W or VA	320	380	380	380	380	380	380	580	580
Max. Power/Load for Total Plate - Tungsten GLS lamps _ W	400	480	480	740	740	940	940	1440	1800
Max. Power/Load for Total Plate - Mains Tungsten Halogen Lamps or Low Voltage Transformers - W or VA	320	380	380	600	600	750	750	1155	1440

NOTE: No load adjustment is required for LED lamps.

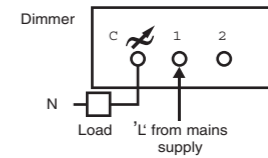


Figure 1 - typical one-way switch circuit

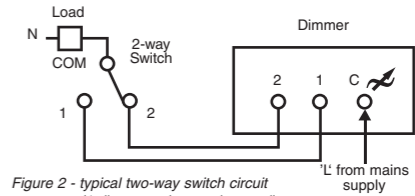


Figure 2 - typical two-way switch circuit (1 dimmer only must be used)

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F. INSTALLATION (continued)

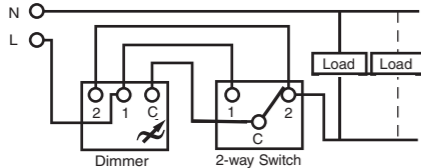


Figure 3 - Alternative connection method for 2 way switching

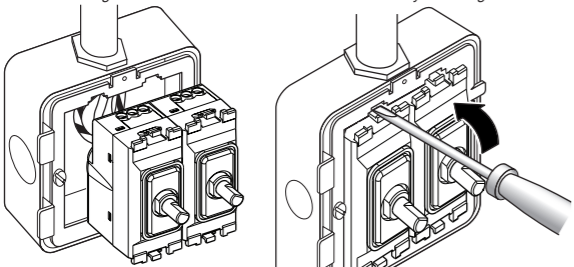


Figure 4 - Typical mounting arrangement

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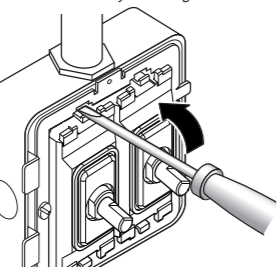


Figure 5 - Module removal procedure

F. INSTALLATION (continued)

INSTALLING THE DIMMER IN A TWO-WAY SITUATION

1. A two-way installation is when a dimmer is used in conjunction with a two-way switch, to control one light from more than one position.
2. If replacing an old switch, carefully note the terminals to which each wire is connected. (com., 1, 2 etc.) Connect the wire(s) going to com. of the switch, to the C terminal of the dimmer, the wire(s) connected to terminal 1 of the switch to terminal 1 of the dimmer and the wire(s) connected to terminal 2 of the switch to terminal 2 of the dimmer. This will ensure correct operation of the dimmer.
3. Follow the instructions for installing the dimmer switch in a one-way situation given above, except this time using the circuit shown in either Fig. 2 or Fig. 3, whichever is found to be more suitable.

CLEANING FRONT PLATES

In order to protect the surface finish quality of the front plate, periodic cleaning should only consist of polishing with a dry lint free soft cloth. On no account should abrasive or domestic cleaners be used.

G. STANDARDS COMPLIANCE

The dimmers in this range comply with the following EC directives:

Low Voltage Directive (73/23/EEC)

Electromagnetic Compatibility Directive (89/336/EEC)

They also comply with the requirements of the following standards: IEC 60669-2-1 and BS EN 60669-2-1

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H. GUARANTEE

The Company undertakes to replace or repair, at its discretion this product should it become defective within a period of 10 years after delivery, solely as a result of faulty materials and/or workmanship. Understandably, if the product has not been installed or maintained in accordance with the Company's instructions, has not been used appropriately, or if any attempt has been made to rectify, dismantle or alter the product in any way, the guarantee will be invalidated.

This Guarantee states the Company's entire liability. It does not extend to cover consequential loss or damage or installation costs arising from the defective product. This Guarantee does not restrict or infringe the normal statutory or other rights of the consumer.

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