

Switch Receiver and Transmitters



Please keep this leaflet for future reference.

SAFETY INSTRUCTIONS

- This product must be installed by a competent person in accordance with the current editions of the IEE Wiring Regulations (BS7671) and Buildings Regulations. **If in any doubt, consult a qualified electrician.**
- To minimise the risk of electrocution, do not work on any appliance live. **Switch off the mains supply before commencing work.**
- To prevent fire hazard do not exceed the light load rating.
- **These instructions should be left with the end user and kept in a safe place.**

51771 PL Ed.1

SWITCH RECEIVER (1100VA)

This switch receiver module can be controlled by radio signals from up to 30 MK Switch Transmitter units.

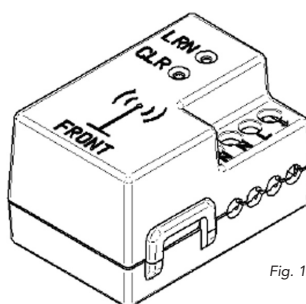


Fig. 1

MODULE DIMENSIONS; -
47.4 long x 34.6 wide x 28.8 mm high

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THE SWITCH RECEIVER IS CAPABLE OF OPERATING THE FOLLOWING LOADS:-

TYPE OF LOAD	MAX RATING
Incandescent lamps	4 x 100W
Gas discharge lamps / HQL-HQI / not compensated	100W
Gas discharge lamps / HQL-HQI / compensated	80W (14µF)
EVG Dynamic / dimmer	4 x 18W 3 x 36W 2 x 58W
Halogen lamp 230V AC	150W
Fluorescent lamp 230V AC With conventional ballasts. Not compensated cosφ 0,4 – 0,6	20 x 18W 10 x 36W 6 x 58W

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TYPE OF LOAD	MAX RATING
Fluorescent lamp 230V AC With conventional ballasts. Compensated with capacitance in parallel	4 x 18W 3 x 36W 2 x 58W (2x7µF)
Fluorescent lamp 230V AC With conventional ballasts. Compensated fluorescent DUO-circuit	4 x 18W 3 x 36W 2 x 58W
Fluorescent lamp 230V Siemens / Osram EVG	6 x 18W
AC with electronic ballasts Siemens / Osram EVG	4 x 36W 3 x 58W
Resistive load 230V AC cosφ =1	5A
Max. capacitance at 230V AC	14µF
Max. inrush current for max. 20ms at 230V AC	40A

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POSITIONING SWITCH RECEIVERS AND TRANSMITTERS

The integrated ¼-wave whip antenna enables a very compact receiver unit with good radio reception characteristics. For good receiver performance please note the factors restricting transmission range given in the next section.

Please note that the best range can be realised by facing the MK switch transmitters with the front surface of the MK switch receiver (see antenna marking on cap see Fig. 1). This indicates the internal antenna position that can be seen in the following picture (Fig 2):

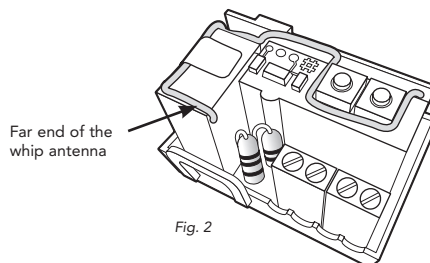


Fig. 2

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For the best range performance a minimum distance of 1 to 2 cm, should be allowed from the whole length of the antenna to any conductive objects. In particular, the far end of the whip aerial should be mounted as far away as possible from all metal parts.

Please note that large metallic or conductive objects between the transmitter and the receiver could cause blocking of the radio waves such that it might result in a range reduction.

Using a suitably positioned repeater is a possible remedial measure in overcoming this problem.

Do not mount the receiver into an enclosed metal housing.

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RANGE INFORMATION

The frequency at which the MK wire free system works is 868.3 MHz.

Since the radio signals are electromagnetic waves, the signal is attenuated on the way from the transmitter to the receiver. This means that the field intensity diminishes as the distance between the transmitter and the receiver increases, and radio range is restricted. Obstacles between devices can also reduce the range.

In practice, this means that the materials used in the building play an important role when an assessment of the radio range is made. Some standard values for helping in assessing the environment: (Please note, this information is for all plastic products, i.e. Logic Plus).

- Line-of-sight connections: Typically 30m range in corridors, up to 100m in halls.
- Plasterboard walls / dry wood: Typically 30m range, through maximum of 5 walls.
- Brick walls / aerated concrete: Typically 20m range, through maximum of 3 walls.
- Ferro concrete walls/ceilings: Typically 10m range, through maximum of 1 ceiling.
- Fire-safety walls, elevator shafts, staircases and supply areas should be considered as screening and as such can mean a much reduced penetration of signal.

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When using metal front plate products, please note that the range mentioned in the first bullet point above, when mounting in a hall, will be reduced to approximately 30m. It is advised that the Field Strength Indicator is used to determine if the range in a given installation is suitable or not. If the signal strength is insufficient, then a Repeater (K5414R) should be used.

Other factors restricting transmission range:

- Switch transmitter mounted on metal surfaces (up to 30% loss of transmission range).
- Hollow lightweight walls filled with insulating wool on metal foil.
- False ceilings with panels of metal or carbon fibre.
- Lead glass or glass with metal coating, steel furniture.
- Mounting transmitter or receiver on the floor, or close to the floor, or towards corners.
- Humidity in materials
- Devices transmitting RF signals such as computers, audio and video equipment, or electronic gear controls for lamps. A minimum distance of 0.5m should be kept

The angle at which the transmitted signal hits the wall is very important. The effective wall thickness – and with it the signal attenuation – varies according to this angle. Signals should be transmitted as directly as possible through the wall. Wall corners should be avoided.

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SWITCH RECEIVER INSTALLATION

Always switch off the mains supply before installing any electrical device.

Switch receivers can be mounted either in a switch wall box, as long as it is at least 40mm deep, or it can be installed close to the lighting load in the ceiling void.

It is not advisable to mount switch receivers in a metal wall box as it can considerably attenuate the signal strength it sees from switch transmitters mounted elsewhere in a room.

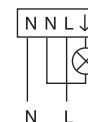
For the best performance do not mount the switch receivers close to the floor or near to room corners.

The switch receiver is designed for interior use only. If it is to be used with a Masterseal switch transmitter, then it is possible to mount the switch receiver outside, **but only** if it is mounted in the MK Masterseal enclosure, list number 55000 GRY, or WHI.

Preparing the cables: Ensure the ends of both input and output cables are cropped cleanly and then remove about 7mm of insulation from each cable.

Carefully insert the cables into the terminals. Note: the neutral terminals are un-switched and are linked internally.

Use a screwdriver of a suitable size, so as to avoid over tightening the terminals, thereby causing possibly



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damage to the PCB within the enclosure.

Once wiring is complete, ease the receiver box into the chosen position, taking care not to stress the terminal connections. Restore the power supply.

SWITCH TRANSMITTER INSTALLATION

General for all MK Switch Transmitters

Switch transmitters are available to complement all of MK's Logic Plus and decorative metal finished products.

All switch transmitters are available as 1 and 2-gang units.

All products can be screwed to a back box in the normal manner, or screwed to a wall using the screws and wall plugs provided.

Please ensure the transmitters are mounted the right way up. To not do this will mean the switches will not function in the conventional manner, i.e. to press the bottom of the rocker to turn "on" and the top to turn "off". Please note:- Arrows are moulded into the plastic frame to indicate which is the top.

An earth terminal is provided with all metal front plate products. If a product with a metal front plate is mounted on a back box where electrical cables have not been stripped out, then the product must always be earthed.

If the metal front plate products are to be screwed directly onto a wall without using a back box, then the earth terminal can be

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If sticking the product to a wall or suitable mounting surface, such as a glass partition, make sure the surface and the back of the mounting frame are free from dust or grease deposits prior to using the double sided adhesive pad. Dirt and grease will prevent proper adhesion, which in the worst case, could mean the product will fall off the wall. First remove the protective paper from one side of the pad and then stick it to the back of the product so that it falls within the outline on the rear of the spacer moulding. Next remove the second protective paper and carefully align with the chosen position on the wall. Press the complete product hard against the wall, so as to ensure as much surface contact as possible. Allow 24 hours before full adhesive strength is realised.

To screw the product to the wall or standard back box, follow the instructions in the 'general' section above.

If mounting the product to a back box, it is possible to remove the clear plastic spacer and mount the product on the wall in the traditional Aspect manner; the back protrusion of the transmitter mechanism can be allowed to protrude into the back box.

To remove the spacer, view the product from the back and it will be seen there are clip features that hold the spacer frame to the plastic carrier that holds the transmitter module. By use of a small flat screwdriver blade, carefully release the spacer moulding from the rest of the product.

Once the product has been installed on the chosen surface, hook the left hand side of the front plate over the edge of the mounting frame and then clip it in place along the right hand side of the plate.

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BASIC SETTING UP

Each switch transmitter can operate any number of switch receivers. Each switch receiver can be operated by up to 30 MK switch transmitters.

The memories of all our switch receivers are empty when dispatched and are ready to be programmed and assigned to MK switch transmitters.

To programme a switch receiver, it must first be connected to the power supply. Once programmed, this memory will be retained when the power is disconnected.

To prevent programming unintended switch transmissions, when placed in learn mode the receiver sensitivity is reduced to approximately 5 meters from the switch.

On the surface of the switch receiver module there are LRN and CLR push buttons. These should only be operated by pushing a non-metallic insulated probe (e.g. ballpoint pen) carefully through the small hole in the housing onto the push button.

Press the LRN button and hold it down. After 0.3 s the programming mode becomes active, this is confirmed by continual 1 second cyclic switching of the output relays: Any light load connected to the power output will be switched on and off every second. In quiet environments the cycling of the relay can be heard. (The LED on the KS413R Switch Receiver will cycle on and off along with the load to give additional feedback during programming.)

Transmitters can now be programmed so they are assigned to the receiver. Due to the reduced sensitivity of the receiver during this

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removed before installation, which will then allow the product to lie flat on the wall.

When preparing to drill holes in a wall, first check that there are no cables or any form of gas or water pipes below the wall surface, once satisfied, then drill the holes intended to take the wall plugs.

The rockers do not need to be removed to complete installation and should therefore always be left in place, so as to avoid unnecessary possible damage. If they should come apart for whatever reason, the rocker of the 1-gang switch must be clipped back the right way round. The mouldings are marked with the normal on and off symbols, I & O.

Logic Plus

For these products, Logic Plus has a clip on urea front plate.

With the front plate removed by inserting and carefully twisting the blade of a screwdriver in one of the two location slots along the bottom edge of the plate, the mounting frame that is revealed can be screwed to a back box or a wall as described in the 'general' section above, or stuck to a clean surface using the double sided adhesive pad provided.

If sticking the product to a wall or suitable mounting surface, such as a glass partition, make sure the surface and the back of the mounting frame are free from dust or grease deposits prior to using the double sided adhesive pad. Dirt and grease will prevent proper adhesion, which in the worst case, could mean the product will fall off the wall. First remove the protective paper from one side of the pad and then

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Masterseal

The enclosure must be mounted on a flat, vertical surface that is free from grease, dirt and loose material.

There should be no reason why any of the conduit entries are used for the Switch Transmitter, if for any reason a conduit cable entry has to be used and it enters from the top or sides, the lower drain hole in the mounting box must be drilled out using a 5mm diameter drill bit. This will allow any condensation formed in the conduit system to drain out of the unit. Note: opening the drain hole will reduce the IP rating; therefore ensure that jetted water is not directed at the unit.

The drain hole should not be drilled out if the enclosure is to be installed in an excessively dusty environment. If the drain hole is not drilled out, only the bottom cable entry must be used.

Note: - Do not allow paint or wood preservative to come into contact with the product. The product can be safely mounted on painted surfaces or surfaces treated with wood preservative when the paint or wood preservative is completely dry.

Unscrew the four screws that hold the front and rear mouldings together.

Mark the position of the fixing holes for the mounting box.

When preparing to drill holes in a wall, first check that there are no cables or any form of gas or water pipes below the wall surface, once satisfied, then drill the holes and fit wall plugs suitable for a No. 8 wood screw.

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time, it is possibly better to programme the transmitter by holding it in the hand before completing its installation.

By pressing and releasing the rocker of an MK switch transmitter, it will then be assigned to the switch receiver. The receiver relay will stop cycling for approximately 4 seconds to confirm receipt of the command before resuming recycling the load.

Switch transmitters can be un-assigned in the same way. When wanting to remove a switch transmitter from being assigned, during the cycling period if the already assigned switch transmitter is pressed, it will then no longer be able to operate the switch receiver. Feedback of the command being received is given in the same way as described above.

While the 1 second cycling of the relays continues, another switch transmitter can be programmed so it is assigned or deleted, as required. If the memory is full (i.e. assigned to 30 switch transmitters) the receiver goes into operating mode during an attempt to enter a further transmitter. In this case at least one ID has to be deleted before entering a new transmitter.

The programming mode is left by re-pressing the LRN button, or after 30 seconds of no activity the receiver exits programming mode automatically.

If the CLR button is pressed and held for approximately 2 seconds the memory is deleted completely (which is the condition upon delivery). The switch receiver then changes to programming mode which is again signalled by the cycling output relays. Programming mode can be left manually by pressing the LRN button.

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carefully stick it to the back of the product so that it falls within the outline on the rear of the mounting frame. Next remove the second protective paper and carefully align with the chosen position on the wall. Press the complete product hard against the wall, so as to ensure as much surface contact as possible. Allow 24 hours before full adhesive strength is realised.

To screw the product to the wall or standard back box, follow the instructions in the 'general' section above.

Once the product has been installed on the chosen surface, hook the top of the front plate over the top edge of the mounting frame and then clip it in place along the lower edge of the plate.

Edge

Edge products can only be mounted to a standard back box in the wall.

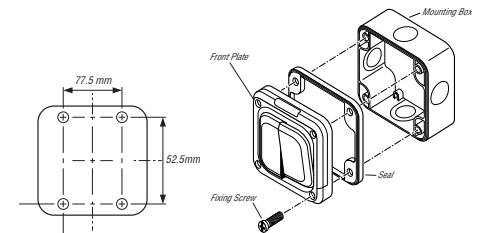
As the front plate is a 1.5mm thick metal plate, there is no opportunity to build the switch transmitter mechanism within the depth of the plate, as with most other metal front plate products.

Aspect

As with Logic Plus, these products can be screwed to a back box or to a wall as described in the 'general' section above, or stuck to a clean surface using the double sided adhesive pad provided.

The front plate can be removed as with all other Aspect products, by inserting and twisting a screwdriver blade in the small aperture along the bottom right hand edge of the front plate.

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Prior to fitting the mounting box to the wall, if the drain hole is required, then it should be drilled out prior to mounting the box on the wall. Finish by filing out the complete drain hole profile, taking care not to damage the internal wall of the box.

Secure the mounting box to wall with four No. 8 wood screws. If the drain hole has been opened, position it at the bottom left hand corner.

Then, with the front plate correctly orientated, ensure that the seal that goes between the two mouldings is correctly located and not distorted in any way as the front and rear portions of the product are re-assembled. Screw the assembly together using the four screws.

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