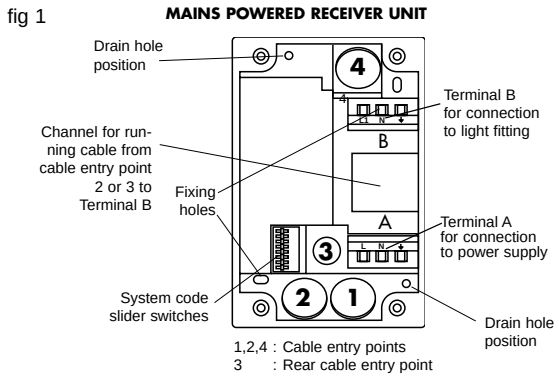
SPECTRA WIREFREE 6500

140° PIR Movement Detector / Transmitter and Receiver

For easy installation and earlier detection

fig 1



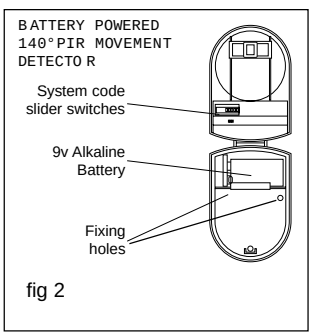


fig 2

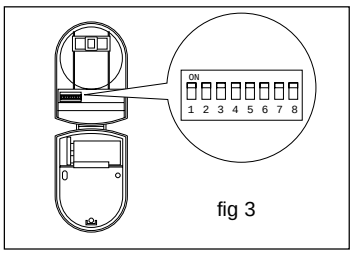
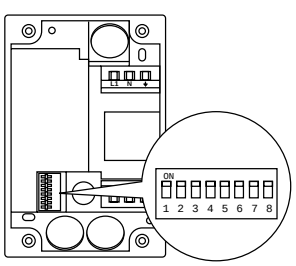
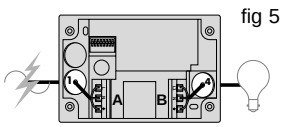


fig 3

fig 4





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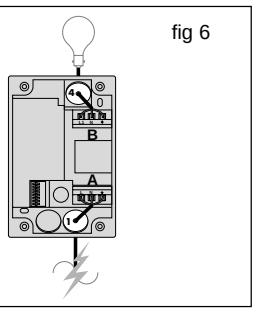

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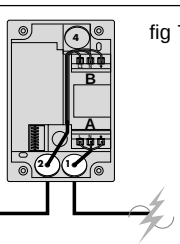

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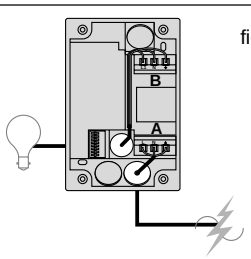

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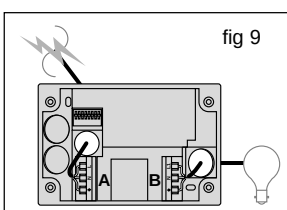

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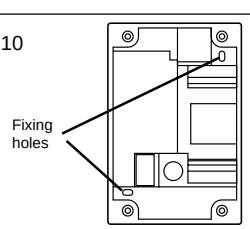

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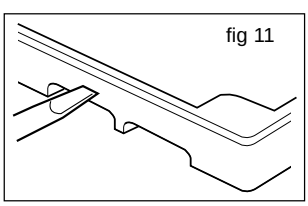

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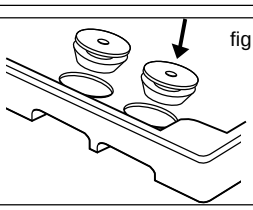

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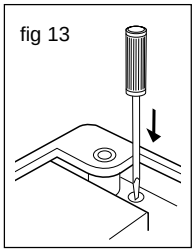

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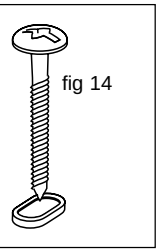


fig 14

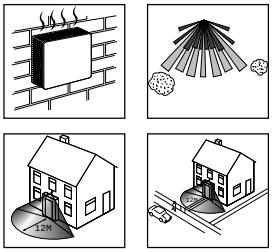


fig 18

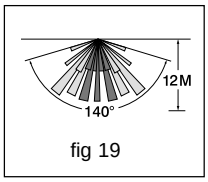


fig 19

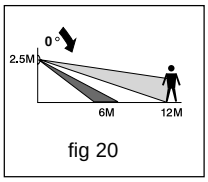
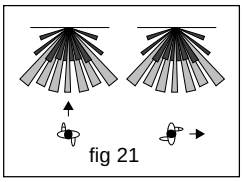


fig 20



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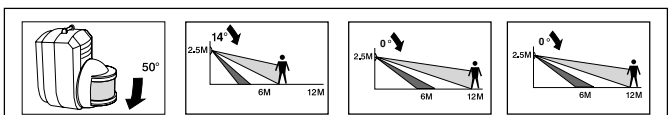


fig 22

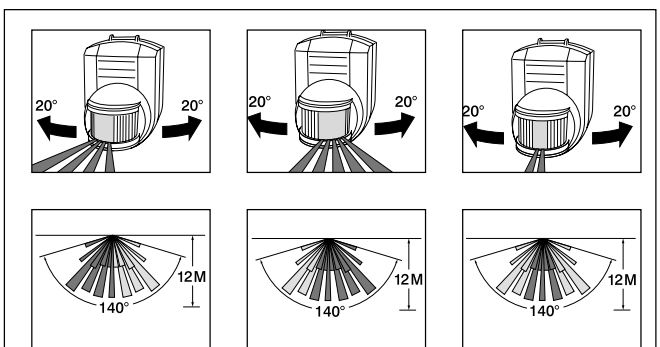


fig 23

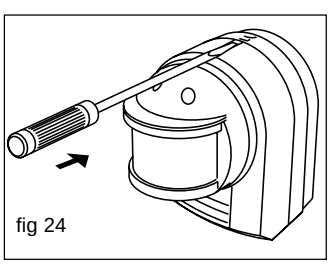


fig 24

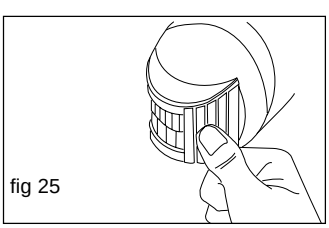
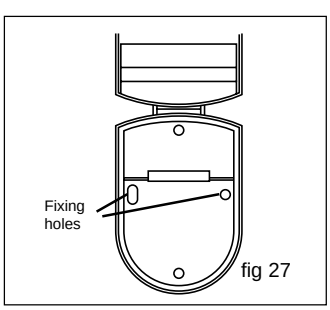


fig 25



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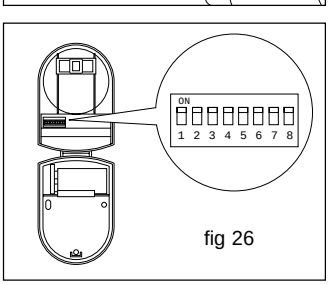

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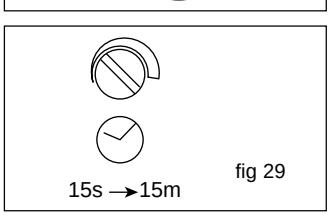


fig 29

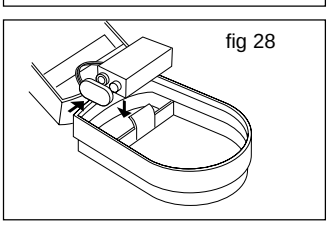


fig 28

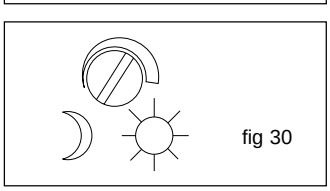


fig 30

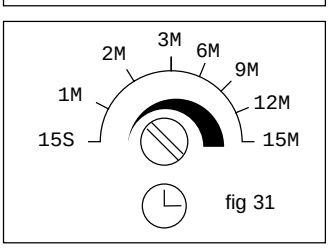


fig 31

1. SPECTRA WIREFREE PIR MOVEMENT DETECTOR & RECEIVER SYSTEM

Your Spectra Wirefree Passive Infrared (PIR) Movement Detector and Receiver System provides you with an advanced system which can utilise an existing light, or any new exterior lamp you choose. It gives you the freedom to fit any style of light fitting, and still enjoy the peace of mind and convenience of effective automatic lighting.

No Wires! - The system uses radio technology to activate the light. With no need for wiring, the PIR Detector can be easily located wherever it is needed within 50 metres of its receiver - which in turn controls the light. Even mains garden lighting can easily be converted to automatic operation.

This system uses radio wave technology to activate mains lighting. Radio wave transmission can be affected by thick walls, metal window frames, aluminium reinforced UPVC windows and doors, metallic parts of house structures and similar objects. Whilst the majority of installations are not adversely affected, you may have to experiment a little to discover the best location for your PIR/Transmitter and Receiver Unit.

The PIR Movement Detector/Transmitter and the Receiver Unit are weatherproof, and suitable for outdoor installation.

2. PACK CONTENTS

- 1 wirefree (battery powered) 140° coverage PIR Movement Detector with built-in radio transmitter. Requires 1 x PP3/6LR61 9v Alkaline Battery
- 1 mains powered receiver unit
- 4 plastic wallplugs plus 4 securing screws
- 4 rubber cable grommets (2 with hole pierced, 2 unpierced)
- 2 fixing screw sealing plugs
- 2 slot-in PIR lens screening panels

3. ELECTRICAL CABLING TO THE RECEIVER UNIT

The Receiver Unit requires connection to a 220-240V 50Hz mains electricity supply.

The Receiver Unit is designed to accept most types of 10A rated 2 or 3 core cable up to 14mm in diameter. It is recommended that only one cable is fitted through a single grommet.

Except when installed in a dry and protected environment, the Receiver Unit is not suitable for connection using separate single core wires - the kind sometimes found in conduit cabling. The receiver unit is not designed for direct connection to conduit.

4. TOOLS YOU WILL NEED

Flat bladed screwdriver, terminal or electrician's screwdriver, cross-head screwdriver, electrical cable cutter/wire stripper. Electric hand drill, drill bit to suit wall plug dimensions.

5. CHOOSING YOUR SYSTEM CODE

The wirefree PIR Detector communicates with its Receiver by means of a system code. This is to prevent activation
by other systems - such as a neighbour's wirefree system, or your own additional but separate system. If such disturbance is unlikely, leave the code at its factory setting.

TO SELECT A SYSTEM CODE simply move some of the eight slider-switches in the PIR Detector unit - leave some in their original position. (See figs 3 and 4). See fig 25 on page 15 for instructions on how to open the Detector unit. This is now your system code; the slider-switches in your Receiver Unit must now be set in the same pattern. Make a note of the settings on a piece of paper, so you can double-check your code without having to re-open the PIR Detector.

6. RECEIVER UNIT FITTING INSTRUCTIONS

6.1 Choosing a wiring method for the receiver

Before starting work, it is essential to decide precisely where to fit the Receiver Unit, and how you intend to wire it. i.e., which cable entry points you will use and therefore how long the cable will need to be. There are 2 types of installation - please choose the appropriate method for your situation:

Wiring method A. Using existing cabling only

This approach is used when you wish to leave the existing power supply cabling to a light fitting unchanged. The cable is cut at a convenient point and the receiver connected to the cut cable ends.

Wiring method B. Using new or a combination of new and existing cabling

This approach is used when new cabling is required throughout the installation, or when only the cabling from the power supply or light fitting needs to be changed.

is important to take the following factors into account when deciding where the receiver should go:

- The surface must be flat
- The power supply cable must be connected to terminal A
- The light fitting cable must be connected to terminal B
- The entry point hole next to terminal B cannot be used for the power supply cable (shown in fig 1 as entry point 4)

Follow the instructions relevant to your installation

A. Using existing cabling only

IMPORTANT: Mains electricity supply must be turned off before cable is cut. If in doubt consult a qualified electrician.

Choose a position for the Receiver Unit - which can be mounted horizontally (fig 5) or vertically (fig 6)

This may be outdoors near the light fitting or perhaps indoors near the mains supply consumer box. It's important to remember that with only the cut existing cable to work with you must fit the unit so that the cable entry holes 1 and 4 at either end of the receiver can be used (See figs. 5 and 6).

Check there are no obstructions to fitting the unit in your chosen position.

Cut cable, making sure there is enough free cable either side of the cut to allow connection to the Receiver's

Cut cable, making sure there is enough free cable either side of the cut to allow connection to the Receiver's terminals.

Do not trim the cable ends yet.

B. Using new, or a combination of new and existing cabling

IMPORTANT: Mains electricity supply must be turned off before cable is cut. If in doubt consult a qualified electrician.

Choose a position for the Receiver Unit - which can be mounted vertically (figs 7&8) or horizontally (fig 9)

Decide where the Receiver Unit is to be fixed and which cable entry points will be used, checking that the cables will fit without obstructions.

Any of the cable entry points in the unit may be used (see examples in figs 7, 8 and 9), so long as the supply cable is connected to TERMINAL A and the cable to the light or lights is connected to TERMINAL B. You can wire through the end entry points or the rear entry point to suit the circumstance. Note that the entry hole (No.4) next to TERMINAL B CANNOT be used for the supply cable.

Prepare the cable

Cut the existing cable to a convenient length for handling, yet with enough spare to allow connection to the relevant terminal when Receiver box is in position.

Install the new length of cable, again leaving a generous amount spare at the receiver box end.

DO NOT reconnect power yet.

6.2 Fitting and connecting the Receiver Unit

The following fitting instructions can be used for wiring method A or wiring method B

Mark the position of the Receiver

- Remove the cover from the Receiver Unit.
- Place the receiver case in the required position, ensuring that it is on a flat surface, and check
  that both cables will be able to enter the chosen
  entry holes.
- Mark the position of the fixing holes (fig 10).

Prepare access openings and drain hole

- The access openings in front of the cable entry holes can be enlarged by removing 'knock outs'. If the cable to be passed through the access opening is too large in diameter to fit, knock out the extra material with a small screwdriver to create suitably larger openings. (See fig 11)
- If the rear access hole is chosen, use firm pressure with your screwdriver to remove the knock out and create the hole. Clean up the edges of the hole with a sharp knife to ensure a good seal for the grommet.
- Make sure that the pierced grommets are in position in the entry holes to be used, and that the blank unpierced grommets are fitted in the other unused entry points. Insert the grommets the correct way round. (See fig 12)
- There are two moisture drain holes - see fig 1. For your chosen installation, determine which will be in the lower position when fitted. Open up this drain hole to its full diameter using a small screwdriver or drill
  (See fig 13)Fixing in place
- Drill holes where marked. If fitting against a masonry wall, drill holes using a masonry drill bit to suit wall plug dimensions. Drill the holes to the required depth and insert the wall plugs.
- Before fixing the receiver case in place, feed cable ends through pierced grommets in the entry holes, being careful not to pull out the grommets.
- Push fixing screws through the sealing plugs (see fig 14) - ensuring that the seals are correctly seated in the fixing holes - and screw receiver case to wall.

Connecting cable ends

- Cut the cable ends so they easily reach the terminals.
- Trim back the outer insulation to a convenient length, but allow at least 5mm to remain protruding from the inside of the grommet when the cable is fed through.
- If you're fitting the cable to the light fitting(s) through an entry hole near TERMINAL A, you must remove the outer insulation from the wires to allow them to fit into the channel giving access to TERMINAL B (see figs 7 and 8).
- Strip the LIVE and NEUTRAL wires' insulation to expose 6mm of bare copper wire (if the wire is the stranded kind, twist the strands together so that no strands fray).
- If the cable contains an insulated EARTH wire, strip this in the same way.

- Make a final check that the cables from the power source and the light fitting will be connected at the correct ends of the Receiver Unit - (the power supply must be connected to TERMINAL A, and the light fitting must be connected to TERMINAL B).
- Connect both cable ends to their terminal blocks, inserting each separate wire into the relevant terminal.
- For the cable from the supply, LIVE is connected to the L terminal, NEUTRAL is

connected to the N terminal and, the EARTH to the terminal.

- For the cable to the light fitting, LIVE is connected to the L1 terminal, the NEUTRAL to the N terminal and, the EARTH to the terminal.

IMPORTANT: You must connect the earth wires to the earth terminals where metal light fittings are used, to ensure the fittings are properly earthed.

System code and closing up

Set your system code if required (see Section 5 - Choosing your system code), ensure the rubber waterproofing gasket is in position, screw the receiver cover in place and connect the power supply.

6.3 Manual Override

By adding an indoor lightswitch to the wiring circuit, the connected light can also be controlled manually. Depending on the option chosen the light can be turned off permanently, or turned on permanently as an alternative to automatic operation.

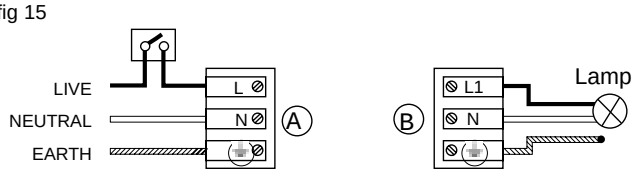
1 AUTO / OFF

Wiring in this manner provides two lighting options:

Automatic operation - Switch closed
Permanent OFF - Switch open

INDOOR SWITCH FOR 'PERMANENT OFF' OVERRIDE

fig 15



2 AUTO / ON

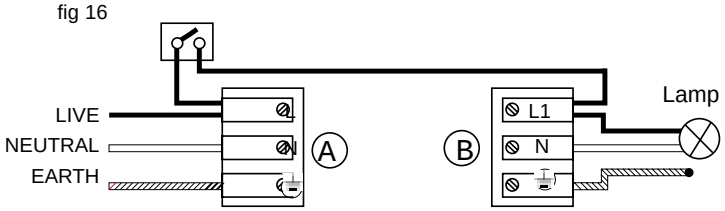
Wiring in this manner provides two lighting options:

Automatic operation - Switch open
Permanent ON - Switch closed

INDOOR SWITCH FOR 'PERMANENT ON' OVERRIDE

NOTE: To ensure watertight seals are maintained in the Receiver Unit, use a separate cable entry hole & grommet for any additional cabling from the switch

fig 16



3 AUTO / ON / OFF

Wiring in this manner provides three lighting options:

Automatic operation - Switch 1 closed, switch 2 open
Permanent OFF - Switch 1 open, switch 2 open
Permanent ON - Switch 1 open or closed, switch 2 closed

INDOOR SWITCH SINGLE POLE 2 GANG

NOTE: To ensure watertight seals are maintained in the Receiver Unit, use a separate cable entry hole & grommet for any additional cabling from the switch

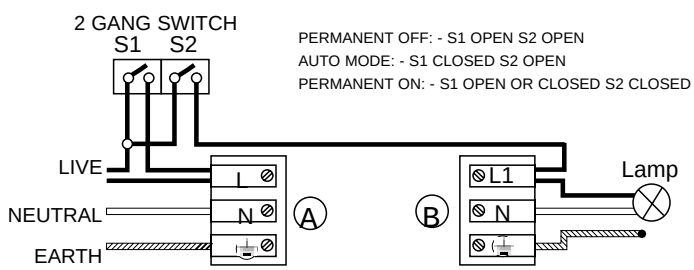


fig 17

7. PIR MOVEMENT DETECTOR FITTING INSTRUCTIONS

7.1 Where to position the PIR Movement Detector

- Position the Wirefree PIR Detector anywhere within 50 metres of the Receiver Unit, but avoid mounting it on or near a large metal object, on something which is likely to move - such as a small tree or loose fence panel - or where the light can shine directly at the PIR Detector. Also avoid siting where the unit may detect any of the following: heat sources (extractor fans, tumble dryer exhausts, etc.), reflective surfaces (pools of water, white-painted walls, etc.), nearby overhanging branches. (see fig 18)
- The ideal height to mount your PIR Detector is 2.5 metres, which makes the best use of the unit's detection zones as shown in the diagrams (see figs 19 and 20). Mounting the PIR Detector in a higher position (maximum 4 metres) may give a greater range, but the detection pattern will be less effective. The PIR Detector is much more sensitive to movement across its field of vision (see fig 21A) than movement directly towards it, so site the unit so that it looks across the normal approach to your property.
- The Wirefree PIR Movement Detector has a swivel sensor head to allow you to adjust the area of detection (See Testing Procedure in Section 8): tilting the head upwards will increase the detection distance, tilting it downward will reduce the detection distance. The sensor head will also turn to the left and right (see figs 22 and 23).
- You can further tailor the detection area to suit your needs by using the slot-in lens screening panels provided (see fig 24). To discover how much screening is needed, first obscure the PIR unit's lens with masking tape, progressively covering more of the lens until the required detection area is achieved. Then simply cut a piece of the plastic screening to cover the same area as the tape, remove the tape - being sure to remove any adhesive residue left behind - and slot the screening into the PIR Detector (see fig 24)

N.B If in normal conditions you find that something such as a tree or shrub is repeatedly activating the system, you can partially 'mask' the detector lens with electrical tape to stop the detector 'seeing' the disturbance. As a guide, the top half of the PIR Detector lens deals with long-range detection, the bottom half is for short range. Alternatively, the PIR Detector can be easily repositioned in a more suitable location.

7.2 Fitting the Wirefree PIR Movement Detector

NOTE:Before fixing the PIR unit to the mounting surface, it is advisable to check that the system works correctly (i.e. that the transmitter and receiver are within radio range of each other) by temporarily fixing the PIR Detector in the chosen location.

- Open the PIR Detector by inserting a small slotted screwdriver into the slot at the base of the unit. Push the screwdriver gently to release the catch and to allow the front cover to be opened fully - the cover is hinged at the top (see fig 25).
- Check inside to identify the battery connector and the row of eight slider-switches
- If you changed the system code switch settings in the receiver unit (Section 5), make sure you have set the same code in the PIR detector.
- Place the backplate of the unit in the desired position and mark the locations of the fixing holes (see fig 27). Next, drill the holes to the required depth and insert the wall plugs.
- Clip a 9V PP3 (6LR61) ALKALINE battery to the connector and place the battery in its holder (see fig 26).
- Fit the unit in place, close the cover and click it shut.

8. TESTING YOUR SYSTEM

Once your wirefree system is installed, test it by following the 'Walk Test' steps below.

1. Set the two adjustment controls on the underside of the PIR Detector as follows:
   TIME - turn fully anticlockwise to min (see fig 29).
   LUX - turn fully clockwise to max (see fig 30).
   With these settings the system is in test mode and will work in full daylight. A small red light (LED) behind the PIR detector lens will illuminate briefly each time movement in front of the PIR is detected.
2. Ensure mains power is being supplied to the Receiver Unit.
3. Walk across the detection area approximately 5 metres from the PIR Detector. As you walk through the first detection zone, the LED should light up. Now stand still until the LED goes out - this should take about 1 second. The light fitting wired to the Receiver Unit will also turn on for 3 seconds.
4. Start moving again. As you cross each zone the LED and light fitting should illuminate as in step 3.
5. Repeat steps 3 and 4, walking at various distances and angles to the unit. This will enable you to discover the detection pattern.
6. If the detection area is too small for your requirements, angle the PIR Detector head up - this should increase the coverage distance. Similarly, angling the head downwards will reduce the range. The tilt and swivel head also allows you to move the unit from side to side, for further adjustment of the detection area. For more unusual requirements, such as extremely short range, you may need to 'mask' an area of the sensor lens - see Section 7.1.

9. SETTING FOR AUTOMATIC OPERATION

Having completed the 'walk test' procedure, you can set the unit for automatic operation as follows:

- Adjust the TIME control to the setting you require. This controls the length of time the security light stays on once activated, after all motion stops. The minimum time (control set fully anticlockwise) is about 15 seconds; the maximum (control set fully clockwise) is approximately 15 minutes. Set the control at whichever timing suits you between these limits. See fig. 31 for approximate position of time settings.

N.B. Remember that the time you set relates to how long the lamp remains on after all motion stops. If someone triggers your lamp it will remain on for as long as that person keeps moving in the detection area, then continue to illuminate for the timing you have set after all motion stops.

- The 'LUX' control enables you to set the system to become active when a certain level of darkness has fallen each evening. Set the LUX by turning the control fully anticlockwise, and wait until darkness begins to fall. When it is dark enough for you to want the lamp to be operative, turn the LUX control clockwise slightly, move your hand slowly in front of the PIR, turn the LUX control a little more and repeat the procedure until the light activates. Leave the control set at this point.
- If after a few nights you decide the system is starting too early, turn the LUX control slightly anticlockwise. Or if it starts too late, turn clockwise.

10. BATTERY REPLACEMENT

The PP3 9 volt battery should provide the PIR Detector with around 18 months operation*. When the battery is nearing the end of its life - about 30 days before failure - the PIR Detector sends a message to the receiver, **EACH TIME IT IS ACTIVATED so that THE LIGHT BRIEFLY TURNS ON, THEN OFF THEN ON AGAIN IN QUICK SUCCESSION. THIS NOTIFIES YOU TO CHANGE THE BATTERY.**
As this 'change battery' message will not occur for some time and you may forget about it in the future, we have included a reminder sticker which should be positioned in a prominent place.

**Depending on the number of activations each day and the effect of low temperatures.*

11. EXTENDING THE SYSTEM

To extend your wirefree automatic lighting system, additional PIR Detectors can be purchased to extend the area of intruder detection. Further PIR Detector and Receiver kits can be installed to operate on different system codes. This allows you to 'zone' your security lighting, so for instance, you can cover a distant outbuilding or secondary access to your property without having lights turning on elsewhere. Remember that if you have more than one PIR Detector in the same system (set with the same system code), the light or lights will stay on until the last detector no longer detects any movement, and then continue to be illuminated for the duration of the 'light on' timing you have chosen.

12. CLEANING

Occasionally use a soft damp cloth to gently clean the PIR unit lens, and the plastic cases of both the PIR unit and receiver. Take care not to accidentally move the detector head.

13. FAULT FINDING

If your wirefree system fails to work properly, complete the relevant test or tests which follow.

PROBLEM — Light does not operate when it should…

…Ever — Confirm that bulb, mains supply, and battery are operating correctly. Also ensure that the system codes in each unit match, and that the PIR is within the operating range of 50 metres. If all these are OK, go to the next stage.

…Intermittently

… At night — Although this is most likely to be an incorrect lux setting, first confirm that there is not another cause by following the next step.

→ TEST THE SYSTEM'S OPERATION

Carry out a 'Walk Test' (see section 8). This allows you to check that the PIR is functioning when it is functioning and whether the Receiver is picking up its signal.

→ TEST OK → SOLUTION

Set timing control back as it was and set lux control to a 'brighter' setting than before. The conditions may have generally been too bright for the detector setting. An intermittent problem may also be due to occasional radio interference.

PROBLEM → SOLUTION

PIR does not detect properly

The PIR 'view' may be obscured by objects that partially hide persons to be detected (e.g. posts, pillars). The PIR position or sensor alignment may need adjusting.

→ Try repositioning or adjusting the angle or direction of the PIR head.

PROBLEM → SOLUTION

PIR detects effectively but light doesn't operate

Radio transmission is not being received due to distance or obstructions or radio interference. Also large metal objects (including vehicles) close to the Detector Transmitter or Receiver Unit can cause this.

→ Try repositioning the detector to allow a stronger signal to reach the Receiver.

PROBLEM	SOLUTION
Light stays on continually at night.	■ The PIR Detector may be suffering from false activation. Check this by completely covering the Detector's lens with a thick cloth, masking tape or a piece of cardboard. This will stop the Detector 'seeing' anything. If the Detector now lets the light switch off after the set time and does not light it again, this indicates that the sensor has been picking up movement within its range. Slightly adjust the position/angle of the PIR Detector to solve the problem. Masking the area of the lens corresponding to the location of the interference is another solution; and since the PIR Detector is wirefree, even moving it to a new location is easy.
PIR Detector activates the light in daytime.	■ The level of light at the Detector may be too low for the current photocell LUX setting, activating the unit as though it were night-time. In normal daylight, adjust the LUX control slightly anticlockwise. Wait outside the detection area until the light goes out, then re-enter it. If the PIR Detector still activates, the LUX setting is still too high. Adjust and test again until the unit stops activating the light.
Detection range varies from day to day.	■ The PIR Detector operates by sensing temperature differences. On a cold winter's night, body heat stands out more contrastingly from the surrounding cold conditions, so the PIR Detector is more effective. On a warm night the contrast is not so great, and the detector is less effective. For this reason, it may be necessary to make seasonal adjustments to the PIR Detector.
Light activates for no obvious reason, at random.	■ The PIR Detector may be suffering from false activation. Check this by completely covering the detector's lens with a thick cloth, masking tape or a piece of cardboard. This will stop the Detector 'seeing' anything. If the Detector now lets the light switch off after the set time and does not light it again, this indicates that the sensor has been picking up movement within its range. Slightly adjust the position/angle of the PIR Detector to solve the problem. Masking the area of the lens corresponding to the location of the disturbance is another solution; and since the PIR detector is wirefree, even moving it to a new location is easy.
	■ Wind may be activating the detector, due to where it is sited; try it in a different location.
	■ Small animals and pets may be affecting the unit - try masking the bottom half of the lens to stop the Detector from picking up low level objects.
	■ Also check that the PIR Detector is not sensing movement from nearby traffic or pedestrians. Alternatively, for the above problems, check if a nearby wirefree system is operating with the same code. In this instance the light would still operate if the detector lens was completely masked off or if the battery was removed - change the coding if necessary.

14. TECHNICAL SPECIFICATIONS

PIR MOVEMENT DETECTOR	
Transmitter range -	Up to 50 metres
Detection range -	Up to 12 metres
Angle of detection -	140°
Detector battery life -	Minimum 18 mths, at 8 activations per day and constant 15°C
Battery type -	PP3 (6LR61) 9 volt alkaline
Time on adjustment -	15 secs - 15 mins
Photocell adjustment -	5 lux to daylight
Temperature operating range -	-20°C to +35°C

RECEIVER UNIT	
Power supply -	220 - 240 volt AC 50Hz
Switching capacity -	1000W tungsten filament, 1000W tungsten halogen lighting (2 amp inductive loads)
Temperature operating range -	-20°C to +50°C

GUARANTEE

Friedland Limited guarantee that should any defects in workmanship or materials occur in this product within 3 years from the date of purchase, it will be replaced provided it has not been dismantled, altered, or a repair attempted. To comply with the 3 year guarantee, the installation and usage of the product must be in accordance with the Technical Specification above and in particular, care should be taken to ensure the maximum switching loads are not exceeded. The product should be returned to place of purchase along with this manual, the purchase receipt and details of circumstances of the malfunction given. This undertaking is in addition to the consumer's statutory rights and does not affect these rights in any way.

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