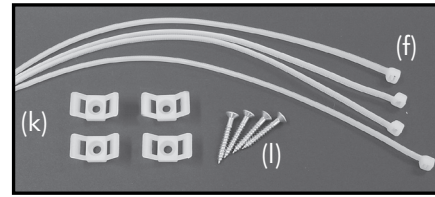


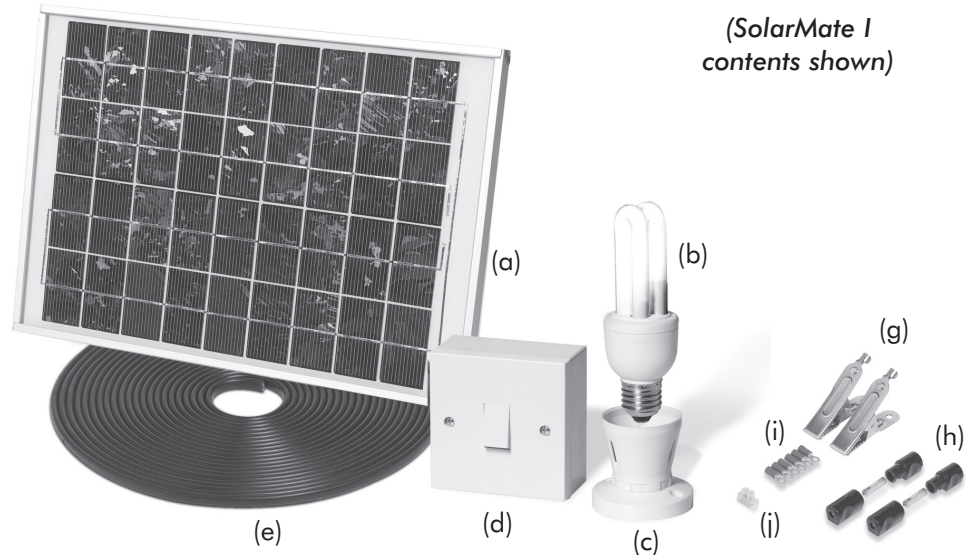
SolarMate®

SOLAR POWERED MAINS FREE LIGHTING
INSTRUCTIONS

SolarMate Kit Contents



(SolarMate I contents shown)



SolarMate I:

- 1 x 5wp Solar Panel (a)
- 1 x Long Life Bulb (40-45W equivalent) (b)
- 1 x Bulb holder (c)
- 1 x Wall switch (d)
- 5m Cabling (e)
- 4 x Cable ties (f)
- 2 x Crocodile clips (g)
- 2 x In-line fuses (h)
- 6 x Ring terminals (i)
- 1 x Single connection block (j)
- 4 x Roof/wall mounting blocks (k)
- 4 x Mounting screws (l)
- 8 x Cable Clips (not pictured)
- Fixing screws for items (c) & (d)

SolarMate II:

- 1 x 10wp Powered Solar Panel
- 2 x Long Life Bulbs (40-45W equivalent)
- 2 x Bulb holders
- 1 x Wall switch
- 7m Cabling
- 4 x Cable ties
- 2 x Crocodile clips
- 2 x In-line fuses
- 6 x Ring terminals
- 1 x Single connection block
- 4 x Roof/wall mounting blocks
- 4 x Mounting screws
- 8 x Cable Clips (not pictured)
- Fixing screws for items (c) & (d)

SolarMate III:

- 1 x 18wp Solar Panel
- 1 x 4Ah Voltage regulator (not pictured)
- 2 x Fluorescent light tubes and fittings -self switched (40-45W equivalent)
- 7m Cabling
- 4 x Cable ties
- 2 x Crocodile clips
- 2 x In-line fuses
- 10 x Ring terminals
- 1 x Single connection block
- 4 x Roof/wall mounting blocks
- 4 x Mounting screws
- 8 x Cable Clips (not pictured)
- Fixing screws for items (c) & (d)

SolarMate III ES:

- 1 x 18wp Powered Solar Panel
- 1 x 4Ah Voltage regulator
- 4 x Long Life Bulbs (40-45W equivalent)
- 4 x Bulb holders
- 1 x Wall switch
- 7m Cabling
- 4 x Cable ties
- 2 x Crocodile clips
- 2 x In-line fuses
- 10 x Ring terminals
- 1 x Single connection block
- 4 x Roof/wall mounting blocks
- 4 x Mounting screws
- 8 x Cable Clips (not pictured)
- Fixing screws for items (c) & (d)

SolarMate IV:

- 1 x 28wp Solar Panel
- 1 x 4Ah Voltage regulator
- 4 x Fluorescent light tubes and fittings -self switched (40-45W equivalent)
- 10m Cabling
- 4 x Cable ties
- 2 x Crocodile clips
- 2 x In-line fuses
- 12 x Ring terminals
- 1 x Single connection block
- 4 x Roof/wall mounting blocks
- 4 x Mounting screws
- 14 x Cable Clips (not pictured)
- Fixing screws for items (c) & (d)

SolarMate IV ES:

- 1 x 28wp Powered Solar Panel
- 1 x 4Ah Voltage regulator
- 6 x Long Life Bulbs (40-45W equivalent)
- 6 x Bulb holders
- 2 x Wall switches
- 10m Cabling
- 4 x Cable ties
- 2 x Crocodile clips
- 2 x In-line fuses
- 12 x Ring terminals
- 1 x Single connection block
- 4 x Roof/wall mounting blocks
- 4 x Mounting screws
- 14 x Cable Clips (not pictured)
- Fixing screws for items (c) & (d)

SolarMate V:

- 1 x 43wp Solar Panel
- 1 x 4Ah Voltage regulator
- 6 x Fluorescent light tubes and fittings -self switched (40-45W equivalent)
- 10m Cabling
- 4 x Cable ties
- 2 x Crocodile clips
- 2 x In-line fuses
- 12 x Ring terminals
- 1 x Single connection block
- 4 x Roof/wall mounting blocks
- 4 x Mounting screws
- 14 x Cable Clips (not pictured)
- Fixing screws for items (c) & (d)

SolarMate V ES:

- 1 x 43wp Powered Solar Panel
- 1 x 4Ah Voltage regulator
- 8 x Long Life Bulbs (40-45W equivalent)
- 8 x Bulb holders
- 2 x Wall switches
- 10m Cabling
- 4 x Cable ties
- 2 x Crocodile clips
- 2 x In-line fuses
- 12 x Ring terminals
- 1 x Single connection block
- 4 x Roof/wall mounting blocks
- 4 x Mounting screws
- 14 x Cable Clips (not pictured)
- Fixing screws for items (c) & (d)

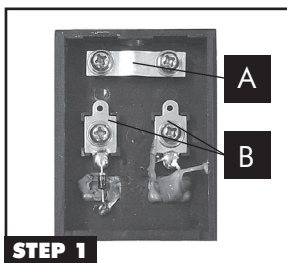
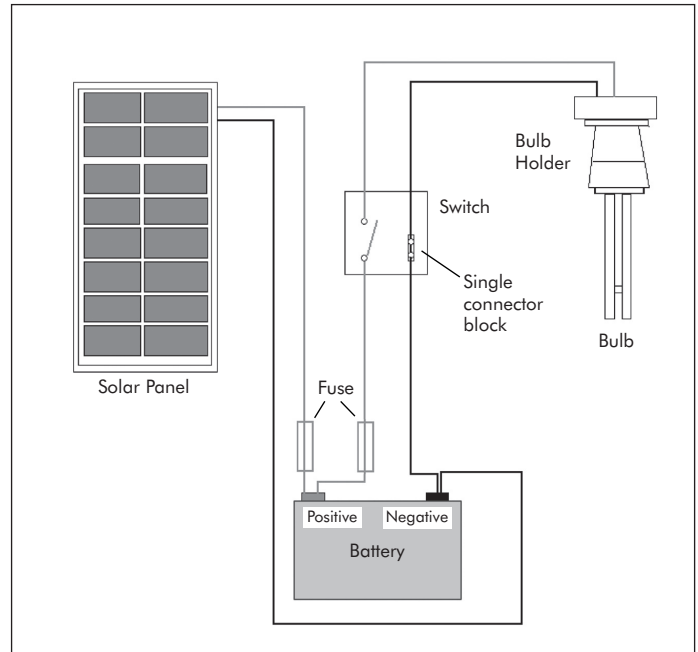
Connecting your SolarMate Kit

Please read all instructions carefully before any installation work begins.

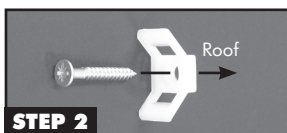
Please refer to circuit diagram, please observe correct polarity at all times: Positive = Red; Negative = Black

Positioning your Solar Panel

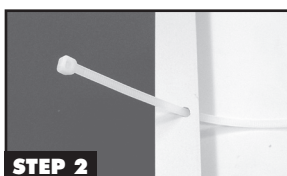
Position your solar panel, ideally on a sloping roof facing south, at an angle of 50-70 degrees to the horizontal. If this is not possible, remote positioning may be required to give maximum performance, although west or southwest will still provide good power generation. Avoid shaded areas.



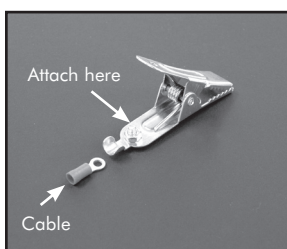
STEP 1
Connect Terminal Box



STEP 2
Screw Roof Mounting Blocks to roof



STEP 2
Feed Cable Ties through holes in panel before securing to Roof Mounting Blocks



STEP 3
Connect cable to crocodile clips

STEP 1 Fitting the Cable to the Solar Panel

- 1.1 Before fitting the cable to the solar panel, decide on the panel location and cut the appropriate length of cable ensuring it will reach from the solar panel to the battery.
- 1.2 Remove the cover from the terminal box on the rear of the solar panel.
- 1.3 Unscrew & remove the cable clamp (A). Loosen (do not remove) the two terminal screws (B)
- 1.4 Take one end of the cable & strip back the black outer sheath 4.5cm. Strip back the insulation of the red & black inner cables 1.5cm to expose bare conductor.
- 1.5 Feed the cable through the hole in the terminal box.
- 1.6 Twist the bare conductor ends tightly & wrap clockwise around the loosened terminal screws. Alternatively two ring terminals (supplied) can be crimped onto the bare conductor ends.

RED (POSITIVE); BLACK (NEGATIVE)
As marked on the inside of the terminal box

- 1.7 Tighten terminal screws, refit the cable clamp and replace the terminal box cover.

Note: The cable clamp will give best results with low profile cable is fitted with the bulge facing (touching) the cable.

STEP 2 Mounting the Solar Panel

- 2.1 Drill an 8mm access hole, ideally positioned close to or underneath where the solar panel will be located.
- 2.2 Fix the mounting blocks to the outer surface of the roof or wall as shown in 'STEP 2' picture on left.
- 2.3 Thread the cable ties through both loops on the mounting blocks.
- 2.4 Insert the loose end of the cable from the solar panel into the access hole and lower the panel onto the fixing surface, ensuring the pre-drilled holes on the back of the panel frame line up with the mounting blocks.

- 2.5 Thread the pointed end of each cable tie through each panel frame hole and then through the square end of the tie. Now pull the pointed end of the tie tight to lock off.
- 2.6 Cut off the loose end of the cable tie.
- 2.7 The access hole can now be filled to prevent leakage with a suitable sealant or adhesive.

STEP 3 Connecting Solar Panel to the system Battery

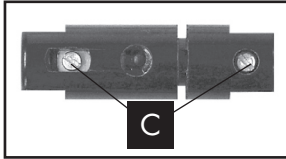
(Recommended battery size 35Ah to 85Ah - see notes, section A.) Site the battery in a well-ventilated & dry area; protect from frost. Always start with a fully charged battery. If the battery is flat at the time of installation of the SolarMate kit, allow the fully connected system a period of between 8 to 14 days to fully charge the battery before first use.

SolarMate I & SolarMate II solar panels can be connected direct to the battery using the cable supplied. A reverse feed diode is fitted to prevent discharge through the solar panel at night time. SolarMate III/ES, IV/ES and V/ES do not have a reverse feed diode fitted. This function is performed by the voltage regulator supplied in these kits - see section 3a. All SolarMate kits require a fuse (supplied) to be fitted on the positive (red) cable.

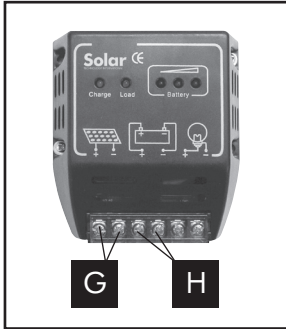
- 3.1 Strip back 20cm of the black outer sheath of the cable end to be connected to the battery.
- 3.2 Cut the red cable at the halfway point & strip 5mm of the red insulation from both the cut ends. Twist the bare wire ends tightly. Fit into the screw terminals C on each of the fuse holder pieces (See picture left).
- 3.3 For both SolarMate I and SolarMate II, connect the cable to your battery. Strip red and black insulation from the inner cable. Twist the bare conductor ends tightly & wrap clockwise around the loosened terminal screws. Alternatively two ring terminals (supplied) can be crimped onto the bare conductor ends.

Do not connect the battery until the installation is complete.

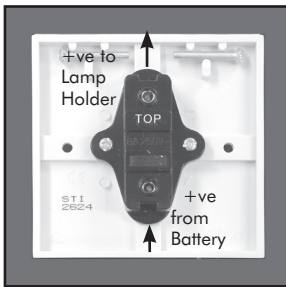
For step 3a, 4, 5 and 6 please see overleaf



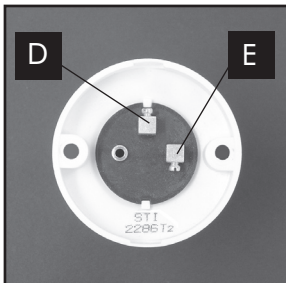
STEPS 3 & 4
Connect In-Line Fuse



STEP 3a
Connect Voltage Regulator



STEPS 4 & 5
Connect Wall Switch



STEP 6
Connect Lamp Holder

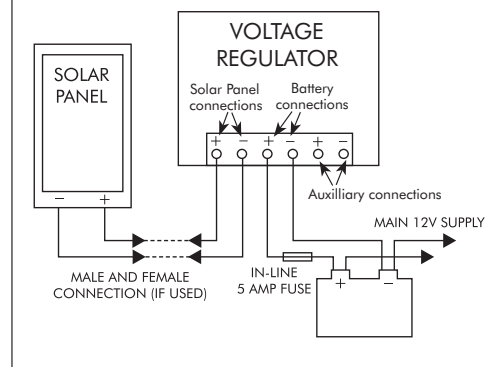
STEP 3a Connecting the Voltage Regulator

SolarMate III (ES), IV (ES) and V (ES) require a voltage regulator to protect the battery from overcharging and to ensure the panel does not discharge the battery at night.

- 3.1 Position the Solar voltage regulator as close as possible to the battery (must be a dry location).
- 3.2 Measure the distance between your battery terminals and the Solar voltage regulator.
- 3.3 Cut the measured distance from the end of the cable.
- 3.4 Prepare as described in 3.1 & 3.2 the end of the cable from the inline connector (if fitted) and attach to the two terminals (G) on the Solar voltage regulator.
- 3.5 Take one end of the remaining cable, prepare as above and attach to the centre terminals (H) on the Solar voltage regulator by using the same procedure as described in 1.6.

NOTE: RED = POSITIVE (+); BLACK = NEGATIVE (-)

Connecting the Voltage Regulator to a battery and Solar panel



STEP 4 Connect the Cable to the Wall Switch and Battery

NOTE - if SolarMate III, IV or V has been purchased each fluorescent fitting is individually switched, therefore ignore this section and go straight to **Connect Cable to Battery**.

Remove the knockouts at the top & bottom of the wall switch mounting box to allow cable access & secure to the wall at the desired location.

The wall switch (10Amp max) will control & switch the light fittings. The main supply from the battery will run through the wall switch via the in-line fuse. The positive cable is the wire that must be switched, the Negative wire must remain unbroken. It may be necessary to join the Negative wire with the single connector block supplied in the switch housing to complete the circuit. Do not connect the battery until the installation is complete.

Connect Cable to Wall Switch

- 4.1 Measure & cut to length the cable that will run from the battery to the Wall Switch.
- 4.2 Remove 3.5cm of the outer black cable sheathing.
- 4.3 Strip back approx. 5mm of insulation from the red & black wires.
- 4.4 Feed cable into the bottom of the switch mounting box.
- 4.5 Connect the red wire to the bottom of the switch.
- 4.6 Connect the black wire to the single connector block supplied.

Connect Cable to Battery

- 4.7 Strip back 20cm of the black outer sheath of the cable end to be connected to the battery.
- 4.8 Repeat Step 3.2.
- 4.9 Follow step 3.3 and connect the cable ends to the same crocodile clips as the cable running from the solar panel.

Do not connect the battery until the installation is complete.

STEP 5 Measure & cut Cable to run from the Wall Switch to the Lamp Holder

- 5.1 Repeat steps 4.2 & 4.3.
- 5.2 Feed cable into top of switch mounting box.
- 5.3 Connect the red wire to the top of the switch, marked TOP (See picture left).
- 5.4 Repeat step 4.6.
- 5.5 Secure the switch plate to the mounting box.

STEP 6 Connecting the Lamp Holder

- 6.1 It will be necessary to remove or cut away a small portion of plastic at the lamp holder base to allow cable entry. The cut outs can be seen at the base and can be removed with a sharp knife. The lamp holder will need to be connected up electrically before finally fixing in position.
- 6.2 At the cable end to be connected to the lamp holder, remove 4cm of outer sheathing.
- 6.3 Repeat step 4.3.
- 6.4 Connect red wire to Lamp Holder positive (centre) terminal (D) located at the 12 o'clock position (See picture left).
- 6.5 Connect the black wire to the Lamp Holder negative outer Terminal (E) located at 3 o'clock. (See photograph left)
- 6.6 Secure the Lamp Holder at the desired location.
- 6.7 SolarMate II, III (ES) and V (ES) have more than one lamp holder to fit. Simply connect all subsequent lamp holders to the first by connecting red to red and black to black (parallel connection). This also applies to connecting the fluorescent light fitting on SolarMate III, IV and V.

Notes

- a. If a battery capacity of less than 35Ah or 70Ah will be used with Solar Mate I and II respectively, the solar panel must be disconnected from the battery during long periods of system inactivity (e.g when on holiday or in the summer etc) or overcharging may occur and the battery could be permanently damaged. Alternatively contact Solar Technology International who can supply a voltage regulator (at a small extra charge).
- b. We recommend the use of a standard leisure (caravan) battery or auto battery. These can typically be found in most car / caravan accessory stores and are typically 75Ah to 85Ah capacity. If the battery location could cause a spillage from the battery then we would recommend using a Solar Technology International sealed deep cycle battery - see www.solartechtechnology.co.uk
- c. When routing cables & fittings, care must be taken that cables & fittings cannot become damaged in the normal course of use by machinery or livestock, & care must be taken to protect cables & fittings from damage, where necessary, from any external influences. Care must also be taken near any gas supplies, as arcing from switches & appliances may be a hazard.
- d. If an existing electrical installation is already in place or in service, the 12v DC Solar installation and sub circuits, including battery, must be kept totally separate & isolated, and in no way integrated, or made part of the original existing system. 12 volt DC & 240AC cables cannot be run in the same conduits & trunking.
- e. Run times may vary and will be dependent on weather conditions, the solar panel will produce energy even in cloud conditions, but winter production will be less primarily because of the position of the sun in relation to the solar panel. Less power is produced when the sun is low in the sky.
- f. Increased run times can be achieved in spring/summer months when the sun is much higher in the sky.
- g. Normal battery maintenance applies: check fluid levels on a regular basis, top up as necessary.
- h. Extra cable can be purchased by the metre from Solar Technology International.
- i. Many 12v accessories can be added: lighting, audio equipment, visual equipment, water pumps etc, to make a comprehensive installation.
- j. Both SolarMate systems can be expanded to power more appliances by 'daisy chaining' more solar panels to the original installation. Please contact Solar Technology on 01684 774000 for advice on your specific requirements.