ROMAN

PWRGRID

6.5W / 13W / 20W / 45W

SOLAR CHARGER AND MAT KITS

User Manual and Product Specifications

Part No. PRI20256 / PRI20267 / PRI20278 / PRI20289

Introduction

Roman Solar Charger and Mat Kits are designed for Australia's tough conditions, using the latest high-quality components which provide dependable performance and reliability in an easy to use compact solar kit.

Ideally suited for hiking, camping, 4WDriving and other activities where access to power is limited. Will quickly and easily charge mobile devices such as smartphones, cameras, power banks, GPS units and more. The Auto Restart function automatically restarting the charging process when sunlight is interrupted by lowlight conditions.

Other suggested items that could also be charged include;

Media players, action cameras, Bluetooth headsets and speakers, head lamps, tablets, and 12V DC batteries*

**PRI20289 45W Solar Mat Kit.*

ETFE Cell Lamination

To offer the best possible life and performance from this solar range, Roman is using ETFE material to achieve the ultimate cell protection. The ETFE material has many features which make it ideal to be used as a protective surface over a solar cell. Technically known as Ethylene Tetrafluoroethylene, ETFE has a polymer base and has been design to have high strength over a wide temperature range and be highly resistant to corrosion. ETFE is water proof and highly transparent at 97%, has excellent chemical resistance and a relatively high melting temperature. It is also extremely UV resistant, will not discolour or degrade over many years of use.

Protecting the C60 cell with ETFE will effectively double the lifespan compared to that of polyethylene terephthalate (PET) cell lamination.

Applied as a thin film over the cells and uniquely textured from the laminating process allowing more light to be captured by the undulating surface adding further efficiency to the C60 cell. Due to the non-adhesive properties, ETFE has a 'self-cleaning' effect and will naturally reduce any build-up of foreign deposits which may block the suns light. These deposits do not sick and can easily be wiped off or washed away.

Auto Restart Technology

All Roman Solar Charger Kits and the 45W Mat Kit are equipped with the latest in solar charger technology offering 'Auto Restart'. The controller knows the difference between the various charging states and will distinguish if a battery is fully charged or it needs to reconnect if charging is interrupted due to lowlight or shadowing conditions.

IMPORTANT: **This user manual contains important safety information and operating instructions. Please read this manual carefully to familiarise yourself with the product and accessories before connecting to the battery being charged. Keep this manual in a safe place for future reference.**

General Warnings

In reference to the Solar Charger Kits and Solar Mat Kit:

- Follow the assembly instructions within this manual carefully as to not cause harm to yourself or others
- Do not charge a damaged battery
- Do not charge a frozen battery
- Do not use this solar kit if it is damaged in anyway, contact customer service for advice if necessary, details are at the back of this booklet
- Do not disassemble the solar panels or controller
- This product must not be used by children or by an adult who has reduced physical or mental capabilities. Also, this product is not to be used by an adult who has a lack of knowledge or experience with this type of product, unless they are being supervised by a person who is competent in the safe use of this type of product.

In reference to the 45W Solar Mat Kit:

- Do not connect the solar mat output wire directly to the battery being charged. The controller must be used inline. Failure to do so, could cause permanent damage to the battery and or personal injury if the battery ruptures.

- Follow the assembly instructions within this manual carefully as to not cause harm to yourself or others, particularly when 'connecting' and 'disconnecting' the DC clamps (Direct Current clamps) to or from the battery being charged
- Do not charge 'dry' cell rechargeable batteries with this product. To charge 'dry' cell rechargeable batteries, connect an appropriate sized 240V invertor to the 'wet' cell battery being charged by the solar mat. Then connect the 240V 'dry' cell charger which came with the batteries to the 240V inverter ensuring that the manufactures guidelines are followed
- Do not charge 'dry' cell non-rechargeable batteries
- Ensure that the battery being charged is in a well ventilated area as poisonous gasses are emitted during the charging process
- Ensure that appropriate personal protective equipment (PPE) is worn while in close proximity to the battery being charged; Safety glasses, Gloves, Protective clothing as a minimum
- Ensure that no metal objects or jewellery contacts the battery terminals. It is recommended to remove rings, bracelets etc when working with lead-acid batteries. A lead-acid battery can produce a short-circuit current high enough to melt metallic materials possibly causing severe burns
- Do not smoke or have the battery in the vicinity of sparks, open flame, fuel or solvents while the battery is being charged. Gasses emitted could be ' EXPLOSIVE'
- Battery acid is highly corrosive. Avoid 'CHEMICAL BURNS' wash effected area immediately with clean running water if contact is made with your skin or eyes. Seek medical advice

- Disconnect power from the solar mat by separating at least one join between either extension lead before 'connecting' or 'disconnecting' the DC clamps to or from the battery
- Ensure correct DC clamp connection 'sequence' when 'connecting' and 'disconnecting' the DC clamps to or from the battery being charged. A simple way to remember is; The negative '-' DC clamp is the 'Last' on and the 'First' off (the negative '-' battery terminal). This will reduce the dangers of a potential short-circuit and excessive sparking of the battery terminal
- Ensure correct DC clamp connection 'polarity' when 'connecting' to the battery being charged. Connect the Red coloured DC clamp to the positive '+' battery terminal. Then connect the Black coloured DC clamp to the negative '-' battery terminal
- Immediately cease charging if the battery being charged is found to be excessively hot, leaks or appears to be taking a long time to charge
- Caution should be taken when charging an accessory battery when connected to a 'Dual battery Monitor' or a 'Volt Sensitive Relay' (VSR). It is important that the battery circuit is 'open'.

Understanding your Solar Charger Kit and Solar Mat Kit

Solar Charger kits include:

1. 6.5Watt solar charger
2. 13Watt solar charger (unfolded)
3. 20Watt solar charger (unfolded)
4. Neoprene storage pouch
5. USB cable
6. 4 x Carabiners
7. 4 x Suction cups
8. Instruction manual

Solar Mat kit includes:

9 45Watt solar mat (unfolded)

10 3m Extension lead with 30A Anderson style plugs

11 Fused 0.8m battery clamp extension lead

12 8A PWM weatherproof controller

13 Neoprene storage pouch

14 USB cable

15 4 x Carabiners

16 4 x Suction cups

17 Instruction manual

Features

In reference to the 6.5Watt, 13Watt, 20Watt Solar Charger Kits:

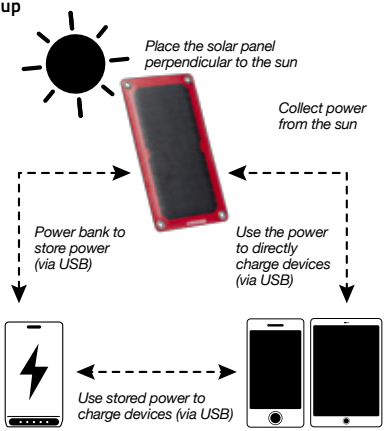
- Three models to choose from, ranging from 6.5Watt to 20Watt output
- Lightweight, perfect for carrying
- Next generation SunPower® 3.4W cells, delivering ultimate performance
- ETFE cell lamination, providing maximum protection from the elements
- Smart charge controller with Auto-Restart Technology, delivering continuous power
- Simple 'Plug' and 'Play' USB connections
- Neoprene storage pouch

In reference to the 45Watt Solar Mat Kit:

- Lightweight, perfect for carrying
- Next generation SunPower® 3.4W cells, delivering ultimate performance
- ETFE cell lamination, providing maximum protection from the elements
- Smart charge controller with Auto-Restart Technology, delivering continuous power
- Dual output, USB and 12V DC 30A Anderson style plug connection
- 8A Pulse Width Modulation (PWM) smart solar controller
- 3M extension lead with 30A Anderson style plug connections
- 0.8M extension lead with battery clamps
- Neoprene storage pouch

6.5Watt, 13Watt and 20Watt Solar Charger Kit

Operation – Setup



In reference to the 6.5Watt, 13Watt, 20Watt Solar Charger Kits:

Step 1 Remove the solar charger from the storage pouch and connect the USB cable* to the controller and the device being charged

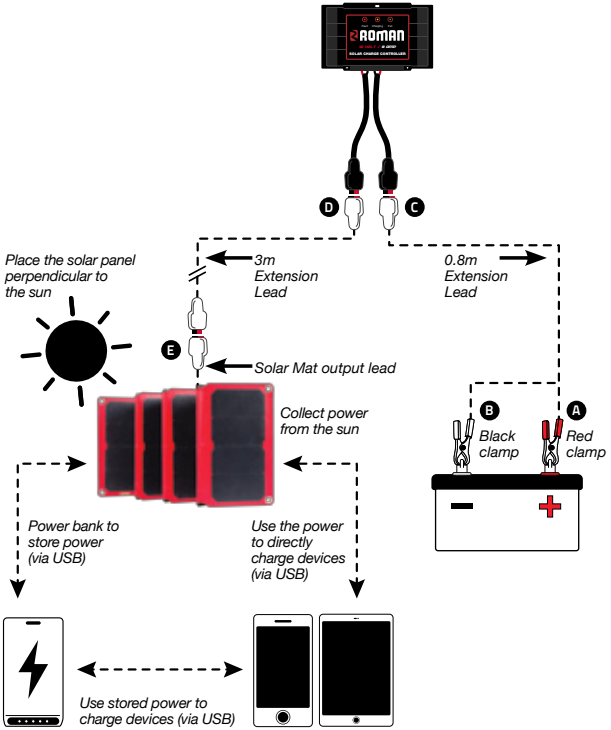
Step 2 Unfold the solar charger (13Watt and 20Watt) and position towards the sun. For optimum charging, position perpendicular to the sun's rays and periodically reposition throughout the day.

Step 3 The solar charger will start producing power to the devise being charged automatically

**Use the USB cable supplied or the USB cable supplied with the device*

45Watt Solar Mat Kit

Operation – Setup



Note: It is recommended to establish connections (DC clamps) at the battery being charged first. Then, join the connectors in sequence working back towards the solar mat. This will eliminate the danger of having 'live' battery clamps inadvertently being sort-circuited causing sparks and possibly fire.

Also ensure that the panels are kept in direct sunlight for optimum efficiency. The solar panels may have to be moved periodically throughout the day to track the sun's path.

45Watt Solar Mat Kit

Operation – Setup

Step 1 Remove the solar mat and accessory leads from the original packaging or storage pouch. Check the solar mat, leads and connectors for any damage before use.

Note: If damage is found on any part, it is highly recommended that they are replaced with genuine parts available from Primus Australia Pty Ltd. Please contact Primus customer service (details are at the back of this booklet) if spare parts are required.

Select a suitably cleared area to unfold the solar mat. The position should allow the solar mat to have a clear view of the sun and facing in the direction of 'North' as close as possible.

WARNING: Cells (panels) will start producing electricity as soon as they are exposed to the sun. Care must be taken when connecting the DC clamps to the battery and joining the extension leads. To reduce the possibility of an electric shock or short-circuit, it is recommended to place a blanket or trap over the panels to block out any sunlight temporally while all connections are made.

Step 2 Refer to the specification label on your battery or consult the battery manufacture to establish the type of battery being charged. Set the 'DIP' switch on the rear of the controller to the matching battery type being charged.

Step 3 FIRST, connect the DC clamp on the 0.8m extension lead to the correct polarity terminals on the battery being charged. Example; **A** 'RED' DC clamp to the Positive '+' terminal and the **B** 'BLACK' DC clamp to the negative ' –' terminal.

C Connect other end of the 0.8m extension lead (30A plug) to the controller output (30A plug)

D Connect the controller input lead (30A plug) to either end of the 3m extension lead (30A plug) then finally, join the remaining end of the 3m extension lead to the solar mat output lead **E**

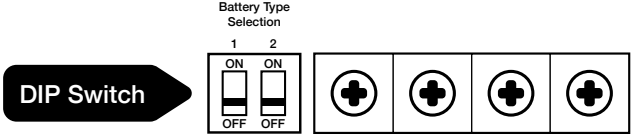
Ensure the all connections are firm and that the extension lead is positioned not to cause a tripping danger to people walking by. And that's it, your battery will now be charging.

45Watt Solar Mat Kit

Operation – Dip Switch

Please check your battery manufacture's specifications to select the correct battery type to be charged. There are four battery types to select from, including; GEL, AGM, WET (conventional lead-acid) and Calcium.

The 'DIP' switch is located on the rear of the solar controller. Use the 'DIP' switch to select the corresponding settings to match the battery type that you are charging from the diagram below. The default setting from the factory is AGM type battery.

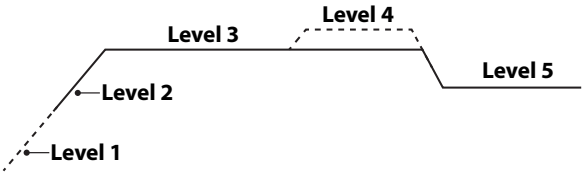


Battery Type			
AGM	(14.4V)	OFF	OFF
GEL	(14.1V)	ON	OFF
WET	(14.7V)	OFF	ON
Calcium	(14.9V)	ON	ON

IMPORTANT: **Once the 'DIP' switch setting have been selected and the charging process has begun, do not change the 'DIP' switch setting at this point as damaging to the battery may occur. Disconnect the battery before changing the 'DIP' switch setting.**

45Watt Solar Mat Kit

Operation – Charging



1. **Soft Charge:** When a battery has been over-discharged, the controller will softly ramp up the battery's voltage to 10V
2. **Bulk Charge:** Maximum current charging until the battery rises to absorption level
3. **Absorption Charge:** Constant voltage charging until the battery is over 85%
4. **Equalization Charge:** Only for WET or Calcium battery types and when the battery is deeply drained below 11.5V. It will automatically run this stage to bring the internal cells to an equal state in an attempt to restore lost capacity. (GEL and AGM type batteries do not run this equalization charge)
5. **Float Charge:** Battery is fully charged and maintained at a safe level.

45Watt Solar Mat Kit

Operation – LED Indication and Fault Codes

Three LED's indicate the charging status & fault connection	Fault	Charge	Full
	Red	Blue	Green
Solar power present – no battery connected	ON	SLOW Flash	SLOW Flash
Battery reversed	ON	FAST Flash	FAST Flash
Solar panel reversed	OFF	OFF	OFF
Soft start charging	OFF	SLOW Flash	OFF
Bulk, Absorption, Equalization charging	OFF	ON	OFF
Float charging	OFF	OFF	ON
Solar panel weak	SLOW Flash	OFF	OFF
At night, no charge	OFF	OFF	OFF

Customer Service

For more information call 1300 555 197
Email: service@companionbrands.com.au

Technical Details

Solar Chargers/Mat	6.5 Watt	13 Watt	20 Watt	45 Watt
Part No:	PRI20256	PRI20267	PRI20278	PRI20289
Cell make:	SunPower®C60	SunPower® C60	SunPower®C60	SunPower®C60
Cell type:	3.4W Monocrystalline	3.4W Monocrystalline	3.4W Monocrystalline	3.4W Monocrystalline
Cell efficiency:	22.5%	22.5%	22.5%	22.5%
Maximum power (Pm):	6.8W	13.6W	20.4W	47.6W
Current at max power (Imp):	N/A	N/A	N/A	3.1A (Via Anderson style plug)
Voltage at max power (Vmp):	6.5V	6.5V	6.5V	15.4V
Output connection:	1 x USB 5V 1A	2 x USB 5V 2A	2 x USB 5V 2A	2 x USB 5V 2A and 1 x 30A Anderson style
Cell Encapsulation:	ETFE lamination	ETFE lamination	ETFE lamination	ETFE lamination
Folded dimension L x W x H:	N/A	16.5 x 30.4 x 2.2cm	16.5 x 30.4 x 2.5cm	17.0 x 28.0 x 3.5cm
Unfold dimension L x W:	16.3 x 30.4cm	33.0 x 30.4cm	50.0 x 30.4cm	120.0 x 28.0cm
Weatherproof:	Yes	Yes	Yes	Yes
Net weight (total kit):	0.40KG – Including accessories	0.63KG – Including accessories	0.83KG – Including accessories	2.0KG – Including accessories
Portable Controller				
Micro control unit:				PWM
Rated solar panel amps:				8A
Readout:				LED
Number of battery types:				4
Input and Output connectors:				30A Anderson style
Dimension L x W x H:				10.0 x 6.5 x 2.5cm
Weatherproof:				Yes

Notes:

Notes:

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