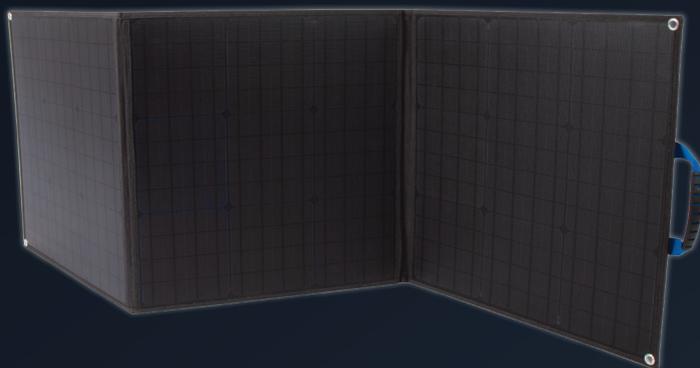


COMPANION[®]

TRUSTED SINCE 1941

SOLAR CHARGERS

120W & 200W



OWNERS MANUAL

Part No. 10000068 / 10000069

**IMPORTANT: Read these instructions for use carefully before operating the unit.
Keep these instructions for future reference.**

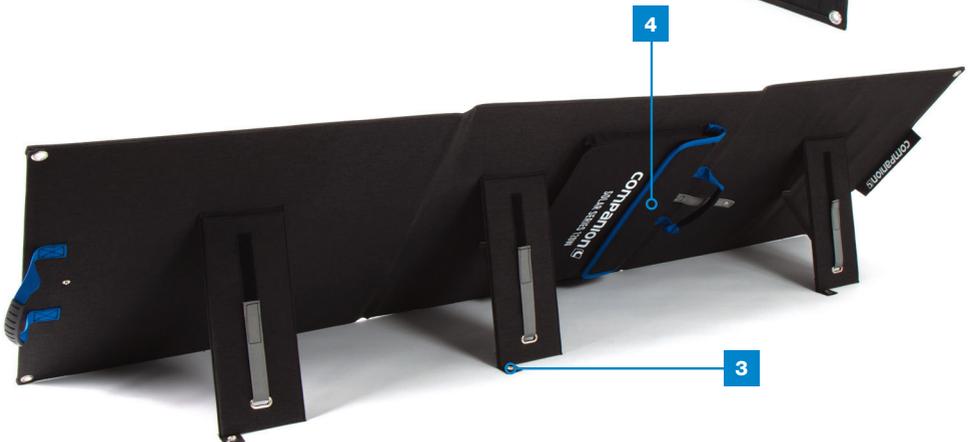
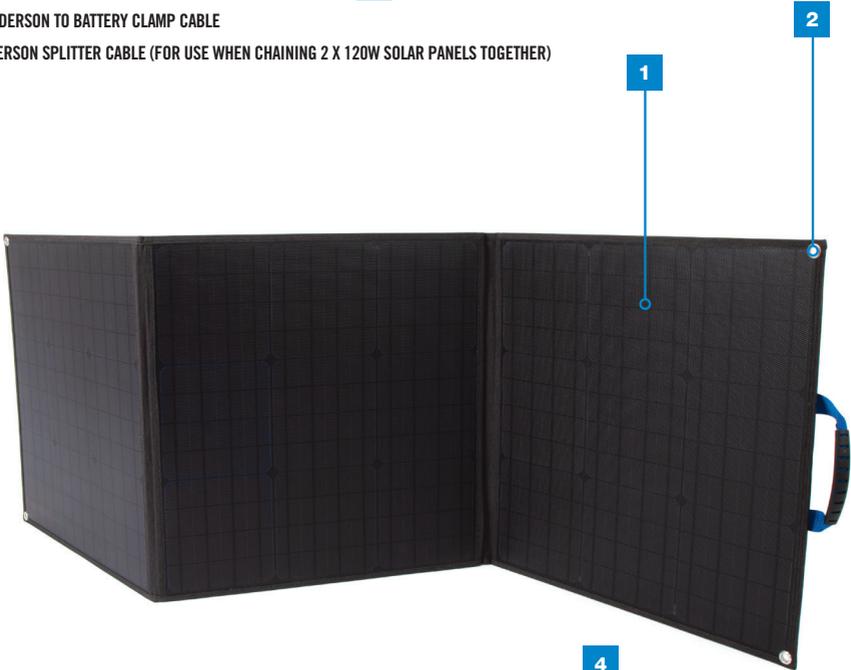
SAFETY INFORMATION

- Follow the 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 disassemble the solar panel or controller
- Do not use this solar kit if it is damaged in any way – contact Customer Service for advice if necessary
- To be repaired by qualified persons only – contact Customer Service on 1300 555 197
- This product must not be used by persons (including children) with reduced physical or mental capabilities. Also, this product is not to be used by a person 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
- Do not connect the solar mat output wire directly to the battery being charged unless the battery has a built-in controller. A controller/regulator must be used inline. Failure to do so, could cause permanent damage to the battery and or personal injury if the battery ruptures
- Ensure that the battery being charged is in a well ventilated area as poisonous gases may be 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.
Gases emitted could be EXPLOSIVE
- Battery acid is highly corrosive. Avoid CHEMICAL BURNS by washing the affected area immediately with clean running water if contact is made with your skin or eyes and seek medical advice
- 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 'Last' on and 'First' off (the negative '-' battery terminal). This will reduce the dangers of a potential short circuit and excessive sparking of the battery terminals
- 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
- NOT for long term permanent installation
- Make sure the battery has enough voltage for the controller to recognize the battery type before first installation
- The controller is suitable for Lithium batteries and lead-acid batteries (OPEN, AGM, GEL)
- The controller will be hot when running. Please note that the controller needs to be installed on a flat, well ventilated surface

UNDERSTANDING YOUR APPLIANCE

120W SOLAR CHARGER

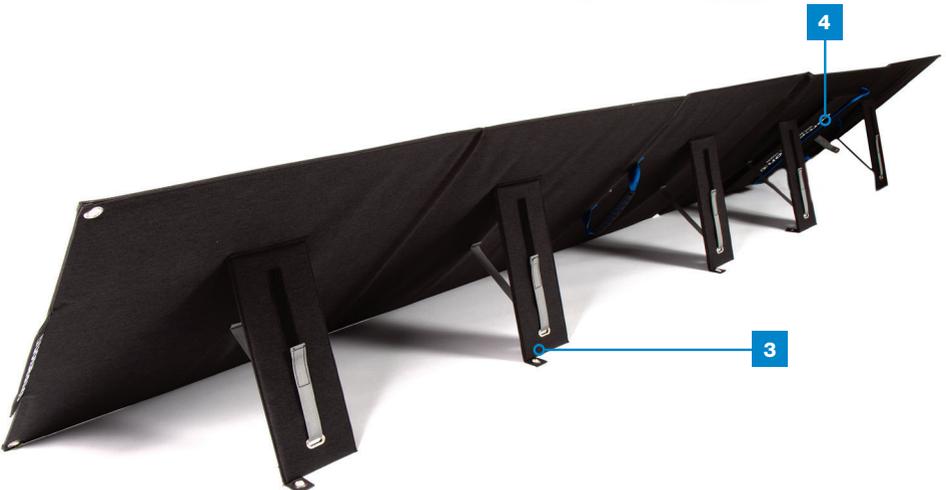
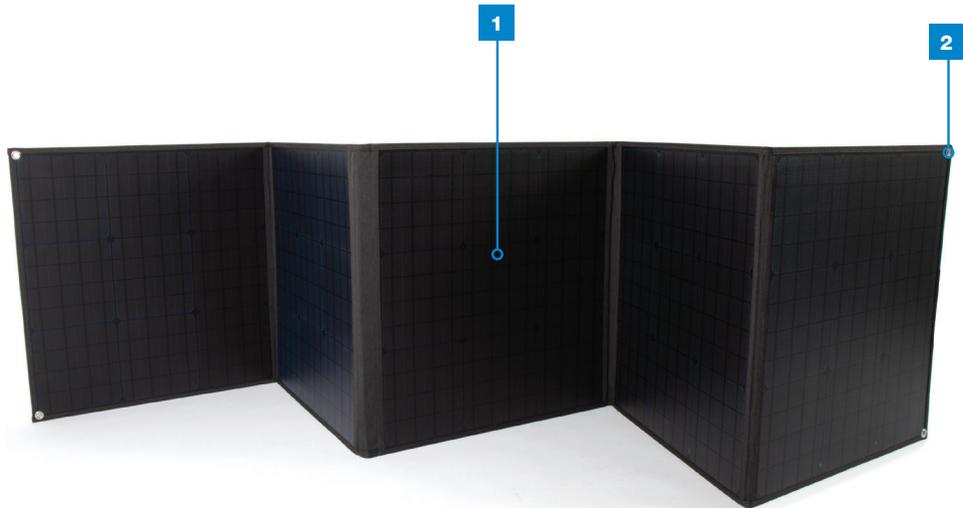
1. SOLAR PANEL
2. REINFORCED EYELETS
3. STAND WITH PEG DOWN POINT
4. ACCESSORY POCKET
5. 20A PWM CONTROLLER WITH 2 X ANDERSON CONNECTORS
6. 5M ANDERSON CABLE
7. 0.5M ANDERSON TO BATTERY CLAMP CABLE
8. 2M ANDERSON SPLITTER CABLE (FOR USE WHEN CHAINING 2 X 120W SOLAR PANELS TOGETHER)



UNDERSTANDING YOUR APPLIANCE

200W SOLAR CHARGER

- 1. SOLAR PANEL
- 2. REINFORCED EYELETS
- 3. STAND WITH PEG DOWN POINT
- 4. ACCESSORY POCKET
- 5. 20A PWM CONTROLLER WITH 2 X ANDERSON CONNECTORS
- 6. 5M ANDERSON CABLE
- 7. 0.5M ANDERSON TO BATTERY CLAMP CABLE



OPERATION SETUP

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

Step 2. 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 face as close as possible to 'NORTH'. The adjustable stand allows you to adjust the solar panel to the optimal angle.

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 tarp over the panels to block out any sunlight temporarily while all connections are made.

Step 3. Refer to the specification label on your battery or consult the battery manufacturer to establish the type of battery being charged.

Step 4. When connecting the controller, ensure the positive (+) and negative (-) wires are attached to the appropriate terminals. Incorrect connection may cause damage to the controller. The following connection order must be followed to avoid damage to the controller.

1. Connect the battery to the controller
2. Connect the solar mat to the controller
3. Connect the load you want to provide power to (if applicable)
4. To uninstall, reverse the above order

Step 5. Once connected the controller will receive power and the settings can be adjusted. The controllers default battery setting is BaT (AGM).

There are 3 battery types to choose from on the controller:

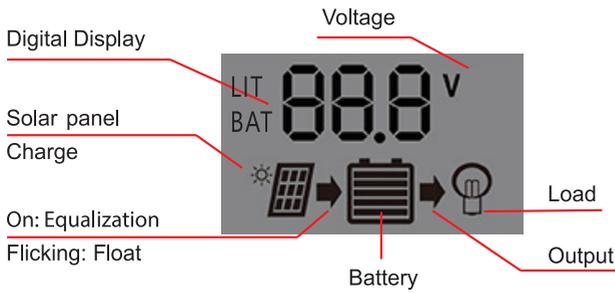
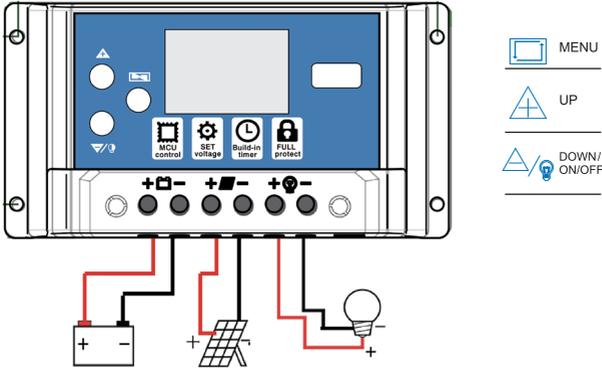
- L1: LiNiMnCoO2 (NMC)
- L2: Lithium Ion / LifePO4 (Lithium Phosphate)
- bAt: GEL, AGM, WET
(conventional lead-acid), Calcium

Adjust the battery setting to match your battery.

The controller will automatically resume on the last settings selected the next time you use it.

Caution: Incorrect battery type setting may damage your battery.

UNDERSTANDING YOUR CONTROLLER



MENU: Long press to switch between different displays or to enter /exit settings

UP: Press to increase value

DOWN: Press to decrease value

MENU & FUNCTIONS

Step 1. Press “MENU” to browse the different settings

Step 2. For screens 2 to 5, press and hold for up to 5 seconds to change the settings on the screen.
When the numbers flash, press the “UP” and “DOWN” buttons to adjust the values

Step 3. Press and hold “MENU” for 5 seconds to set the values and exit

Step 4. To restore default settings, press and hold “UP” for 5 seconds

	<p>MAIN DISPLAY Displays voltage information of the battery and connections to the controller If the battery shows empty check the connections and battery</p>
	<p>EQUALIZATION (FLOAT) Charges the battery from the solar panel until the battery’s voltage reaches the set value</p>
	<p>DISCHARGE RECONNECT Charges the load when the battery’s voltage reaches the set value</p>
	<p>UNDERVOLTAGE PROTECTION Disconnects the load when the battery’s voltage reaches the set value</p>
	<p>WORK MODE Controls when the battery provides power to the load 0H: supply power when the solar panel is not receiving sunlight 1-23H: supply power for a set number of hours when the solar panel is not receiving sunlight 24H: supply power from the battery to the load</p>
	<p>BATTERY TYPE Displays the type of battery attached to the controller L1: Tenary Lithium battery (NMC) L2: Lithium Ion / LifePO4 battery bAt: GEL, AGM, WET (conventional lead-acid), Calcium</p>

FREQUENTLY ASKED QUESTIONS

Q: How does the solar mat work?

A: The solar mat converts sunlight energy into DC (direct current) electric power to charge rechargeable batteries. The batteries are then used to run your lights, fridge or power an inverter

Q: Can I bypass the controller to charge my battery?

A: If your battery has built in MMPT controller then you can go direct from solar to battery. Products with built in MMPT are usually items such as lithium power stations, be sure to check the battery specifications.

For products without a built in MMPT controller, you cannot bypass the controller. The controller automatically regulates the voltage output to suit the battery size and type being charged.

Q: Will the solar mat overcharge my battery?

A: The controller (regulator) ensures that a steady charge is supplied and will not over charge the battery. The controller has up to 3 levels of charging and will automatically evaluate the battery's condition

Q: Why is it when it is a clear or slightly overcast day and the solar controller amperage output is a lot less than the rated specification?

A: The solar controller is smart enough to know what the battery actually needs in regard to amperage input. If the battery is almost fully discharged the solar controller will allow maximum amperage to flow through to the battery. If the battery is almost or fully charged the solar controller will automatically reduce the amperage input to the required level. Amperage output from the solar controller is also affected by shade or intermittent cloud cover.

Q: How many Amps do I get out of my 120W Solar Mat and what can I run?

A: A 120W solar charger can supply between 5 and 6 Amps in optimal conditions on a sunny day or for most of the sunlight hours of the day. There are many variables, but let's assume that we can achieve 6 to 7 sunlight hours in a day, anymore sunlight hours would be considered a bonus.

Provided it is not too cloudy, the solar mat is moved every now and again to best track the sun's path and the solar mat is kept out of the shade, it is safe to assume that the solar mat can supply between 5 and 6 Amps per charging hour.

So, putting this into perspective, let's assume that the 120W solar mat is charging a 100Ah AGM battery. You wish to run a 40L Fridge which draws on average 1.5A over a 24hr period, and 2 x LED camp light which draw 1.0A each when running.

FREQUENTLY ASKED QUESTIONS

You want to have the fridge running (cycling) 24 hours a day, and the camp lights on for 3 hours each night.

Fridge: $1.5A \times 24h = 36Ah$

Lights: $1.0A \times 3h = 3Ah \times 2 \text{ lights} = 6Ah$

Total: 42Ah per day

Your solar mat can supply:

$5.5A \times 6h = 33Ah$ each day

Therefore, the battery is being discharged by:

$42Ah - 33Ah = 9Ah$ each day

Although you have a 100Ah battery, it is recommended when calculating run times to allow yourself a buffer and calculate using only 50% of the battery specification. So, in this case using 50Ah you could run your fridge and lights for: $50Ah / 9Ah = 5.5$ days or just under a week without any other form of charge.

Q: How many Amps do I get out of my 200W Solar Mat and what can I run?

A: A 200W solar charger can supply between 10 and 11 Amps in optimal conditions on a sunny day or for most of the sunlight hours of the day. There are many variables, but let's assume that we can achieve 6 to 7 sunlight hours in a day, anymore sunlight hours would be considered a bonus.

Provided it is not too cloudy, the solar mat is moved every now and again to best track the sun's path and the solar mat is kept out of the shade, it is safe to assume that the solar mat can supply between 10 and 11 Amps per charging hour.

So, putting this into perspective, let's assume that the 200W solar mat is charging 2 x 100Ah AGM batteries. You wish to run a 40L Fridge which draws on average 1.5A over a 24hr period, 2 x LED camp lights which draw 1.0A each when running and a 1000W inverter with a 600W load.

You want to have the fridge running (cycling) 24 hours a day, the camp lights on for 3 hours each night and the inverter under load for a total of 2 hours throughout the day

Fridge: $1.5A \times 24h = 36Ah$

Lights: $1.0A \times 3h = 3Ah \times 2 \text{ lights} = 6Ah$

Inverter: $60.0A \times 2h = 120Ah$

Total: 162Ah per day

Your solar mat can supply: $10.5A \times 6h = 63Ah$ each day

Therefore, the battery is being discharged by: $162Ah - 63Ah = 99Ah$ each day

Although you have a 2 x 100Ah batteries, 200Ah total, it is recommended when calculating run times to allow yourself a buffer and calculate using only 50% of the battery specification. So, in this case using 100Ah you could run your fridge, lights and inverter for $100Ah / 99Ah = 1.01$ days without any other form of charge.

Note: The above calculations are intended for reference & information only and are based on the cell "peak power" of the solar mat. It does not take into consideration any expected power losses due to the controller, leads or atmospheric conditions.

TROUBLE SHOOTING

Situation	Probably Cause	Solution
Charge icon not displaying when solar charger is in the sun	The solar panel is not connected to the controller	Check all connections, ensure the positive and negative terminals are connected correctly
Load icon is off	Incorrect menu setting	Set the menu again
	Battery is low	Recharge the battery
	No load is connected	Connect the load to the battery
Controller is turned off	Battery is too low	Charge the battery
	Battery is not connected properly	Ensure all connections from controller to battery are correct

CLEANING INSTRUCTIONS

Periodically, clean the panels with warm water and a soft sponge or cloth to remove any built-up dust or foreign deposits. Keeping your solar mat clean will ensure optimum performance.

MAINTENANCE

The Solar Mat and Controller are both sealed units and cannot be repaired. If a problem does occur, double check all connections, including correct polarity of the DC battery clamps and/or disconnect the DC battery clamps from the battery and wait 30 seconds.

For further information or assistance please contact Customer Service on 1300 555 197 or email: service@companionbrands.com.au

120W SOLAR CHARGER SPECIFICATIONS

Part no.	10000068
Product Name	Solar Charger 120W
Cell Type	A-grade monocrystalline silicon
Cell Efficiency	19.5%
Cell Backing	Copper
Cell Encapsulation	ETFE Lamination
Wattage	120W
Max Amp Output Per Hour (Imp)	6.67A
Voltage at Max Power (Vmp)	18V
Open Circuit Voltage (Voc)	21.6V
Short Circuit Current (Isc)	7A
Output Connection	50A Anderson
Case Material	900D Polyester
Size (folded)	525 x 525 x 60mm
Size (unfolded)	1550 x 525 x 30mm
Weight (Panel Only)	5.5kg
Controller Type	Pulse Width Modulation (PWM)
Controller Stages	3
Controller Amps	20A
Types of Batteries it can Charge	AGM, Gel, Calcium, Li-Ion, LiFePO4, LiNiMnCoO2 (NMC)
Input and Output Connectors	50A Anderson
Pack Contents	1 x Solar Charger 120W 1 x 20A PWM Controller with 2 x Anderson Connectors 1 x 5m Anderson Cable 1 x 0.5m Anderson to Battery Clamp Cable 1 x 2m Anderson Splitter Cable (for use when chaining 2 x 120W solar panels together)

200W SOLAR CHARGER SPECIFICATIONS

Part no.	10000069
Product Name	Solar Charger 200W
Cell Type	A-grade monocrystalline silicon
Cell Efficiency	19.5%
Cell Backing	Copper
Cell Encapsulation	ETFE Lamination
Wattage	200W
Max Amp Output Per Hour (Imp)	11.1A
Voltage at Max Power (Vmp)	18V
Open Circuit Voltage (Voc)	21.6V
Short Circuit Current (Isc)	11.65A
Output Connection	50A Anderson
Case Material	900D Polyester
Size (folded)	525 x 525 x 95mm
Size (unfolded)	2610 x 525 x 30mm
Weight (Panel Only)	9kg
Controller Type	Pulse Width Modulation (PWM)
Controller Stages	3
Controller Amps	20A
Types of Batteries it can Charge	AGM, Gel, Calcium, Li-Ion, LiFePO4, LiNiMnCoO2 (NMC)
Input and Output Connectors	50A Anderson
Pack Contents	1 x Solar Charger 200W 1 x 20A PWM Controller with Anderson Connectors 1 x 5m Anderson Cable 1 x 0.5m Anderson to Battery Clamp Cable

CONTROLLER SPECIFICATIONS

Battery Voltage	12V / 24V auto adapt
Charge Current	20A
Discharge Current	10A
Max Solar Input	< 41V
Equalization (Float)	Ternary lithium battery(L1): 12.0V (Adjustable range 11V-13.5V)
	Lithium iron phosphate battery(L2): 13.8V (Adjustable range 12.5V-15.5V)
	Lead acid battery(bat): 13.7V (Adjustable range 13V-15V)
Undervoltage Protection	Ternary lithium battery(L1): 10V (Adjustable range 9.0V-11V)
	Lithium iron phosphate battery(L2): 12V (Adjustable range 10.3V-12.8V)
	Lead acid battery(bat): 10.7V (Adjustable range 9.5V-11.5V)
Discharge Reconnect	Ternary lithium battery(L1): 11.6V (Adjustable range 11.0V-11.7V)
	Lithium iron phosphate battery(L2): 13.5V (Adjustable range 12.8V-13.8V)
	Lead acid battery(bat): 12.6V (Adjustable range 11.5V-13.0V)
Standby Current	< 10mA
USB Output	5V / 2A Max
Operating Temperature	-10 - +50C
Dimensions	133 x 70 x 35mm
Weight	140g

NOTES

NOTES

WARRANTY

Adventure Trading Australia P/L warrants this product against defects for a period of **two years** from the date of purchase. Adventure Trading Australia P/L will repair or replace the product, at its discretion, should a warrantable defect arise within the warranty period. If the exact model is unavailable a model of equivalent nature will be substituted at our discretion. This warranty excludes faults and failures caused by improper use and abuse; fair wear and tear; or failure to follow instructions regarding care and maintenance. Products used for a commercial nature are not covered by this warranty against defects. A warranty may be claimed by returning the product to its place of purchase, with a detailed proof-of-purchase clearly showing the date and detail of the purchase.

You can contact Adventure Trading Australia P/L Customer Service by phone on 1300 555 197, in writing: PO Box 1110, Eagle Farm QLD 4009. The benefits under Adventure Trading Australia P/L warranty against defects are in addition to other rights and remedies under law in relation to goods.

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

WARRANTY - For details see www.companionleisure.com.au/warranty

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Primus Australia Pty Ltd

Designed & Imported by:
Adventure Trading Australia Pty Ltd
71 Charles Ulm Place,
Eagle Farm, QLD 4009
AUSTRALIA



Made in China