

↗ DOMETIC

# ENERGY & LIGHTING

# SUN POWER



PS120A, PS180A

EN

## Portable Solar Kit

Installation and Operating Manual



**Please read this instruction manual carefully before installation and first use, and store it in a safe place. If you pass on the product to another person, hand over this instruction manual along with it.**

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## 1 Explanation of symbols



### **WARNING!**

**Safety instruction:** Failure to observe this instruction can cause fatal or serious injury.



### **CAUTION!**

**Safety instruction:** Failure to observe this instruction can lead to injury.



### **NOTICE!**

Failure to observe this instruction can cause material damage and impair the function of the product.

**NOTE**

Supplementary information for operating the product.

## 2 General safety instructions

The manufacturer accepts no liability for damage in the following cases:

- Damage to the product resulting from mechanical influences and excess voltage
- Alterations to the product without express permission from the manufacturer
- Use for purposes other than those described in the operating manual

The declaration of conformity can be requested from the manufacturer (contact information on the back).

Note the following basic safety information when using electrical devices to protect against:

- Electric shock
- Fire hazards
- Injury

### 2.1 General safety

**WARNING!**

- Only use the device as intended. Any alternation to the product without express permission from Dometic Australia head office voids warranty.
- Disconnect the device
  - Before cleaning and maintenance
  - After use
  - Before changing a fuse
- The device may not be used if the device itself or connection cables are visibly damaged.
- This appliance may only be repaired by qualified personnel. Inadequate repairs may cause serious hazards.
- This appliance can **not** be used by children as well as by persons with diminished physical, sensory or mental capacities or a lack of experience and knowledge.

- **Electrical devices are not toys.**

Always keep and use the device out of the reach of children.

- Children must be supervised to ensure that they do not play with the appliance.

**NOTICE!**

- Check the manufacturer's data for your battery and ensure that the maximum voltage of the solar charge controller does not exceed the manufacturer's recommended charging voltage.
- Do not use the solar panel to charge non-rechargeable batteries.
- Be sure to connect the battery before exposing the solar panel to the sun.
- Before using the device for the first time, check that the voltage specification on the rating plate matches that of the power supply.
- Store the device in a dry and cool place.

## 2.2 Operating the device safely

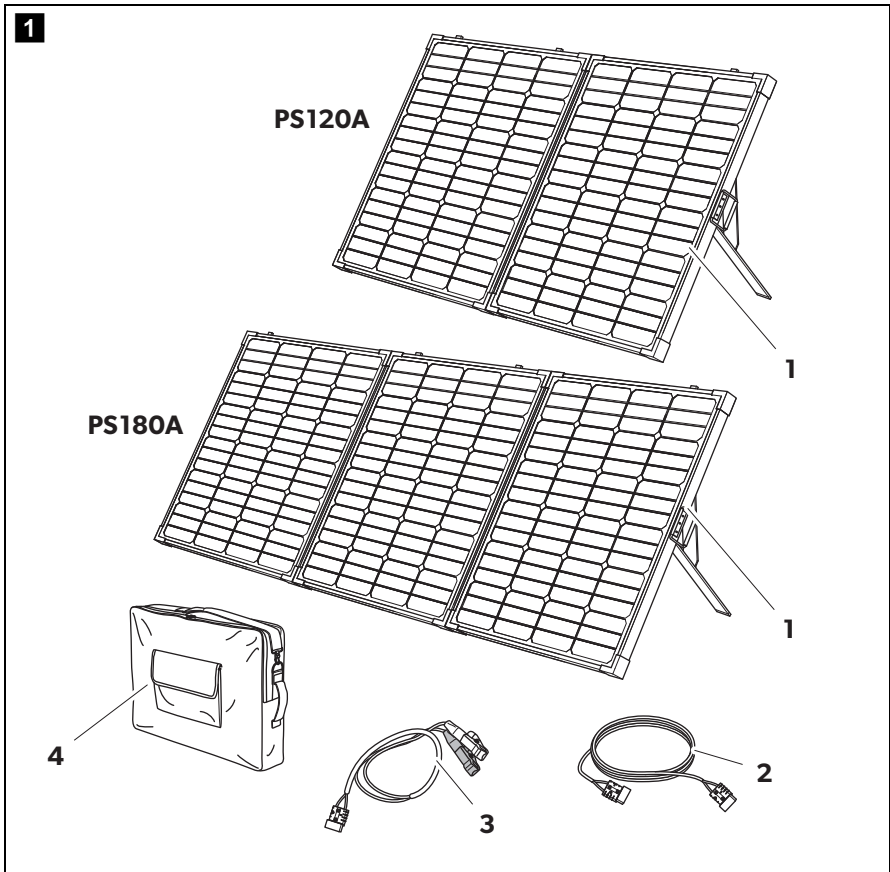
**CAUTION!**

- Do **not** use the solar panel in windy or gusty conditions.
- Do **not** use high pressure to clean the solar panel.
- Do **not** operate the device
  - In salty, wet or damp environments
  - In the vicinity of corrosive fumes
  - In the vicinity of combustible materials
  - In areas where there is a danger of explosions

**NOTICE!**

- Do not disconnect any cables when the device is still in use.

### 3 Scope of delivery



| No. in fig. 1 | Description                                |
|---------------|--|
| 1             | Portable solar panel with solar controller |
| 2             | 5 m cable with Anderson plugs              |
| 3             | Alligator clips adapter                    |
| 4             | Carry bag                                  |
| -             | Temperature sensor                         |
| -             | Installation and operating manual          |

## 4 Intended use

The portable solar panel is a mobile power supply with a solar controller attached to the back for charging a 12 V $\text{DC}$  battery and connecting a 12 V $\text{DC}$  device.

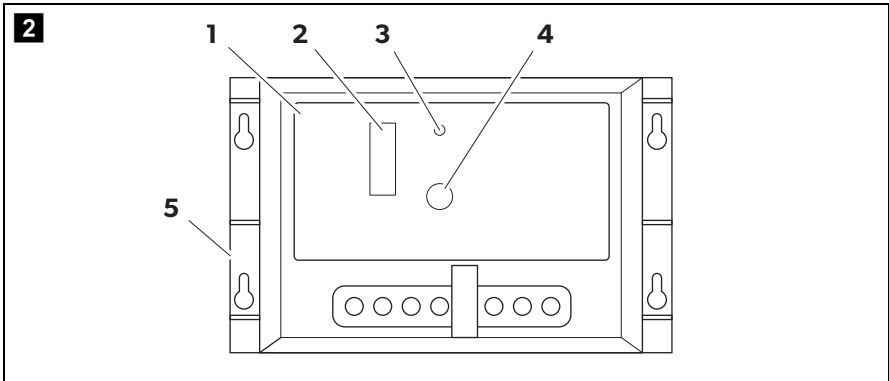
## 5 Technical description

The portable solar panel is designed as monocrystalline construction with tempered glass coating. The integrated solar controller attached to the back enables a DC consumer unit (e.g. a cooler) or inverter to be simultaneously supplied with power while the 12 V $\text{DC}$  battery is being charged.

The solar controller has the following protective functions:

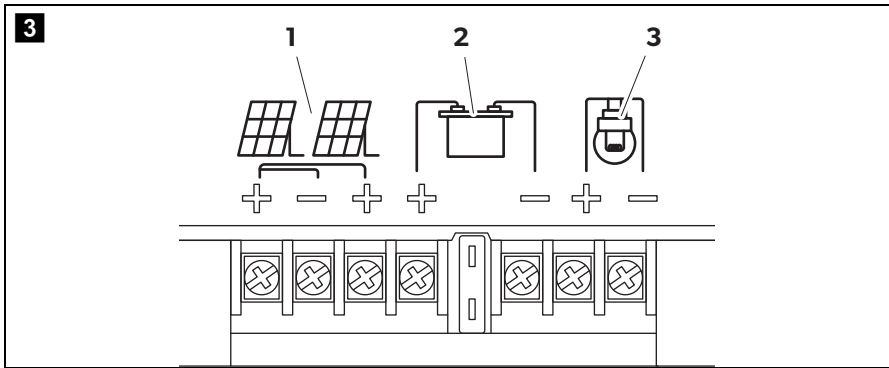
- Incorrect polarity protection
- Battery overvoltage protection
- Battery undervoltage protection
- Battery open circuit protection
- Battery over-charge and over-discharge protection
- Output overcurrent protection
- Short circuit protections for output and solar panel
- Temperature compensation function

## 5.1 Connecting and display elements



| No. in fig. 2 | Description             |   |
|---------------|-------------------------|---|
| 1             | Solar controller        |   |
| 2             | Status LEDs             | Battery is being charged according to the number of LEDs shining in cycle:<br>LED 1 = 25%<br>LED 2 = 50%<br>LED 4 = 75%<br>LED 8 = 100%<br>LEDs light on when the battery is fully charged.   |
| 3             | Load LED                | The output indicator lights on when an output is present.   |
| 4             | Error LED               | The error LED lights on when the following faults occur: <ul style="list-style-type: none"> <li>– Over discharge status</li> <li>– Batteries reverse polarity</li> <li>– Solar module reserve polarity</li> <li>– Load over-current</li> <li>– Short current</li> <li>– Batteries open circuit working</li> </ul> |
| 5             | Temperature sensor port |   |





No. in  
fig. 3

Description

|   |                       |
|---|-----------------------|
| 1 | Solar panel terminals |
| 2 | Battery terminals     |
| 3 | Load terminals        |

## 6 Using the appliance

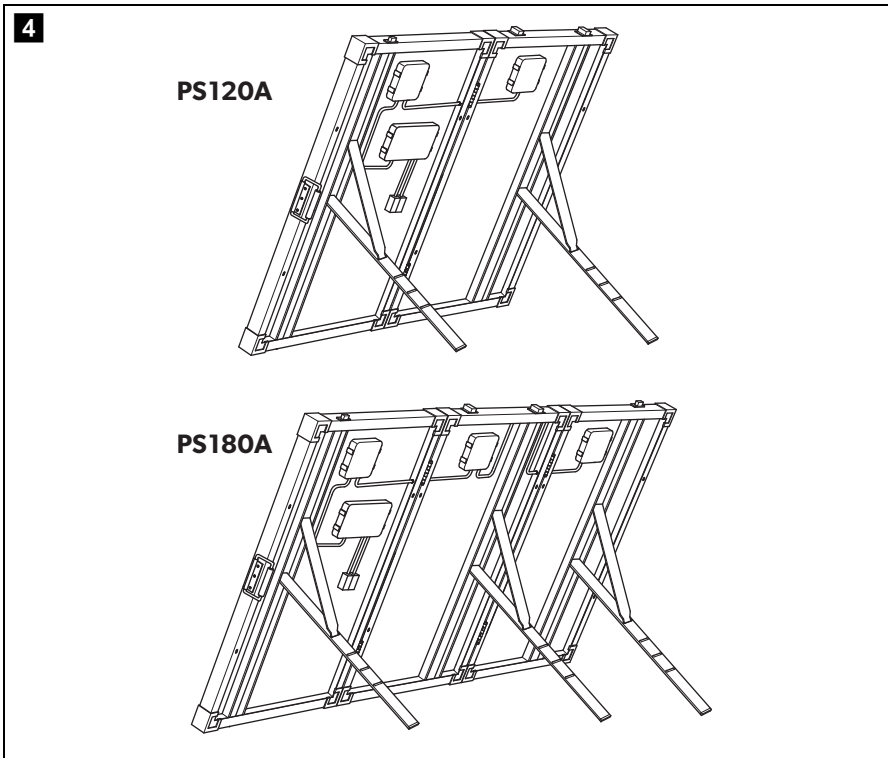
### 6.1 Positioning the solar panel



#### NOTE

To obtain maximum output, regularly move the solar panel to track movement of the sun throughout the day.

- Locate a clear area free from over hanging branches or obstructions.
- Remove the solar panel from the carry bag.
- Unclip the latches on the side of the unit and unfold the panel.



► Extend the stands to the required length and lock them in position.

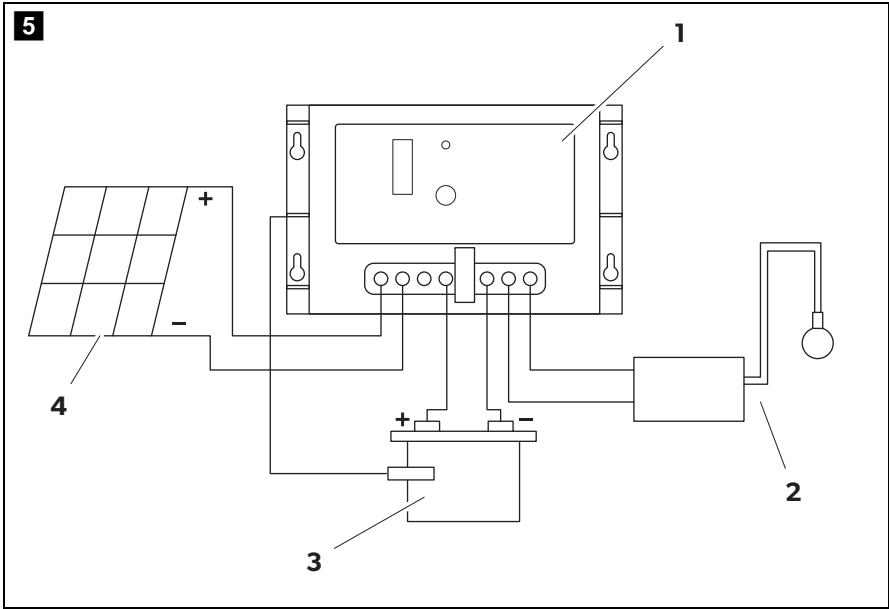
## 6.2 Connecting the solar panel



### NOTICE!

- Always observe the following connection sequence. Overvoltage can damage the electronics of the device.
  - **Connecting the solar panel:** Connect the Alligator clips to the battery, then connect the Anderson plug to the solar panel, finally connect the load.
  - **Disconnecting the solar panel:** Disconnect the load first, then disconnect the Anderson plug from the solar panel, finally disconnect the Alligator clips from the battery.
- Ensure that the battery clamps do not get in contact with each other.
- Only use the cable with Anderson plug and alligator clips supplied.
- Make sure that the polarity is correct.
- Make sure that the connection is tight and secure.

**Connecting diagram**



**Key to connecting diagram**

| No. in fig. 5 | Description               |
|---------------|---------------------------|
| 1             | Solar controller          |
| 2             | Load                      |
| 3             | 12 V $\text{---}$ battery |
| 4             | Solar panel               |

## Connecting to a battery

- Connect the Alligator clips to the battery terminals. Connect the red lead with red clamp to the positive (+) battery terminal. Connect the black lead with black clamp to the negative (-) battery terminal. Ensure that the connection is secure and tight.
- Connect the Anderson plug to the Anderson socket.
- ✓ The battery is loading.
- ✓ The green LEDs on the solar controller light up.

The number of green LEDs show the battery capacity. The LEDs light in cycle during charging status. The LEDs stop shining and light on when the battery is fully charged. In over-discharge status, LED 1 (25%) flashes quickly to warn the user to charge the battery immediately.

For safety reasons the solar controller will start buzzing if the battery connection is in reverse polarity to protect against reversing the polarity and short circuits when connecting to a battery.

To protect the battery, the solar controller switches off automatically if the voltage is insufficient (see table below).

|                           | <b>12 V</b>                       |
|---------------------------|-----------------------------------|
| <b>Switch-off voltage</b> | $11 \pm 0.3 \text{ V} \text{---}$ |
| <b>Switch-on voltage</b>  | $12 \pm 0.3 \text{ V} \text{---}$ |

## Connecting a 12 V $\text{---}$ device or inverter

- Connect the lead to the positive (+) and negative (-) terminal. Ensure that the connection is secure and tight.

## Connecting the temperature sensor

The battery temperature sensor allows the charge controller to continuously adjust charge voltage based on measured battery temperature.

- Attach temperature sensor to the battery with tape, ensuring good contact.

## Disconnecting the solar panel

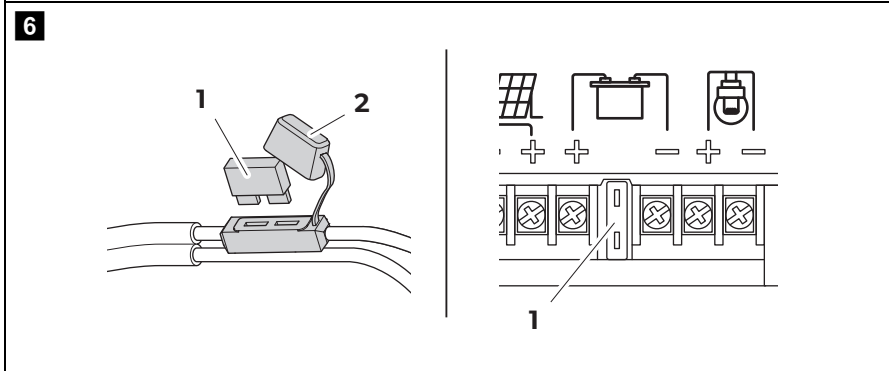
- Disconnect the load first, then disconnect the Anderson plug from the solar panel, finally disconnect the Alligator clips from the battery.

## Replacing the fuse



### NOTICE!

Disconnect the solar panel before you replace the device fuse.



- Disconnect the solar panel.
- Remove the protective cover (2)
- Replace the defective fuse (1) with a new fuse of the same type and rating:
  - Cable: 15 A, automotive, fast acting
  - Controller: 15 A for PS120A, 20 A for PS180A, automotive, fast acting
- Refit the protective cover.
- Reconnect the power supply to the cooler.

## 7 Troubleshooting

If you are unable to rectify the fault, get in touch with a specialist workshop.

| Fault   | Possible cause   | Suggested remedy  |
|---|--|---|
| Device does not function, LED does not glow.  | The device fuse is defective   | Replace the device fuse, see chapter "Replacing the fuse" on page 13.     |
| The charging LED flashes.                     | The device is in over discharge status.  | Remove the load. Otherwise the device switches of to protect the battery. |
| The fault LED flashes. The controller buzzes. | Battery is connected with wrong polarity.  | Connect the battery with correct polarity.                                |
| The fault LED flashes.                        | Load over-current and short current protection are activated.<br><br>Solar module is connected with reserve polarity.<br><br>Batteries circuit open. | Connect the device correctly.   |

## 8 Maintaining and cleaning the product



### NOTICE!

Do not use sharp or hard objects or cleaning agents for cleaning as these may damage the product.

- Occasionally clean the surface of the solar panel with a damp cloth.

## 9 Warranty

The statutory warranty period applies. If the product is defective, please contact your retailer or the manufacturer's branch in your country (see the back of the instruction manual for the addresses).

For repair and guarantee processing, please include the following documents when you send in the device:

- A copy of the receipt with purchasing date
- A reason for the claim or description of the fault

## 10 Disposal

- Place the packaging material in the appropriate recycling waste bins wherever possible.



If you wish to finally dispose of the product, ask your local recycling centre or specialist dealer for details about how to do this in accordance with the applicable disposal regulations.

# 11 Technical data

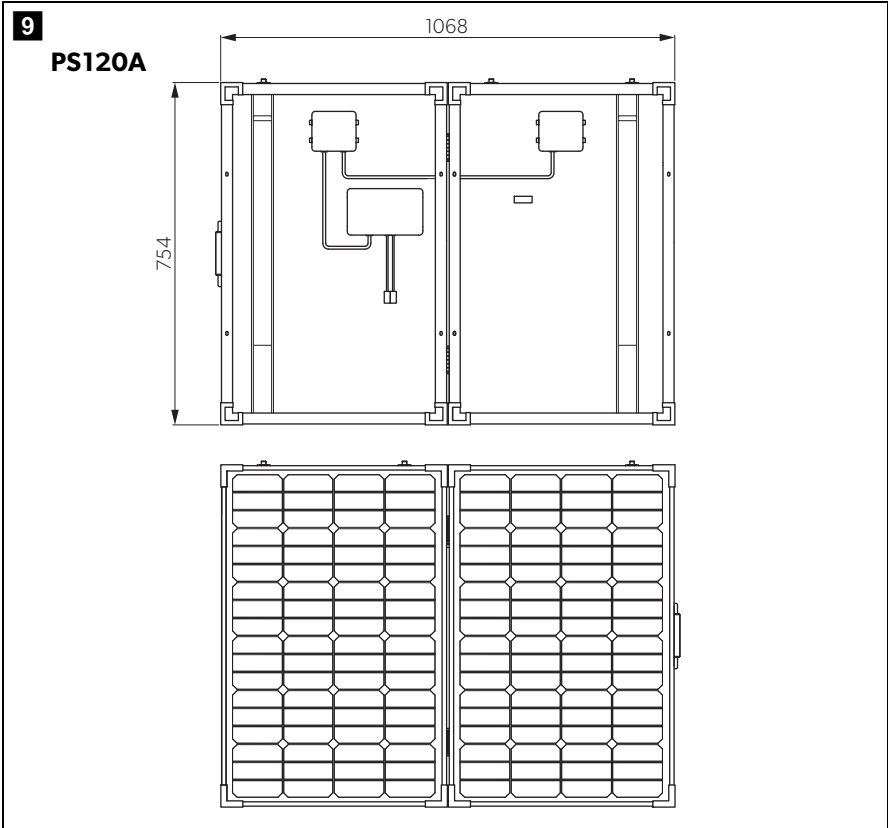
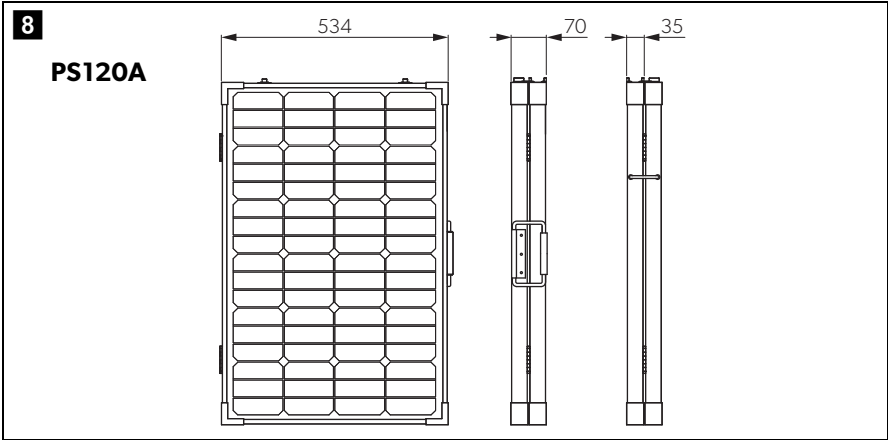
|                                     | <b>PS120A</b>   | <b>PS180A</b> |
|-------------------------------------|---|---------------|
| Ref. no.:                           | 9108400883  | 9108400917    |
| Panel type:                         | Monocrystalline   |               |
| Peak power:                         | 120 W ±3%   | 180 W ±3%     |
| Voltage at max. power ( $V_{mp}$ ): | 18.1 V  |               |
| Current at max. power ( $I_{mp}$ ): | 6.63 A  | 9.95 A        |
| Open circuit voltage:               | 22.44 V   |               |
| Short circuit current:              | 7.09 A  | 10.5 A        |
| Operating temperature:              | -40 °C to +85 °C  |               |
| Max. system voltage:                | 700 V   |               |
| In-line fuse:                       | 15 A, automotive, fast acting   |               |
| Net weight                          | 12.25 kg  | 17 kg         |
| Test condition:                     | Irradiance 1000 W/m <sup>2</sup> , AM = 1.5<br>Module temperature 25 °C |               |

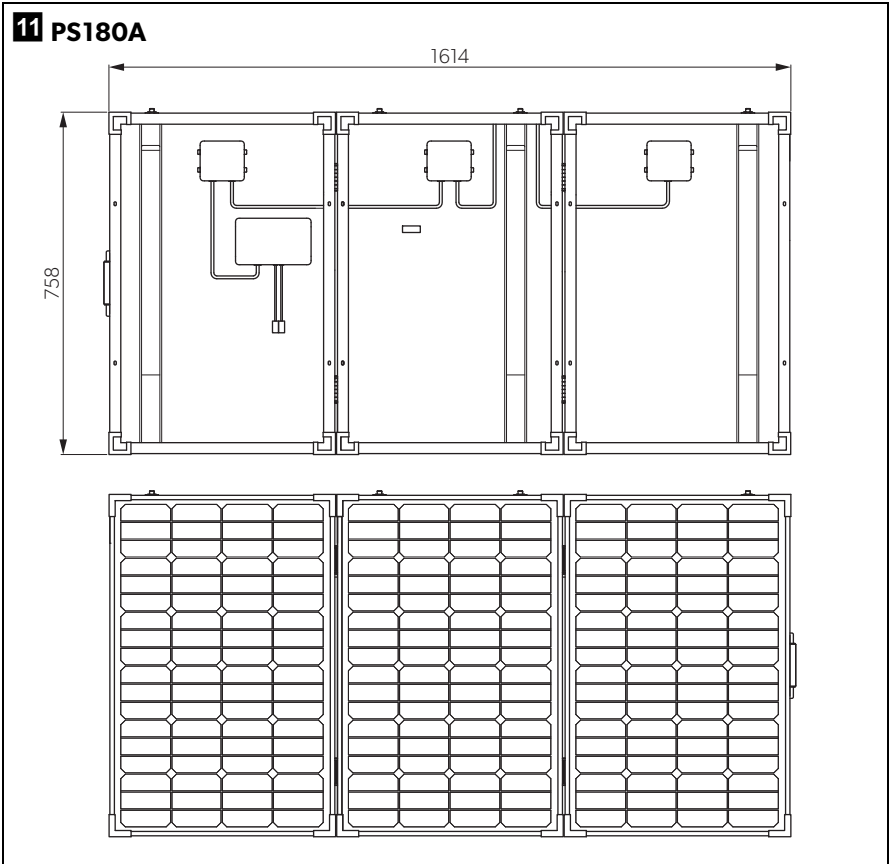
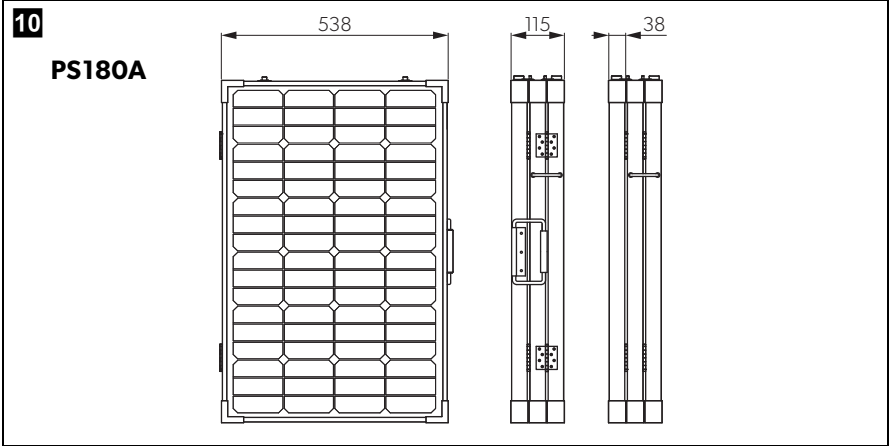
## Controller:

|                              |                       |      |
|------------------------------|-----------------------|------|
| Rated current:               | 10 A                  | 20 A |
| Rated voltage:               | 12 V $\equiv$         |      |
| Over-charge protection:      | 14.4 ± 0.3 V $\equiv$ |      |
| Over-discharge:              |                       |      |
| Cut-off:                     | 11 ± 0.3 V $\equiv$   |      |
| Resume:                      | 12 ± 0.3 V $\equiv$   |      |
| Over-voltage:                |                       |      |
| Cut-off:                     | 16.5 V $\equiv$       |      |
| Resume:                      | 15.0 V $\equiv$       |      |
| Voltage drop:                |                       |      |
| Between input and batteries: | 0.5 V $\equiv$        |      |
| Between batteries and load:  | 0.2 V $\equiv$        |      |
| No load current draw:        | <5 mA                 |      |
| Ambient temperature:         | -10 °C to +55 °C      |      |



**Measurements**







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