



120W 12V SOLAR MAT

WITH 10A 12V SOLAR CHARGE CONTROLLER

Model No. KT70727



IMPORTANT

This manual contains important safety and operational instructions. Please read carefully before using this product.



For your personal safety, please read, understand and follow the information provided in this instruction manual.

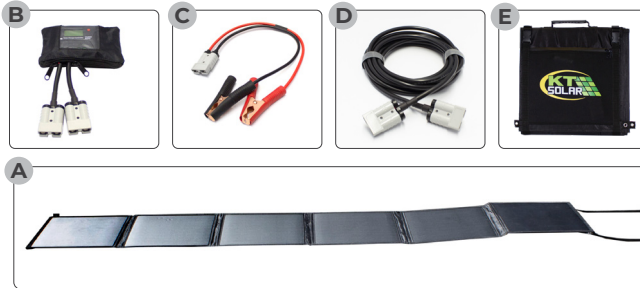
Congratulations on your new & Innovative 120 Watt 12 Volt Portable Folding Solar Mat

Folding down to a convenient 395mm x 360mm x 80mm ideal for camping & marine applications, 4x4, caravan applications & more!

Features

- **Compact & powerful**
Features 6 x monocrystalline solar cells. These cells are cast from silicone and are more efficient at producing power than most other solar panels, allowing the panel to be smaller in size yet produce a greater power output.
- **Lightweight, foldable design for easy transportation & Storage**
Dimensions folded: 395mm (L) x 360mm (W) x 80mm (D)
Dimensions un-folded: 2285mm (L) x 360mm (W) x 5mm (D)
Total Weight: 5.1 Kg
- **10 Amp 12V PWM solar controller included**
Display cycles in 3 second intervals between displaying battery voltage, battery capacity percentage, ambient temperature & load mode.
Single USB Input for charging USB devices.
220mm leads terminated to 50A heavy duty connectors
- **Includes leads & accessories in storage compartment**
1 x Heavy duty connector to positive negative battery clamps, 550mm lead
1 x 50A 12V heavy duty connector extension lead, 4.8M
- **Flexible positioning**
Ability to lay-flat across vehicle windscreens, flat surfaces, rooftops or hang / mount from durable eyelets.
- **Suitable for a wide-range of applications**
Perfect for charging 12V batteries that power camping fridges, lighting, air-compressors & other 12V devices.

Components



- A** 6 Panel solar mat
- B** 10A 12V solar charge controller, 220mm leads with 50A heavy duty connectors
- C** Heavy duty connector to positive negative battery clamps, 550mm lead
- D** 50A 12V heavy duty connector extension lead, 4.8M
- E** Solar mat when folded

Solar Mat Operational Instructions

- 1. Step 1 - Unfold & position the mat in the sun**

Locate the panel in a position where it is exposed to the sun for the majority of the day. For best results use a northern orientation. The panel will function in the horizontal or hung position, however for best performance tilt the panels so they directly face the sun.
- 2. Step 2 - Connect to the battery**

Connect the 5M lead to the battery - red clamp to the positive (+) terminal and black clamp to the negative (-) terminal. The solar panel will now be charging the battery.

Solar Mat Specifications

TYPE	Monocrystalline
Maximum Power (Pmax)	120Wp
Maximum Power Voltage (Vmp)	19.6V
Maximum Power Current (Imp)	6.12A
Open Circuit Voltage (Voc)	23.2V
Short Circuit Current (Isc)	6.76A
Battery Connections	Battery Clamps
Product Application	Class A
Product Weight	5.1Kg
Product Dimensions Folded	395mmL x 360mmW x 80mmD
Product Dimensions Un-Folded	2285mmL x 360mmW x 5mmD

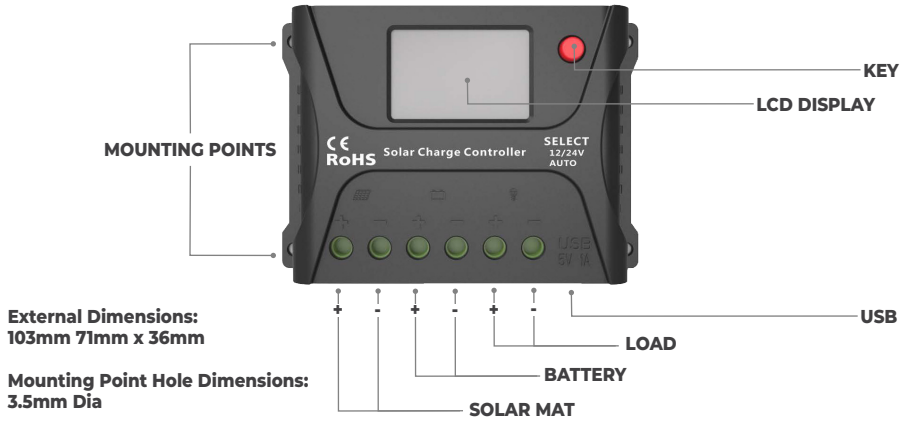
Solar Controller Features

- 12V System Voltages are automatically recognised
- An upgraded 3-stage PWM charging algorithm is adopted. Application of an equalizing charging to the battery periodically or when over discharged, can effectively prevent the battery from non-equalisation and sulfation, thus extending the batteries service life.
- With temperature compensation employed, charging parameters can be automatically adjusted.
- A wide range of load working modes facilitate the products application to different types of load.
- The product provides overcharge, over-discharge, overload protection, as well as short circuit protection.
- By virtue of an advanced load starting method, large-capacitance loads can be started smoothly.
- The product provides a dot matrix graphic LCD Screen and a human-machine interface with a key
- The user-friendly design of the browser and dynamic interfaces ensure convenient and intuitive operations
- Boasting an industrial grade design, the product can function well in various tough conditions.
- TVS lighting protection is adopted.

Solar Controller Specifications

Type	PWM (Pulse Width Modulation)
Model	SR-HP2410
Rated Current	10A
System Voltage	Automatic Recognition of 12V
Dimensions	130 x 75 x 38mm
No-Load Loss	<5mA/12V
Max. Solar Energy Input	<55V
Max Voltage at the Battery end	<35V
Over Voltage Protection	17.0V
Equalising & Charging Voltage	14.6V
Boost Charging Voltage	13.8V
Floating Charging Voltage	13.2V
Charging Recovery Voltage	12.6V
Over-Discharge Recovery Voltage	11.1V
Equalizing Charging Interval	30 Days
Equalising Charging Time	1H
Boost Charging Time	2H
Temperature Compensation	-3.0mV / °C / 2V
Light Control Voltage	Light Control on 5V, x 2/24V; Light Control off 6V
Light Control Judgment Time	1 Minute
Operating Temperature	-25°C to +55°C
IP Protection Degree	IP30
Net Weight	160g
Protection Functions	Solar panel short circuit and reverse-connection protection. Over temperature, overload and short circuit protection

Solar Controller Diagram



Solar Controller Operation

Step 1: Connect the battery. If the connection is correct, the controller screen lights up; otherwise, check whether the connection is correct.

Step 2: Connect the solar panel. If sunlight is present and strong enough (the solar panel voltage is greater than battery voltage), the sun icon on the LCD screen is on; otherwise, check whether the connection is correct.

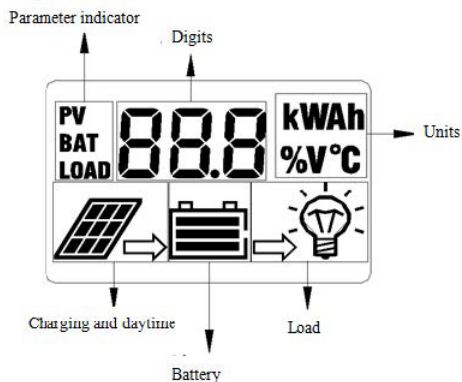
Step 3: Connect the load. Connect the load leads to the controller's load output terminal, and the current shall not exceed the controller's rated current.

Step 4: As the controller generates heat during operation, it is recommended that the controller be installed in an environment with good ventilation conditions.

Step 5: Choose cables with large enough capacity for connection, in case too much loss incurred on the lines causes the controller to misjudge.

Step 6: The controller has a common positive pole inside. If grounding is needed, ground the positive pole.

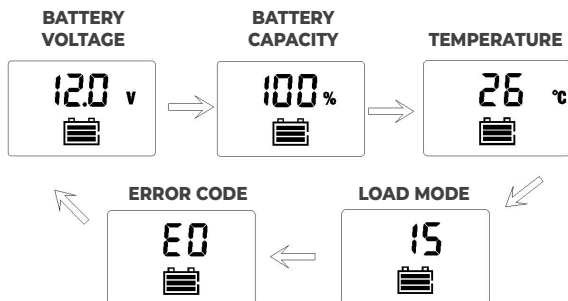
Display Features



LCD Icon	Indicated Object	State
BAT	Battery	Steady on
LOAD	Load Discharge Data	Steady on
	daytime or charging	Steady on
	Night recognition	Quick flashing
	Load short circuit or overload	Steady on
	Load Switched on	Steady on
	Load Switched off	Steady off
	Normal battery	All on
	Over discharge	Only outline flashes
	Over voltage	3 dashes flashing

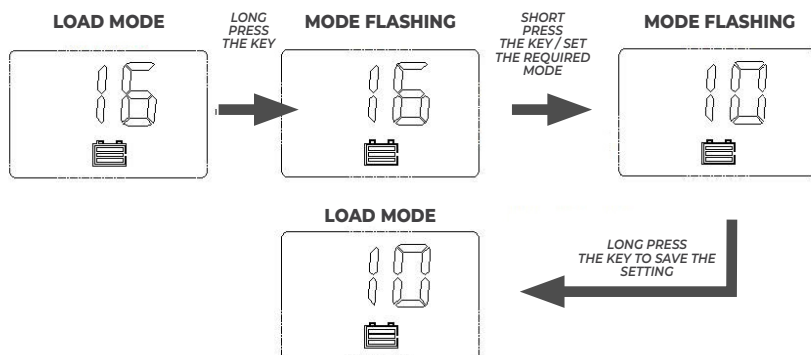
Browsing Menu on LCD Display

The following menu's are shown in an automatic cycle on the display, with an interval of 3s.



To set Menu on LCD Display of Solar Controller

1. Long hold the red KEY in any mode to enter the load mode setting interface, and load mode begins to flash.
2. Short press the key to adjust the load mode
3. Long press the key again to save and exit mode setting, or wait for 10 seconds to let the system save and exit automatically.



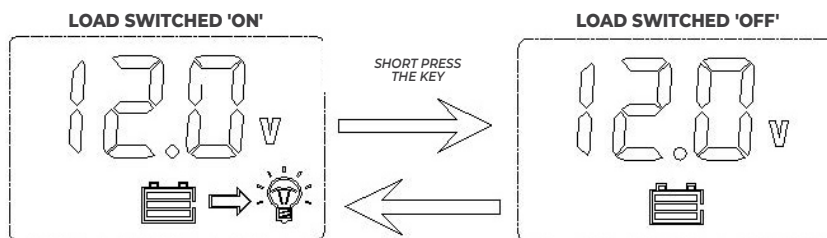
Five Load Working Modes

1. Pure light control (0): When sunlight disappears and the light intensity drops to the starting point, the controller initiates a one minute delay (settable) to confirm the starting signal, and then switches on the load for operation. When sunlight emerges and the light intensity reaches the starting point, the controller initiates a one minute delay to confirm the shutting-down signal, and then shuts down the output to stop the load's operation.
2. Light control + time control (1 to 14): The starting process is the same as pure light control. After operating for a preset period of time (settable from 1 to 14 hours), the load stops operation automatically.
3. Manual mode (15): In this mode, the user can switch the load on or off by the key, no matter whether it's day or night.
4. Debugging mode (16): In cases of 6V with light signals, the load will be shut off. In cases of 5V (varies according to the preset light controlled voltage and system voltage) without light signals, the load will be switched on. This mode enables fast check of the correctness of system installation during installation and debugging.
5. Normal on (17): The energized load keeps in output state.

LED Display	Mode
00	Pure light control mode
01-14	Light control + time control (1 to 14 hours)
15	Manual mode (default)
16	Debugging mode
17	Normal on mode

Manually Switching On / Off Modes

When the load mode is set to 15 (manual mode), short press the key (non-setting mode) in any interface to switch on or off the load.



Note: As load start is a type of soft start, display of the load icon on the LCD screen will be delayed after the load is switched on.

Trouble Shooting

Issue	Causes & Solutions
LCD screen does not light up	Check whether the battery is correctly connected.
Incomplete display or no renewal on LCD screen	Check whether the ambient temperature is too low and whether the display recovers when the temperature rises.
No charging with sunlight present	Check whether the solar panel is correctly connected, and contact is good and reliable. Check whether the solar panel voltage falls below the battery voltage.
The battery icon flashes quickly, and there is no output.	System overvoltage. Check whether the battery voltage is too high.
The battery icon flashes slowly, and there is no output.	The battery is over-discharged, and will recover after recharged adequately.
The load icon flashes quickly, and there is no output.	The load's power exceeds the rated value or the load is short-circuited. After the problem is solved, long press the key or wait until it recovers automatically.
Other Issues	Check whether wiring is sound and reliable, and system voltage is correctly recognized.

Product Care

1. Periodically inspect the electrical and mechanical connections. Make sure they are all tight and free from corrosion. If necessary clean the surface of the solar panels with a soft damp cloth. Mild detergent can also be used. Any dirt or residue on the solar mat may effect performance.
2. Always fold-away for storage when not in use

Product Safety

Always follow user manual for operational and safety instructions.

1. For installations with all batteries, avoid sparks or flames near the batteries and always use proper eye protection.
2. Given sufficient light, solar panels always generate energy even when they are disconnected.
3. Accidental 'shorting' of the terminals or wiring can result in sparks causing personal injury or a fire hazard.
4. Do not scratch or bend solar panels.
5. Do not disassemble the Solar mat.
6. When mounting solar mat at a height, adhere to all relevant safety regulations.
7. Do not walk on modules.
8. Do not attempt to increase module output by concentrating light on its surface with mirrors.
9. Be sure to use components (cables, fuses, etc) greater than 25% of the Solar mat's maximum current ratings.
10. When storing the KT Solar mat - to avoid damage, do not pack heavy items on top.
11. Do not disassemble the controller. Take to a qualified electrician if the unit requires repairing.
12. **Solar mat is not to be exposed to inclement weather or excess moisture.**
13. Solar Regulator is IP65 Rated, however all care must be taken to ensure wiring is not exposed to moisture.
14. If in any event that the solar mat is completely saturated with water, simply hang up to dry in a convenient position. Do not re-use solar mat until dry.

Important Warning

It is recommended not to place your solar mat over vehicles paint-work. Humidity can cause the mat to stick to paint-work.

Solar mats are unlike tempered glass folding kits. They have a thick canvas material stitched in behind the solar cells. Your kt solar blanket should be folded up and stored in a dry place at night whilst camping.

Try to avoid placing on wet grass during early morning sunlight and select a dry surface for the mat to be placed, unless suspending or for windscreen application.

Frequently Asked Questions

Can the Solar Mat be mounted on a flat roof or wall?

Yes, it is fine to mount the solar mat on a horizontal surface such as a vehicle roof or on a vertical surface such as a wall, as long as the panel receives full sun for a reasonable period of the day.

You will gain optimal performance if the panel is tilted toward the sun and faced in a northerly direction. Placing the panel in this position enables the maximum amount of solar energy to reach the panel.

What current output can I expect?

The current output (A) of the solar mat is based mostly on the available solar energy (sun rays).

The current ratings (peak power) given in the specifications table are based on the 'Ideal' sunlight conditions. In reality this may be achieved only on a very bright sunny day. The normal current output will therefore be a little lower. If the panel is shaded or if it is a very hot day the output will decrease further.

Will it charge my flat battery and how long will it take?

Yes, the KT solar mat will charge a flat battery (above 9v) 250-1800cca (automotive) with a charge depending on battery size.

Warranty Guarantee

This product carries an unconditional 12 Month Warranty against defects under the terms of the manufacturers warranty. Should the manufacturers warranty not comply with Australian Consumer Law, AECAA Pty Ltd Trading as Automotive Electrical & 4WD Accessories will provide a warranty against defects for 12 months from date of purchase on the following terms:

- a) For valid claims, Automotive Electrical & 4WD Accessories will replace the product free of charge.
- b) The warranty excludes defects from after sale damage, neglect, abuse, failure to comply with information provided in this manual, or incorrect installation. You bear all transportation costs to and from Automotive Electrical & 4WD Accessories.
- c) The Benefits of this warranty are in addition to any other rights and remedies available at law.
- d) 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.

For warranty claims:

- a) Return the product with receipt and original packaging (if available) to the store in which the product was originally purchased.
- b) Email our team at warranties@ae4a.com.au with details of the products defects and our team will assist with a resolution.

Feedback

KT Cable Accessories design and innovate our own products based on market and consumer demand, and always welcome any feedback on our products and services. If you would like to provide us feedback, you can do this by:

- a) Send our team an email at marketing@ktcables.com.au or
- b) Follow our Facebook & Instagram Pages '@ktcables' and leave us a review
- c) Contact our team directly by phone:
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We also welcome you to share any images you have of your installations on our social media pages (Facebook and Instagram). Our team post daily and may re-share your installation photos with our +80K followers!

To learn more about KT Cable Accessories products and Services, visit www.ktcables.com.au.

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