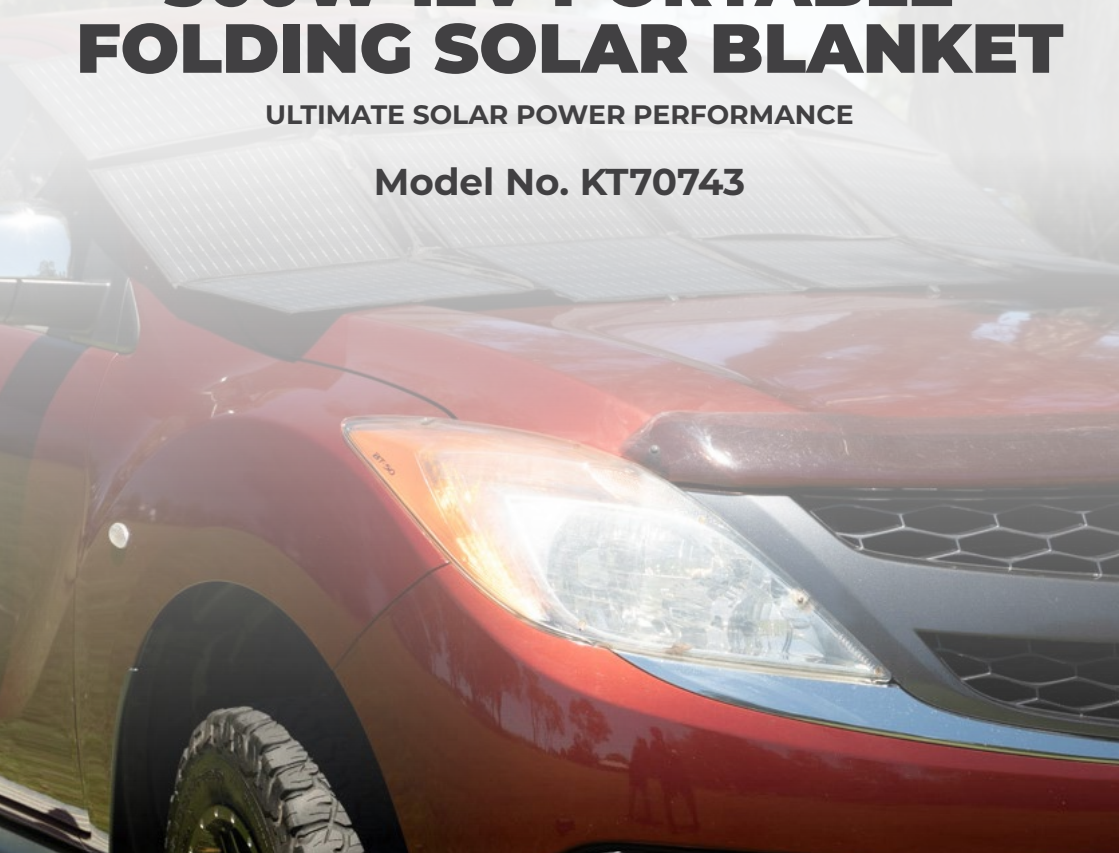




300W 12V PORTABLE FOLDING SOLAR BLANKET

ULTIMATE SOLAR POWER PERFORMANCE

Model No. KT70743



IMPORTANT

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

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 3 years 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:
East Coast - QLD, NSW, ACT, VIC, TAS: (07) 5540 7877
West Coast: WA, NT, SA (08) 9358 7000

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.

Alternatively, to learn more about Automotive Electrical & 4WD Accessories, visit www.ae4a.com.au



www.ktcables.com.au

Manufactured & Packaged for
AECAA Pty Ltd trading as Automotive Electrical
& 4WD Accessories

www.ae4a.com.au

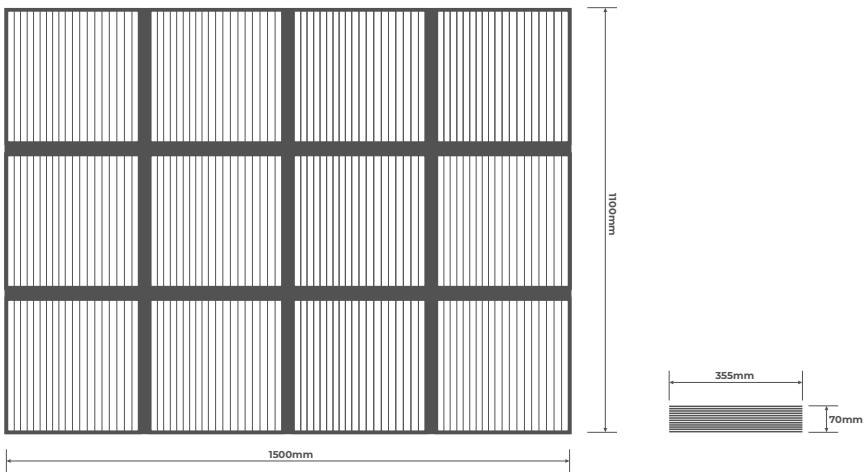
For your personal safety, please read, understand and follow the information provided in this instruction manual.

Congratulations on your new & Innovative 300 Watt, 12V Portable Folding Solar Blanket!

Designed to fold down to 350 x 350 x 70mm.

Features

- **12 X 25W Monocrystalline Cells In Series**
With its efficient design, the Portable 300W, 12V Portable Folding Solar Blanket conveniently folds up to fit into cargo areas.
- **Easy folding for storage convenience**
Dimensions Folded (mm): 350 x 350 x 70
- Dimensions Unfolded (mm): 1100 x 1500 x 7
Total Weight: 11.3kg
- **20A, 12V PWM Solar Controller included**
Designed for charging a single battery. The solar controller is compatible with GEL, WET, AGM, CALCIUM & LITHIUM Batteries. Controller features reverse polarity, short circuit and over voltage protection.
- **Includes leads & accessories with sealed 50A connectors**
1 x 4.8m Lead, 50A Extension leads for easy connection to power
1 x Positive & Negative Alligator Clamps, 500mm Lead to Heavy Duty Connector
- **Ideal for camping, 4WD & outdoor applications**
Perfect for charging 12V batteries that power camping fridges, lighting, air-compressors & other 12V devices.



Components



- A** 12 x 25W monocrystalline cells in series
- B** 20A, 12V PWM solar controller - can be programmed
- C** 1 x 4.8m, 50A extension lead
- D** 1 x Positive & Negative alligator clamps, 500mm lead to 50A, 12V connector

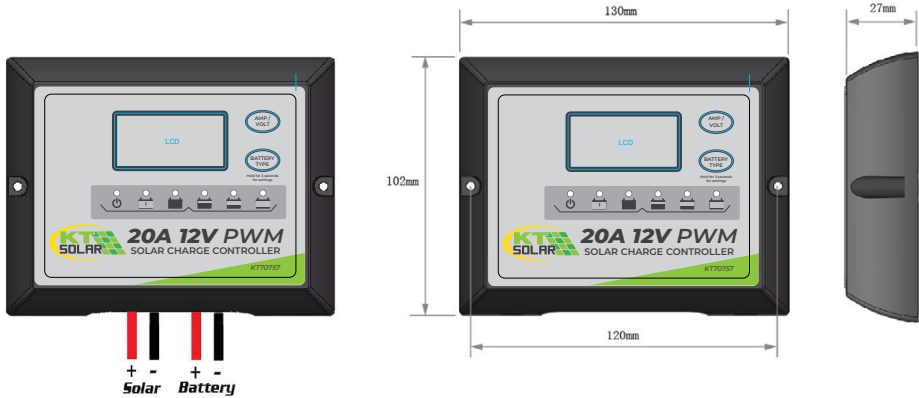
300W Portable Folding Solar Blanket Operational Instructions

- 1. Step 1 - Unfold & position the blanket in the sun**
Locate the blanket 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 blanket will now be charging the battery under regulation.

Solar Kit Specifications

| SPECIFICATIONS | |
|-----------------------------|-----------------|
| Type | Monocrystalline |
| Maximum Power (Pmax) | 300Wp |
| Power Tolerance | ± 3% |
| Maximum Power Voltage (Vmp) | 21.7V |
| Maximum Power Current (Imp) | 13.8A |
| Rated Voltage | 12V |
| Open Circuit Voltage (Voc) | 26.5V |
| Short Circuit Current (Isc) | 16.6A |
| Operating Temperature | 45 ± 2°C |
| Product Application | Class A |
| Maximum System Voltage | 1000V DC |
| Product Weight | 11.3kg |

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: 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.

Solar Controller Specifications

| | |
|----------------------------|----------------------------|
| Type | PWM |
| Operating Temperature | -20°C to +80°C |
| Operating Voltage | 12V |
| Rated to (Amps) | 20A |
| Rated to (Voltage) | 12V |
| Battery Voltage | 12V |
| Dimensions (mm) | 100 (H) x 130 (W) x 28 (D) |
| Product Weight | 1.20kg |
| Manufactured from material | Polycarbonate |

The KT 20A, 12V Solar Charge Controller is designed to charge Deep Cycle Batteries. Suited to charge Lead Acid, Gel, AGM, Lithium & Calcium Battery types, this Solar Charge Controller prevents batteries from becoming overcharged. The unit provides an automatic equalisation feature for all battery chemistries.

The PWM Solar Charge Controller features a digital LCD to directly display battery voltage, charging current, charging capacity, percentage present, battery type, fault codes. Coloured LED's indicate the operational status and each battery conditions.

KT's range of solar regulators are PWM (Pulse Width Modulation) which are the most commonly used, making them suitable for use on panels that are constantly being transported or moved eg; on the roof of a caravan, fitted to the back of a transportable, folding solar panel etc. PWM solar chargers use technology similar to other modern high-quality battery chargers. When a battery voltage reaches the regulation set-point, the PWM algorithm slowly reduces the charging current to avoid heating and gassing of the battery, yet the charging continues to return the maximum amount of energy to the battery in the shortest time. The result is a higher charging efficiency, rapid recharging, and a healthy battery at full capacity.

Solar Charge Controller

- Advanced MCU control Pulse Width Modulated (PWM) technology, high efficiency operation.
- Suitable for Lithium, GEL, AGM, Conventional Lead-Acid (WET) and Calcium Batteries.
- Built in regulator to prevent your battery from being overcharged. Overcharging occurs when the charge voltage is unregulated. This can result in premature battery failure.
- The regulator prevents your battery from being under charged, in the solar energy field, battery undercharge always occurs, especially on some conventional lead-acid or calcium batteries. The unit provides an automatic equalization feature for deeply drained conventional lead-acid battery or calcium battery, as well as provides a cycling automatic equalizing feature every 28 days.

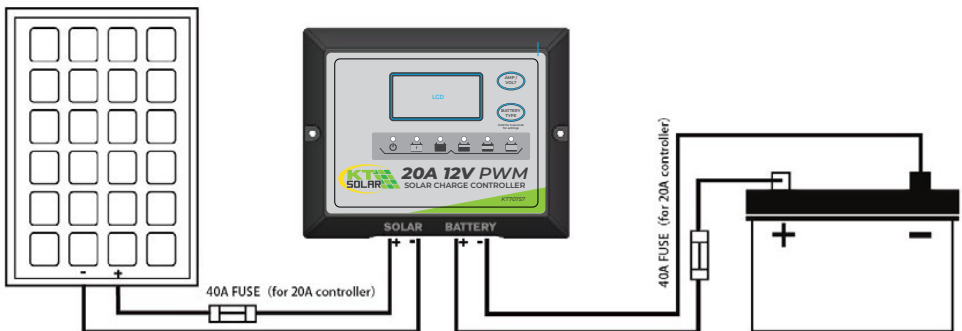
- Can be connected to the battery permanently to keep the battery fully charged by using a process called "floating". This means the controller will stop charging when the battery is full and will automatically start charging the battery as required. This process will also reduce water loss and help prevent the battery from 'drying out'.
- Protects your battery from discharge at night. Under low light or no light conditions the solar panel voltage could be less than the battery voltage. The unit contains a special circuit which prevents current flowing back from the battery and into the solar panel.
- Coloured LED's to easily indicate the operational status and battery conditions.
- Digital LCD to directly display battery voltage, charging current, charging capacity (Amp hour), battery types, full charge and faulty codes.
- Multi-charging protections against reverse polarity, short circuit, over temperature, over voltage, etc.

Wiring Connections

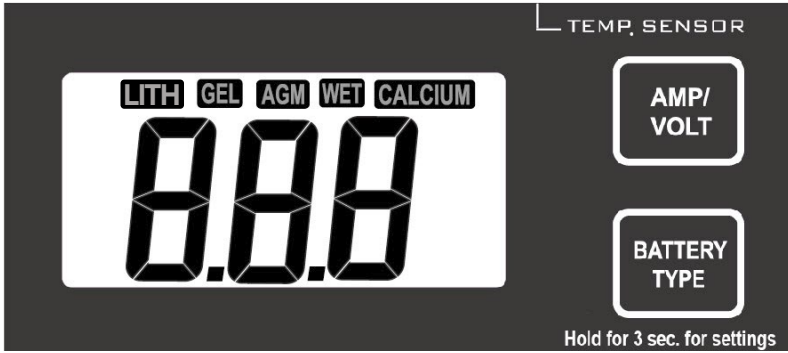
To protect the Battery and the Solar Panel, we strongly recommend that you place inline fuse on the positive wire on both the "Solar" and "Battery" Circuits. 20A fuse for 10A controller, 30A fuse for 15A controller, 40A fuse for 20A controller, (As close to the Battery / Panel as possible).

The Solar Controller has 4 terminals which are clearly marked 'Solar' and 'Battery'. There is a (12V / 24V) and earth (GND) terminal for each circuit.

Refer to the wiring diagram below.



Display Features



Please check your battery manufacturer's specifications to select correct battery type. The unit provides 5 battery types for selections: Gel, AGM, WET (conventional lead acid), Lithium and Calcium.

Press BATTERY TYPE button and hold for 3 seconds to go into your battery type selection mode, the battery type you select will be shown on the LCD meter, the default setting is AGM Battery; the controller will automatically memorize your battery type setting.

Caution: Incorrect battery type setting may damage your battery.

When the controller powers on, the unit will run self-qualify mode and automatically show below items on LCD before going into charging process.



Self-test starts, digital meter segments test



Software version test



V



A

Rated voltage and current test

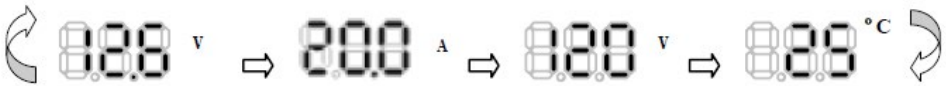


°C

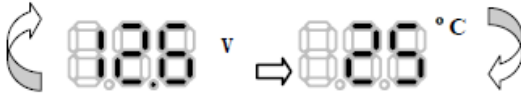
External battery temperature sensor test (if connected)

After going into charging process, the LCD displays the charging states as below: Press VOLT / AMP button in sequence, the LCD will display in turn with Battery Voltage, Charging Current, Charged capacity (Amp-hour) and Battery Temperature (if external temperature sensor connected)

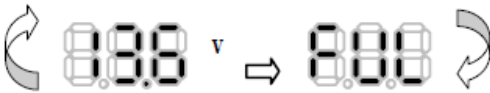
Display in the day time-



Display during the night



Alternatively Display voltage and FUL when battery is fully charged



The VOLT / AMP button can be changed at any time during charging process.

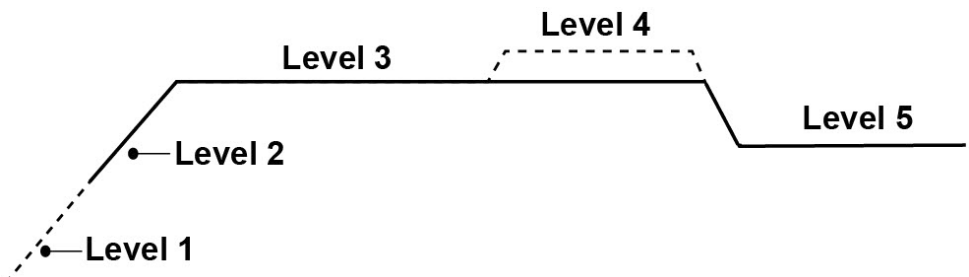
The LCD also can be treated as an independent voltage meter or thermometer.

A voltage less than 11.5V Volts (for 12V battery) indicates that the battery is discharged and needs re-charging.

CHARGING STAGES OPERATION - L.E.D. INDICATION

The unit has a 5 stage charging algorithm.

- Soft Charge (Level 1)
- Bulk Charge (Level 2)
- Absorption charge (Level 3)
- Equalizing Charge* (Level 4)
- Float Mode (Level 5)



CHARGING STAGES

Soft Charge - When batteries suffer an over-discharge, the controller will softly ramp the battery voltage up to 10V for 12V battery.







Bulk Charge - Maximum current charging until batteries rise to Absorption level

Absorption Charge-Constant voltage charging and battery is over 85%.

Equalisation Charge - Only for WET battery or Calcium battery type, when the battery is deeply drained below 10V (for 12V battery), it will automatically run this stage to bring the internal cells as an equal states and fully complement the loss of capacity. (Gel and AGM battery do not run Equalization charge)






Float Charge - Battery is fully charged and maintained at a safe level. A fully charged battery has a voltage of more than 13.6 Volts (for 12V battery).













OPERATION - L.E.D. INDICATION


| The 6 LED's indicate the charging status and the battery condition |  |  |  |  |  |  |
|--|---|---|---|---|---|---|
| | Red | Blue | Green | Green | Yellow | Red |
| Solar Power Present-No battery connected | ON | OFF | OFF | OFF | OFF | Flash |
| Soft charging | ON | Flash | OFF | OFF | OFF | ON |
| Bulk charging | ON | ON | OFF | Subject to battery voltage | | |
| Absorption charging | ON | ON | OFF | ON | OFF | OFF |
| Equalization charging | ON | ON | OFF | ON | OFF | OFF |
| Float charging | ON | OFF | ON | OFF | OFF | OFF |
| Solar panel weak | Flash | OFF | OFF | Subject to battery voltage | | |
| At night no charge | OFF | OFF | OFF | Subject to battery voltage | | |
| Battery Voltage below 11.5V (+/-0.2V) | ON | ON | OFF | OFF | OFF | ON |
| Battery Voltage between 11.5V - 12.5V(+/-0.2V) | ON | ON | OFF | OFF | ON | OFF |
| Battery Voltage above 12.5V (+/-0.2V) | ON | ON | OFF | ON | OFF | OFF |

Values are for 12V use.

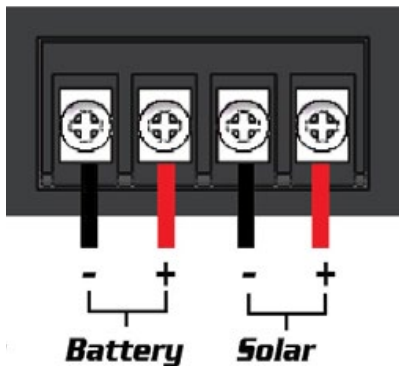
ABNORMAL OPERATION MODE

| Solar panel abnormal mode | LCD display | LED indication | LCD backlight |
|------------------------------------|---|--|---------------|
| Solar panel weak | |  Flash | ON |
| Solar panel reverse connection |  |  Flash | Flash |
| Solar panel over voltage (> 26.5V) |  |  Flash | Flash |

| Battery abnormal mode | LCD display | LED indication | LCD backlight |
|--|---|---|---------------|
| Battery disconnected or less than 3.0V |  |  Flash  Flash  Flash | Flash |
| Battery reverse connection |  |  Flash | Flash |
| Battery over voltage than > 17.5V |  |  Flash | Flash |
| Battery temperature over 65C |  |  Flash  Flash  Flash | Flash |

| The solar controller abnormal mode | LCD display | LED indication | LCD backlight |
|--|---|----------------|---------------|
| The controller over temperature protection |  | | Flash |

SOLAR CONTROLLER WIRING DIAGRAM



SPECIFICATIONS

| | | | | |
|----------|--|------------------------------------|--------|-------|
| 1 | Electrical Parameters | | | |
| 1-1 | Rated solar panel amps | 20 | Max. | AMP |
| 1-2 | Normal input Solar cell array voltage | 15-22 | | VDC |
| 1-3 | Max. solar cell array voltage (output has no load) | 25 | Max. | VDC |
| 1-4 | The controller lowest operating voltage at solar or battery side | 8V | Min | VDC |
| 1-5 | Standby current consumption at night | 5 | Max | mA |
| 1-6 | Maximum voltage drop-Solar panel to battery | 0.25 | Max. | VDC |
| 2 | Charging characteristics | | | |
| 2-1 | Minimum battery start charging voltage | 3 | Min | VDC |
| 2-2 | Soft start charging voltage | 3-10 | +/-0.2 | VDC |
| 2-3 | Soft start charging current (50% PWM duty) | Up to 15 | | AMP |
| 2-4 | Bulk charge voltage | 10-14.0 | +/-0.2 | VDC |
| 2-5 | Absorption charging voltage at 25°C | | | |
| | --Gel type battery | 14.1 | +/-0.2 | VDC |
| | --AGM type battery (default setting) | 14.4 | +/-0.2 | VDC |
| | --WET type battery | 14.7 | +/-0.2 | VDC |
| | --Calcium type battery | 14.9 | +/-0.2 | VDC |
| | --LITHIUM type battery | 14.25 | +/-0.2 | VDC |
| 2-6 | Absorption transits to Equalizing or Float condition: | | | |
| | --Charging current drops to | 0.5 | +/0.1 | AMP |
| | -- or Absorption charging timer timed out | 4 | | Hour |
| 2-7 | Equalization charging active | | | |
| | --Only for WET or Calcium battery | | | |
| | --Battery voltage discharged to less than | 10 | +/-0.2 | VDC |
| | --Automatic equalizing charging periodical | 28 | | Day |
| 2-8 | Equalization charging voltage at 25°C | 15.5 | +/-0.2 | VDC |
| 2-9 | Equalization charging timer timed out | 2 | | Hour |
| 2-10 | Float charging voltage at 25°C | 13.6 | +/-0.2 | VDC |
| 2-11 | Voltage control accuracy | +/- 1% | | |
| 2-12 | Battery temperature compensation coefficient | -24 | | mV/°C |
| 2-13 | Temperature compensation range | -20 ~ +50 | | °C |
| 3 | Protection | | | |
| 3-1 | Against reverse polarity or short circuit | | | |
| 3-2 | No reverse current from battery to solar at night | | | |
| 3-3 | Over temperature protection during charging | 65 | | °C |
| 4 | Electrical parts | | | |
| 4-1 | Input output terminal | M5 terminals | | |
| 4-2 | Temperature sensor port (Press and Release type) | DA 250-350 2P | | |
| 5 | Physical Parameters | | | |
| 5-1 | Controller material | Plastic, Standard ABS | | |
| 5-2 | Power terminal maximum stranded wire size | #12 AWG stranded-3 mm ² | | |
| 5-3 | Mounting | Vertical wall mounting | | |
| 5-4 | IP grade | IP22 or IP65 | | |
| 5-5 | Net weight | Approx. 300g | | |
| 6 | Environmental characteristics | | | |
| 6-1 | Operating temperature | -25 ~ 50°C | | |
| 6-2 | Storage temperature | -40 ~ 85°C | | |
| 6-3 | Operating Humidity range | 100% no condensation | | |

Values are for 12V use.

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 stand on solar cells.
5. Do not disassemble the Solar kit.
6. Do not attempt to increase module output by concentrating light on its surface with mirrors.
7. When storing the KT Solar Blanket - to avoid damage, do not pack heavy items on top.
8. Do not disassemble the controller. Take to a qualified electrician if the unit requires repairing.
9. The solar regulator is IP65 rated, however solar blankets should not be left overnight during rainfall. They should be folded up and put away each evening to ensure longevity. In the event the blanket is completely saturated, simply hang up and dry just like a blanket.

