

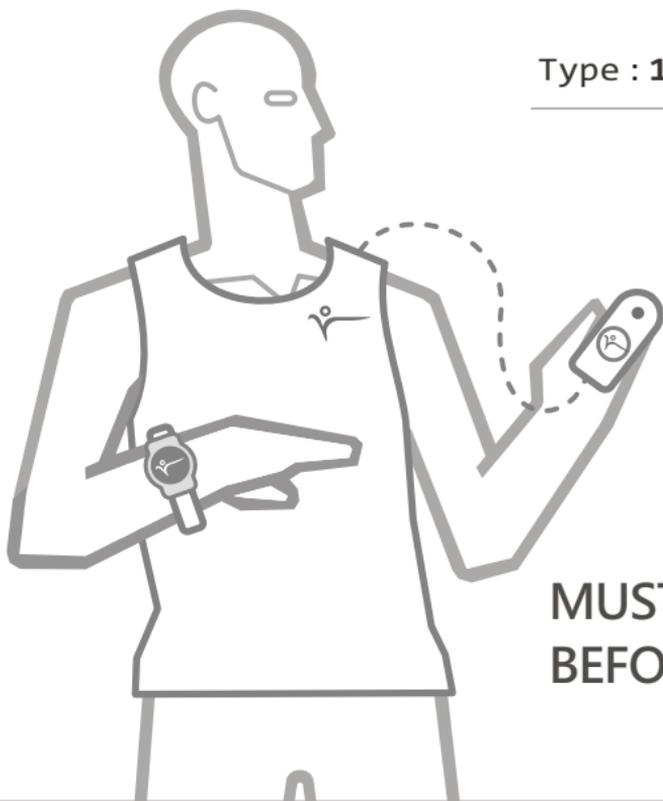


Blue Grade *INTERMEDIATE*

INSTRUCTION MANUAL

Model : PSD

Type : 10-AI / 10-BI



**MUST READ
BEFORE USING!**

! Attention !

- The feeling of warmth produced by the Thermalution® heated undersuit is dependent on the weather conditions, environment and heat sensitivity of each user. We suggest wearing a shirt under the Thermalution® heated undersuit if you feel too warm when it is directly on your skin.
- Shut off power and disconnect battery immediately if discomfort occurs.
- Make sure disconnect battery after power has been turned off.
- Disconnect the batteries from the suit before storing. Such preventive safety measures reduce the risk of starting the heated under suit accidentally.
- Please lay the undersuit on a flat surface after you take it off.
- Never bend or twist the undersuit.
- Do not put weight on top of the undersuit.
- Please flush out the salty water from the undersuit or any grime on the connectors, then store away after it is fully dry. Keep it in a cool and dry place; away from the sun.
- Do not tumble dry. No spin or bleach.



When taking off the undersuit, please do not pull on the collar; instead remove the clothing by pulling on the bottom of the clothes. This would prevent damage due to strain on the heating module.

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Thermalution

Blue Grade *INTERMEDIATE*

➔ Power Heated Undersuit

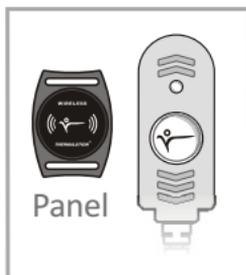
Thermalution® Blue Grade is the latest technology that facilitates you to stay warm and pleasant in oceans up to 50 meters (150ft) deep. You can wear the Thermalution® Blue Grade under your dry suit or wetsuit.

Thermalution® Blue Grade is the first power heated undersuit which utilizes the Close Proximity Sensor (CPS) control system. It is an intermediate model best suited for divers who wish to dive deeper into the ocean.

The high capacity lithium polymer battery has been tested under water to be waterproof.



Accessories & Specifications



CPS Temperature Micro-Controller

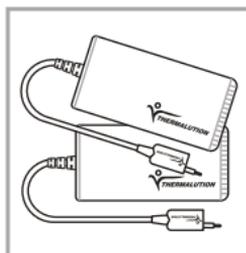
Model : SPE Type : 005-E

CPS Panel Model : SPR Type : 0004-A

3 Settings L(Green) / M(Orange) / H(Red)



Wrist Strap 1pc.



Lithium Polymer Battery 2pc.

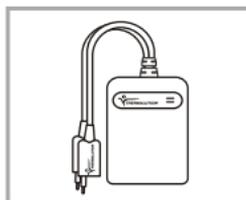
Model : SPE Type : 002-C (for PSD10-AI)

Output : 7.4V / 2200mAh

or

Model : SPE Type : 002-E (for PSD10-BI)

Output : 7.4V / 4400mAh

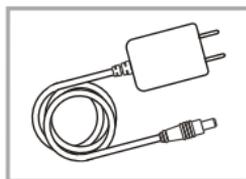


Battery Charger 1pc.

Model : SPE Type : 004-A

Input : 12 VDC / 1A

Output : 8.4 VDC / 0.5A x 2



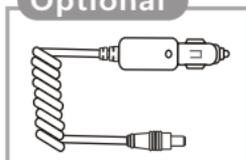
Power Adaptor 1set.

Model : COE Type : 010-C

Input : AC 100-240V 1A

Output : DC 12V, 1A

Optional



Car power adaptor

Model : COE Type : 013-A

Input : 12 VDC / 2A

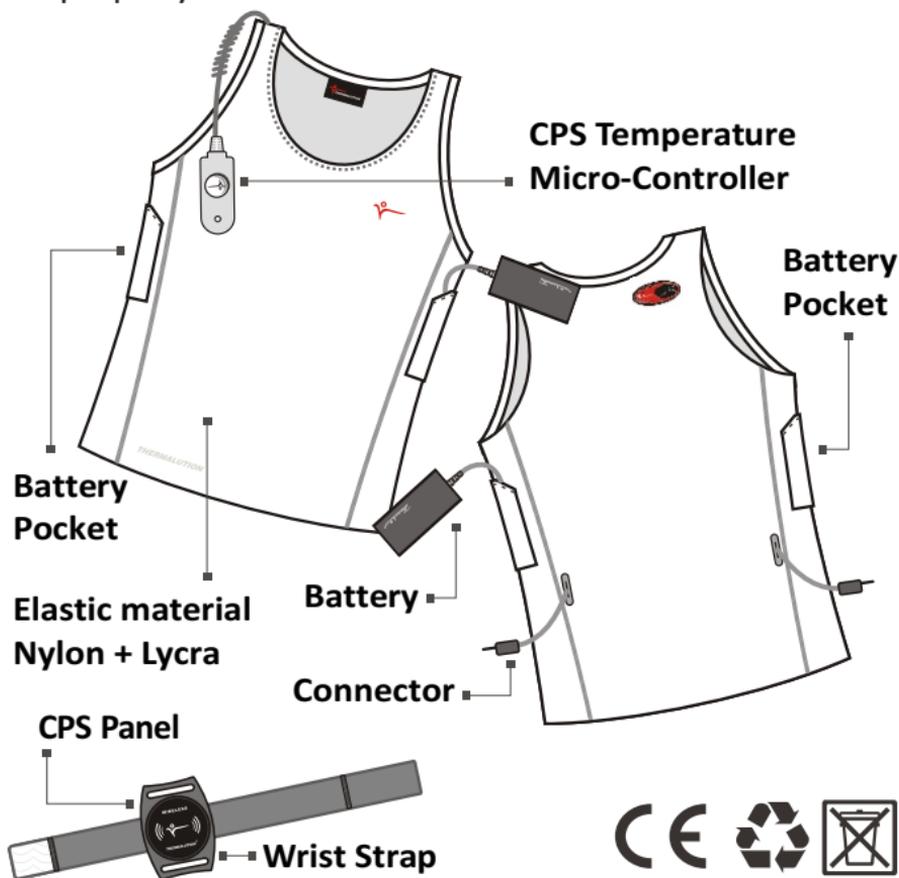
Output : 12 V

Thermalution

Blue Grade *INTERMEDIATE*

➔ Introduction

The Thermalution® Blue Grade needs to be worn underneath a wetsuit and drysuit in order to function properly.





CPS



Powered heating



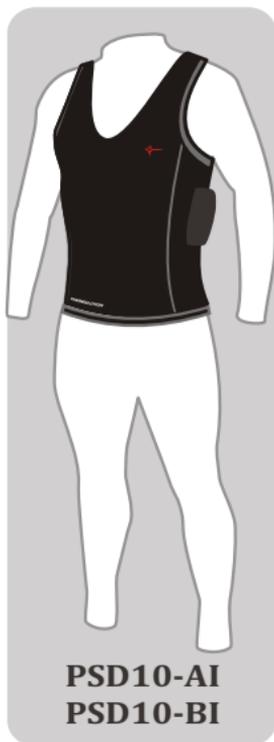
500
charges



Under water



Non-metallic
heating wire



PSD10-AI
PSD10-BI



WATER PROOF



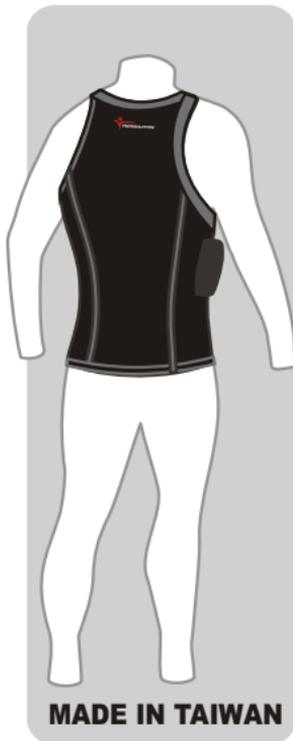
Ultraviolet ray



3 level setting
temperature



Temperature with
micro-controller



MADE IN TAIWAN

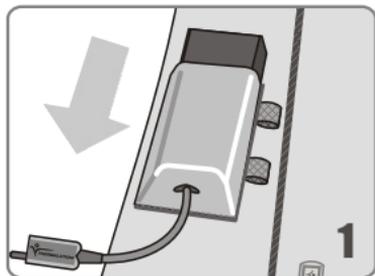
Thermalution

Blue Grade *INTERMEDIATE*

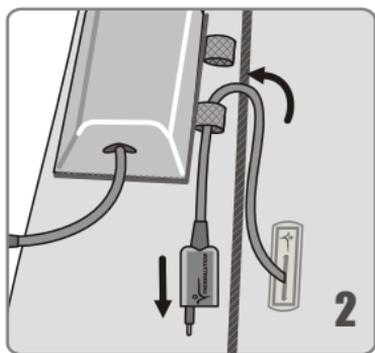
➔ Characteristics

- Suitable for depths up to 50m (150ft) deep.
- Non-metallic heating panel positioned on the back to warm up your core area.
- CPS temperature micro-controller with on/off switch and 3 temperature settings and lights indication.
- Built in microchip within controller providing extra stability for temperature control.
- Heats up within minutes.
- Heat lasting 90-120 minutes.
- High capacity lithium-polymer batteries.
- Batteries could be recharged for 500 times.
- 100V~240V Universal Dual battery charger.
- Therapeutic Far Infrared Technology (FIR).
- Fabric:
Ultraviolet protective material for enhanced sustainability against solar radiation.

How to Connect Batteries onto the Undersuit:

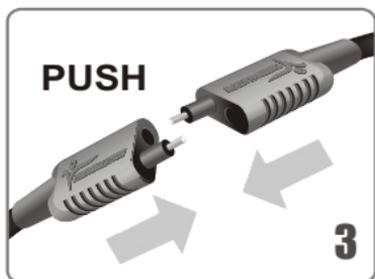


Push the battery connector through the hole at the bottom of the battery pocket. Place the battery inside the battery pocket.



Push the undersuit power connector through the side hole first as shown in the diagram.

⚠ Please switch off the remote controller and remove batteries immediately after diving.



Connect both connectors.

⚠ Connecting batteries with each other is absolutely prohibited! It may cause serious damage to the battery themselves.

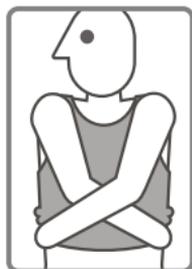
! Connect the battery cables and place the batteries in the battery pockets before you wear the undersuit.

! Fully charge the batteries before use.

! Remove the battery connections once you get out of the water.

How to Wear the Undersuit:

- Thermalution® Blue Grade heated Undersuit functions as a thermal layer under the wetsuit or drysuit.
- Thermalution® Blue Grade heated Undersuit needs to be worn underneath a wetsuit or drysuit in order to function properly.
- To ensure best heating performance, please always charge up the batteries before use.
- CPS panel needs to be fastened by the wrist strap.



! Attention !

When taking off the undersuit, please do not pull on the collar; instead remove the clothing by pulling on the bottom of the clothes. This would prevent damage due to strain on the heating module.



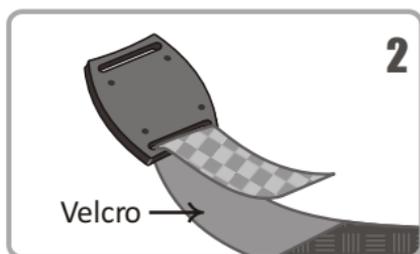
- The feeling of warmth produced by the Thermalution® heated undersuit is dependent on the weather conditions, environment and heat sensitivity of each user. We suggest wearing a shirt under the Thermalution® heated undersuit if you feel too warm when it is directly on your skin.
- Shut off power and unplug battery immediately if discomfort occurs.

How to wear the Wrist Strap:



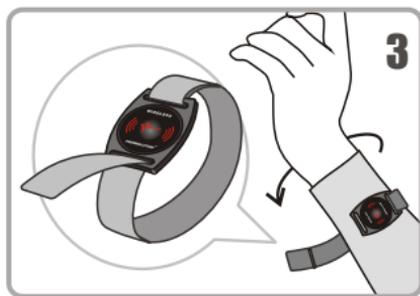
1

Insert the end with velcro loops on both sides of the strap through the CPS panel, while ensuring the loop face is outward facing.



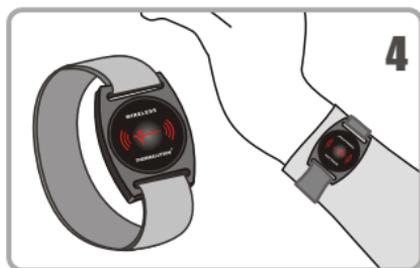
2

Fasten the strap by pressing the hole face to the loop face of the velcro strap.



3

Wrap the strap around your wrist and insert the other end of the strap through the CPS panel.



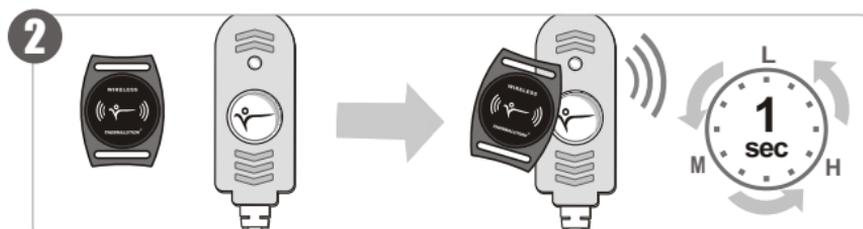
4

Adjust for comfort and fasten the strap.

How to Operate the CPS Temperature Micro-Controller:



Turn on and off the Thermalution Blue Grade by simply placing the CPS panel next to the CPS controller and holding them together for 3 seconds. The indication lights on the CPS controller will show the power status of the undersuit.



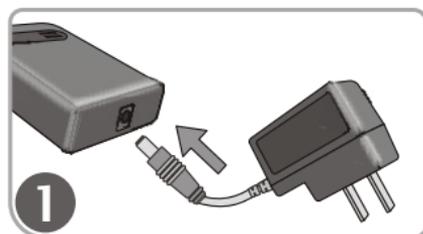
Adjust the temperature setting by simply placing the CPS panel next to the CPS controller for 1 second and moving it away.

A **green** light will indicate the current temperature setting is on “**Low**”, an **orange** light will indicate “**Mid**” and a **red** light will indicate “**High**”.

Attention :

- ! Do not turn the power on if the connectors are still wet.
- ! Fully charge the batteries before use.

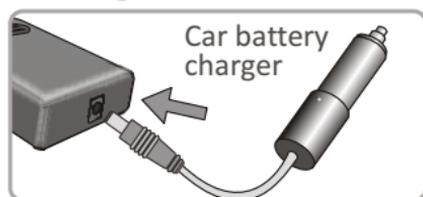
How to Charge the Batteries:



Connect the battery charger to the universal AC power adaptor.

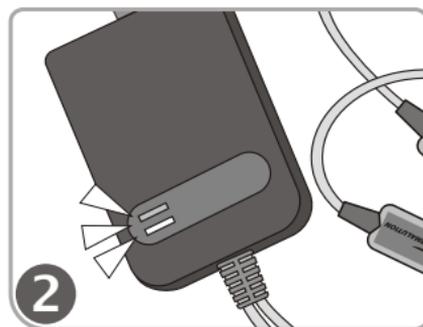
(COE-010-C / 100~240V)

or

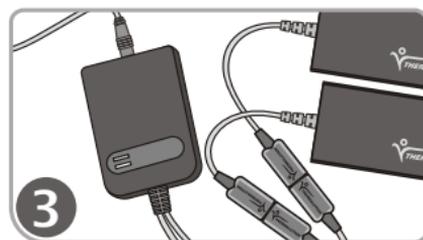


Connect the charger to the cigarette lighter adaptor.

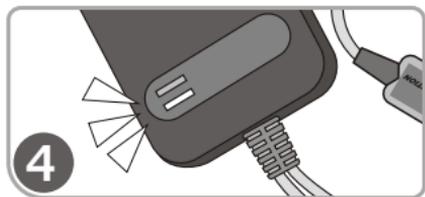
(When using the car battery charger / COE-013-A)



Once connected to power the charger will flash **red > orange > green > off** in sequence as self testing to indicate successful connection. Please wait for lights to switch off before connecting batteries to the charger.



Plug batteries to the dual battery charger (SPE-004-A) to recharge 2 batteries simultaneously.



Charge the batteries until the light turns **green**.

The light on the battery charger will indicate the charging status:

- Red light : charging.
- Green light flashing : 90% charged.
- Green light still : 100% fully charged.

CAUTION

- Red light flashing : charging circuit may be overheating.
- Orange light flashing : short circuit.
- If you notice a problem with the charger, remove the batteries and the power adaptor, disassemble all the connectors and contact your local dealer for further assistance.

MAINTENANCE

To keep the battery operating at maximum efficiency, the batteries are required to be fully charged and discharged 2-3 times every 2 to 3 months, if you do not use it frequently.

* Please check if the heating panel at back still flat, if not please stop using and contact your local dealer for services.

Washing Instructions:

- Hand-wash your heated undersuit with cold water only.
- Before washing , disconnect and remove battery from pocket.
- Please use clean water to rinse the suit after use.
- Please flush out the salty water from the undersuit or any grime on the connectors, then store away after it is fully dry. Keep it in a cool and dry place; away from the sun.
- Do not tumble dry. No spin or bleach.

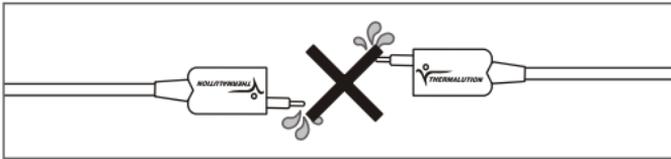


! Attention !

Please flush the undersuit and the battery connectors with clear water immediately after use, and blow dry with an air gun. This would prevent corrosion caused by salt water. Do not tumble dry.

! Attention !

! Do not turn the power on if the connectors are still wet.



! When used in sludge technical diving or salty waters, please make sure to rinse the whole suit and flush both connectors after every use.

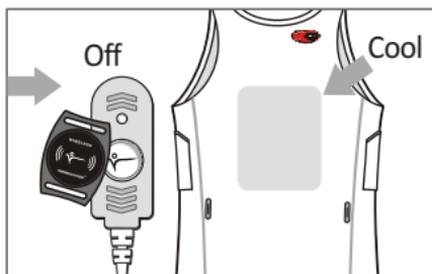
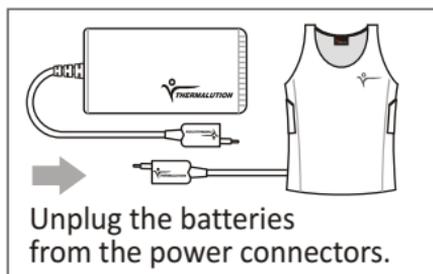
! There is limited power remaining in the enclosed batteries. We recommend that you fully charge the batteries before usage. To achieve the optimum condition, the batteries will need to be fully charged and discharged for the first few times.

*Fully charge means over night charging for at least 8 hours.

How to store the undersuit properly:

When you wish to store the suit, you should follow these general rules:

1. Make sure the power has been turned off.
2. Unplug the batteries from the power connectors.
3. Check the thermal module is cool.
4. Check the controls and cords for any unusual things, such as a crack, any cuts or crimped area in the insulation.
5. Hang the suit on a hanger. Be careful not to put the suit into a sharp hard fold.
6. Loosely wrap the battery cords in a separate loose coil. Always keep the cord loose being sure not to pinch the cord or put it into a severe strain anywhere.
7. When you about to use the suit after storage, make certain that the battery and controller connectors are connected tightly. Insecure connections are the cause for many safety (e.g. overheating) and reliability (e.g. controllers don't work properly) problems.





Power heated undersuit use and care:

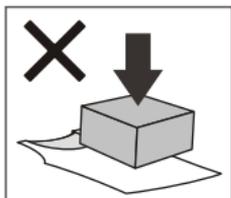
Disconnect the batteries from the suit before storing. Such preventive safety measures reduce the risk of starting the heated undersuit accidentally.

Store out of the reach of children and do not allow persons unfamiliar with these instructions to operate the heated undersuit. It could be dangerous of untrained users.



Please lay the undersuit on a flat surface after you take it off.

Never bend or twist the undersuit.



Do not put weight on top of the undersuit.

Do not allow the cords to be pinched.

Please disconnect the battery plug when the product is not activated.



Please connect both connectors on the undersuit before you store it away.

FAQ:

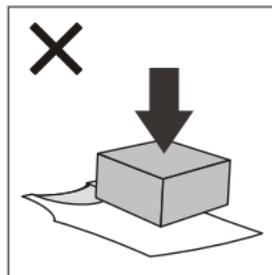
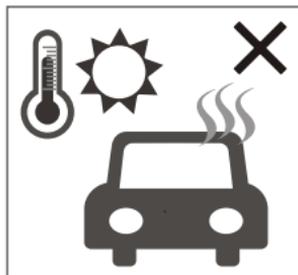
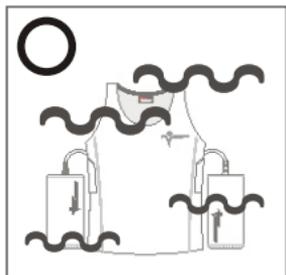
What should I look out for when discharging the battery?

To keep the battery operating at maximum efficiency, the batteries are required to be fully charged and discharged 2-3 times every 2 to 3 months if you do not use it frequently.

Because the Thermalution undersuits are designed for underwater activities, so you must take extra caution when discharging the battery to avoid any accidents. When you are discharging the batteries, please follow these general rules:

1. Discharging the battery in a moderate room temperature environment.
2. Sink the undersuit in cold water during discharging.
3. Lay the undersuit flat, unfold and do not put any weight on top of the undersuit.
4. Never leave the discharging battery unattended.
5. Never discharge the battery in the car, or anywhere under the sun, or close to heat.

DURING DISCHARGING:



Under what circumstances, the Thermalution undersuit may overheat?

The heating module on the Thermalution undersuit may overheat under some exceptional circumstances and/or due to improper usage. It is user's responsibility to use the undersuit as guided and follow these general rules:

1. You must unplug and disconnect the battery from the connector and heating module when the undersuit is not in use.
2. If you are wearing Thermalution undersuits with dry suits, please frequently adjust the heating temperature according to your need. When you feel overheat please switch the temperature level to low, or turn off the system. Moreover, you may wear an under layer underneath the product to avoid skin irritation from heat.
3. When the system is on You should NEVER twist, hard fold and/or put weight on the undersuit.

Warranty exceptions and repair fee?

Thermalution may charge you a repair fee (including shipping charges) as described in the warranty section. If Thermalution inspects your undersuit and determines that (i) your product has failed due to or has compatibilities with improper use, (ii) the product has failed due to accident, abuse, neglect, misuse (including connector pin break, battery pin break, over stretch causing exposure of wires, any components besides the thermal system module; etc), unauthorized modification, extreme physical or electrical stress or interference, fluctuation or surges of electrical power, lightning, static electricity, fire, acts of God or other external causes ("Warranty Exception") Thermalution will return your product to you without servicing and may charge you the repair fee. In general, any action that is NOT instructed in the manual, on Thermalution website or recommended by Thermalution will be considered as improper use. For more details, please refer to the warranty section on the Thermalution website.

For further information please refer to
Thermalution® official website > Q&A page.
www.thermalution.com

Warning:



Read all safety warnings and instructions.

Failure to follow the warnings and instructions may result in electric shock, fire and / or serious injury. Save all warnings and instructions for future reference.

Electrical safety:

Do not abuse the power cable, never use the cord for carrying, pulling, keep cord away from fire or heat equipments, oil sharp edges or moving parts.

Personal safety:

Do not use while you are tired or under the influence of drugs, alcohol, medication, or sleeping, a moment of inattention may result in serious personal injury.

Specific safety rules:

Do not use this heated under suit with an infant, child, a helpless person, or anyone insensitive to heat, such as a person with poor blood circulation.

If you have a medical condition making you sensitive to overheating, or you use any personal medical devices, consult the device manufacturer or your physician to determine if use of this product is appropriate.

Batteries:

The SPE-004-A Battery Charger

Before using the SPE-004-A charger, read and follow the warning notices on this manual.

The SPE-004-A charger is for use with SPE-002-E and SPE-002-C batteries. Do not use with incompatible batteries. The supplied power cable is intended solely for use with the SPE-004-A charger and is for indoor use only.

The SPE-002-C / SPE-002-E Battery

Before using the SPE-002-C / SPE-002-E battery, read and follow the warning notices on this manual.

Do not use the battery at ambient temperatures below 0 °C (32 °F) or above 40 °C (104 °F). During charging, the temperature should be in the vicinity of 5 to 35 °C (41 to 95 °F).

Note that the battery may become hot during use. Wait for the battery to cool before charging. Failure to comply with these precautions could damage the battery, impair its performance, or prevent it from charging normally.

Connecting batteries with each other is absolutely prohibited. It may cause serious damage to the battery themselves.

When the Battery Is Not in Use

When the battery is not in use, remove it from the undersuit and battery charger.

The undersuit and battery charger would draw minute amounts of current even when off; if left in place, the battery could be drained to the point that it no longer functions.

Battery Handling Precautions

DANGER

1 Do not disassemble or modify the battery pack. The battery pack is equipped with built-in safety/protection features. Should these features be disabled, the battery pack can leak acid, overheat, emit smoke, burst and/or ignite.

2 Do not connect the positive (+) and negative (-) terminals with a metallic object such as wire. Do not transport or store the battery pack together with metal objects such as necklaces, hair pins, etc. Otherwise, short-circuiting will occur, overcurrent will flow, causing the battery pack to leak acid, overheat, emit smoke, burst and/or ignite, or the metallic object such as wire, necklace or hair pin can generate heat.

3 Do not discard the battery pack into fire or heat it. Otherwise, its insulation can melt down, its gas release vent or safety features will be damaged and/or its electrolytes can ignite, possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition.

4 Do not use or leave the battery pack near a heat source such as a fire or a heater (80°C / 176°F or higher). If the resin separator should be damaged due to overheating, internal short-circuiting may occur, possibly leading to acid leakage, overheating, smoke emission, bursting and / or ignition.

5 Do not recharge the battery pack near fire or in extremely hot weather. Otherwise, hot temperatures can trigger its built-in protective features, inhibiting recharging, or may damage the built-in protective features. Therefore it may be charged with an extremely high current and voltage, and, as a result, abnormal chemical reactions may occur, possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition.

6 Do not pierce the battery pack with a nail or other sharp objects, strike it with a hammer, or step on it. Otherwise, the battery pack will become damaged and deformed, internal short-circuiting may occur, possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition.

7 Do not use an apparently damaged or deformed battery pack. Otherwise, acid leakage, overheating, smoke emission, bursting and/or ignition of the battery pack may occur.

8 Do not strike or throw the battery pack. The impact might cause leakage, overheating, smoke emission, bursting and/or ignition. Also, if the protective feature in it becomes damaged, it could become charged with an extremely high current and voltage, abnormal chemical reactions may occur, which may cause acid leakage, overheating, smoke emission, bursting and/or ignition.

9 To recharge the battery pack, use the specifically designed battery charger and observe the recharging conditions specified by PETATECH. A recharging operation under non-conforming recharging conditions (higher temperature and larger voltage/current than specified, modified battery charger, etc.) can cause the battery pack to be overcharged, or charged with extremely high current, which may cause abnormal chemical reactions, possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition.

10 Do not directly solder the battery pack. Otherwise, the heat may melt down its insulation, damage its gas release vent or safety features possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition.

11 Do not reverse the positive (+) and negative (-) terminals. Otherwise, during recharging, the battery pack will be reverse-charged, which may cause abnormal chemical reactions. Alternatively, it may cause an excessively high current during discharging which may lead to acid leakage, overheating, smoke emission, bursting and/or ignition.

12 The positive (+) and negative (-) terminals are arranged in a particular orientation. Do not force the connection if you cannot easily connect the battery pack terminals to the battery pack charger or other equipments. Confirm that the terminals are correctly oriented before connection. Reversing the terminals will result in reverse-charging, possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition of the battery pack.

13 If the battery pack leaks, and the electrolyte gets into the eyes, do not rub them. Instead, rinse the eyes with clean running water and immediately seek medical attention. Otherwise eye injury may occur.

14 Do not connect the battery pack to an electrical outlet, vehicle cigarette lighter, etc. When subjected to a large voltage, overcurrent may flow on the battery pack, possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition.

15 Do not use the battery pack for a purpose other than those specified. Otherwise, its guaranteed performance will be lost and/or its service life will be shortened. Depending on the equipment in which the battery pack is used, excessively high current may flow through battery pack, possibly damaging it and leading to acid leakage, overheating, smoke emission, bursting and/or ignition.

Warning

1 Do not use the battery pack in combination with primary battery packs (such as dry-cell battery packs) or battery packs of different capacities or brands. Otherwise, the battery pack may be overdischarged during use or overcharged during recharging, abnormal chemical reactions may occur, possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition.

2 If recharging operation fails to complete even when a specified recharging time has elapsed, immediately stop further recharging. Otherwise, acid leakage, overheating, smoke emission, bursting and/or ignition may occur.

3 Do not put the battery pack into a microwave oven or pressurized container. Rapid heating or disrupted sealing may lead to acid leakage, overheating, smoke emission, bursting and/or ignition.

4 If the battery pack leaks or gives off a bad odor, remove it from any exposed flame. Otherwise, the leaking electrolyte may catch fire, and the battery pack may emit smoke, burst and/or ignite.

5 If the battery pack gives off odor, generates heat, becomes discolored or deformed, or in any way appears abnormal during use, recharging or storage, immediately remove it from the equipment or battery pack charger and stop using it. Otherwise, the problematic battery pack may develop acid leakage, overheating, smoke emission, bursting and/or ignition.

Caution

1 Do not use or subject the battery pack to intense sunlight or hot temperatures such as: left in a car in a hot weather. Otherwise, acid leakage, overheating and/or smoke emission may occur. Also, its guaranteed performance will be lost and/or its service life will be shortened.

2 The battery pack incorporates built-in safety devices. Do not use it in a location where static electricity (greater than the manufacturer's guarantee) may be present. Otherwise, the safety devices may be damaged, possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition.

3 The guaranteed recharging temperature range is 0 to 40°C(104°F). A recharging operation outside this temperature range may lead to acid leakage and / or overheating of the battery pack, and may cause damage to it.

4 If acid leaking from the battery pack contacts your skin or clothing, immediately wash it away with running water. Otherwise, skin inflammation can occur.

5 Store the battery pack in a location where children cannot reach it. Also, make sure that a child does not take out the battery pack from the battery pack charger or equipment.

6 Before use, carefully study the operation manual and precautions. For further information, contact your nearest PETATECH distributor or representative. Safe keep the manual for future reference.

7 For recharging procedures, refer to the operation manual of your battery pack charger.

8 If you find rust, bad odor, overheating and/or other irregularities when using the battery pack for the first time, return it to your supplier or vendor.



Thermalution® Thermal system Quality Warranty and Service

Dear Thermalution® consumers,
Thank you for purchasing Thermalution® products.

We; Petatech International Co., Ltd. Guarantees this product against defective components, faulty workmanship and any defect in materials associated with the **thermal system only** for a period of 12 months from the date of purchase. Products subjected to the above conditions will be rectified a replacement of the product by Thermalution® authorized distributors / retailers from whom this product was purchased.

If your product is faulty within the warranty period:

Should your Thermalution® product have faults within the warranty period, please return it to the distributor / retailer from whom it was purchased. In most cases the distributor / retailer will send the product to Petatech International Co., Ltd. Taiwan for a repair cost inquiry.

All Thermalution products have been insured for product liability insurance. Please be insured for safety.

Conditions

- 1 The product must have been purchased from Thermalution® authorized Distributors / Retailers. As proof of purchase, retain the original sales docket indicating the date and seller of purchase.
- 2 The warranty applies only to faults caused by defective components associated with the thermal system.
- 3 The warranty does not cover faults caused by failure to comply with the product's instruction manual. Consumers are requested to read the instruction manual before using of Thermalution® products.
- 4 In the event of a failure, Petatech shall be under no liability for any injury or any loss or damage caused to property or products other than the product under warranty. This warranty does not prejudice your rights under common law and statute, and is in addition to the normal responsibilities of the distributor / Retailer and Petatech International Co., Ltd.
- 5 The warranty on this product will be voided if the product is altered ,misuse ,improper handling or storage , tampered, taken apart, abuse, modified or repaired by non-authorized repair centers.

Thermalution® product number # _____

Authorized Distributor/Retailer _____

Country: _____ **Purchase date:** _____



Scan to
warranty
web page !

Please refer to Thermalution official web site
for more warranty policy details:

thermalution.com/contact_warranty_water.html



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