

**WATT**CRAFTS

Precision Tools for Powerful Ideas








# User Manual

Temperature Control Module



# 1. Important Notices and Symbols

Read this manual in full before installing, operating, or maintaining the Temperature Control Module. Retain this manual for future reference.

## 1.1 Symbols Used in This Manual

	<b>DANGER</b> — Indicates a hazard that, if not avoided, will or could result in serious injury or death.
	<b>WARNING</b> — Indicates a hazard that, if not avoided, could result in minor injury or damage to equipment.
	<b>CAUTION</b> — Indicates a risk of equipment damage or data loss if instructions are not followed.
	<b>Note</b> — Provides supplementary information to aid correct operation.
	<b>Tip</b> — Practical advice for getting the best result.

## 1.2 Symbols on the Product

<b>CE</b>	Conformité Européenne — Product meets applicable EU Directives.
<b>UKCA</b>	UK Conformity Assessed — Product meets applicable UK regulations.
	<b>WEEE</b> — Do not dispose of this product with unsorted municipal waste. See Section 17.
	Hot and cold surfaces present during operation. Risk of burns or frost injury. Do not touch heat sink, fan or cold plate during operation.

## Disclaimer

The information contained in this manual is provided for the purpose of operating and maintaining this Product. While every effort has been made to ensure the accuracy and completeness of this manual, Wattcrafts Engineering Ltd. assumes no responsibility for errors, omissions, or inaccuracies.

This product is designed for use by qualified personnel who are trained in its proper handling and application. Users are responsible for understanding and following all safety guidelines and instructions provided in this manual. Failure to adhere to these instructions may result in damage to the product, property, or personal injury.

Wattcrafts Engineering Ltd. shall not be liable for any direct, indirect, incidental, or consequential damages arising out of the use, misuse, or inability to use this product. Modifications, alterations, or repairs to the product not expressly approved by Wattcrafts Engineering Ltd. will void any warranty and may result in unsafe operation.

All specifications and features of the product are subject to change without prior notice. The user is responsible for ensuring that they are using the most up-to-date version of this manual.

By using this product, the user agrees to the terms of this disclaimer.

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## Manufacturer and customer service

WATTCRAFTS ENGINEERING LTD.

46 ST. ELMO AVENUE

SA1 8DP

SWANSEA, UK

Email: [info@wattcrafts.com](mailto:info@wattcrafts.com)

Website: [www.wattcrafts.com](http://www.wattcrafts.com)

## 2. Intended Use

The Temperature Control Module (PCH\_TCM\_A) is designed exclusively for laboratory research and development use in conjunction with Wattcrafts Pouch Cell Holders for battery characterisation and electrochemical testing. It provides active thermoelectric heating and cooling of pouch cells under controlled, isothermal conditions.

### **⚠ Restrictions on Use**

- For laboratory and indoor use only. Not suitable for clinical, medical, industrial production, or domestic use.
- Not to be used with flammable, explosive, or reactive materials beyond the scope of the intended battery test cell.
- Not to be operated unattended for extended periods without appropriate monitoring.
- Not to be used outside the environmental conditions specified in this manual.
- Any use other than that described in this manual is considered improper and is the sole responsibility of the user.

## 3. Safety

### 3.1 General Safety

Read all safety instructions before use. Keep this manual accessible during operation.

### **⚠ DANGER — Hot and Cold Surfaces**

- The heat sink, fan outlet and holder base can reach temperatures significantly above and below ambient during operation.
- Risk of burns and frost injury. Do not touch the heat sink, fan, or base plate during operation or immediately after shutdown.
- Allow the unit to return to ambient temperature before handling.

### **⚠ DANGER — Battery Hazard**

- Pouch cells can release hazardous substances if the seal is compromised. Wear appropriate personal protective equipment (safety glasses and chemical-resistant gloves) at all times when working with cells.

- High-current testing can cause significant heating of cell tabs and electrical contacts. Do not touch contacts during or immediately after high-rate testing.
- Refer to the Pouch Cell Holder User Manual and your cell manufacturer's safety data sheet for additional cell-related hazards.

**⚠ WARNING — Ventilation Required**

- The module uses an active fan and heat sink for thermal management. Never operate the module with the fan obstructed or the heat sink covered.
- Maintain a minimum 100 mm clearance around all sides of the unit during operation.
- Do not stack objects on top of the module. Insufficient ventilation will cause thermal shutdown and may damage the unit.

**⚠ WARNING — Electrical Safety**

- Use only the power adapter supplied with the unit. Using an incorrect adapter may damage the unit and create a safety hazard.
- Inspect the power adapter cable and connector before each use. Do not use if damaged.
- Disconnect the power adapter before performing any assembly, maintenance, or fuse replacement.
- Do not expose the unit or the power adapter to moisture, liquids, or condensing environments. The enclosure has no ingress protection rating.
- Do not operate the unit if it has been dropped, submerged, or shows visible damage.

**⚠ WARNING — Thermal Paste**

- The included thermal paste may cause skin or eye irritation. Wear gloves and avoid contact with eyes.
- Wash hands thoroughly after handling. Refer to the thermal paste safety data sheet if required.

*⚠ Caution: Do not operate the Temperature Control Module without the heat sink fan running. Operating the Peltier element without heat dissipation will cause rapid overheating and irreversible damage to the device.*

*⚠ Caution: Do not set a temperature setpoint below 0°C. The factory lower limit is set to 0°C. Attempting to operate below 0°C risks condensation on the cell and module, which can damage both the cell and the electronics.*

## 4. Product description

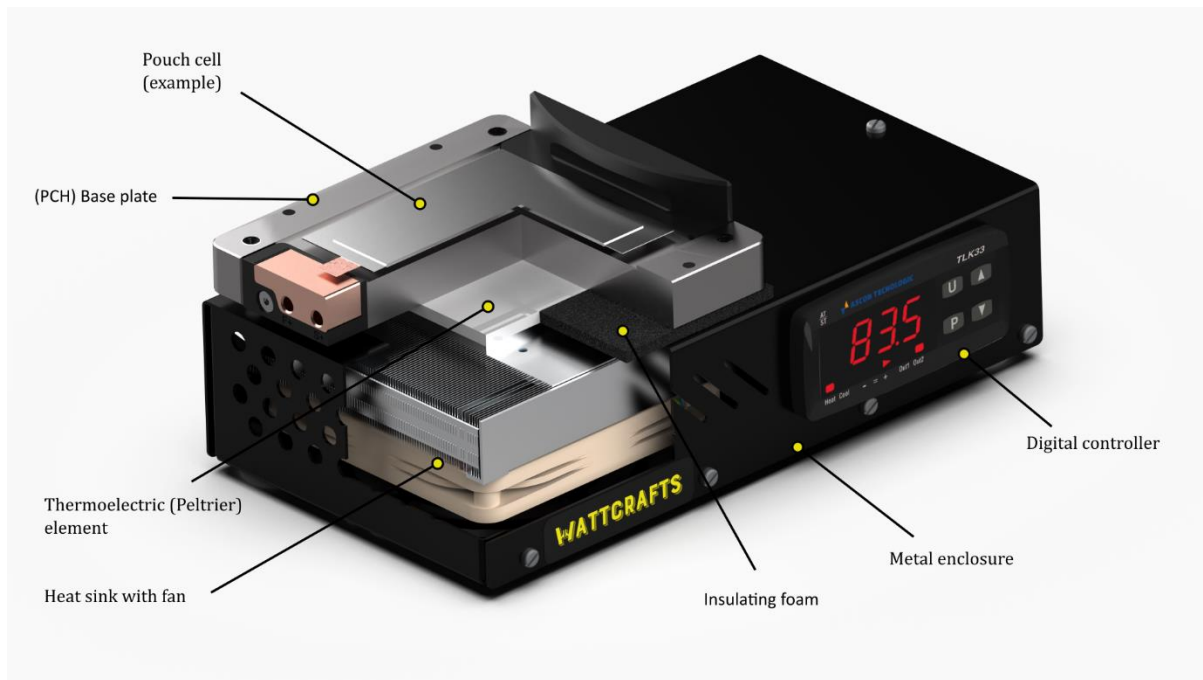
### Temperature Control Module for Controlled Battery Testing Conditions

The Temperature Control Module is designed to enhance accuracy and expand control parameters in battery characterisation, serving the needs of both research laboratories and industry. This thermoelectric heating and cooling system provides active temperature regulation for Wattcrafts Pouch Cell Holders, combining precision control with a practical, compact design to enable reliable isothermal testing across a wide range of applications.

Unlike conventional thermal chambers that rely on convective air cooling, the Temperature Control Module uses conductive heat transfer through a Peltier (thermoelectric) element in direct contact with the base of the Pouch Cell Holder. This approach provides superior temperature stability, eliminating the significant temperature drift commonly observed during pulse testing. The result is experimental data of higher quality and consistency, particularly valuable for model parameterisation and degradation studies where temperature precision directly impacts data validity.

The integrated controller provides simple, responsive temperature regulation in both heating and cooling modes. The power supply chain is entirely low-voltage DC: the included AC/DC adapter converts mains power to 12 V DC and the module operates at 12 V internally, eliminating mains voltage inside the module enclosure.

The module can be paired with the Wattcrafts Temperature Sensor Module (PCH\_S\_TC) for independent cell surface temperature monitoring during testing, providing a comprehensive view of the thermal environment.



## 5. Specification

Model	<b>PCH_TCM_A</b>
Temperature range	0°C to 70°C (setpoint limits); minimum achievable ~10°C below ambient
Temperature control	PID, bidirectional (heating and cooling)
Feedback sensor	Type K thermocouple (included, factory-fitted)
Thermal element	Peltier (thermoelectric) module with heat sink and fan
Input voltage	12 V DC
Max. input current	8.5 A
Max. input power	~102 W
Power supply	External Class I AC/DC adapter, 12 V / 8.5 A (included)
DC fuse (user-replaceable)	8 A, >24 VDC
Compatibility	Wattcrafts Pouch Cell Holder (Standard, A7)
Dimensions	210 × 120 × 60 mm (module only, excluding holder)
Weight	~1 kg (module only)
Operating environment	Indoor use only; 0°C to 50°C ambient; 30–95 % RH non-condensing
Storage	10°C to +60°C; <90 % RH non-condensing
Ingress protection	None (IP00) — keep away from liquids and condensation
Compliance	CE marked (EMC, RoHS); UKCA marked (EMC, RoHS)

**Product includes:**

Check that all items listed below are present before commencing installation. Contact Wattcrafts Engineering Ltd. if any item is missing or damaged.

- Temperature Control Module (PCH\_TCM\_A) with factory-fitted Type K thermocouple
- 12 V DC power adapter
- Mounting hardware for Pouch Cell Holder base plate (4× socket-head cap screws, hex key)
- Thermal paste (single-use syringe)

**ⓘ Note:**

*If the Temperature Control Module was ordered with a Pouch Cell Holder, the holder base plate will already be factory-mounted on the module. In this case the mounting hardware is pre-installed and the thermal paste has already been applied — no mechanical assembly is required. See Section 6.1.*

## 6. Installation and Assembly

There are two assembly scenarios depending on how the unit was ordered. Identify which applies and follow the corresponding sub-section only.

### 6.1 Pre-Assembled (Pouch Cell Holder + TCM ordered together)

The Tempera

When ordered as a bundle, the Pouch Cell Holder base plate is factory-mounted on the Temperature Control Module. No mechanical disassembly or additional work is required.

#### ⓘ Note:

*The lower soft pad (normally supplied with the Pouch Cell Holder) must NOT be used when operating with the Temperature Control Module. Direct contact between the holder base and tested cell is essential for effective thermal conduction. Setting up the holder with the soft pad in place will introduce significant temperature transfer delay and degrade thermal control performance. Upper soft pad can still be used as normal.*

To set up the Pouch Cell Holder on the pre-assembled unit, follow the standard Pouch Cell Holder assembly procedure (refer to the Pouch Cell Holder User Manual) with the following single modification:

- **Remove the lower soft pad (adhesive back of pad is reusable – attach the pad to clean surface for storage).** Proceed directly to placing the cell on the bare holder base, then continue with the remaining assembly steps as normal.

## 6.2 Stand-Alone Module — Mounting the Pouch Cell Holder Base

If the Temperature Control Module was ordered without a Pouch Cell Holder, the holder base plate must be mounted onto the module. This procedure requires care to ensure good thermal contact between the holder base and the Peltier element. Follow all steps in the order given.

### **⚠ WARNING — Before You Begin**

- Disconnect the power adapter before starting. Never perform mechanical assembly with power connected.
- Handle the Peltier element surface with care. It is a polished ceramic surface — do not scratch or apply uneven pressure.
- Wear gloves when handling thermal paste.



1. The Peltier (TEC) element on the top face of the Temperature Control Module is protected by a removable cover during shipping. Unscrew the 4 mounting nuts, then lift and remove the cover carefully. The polished ceramic surface of the Peltier is now exposed.

**⚠ Caution:** *The Peltier from this point is not secured in place and holds only by thermal paste on the bottom side (facing heat sink). Be careful not to displace it.*

1. Locate the thermocouple that is attached to the Temperature Control Module by a short lead. This thermocouple provides temperature feedback to the thermal controller.

2. Attach the thermocouple to the underside (bottom face) of the Pouch Cell Holder base plate. Position it to the side of the central area — do not place it directly over the region that will contact the Peltier element, as this will prevent flat contact. Use the included adhesive pad (or a small piece of thermal tape) to hold the thermocouple in place. Ensure the junction makes good contact with the metal surface of the base plate.
3. Open the included thermal paste syringe. Apply a small amount of paste in shape of 'x' (cross) onto the Peltier.

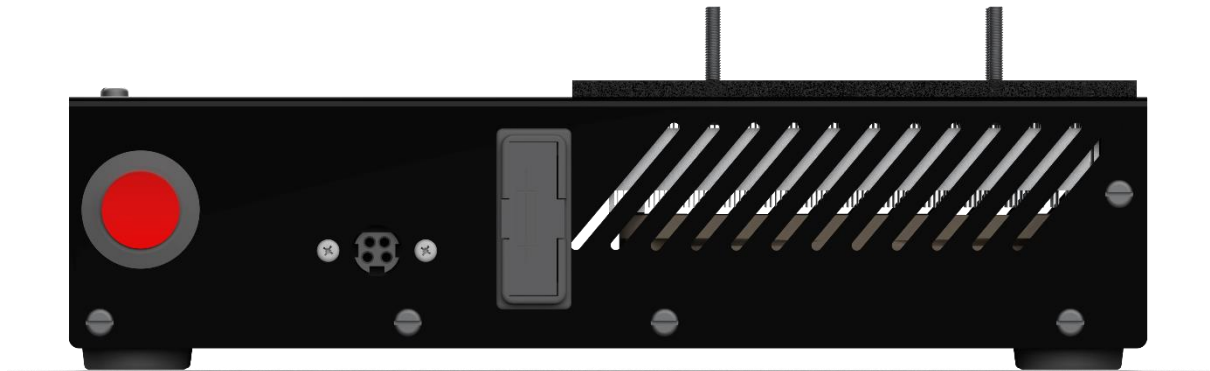
*⚠ Caution: Do not apply thermal paste to the sides of the Peltier element or to the module body. Excess paste that contacts electrical connections may cause damage.*

4. Lower the Pouch Cell Holder base plate carefully onto the top of the Temperature Control Module, aligning the four mounting holes in the base with the four screws in the module body. Check that the thermocouple lead is routed clear of the screw holes and is not trapped between the Peltier and base mating surfaces.
5. Insert all four screws through the bottom of the module and into the holder base plate using the supplied hex key. Begin with finger-tight only — do not tighten any screw fully until all four are seated.
6. Working diagonally (i.e. tighten opposite corners in turn), apply a final half-turn on each screw until snug. The screws should be firm but not forcefully tightened.

*Assembly is complete. Once the holder base is mounted, proceed with normal Pouch Cell Holder assembly following the Pouch Cell Holder User Manual — remembering to remove the lower soft pad (see Section 6.1).*

## 7. Electrical Connections

All electrical connections to the Temperature Control Module are made via the rear panel. No wiring by the user is required. All cables and connectors are included.



### 7.1 Power Connection

Connect the DC output connector of the supplied power adapter to the DC input socket on the rear panel of the Temperature Control Module. The connector is keyed and cannot be inserted incorrectly.

Connect the power adapter to a mains socket. The adapter accepts 80–264 V AC, 47–63 Hz — it is suitable for worldwide use with the supplied plug.

#### **⚠ WARNING**

- Use only the power adapter supplied with the Temperature Control Module (or a direct Wattcrafts-approved replacement). The adapter is rated 12 V DC / 8.5 A.
- Do not use a generic '12 V' adapter. The connector type and current rating must match exactly.
- Inspect the adapter cable before each use. Do not use if the cable or connector is damaged.

## 7.2 Fuse

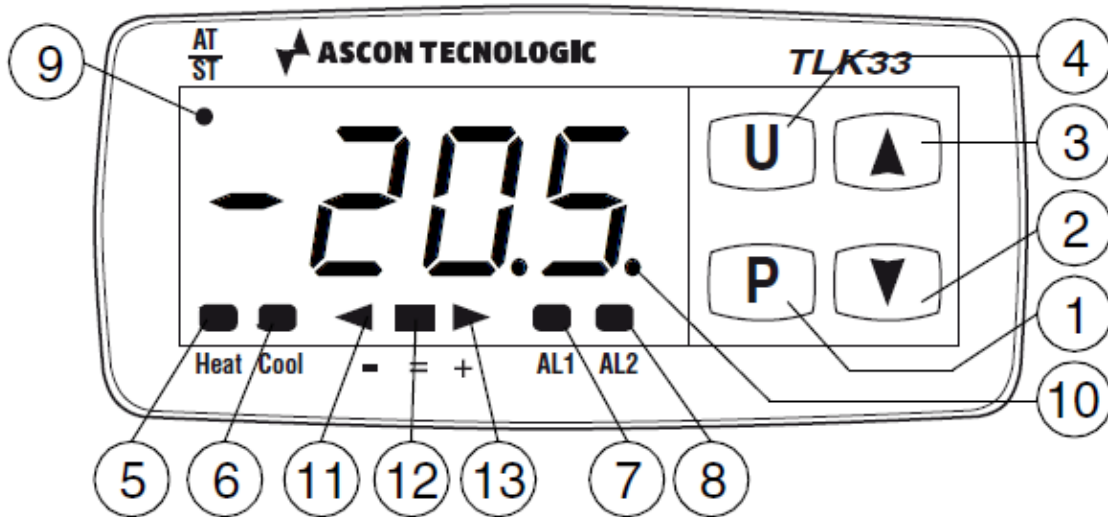
A user-replaceable DC fuse is fitted to the rear panel in a panel-mount fuse holder. The fuse protects the module in the event of an internal fault.

<b>Fuse type</b>	5 × 20 mm cartridge
<b>Rating</b>	8 A, 150 VDCy, slow-blow
<b>Holder type</b>	Panel-mount, tool-free cap

For fuse replacement procedure, see Section 11.

## 8. Front Panel and Controls

The front panel of the Temperature Control Module provides direct access to the digital controller. No additional software or interface is required for basic operation.



Simplified description:

- 1 - **Key P:** This is used to access the set point programming and to confirm selection.
- 2 - **Key DOWN:** This is used to decrease the temperature values.
- 3 - **Key UP:** This is used to increase the temperature values. If the key is held down, it permits visualisation of the output control power.
- 4 - **Key U:** This is a key with a function programmable by par. Not used in basic operation.
- 5 - **Led Heat:** indicates the HEAT mode
- 6 - **Led Cool:** indicates the COOL mode
- 7 - **Led AL1:** indicates the state of output AL1 (Alarm1). Not used in basic operation.
- 8 - **Led AL2:** indicates the state of output AL2 (Alarm2). Not used in basic operation.
- 9 - **Led AT/ST:** indicates that the Self-tuning function is activated. (light on) or that Auto-tuning (flashing ) is in progress. Not used in basic operation.
- 10 - **Led SET:** when flashing, it indicates access to the programming mode.
- 11 - **Led – Shift index:** indicates that the process value is lower than the set point.
- 12 - **Led = Shift index:** indicates that the process value is within the range [SP+2 ... SP-2]
- 13 - **Led + Shift index:** indicates that the process value is higher than the set point.

## 9. Operation

### 9.1 First Power-On Checks

Before powering on for the first time, confirm the following:

- The Pouch Cell Holder base is correctly mounted (Section 6).
- The power adapter cable is undamaged and fully seated in the DC input socket.
- The unit is on a stable, flat, non-flammable surface with at least 100 mm clearance on all sides.
- The fan outlet is unobstructed.
- No cell is installed in the holder during the first power-on check.

Connect the power adapter to the mains supply. Flip the power switch on the back of the device. The controller will power on and run a brief self-test, during which all display segments will briefly illuminate. The display will then show the current temperature read by the feedback thermocouple. Normal operation begins immediately.

### 9.2 Setting the Temperature

The active setpoint is the target temperature the controller maintains. To change it:

1. Press 'P' once. The display will flash 'SP1' to indicate it is in setpoint editing mode.
2. Press ▲ (UP) or ▼ (DOWN) to adjust the target temperature. The value changes in 1°C increments. Hold the key for faster scrolling.
3. Press 'P' again to confirm the new setpoint. The display stops flashing and the controller begins working towards the new target.

*Note: If no key is pressed for approximately 30 seconds after entering edit mode, the display will revert to the previous setpoint automatically and changes will not be saved.*

#### Setpoint Limits

- The setpoint is factory-limited to a minimum of 0°C and a maximum of 70°C. Attempting to set a value outside this range will be rejected by the controller.
- Do not attempt to override these limits. Operating below 0°C risks condensation; operating above 70°C may damage the cell under test or the module.

## 9.3 Heating and Cooling Behaviour

The Temperature Control Module operates bidirectionally:

- **Cooling:** When the setpoint is below the current measured temperature, the Peltier element pumps heat away from the holder base. The minimum achievable temperature is approximately 10°C below ambient. Cooling performance depends on ambient temperature — the colder the room, the lower the achievable setpoint.
- **Heating:** When the setpoint is above the current measured temperature, the Peltier element reverses polarity to pump heat into the holder base. The maximum setpoint is 70°C.

The controller uses PID control with auto-tuning, factory-configured for the thermal characteristics of the Peltier-holder system. In normal use the controller will stabilise at the setpoint within a few minutes, with steady-state oscillation typically within  $\pm 1^\circ\text{C}$ .

### 📘 Note:

*For highest stability, allow the system to equilibrate for at least 10–15 minutes at the target setpoint before starting a measurement, particularly when making large setpoint changes or transitioning from cooling to heating.*

## 9.4 Advanced Controller Configuration

The Temperature Control Module is factory-configured and ready for use without any additional programming. The following advanced features of the thermal controller are available to users who require them:

- Up to 4 programmable setpoints
- Reaching of the Set Point at controlled speed, ramps and dwell function
- PID parameter adjustment
- Auto-tuning initiation (calibration) and self-tuning function
- Temperature offset calibration

Advanced configuration requires access to the programming menu, which is password-protected. Full details of all programmable parameters and their ranges are given in the Ascon Tecnologic TLK33 Operating Instructions, available from the Ascon Tecnologic website ([www.ascontecnologic.com](http://www.ascontecnologic.com)).

**⚠ Advanced Configuration Warning**

- Modifying PID parameters, temperature limits, or sensor configuration incorrectly may result in uncontrolled heating or cooling, equipment damage, or safety hazards.
- Only personnel familiar with PID temperature control should modify advanced parameters.
- Damage to the equipment caused by misconfiguration of controller is not covered under warranty
- If the controller is misconfigured and normal operation cannot be restored, contact Wattcrafts Engineering Ltd. for a factory reset configuration.

## 10. Compatibility with other Modules

The Temperature Control Module is compatible with the following products from the Wattcrafts Pouch Cell Holder ecosystem:

- **Pouch Cell Holder (Standard, A7):** The TCM is designed specifically to mount these holders.
- **Temperature Sensor Module (PCH\_S\_TC):** Can be used simultaneously with the TCM to provide independent, cell-surface temperature measurement. This is highly recommended add-on that allows temperature data recording. The sensor controller conveniently attaches to TCM case with magnets.
- **Force Sensor Module (PCH\_S\_LC\_A) and Thickness Sensor Module (PCH\_S\_TS\_A):** Compatible with the Pouch Cell Holder when mounted on the TCM. All attachment modules connect to the Pouch Cell Holder as normal and are unaffected by the TCM below.

## 11. Maintenance

The Temperature Control Module requires minimal routine maintenance. The following checks are recommended.

### 11.1 Regular Checks

- Inspect the power adapter cable and connector for damage. Do not use if damaged.
- Confirm the fan is running after power-on. Listen for normal fan noise within a few seconds of switching on; if the fan is silent, switch off immediately and contact Wattcrafts.
- Check the heat sink fins are free from dust accumulation. Blocked fins reduce cooling performance significantly.
- Periodic Cleaning (as required): Use compressed air to remove dust from the heat sink fins. Do not use liquids or solvents on the module.
- Clean the controller display window with a soft dry cloth if obscured.

### 11.2 Fuse replacement

A user-replaceable DC fuse is located in the panel-mount fuse holder on the rear panel. If the module does not power on and the power adapter and supply have been confirmed as functional, a blown fuse is the most likely cause.

#### Before You Begin

- Disconnect the power adapter from both the module and the mains supply before replacing the fuse.
- Use only the correct replacement fuse type and rating (see Section 7.2 specification). Using an incorrectly rated fuse may cause a fire or equipment damage.
- If a replacement fuse blows immediately after fitting, there is an internal fault. Do not continue to replace fuses. Contact Wattcrafts Engineering Ltd.

1. Disconnect the power adapter from the module and from the mains supply.
2. Locate the panel-mount fuse holder on the rear panel.
3. The cap and fuse can be removed by hand — no tools are required, but flat screwdriver can help.
4. Remove the fuse cartridge from the cap. Check visually — a blown fuse will typically show a broken wire or blackened glass.

5. Insert the replacement fuse into the cap push back into the holder until firm.
6. Reconnect the power adapter and power on the module. If the module operates normally, the fault is resolved. If the fuse blows again, contact Wattcrafts Engineering Ltd.

### 11.3 Thermal Paste

Thermal paste degrades over time and the thermal interface should be refreshed if the module is disassembled for any reason, or if temperature control performance has visibly deteriorated over a long period of use.

To re-apply thermal paste: remove the holder base following the reverse of the assembly procedure (Section 6.2), clean the old paste from both the Peltier surface and the base plate using isopropyl alcohol and a lint-free cloth, allow to dry, then apply fresh paste and re-assemble as described in Section 6.2. If deemed necessary, also clean and re-apply thermal paste on the opposite side of the Peltier – facing the heat sink.

## 12. Troubleshooting

Module does not power on	Check power adapter is connected and mains supply is live. Check fuse (Section 11). If fuse is intact, contact Wattcrafts.
Display shows 'Err' or '---'	Feedback thermocouple fault. Check requires disassembly of device enclosure. For guidance contact Wattcrafts.
Fan not running after power-on	Switch off immediately. Do not operate without the fan. Contact Wattcrafts.
Temperature stabilises far from setpoint (e.g. >3°C offset)	Check thermocouple is firmly adhered to the holder base and not damaged. Confirm thermal paste was applied correctly. Check for airflow obstruction around heat sink. If ambient temperature is very high, cooling performance will be reduced.
Setpoint cannot be set below a certain value	The factory lower limit is 0°C. If ambient temperature is very high, the Peltier may not be able to reach 0°C — minimum achievable is approximately 10°C below ambient.
Temperature measured by module is different (e.g. >3°C) than independently measured temperature of holder base	Check thermocouple is firmly adhered to the holder base and not damaged. Check adhesive pad (or thermal tape) used to attach thermocouple.
Temperature oscillation is larger than expected	This may occur during initial use or after a large setpoint change. If sustained oscillation >2°C persists after 30 min at a stable setpoint, repeating auto-tuning may be needed — see Section 9.4.
Module gets very hot on the underside	This is normal — the heat sink dissipates heat from the Peltier hot side. Ensure adequate clearance on all sides. If the enclosure sides are unusually hot (>80°C), check for airflow obstruction.

## 13. Disposal

This product is an electrical and electronic device and is subject to the Waste Electrical and Electronic Equipment (WEEE) regulations in the UK (SI 2013/3113) and in the EU (Directive 2012/19/EU).

### Do Not Dispose in Household Waste

- This product must not be disposed of with unsorted municipal or household waste.
- Incorrect disposal may cause environmental harm due to hazardous substances (including the Peltier element materials and electronic components).
- Follow local recycling regulations for disposal

### Packaging

The product packaging is made from recyclable materials. Dispose of packaging in accordance with local recycling requirements.

### RoHS

This product is manufactured in compliance with Restriction of Hazardous Substances (RoHS) Directive 2011/65/EU and the UK RoHS Regulations 2012 (SI 2012/3032). It does not contain lead, mercury, cadmium, hexavalent chromium, PBB, PBDE, DEHP, BBP, DBP, or DIBP above the permitted threshold levels.

## 14. Compliance and Declaration of Conformity

### 14.1 CE Marking

This product bears the CE marking, indicating conformity with the requirements of the following European Union Directives:

<b>EMC Directive 2014/30/EU</b>	Electromagnetic Compatibility
<b>RoHS Directive 2011/65/EU</b>	Restriction of Hazardous Substances

Note: The Low Voltage Directive (2014/35/EU) does not apply to this product, as it operates exclusively at Safety Extra-Low Voltage (SELV: 12 V DC) from an external Class I AC/DC adapter. The power adapter itself bears a separate CE marking covering its own mains-voltage circuit.

### 14.2 UKCA Marking

This product bears the UKCA marking, indicating conformity with the requirements of the following UK Statutory Instruments:

<b>Electromagnetic Compatibility Regulations 2016 (SI 2016/1091)</b>	Electromagnetic Compatibility
<b>RoHS Regulations 2012 (SI 2012/3032, as amended)</b>	Restriction of Hazardous Substances

## 14.3 Declaration of Conformity

### EU / UK DECLARATION OF CONFORMITY

**Manufacturer:** Wattcrafts Engineering Ltd., 46 St. Elmo Avenue, Swansea, SA1 8DP, United Kingdom

**Product name:** Temperature Control Module

**Model reference:** PCH\_TCM\_A

**Year of first CE/UKCA marking:** 2026

*We declare under our sole responsibility that the above product is in conformity with the following applicable Directives and Regulations:*

- Directive 2014/30/EU on Electromagnetic Compatibility
- Directive 2011/65/EU (RoHS)
- The Electromagnetic Compatibility Regulations 2016 (SI 2016/1091)
- The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (SI 2012/3032, as amended)

*Conformity is based on a self-declaration. A Technical File supporting this declaration is held at the manufacturer's address.*

**Signed on behalf of Wattcrafts Engineering Ltd.:**



**Name / Title:** Marcin Orzech / CEO

**Date:** 20/03/2026

## 15. Warranty

Wattcrafts Engineering Ltd. warrants that the product is free from defects in materials and workmanship under normal use for a period of 12 months from the date of purchase. During the warranty period, if the product is found to be defective, Wattcrafts Engineering Ltd. will, at its discretion, repair or replace the product at no charge to the customer.

This warranty does not cover:

- Damage resulting from misuse, abuse, accidents, or unauthorized modifications.
- Wear and tear from normal usage.
- Damage caused by use of an unapproved power adapter.
- Damage caused by operating outside the specified environmental conditions.
- Products that have been altered or repaired by unauthorized personnel.
- Damage caused by improper installation or failure to follow the instructions in the manual.
- Consequential damage to cells or third-party equipment.

To make a warranty claim, please contact Wattcrafts Engineering Ltd. at [info@wattcrafts.com](mailto:info@wattcrafts.com) with a description of the issue.

This warranty is non-transferable and is limited to the original purchaser. It is provided in lieu of any other warranties, express or implied, including any implied warranty of merchantability or fitness for a particular purpose.

Wattcrafts Engineering Ltd. liability under this warranty is limited to the repair or replacement of the product. In no event shall Wattcrafts Engineering Ltd. be liable for any indirect, incidental, or consequential damages arising from the use of this product.

This Limited Warranty shall be governed by and construed in accordance with the laws of England and Wales.