TIMEGA 田美佳®

CE

MTC-K

SERIES

HOT RUNNER TEMPERATURE CONTROLLER



MANUAL

MTC-K、TUVCE26.0

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1 Read Prior to Operation

1.1 Manual Preservation & User Qualification Requirements

All personnel responsible for the installation,commissioning,operation,maintenance and servicing of this equipment shall be properly qualified and able to fully understand this manual.All users shall comply with the following requirements:

- Keep this manual for reference at all times.
- Treat this manual as an integral part of the product.
- Retain the manual throughout the entire service life of the product.
- Hand over this manual to all subsequent owners or operators of the product.
- Incorporate all supplementary amendments into this manual in a timely manner.

Target Users:Qualified electricians and professional technicians.

1.2 General Safety Specifications

Please strictly follow all safety instructions to prevent electric shock,personal injury and fire hazards.Comply with local safety regulations and guidelines during commissioning.

For commercial premises,observe accident prevention regulations issued by industrial associations regarding electrical systems and operating equipment.

Keep the equipment dry.Do not operate the unit outside the specified ambient climate range.Take the equipment’s ingress protection rating into account when selecting operating conditions and working environment.

This equipment is not permitted for use in potentially explosive atmospheres.

Verify sufficient mechanical stability of the unit.Take protective measures to prevent the equipment from sliding off the mounting surface.

Check that the rated voltage marked on the nameplate matches the on-site power supply voltage.

Prevent power cables and connecting wires from being crushed,squeezed or pulled.Protect all cables against oil,sharp edges and temperatures exceeding 70℃.

Do not touch the power plug with wet hands.

Secure the mating connectors on the rear of the equipment with latches to prevent accidental disconnection.

1.3 Cable Connection

- Perform all wiring work only when the power supply is switched off.
- Route cables properly to avoid tripping hazards.

Ensure connected components such as injection molds are reliably connected to the protective earth conductor.

Do not place any liquid-filled containers on the equipment,as this may lead to hazardous conditions.Prevent foreign objects,liquid,dust and vapor from entering the unit,otherwise short circuit,fire or electric shock may occur.

Always unplug the power cord and disconnect the equipment from the power supply before cleaning.

Install the equipment such that the main power switch is easily accessible for emergency power cut-off.

Do not remove the equipment feet.Maintain a minimum clearance of 5 cm at the rear of the enclosure for heat dissipation.Cooling air is drawn in around and underneath the unit.

1.4 Maintenance, Modification & Liability Statement

All maintenance and repair work shall only be carried out by authorised and qualified personnel.This equipment shall only be operated by qualified persons who are familiar with the unit and fully informed of associated hazards.Comply with applicable accident prevention regulations and general occupational health and safety rules.

The manufacturer and supplier shall not be liable for any damage caused by unauthorised modifications to the equipment.

Before performing any work on the equipment,disconnect it from the power supply or ensure the power is fully switched off.Implement lockout measures

to prevent accidental re-energisation.

Warranty claims shall be void for personal injury and property damage res ulting from failure to follow this operating,servicing and safety manual.The ma nufacturer accepts no liability for such damages.

⚠Strictly follow the safety instructions corresponding to all symbols,mark ings and labels affixed to the equipment.

Properly dispose of packaging materials.Plastic films,foam and similar parts may pose safety hazards if left unattended.

1.5 Compliance Certification

This product complies with the essential safety requirements of the EU Lo w Voltage Directive 2014/35/EU.

The CE mark is affixed on the product.

2 Safety Instructions

2.1 DANGER ⚠

High voltage exists inside the equipment. Always disconnect the main power supply and perform lockout-tagout (LOTO) before opening the enclosure, wiring or maintenance work. Never work with live power to avoid electric shock.

The connected heating components can reach temperatures above 450 ℃. Do not touch heating parts and wiring terminals during operation or before full cooling to prevent severe burns.

Do not use this equipment in explosive, wet or water-exposed areas, otherwise electric leakage and fire hazards may occur.

2.2 WARNING ⚠

The equipment must be reliably connected to the protective earth (PE) conductor. Loose or broken earth connection will cause electric shock and equipment damage.

Distinguish between Type K and Type J thermocouples strictly. Mix-up or reverse connection is prohibited. Before wiring heaters, test the cable insulation; the insulation resistance shall not be less than 1 MΩ.

Do not block ventilation openings. Keep a minimum clearance of 5 cm around the unit for heat dissipation to prevent overheating and fire.

Only qualified electrical personnel are allowed to disassemble internal components or modify internal wiring.

2.3 CAUTION ⚠

Do not plug or unplug thermocouple and heater connectors while the equipment is powered on.

Only use original or equivalent replacement parts. Non-standard parts will impair safety protection.

The rated supply voltage is AC 230~400 V. Do not connect to power supply beyond the specified range.

3 Product & Application

3.1 Product Introduction

This hot runner temperature controller is a professional industrial temperature control device specially designed for plastic injection molding hot runner systems. Adopting high-precision microprocessor control technology, it accurately monitors and stabilizes the heating temperature of hot runner heaters in real time.

The equipment features stable output, fast temperature response, high control accuracy and comprehensive fault detection functions, including thermocouple breakage, short circuit, over-temperature and heater abnormality alarm. It effectively prevents temperature deviation, material scorching, wire burning and other abnormal conditions during injection production, ensuring stable injection molding quality and improving production efficiency.

The modular and compact structure ensures convenient installation, operation and maintenance, which meets long-term continuous industrial production requirements.

3.2 Scope of Application

This temperature controller is exclusively used for industrial indoor hot runner temperature control of plastic injection molding machines.

It is applicable to various hot runner molds with Type K or Type J thermocouple heating systems, and suitable for mass production, mold testing and sample production in plastic injection industries.

This device is only intended for professional industrial use.

It is not suitable for household use, explosive environments, outdoor open-air occasions or wet condensation working conditions.

4 Technical Specifications & Functions

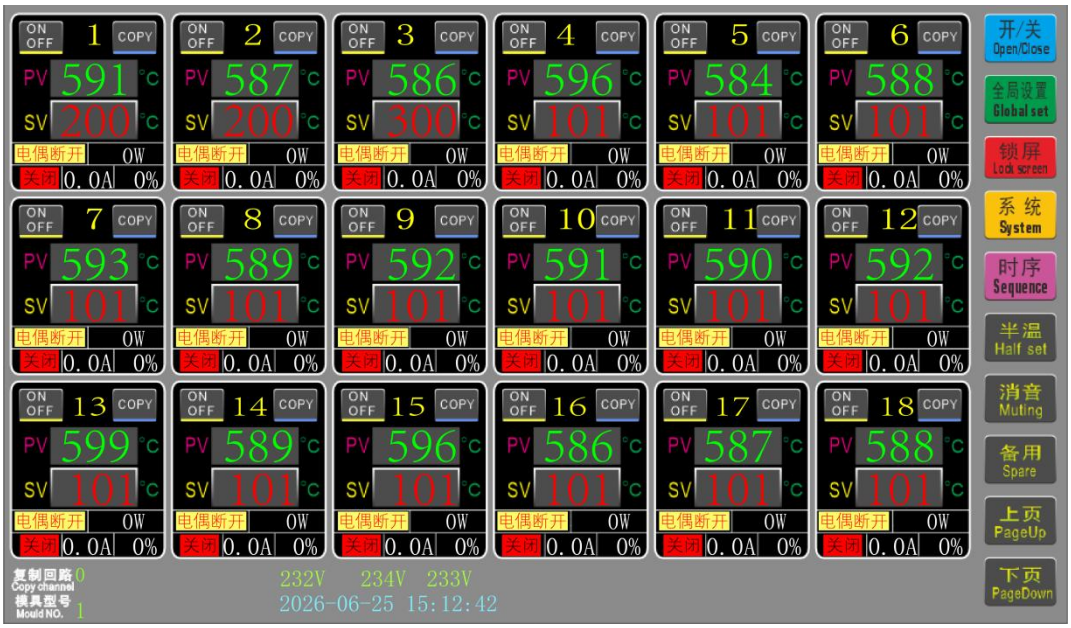
4.1 Specifications

- 1. Control accuracy: ±0.5%
- 2. Cold junction compensation error: ≤ ±1 ℃ temperature coefficient
- 3. Temperature control range: 0 ℃ ~ 450 ℃ for both Type K and Type J thermocouples
- 4. Maximum output power per channel: 9 kW
- 5. Maximum output current per loop: 15 A
- 6. Maximum number of control loops: 120
- 7. Alarm range: 0 ℃ ~ 100 ℃, adjustable freely
- 8. Applicable thermocouple types: Type K, Type J
- 9. Operating power supply: 230/400V AC，50Hz，3P+N+PE (3-phase 4-wire)
- 10. Control mode: Digital PID regulation (PIDD)
- 11. Operating environment: Ambient temperature -10 ℃ ~ 30 ℃; Relative humidity 35% ~ 85% RH. For use in areas free from corrosive substances and strong electromagnetic interference.

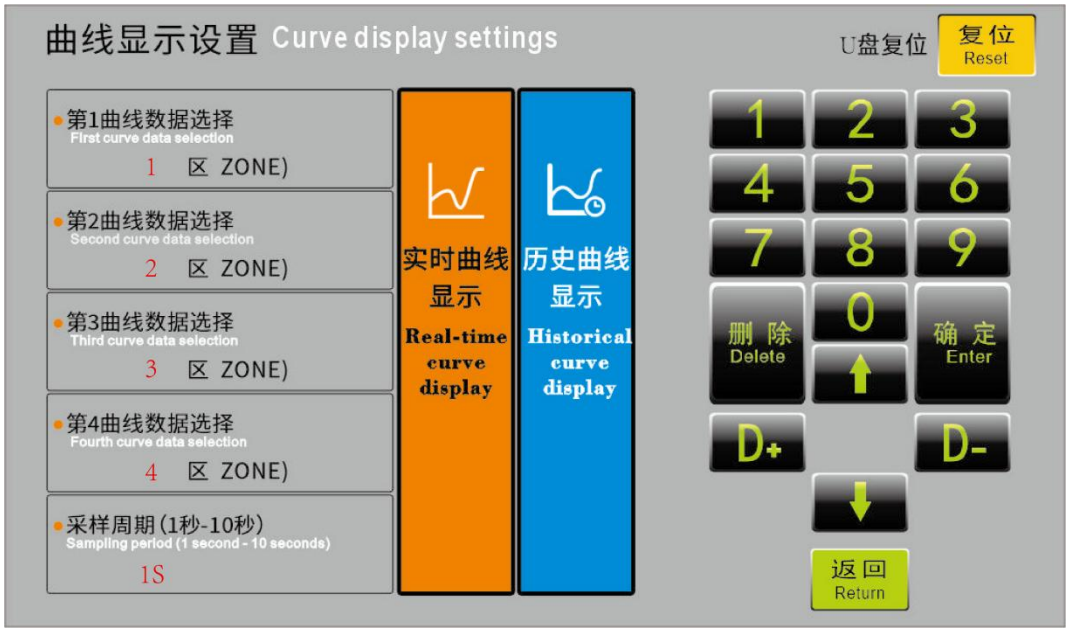
4.2 Functions

- 1. Large LCD graphic display for intuitive operation
- 2. Touch key control
- 3. Display of operating current and output percentage
- 4. Fuse failure indication
- 5. Thermocouple fault detection
- 6. Heater fault detection
- 7. Power consumption metering function
- 8. SCR fault monitoring
- 9. Maximum current limit function
- 10. Linear voltage output, providing effective protection for heaters
- 11. USB data logging function
- 12. Real-time and historical temperature curve display

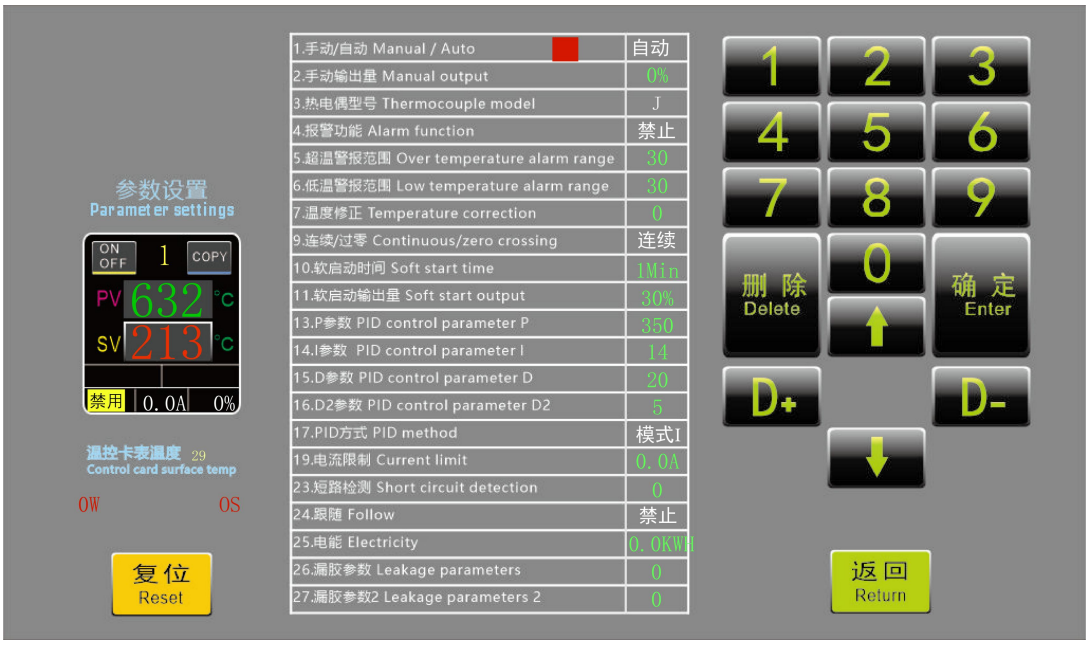
5 User Interface



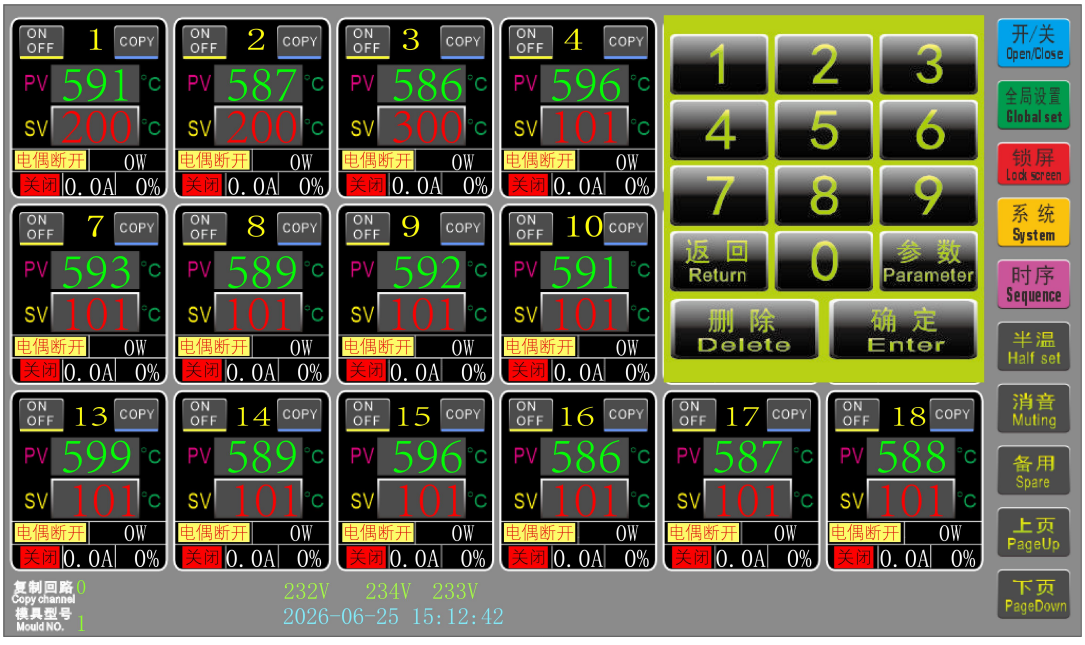
Main Page



Temperature Profile Settings Interface



Parameter Settings



Temperature Setting

6 Operation

6.1 Pre-operation preparation

First confirm that the temperature control card module must be in communication mode, otherwise the touch screen cannot control the temperature control card (set parameter P21 to 'communication' mode, the temperature control card status bar displays a blue 'communication' logo), then turn on the boat-shaped power switch on the back of the touch screen.

Make sure that the serial numbers of all temperature control cards are arranged in sequence from 1-6-N. If the serial numbers are repeated, the touch screen will display a 'serial number duplication' alarm. This alarm needs to be released by pressing the corresponding alarm circuit 'ON/OFF' button on the touch screen.

6.2 Power on/off

(1) Turn on the air switch on each layer on the back of the control box 

(turn it down to turn it off).

(2) Press the "On/Off" button on the home page of the screen, and it will display "Confirm to turn on the system". Click the "Yes" button, and the system will be turned on. Press the "On/Off" 

button on the home page of the screen, and it will display "Confirm to turn on the system". Click the "Yes" button, and the system will be turned off.

6.3 Temperature settings

Press the raised button next to the "SV" 

of the circuit to be set, and the input keyboard interface will pop up on the screen. Manually enter the required temperature, and then press the "Confirm" button to complete the temperature input setting of this circuit.

6.4 Quick temperature setting

If you need to set multiple circuits to the same temperature: for example, set circuits 1 to 10 to the same temperature, after the temperature setting of the first circuit is completed, click the "COPY" key 

on the first circuit, and the copy

circuit 1 will appear at the bottom of the screen (press the "COPY" key again to cancel the copy command), and then press the "COPY" key of circuits 2-9 to quickly set circuits 2-9 to the same temperature as circuit 1. Press the global setting button on the home page to enter the temperature global setting interface, and you can set the temperature of all circuits at once.

6.5 Parameter settings

Press the raised button next to the "SV" of the circuit to be set, and the input keyboard interface will pop up on the screen. Click "Parameter" to enter the parameter setting interface. Press the up arrow or down arrow to move the cursor to select the desired parameter. After selecting the desired parameter, you can press the numeric keyboard or the 'D+, D-^' key to adjust the parameter.

6.6 Reset

Press the 'Reset' button to restore to the initial value
.

6.7 System Settings

Press the 'System' button
 to enter the system settings interface, press the up or down arrow to move the cursor to select the desired parameter. After selecting the desired parameter, press the numeric keypad or 'D+, D-' key to adjust the parameter. (You can set the language and mold model settings)， System Password: 13639.

6.8 Precautions

1. After the touch screen and the temperature control card establish communication, the temperature control card cannot be operated locally, including power on/off and temperature setting. However, when the touch screen is turned off for 20 seconds, the temperature control card can resume local operation, power on/off and temperature setting.

2. If the touch screen is damaged or faulty and cannot work normally, simply turn off the power of the touch screen, and the temperature control card will switch to the local independent operation mode automatically.

6.9 Basic Function Settings

Configuration items include Mold Model, Language, Communication Address,

Baud Rate, Automatic Screen Lock, and ℃/℉ unit switch.

1. Operation Steps

Press the System button. Use the Up/Down arrow keys to select Parameter 1 to Parameter 6, then press the ‘D+’ or ‘D-’ keys to set the corresponding options:

- Mold model
- Language
- Communication address
- Baud rate
- Auto-lock screen
- Temperature unit(℃/℉)

2.Global Settings

Click the Global Settings button on the main interface to enter the setting page. Click Global On or Global Off to power on or power off all temperature control zones of the unit. Click TCJ or TCK to switch the thermocouple type of all zones between Type J and Type K.



7 Troubleshooting

After switching on the air circuit breaker, the temperature control module emits a continuous red alarm.

Cause: Live wire and neutral wire are reversed, or neutral wire is disconnected.

Continuous alarm sounds after power-on.

Cause: Thermocouple open circuit, heater short circuit or open circuit. Please inspect the thermocouple, heater and loose connection cables.

Temperature keeps rising steadily while the output current remains unchanged, until a high temperature alarm is triggered.

Cause: SCR (thyristor) short circuit. The control module requires professional repair.

Unstable temperature control with large fluctuation of output current.

Cause: Missing neutral wire. Please check the power connection for troubleshooting.

The POWER indicator of the temperature control module is off.

Please check the power supply and confirm no phase loss occurs.

Solution for heater short-circuit alarm immediately after power-on: First check the wiring and make sure the thermocouple wire and heater wire are not connected reversely. If the wiring is correct, adjust parameter P23 properly.

In case of unstable temperature control, enable the auto-tuning function via parameter P17.

8 Electrical Principle Introduction

The equipment is powered by AC 230/400 V three-phase four-wire power supply （3P+N+PE). The internal circuit consists of signal acquisition unit, main control unit, driving unit, power output unit and multi-protection circuit.

Thermocouples convert temperature changes into analog electrical signals. After cold junction compensation and signal processing, the signals are transmitted to the microprocessor. Combined with digital PID algorithm, the processor calculates the temperature deviation and outputs corresponding driving signals.

The driving signal controls the conduction angle of the SCR module, so as to adjust the power supplied to the heater and achieve precise constant temperature control.

Meanwhile, the real-time monitoring circuit detects power phase, neutral wire state, loop current, thermocouple and heater status. Once any abnormality is detected, the system will trigger an audible and visual alarm and take protective actions to avoid equipment damage and safety risks.

9 Installation Environment and Installation Requirements

9.1 Installation Environment

This temperature control unit is exclusively developed for indoor industrial production applications,and installation is restricted to independent,standardized professional equipment rooms with basic environmental regulation conditions.

Ambient operating temperature:-10℃~30℃.

Excessively high temperature accelerates component aging;ultra-low temperature causes screen and relay malfunction.

Operating humidity range:35%~85%RH,non-condensing.

High humidity leads to short circuit and rust; low humidity easily generates static damage to chips.

The installation site must be free from corrosive gas,liquid,dust and conductive contaminants.

Corrosive and conductive pollutants will erode circuits and shorten service life.

Keep away from strong electromagnetic interference sources to avoid affecting temperature control accuracy.

Strong interference will distort thermocouple temperature signals.

Do not install in explosive,flammable,damp or outdoor open environments.

The unit has no explosion-proof structure and poses fire&shock risks in hazardous areas.

9.2 Installation Requirements

Place the equipment on a stable,horizontal and dry mounting surface to ensure mechanical stability.Shaking and tilt will loosen internal wiring and solder points.

Maintain a minimum clearance of 5 cm at the rear and around the equipment for heat dissipation.Do not block ventilation openings.Blocked vents trigger overheat protection and may burn power parts.

Do not remove the equipment support feet to avoid affecting bottom air intake and heat dissipation.Support feet form the bottom air intake channel for cooling.

Ensure the power supply voltage,frequency and wiring type match the equipment nameplate specifications.Mismatched power parameters will damage internal electric parts directly.

All wiring operations must be performed in a fully powered-off state.Live wiring brings electric shock and circuit breakdown risks.

Power cables and signal cables shall be routed separately and protected from extrusion,stretching,oil contamination,sharp edges and high temperature above 70℃.Separate wiring reduces interference; cable protection prevents insulation aging and leakage.

The equipment must be reliably connected to the protective earth (PE) conductor to ensure electrical safety.

1.Ground connection mode:Fasten the ground wire firmly to the dedicated PE terminal stud on the chassis with flat washer and spring lock washer,tighten the screw completely to avoid poor contact.Do not wind wires directly around screws without terminals.

2.Ground wire specification:Use solid copper cable with cross-sectional area no less than 2.5 mm^2.If the main power cable is larger than 4 mm^2,match the ground wire size to the power cable gauge.

3.Wiring rule:The PE wire must be an independent dedicated conductor,never share cables with live wire or neutral wire.Ground wiring shall not be omitted,broken or loosely connected at any time.

Complete independent PE grounding prevents electric shock when insulation fails.

After installation,check all terminals,cables and connectors for firm connection to prevent loose contact or accidental disconnection.Loose connections cause heating, sparking and unstable temperature control.

Main power switch must be accessible for emergency shutdown. Operators can cut off power rapidly under abnormal conditions.

10 Detailed Wiring Instructions

10.1 Important Pre-Warning

All wiring work must be carried out with the main power supply completely disconnected. Perform lockout-tagout (LOTO) procedure to prevent accidental power-on. Ensure the equipment and connected components are fully cooled before operation.

10.2 Power Wiring (AC 230/400 V, 3P+N+PE, 50 Hz)

Verify the on-site power supply conforms to the rated specification: AC 230/400 V, 3P+N+PE, 50 Hz.

Clearly identify each conductor: three phase lines (L1, L2, L3), neutral line (N) and protective earth line (PE).

Connect L1, L2 and L3 to the corresponding phase terminals respectively. Connect the neutral wire N to the dedicated neutral terminal.

Firmly attach the Protective Earth (PE) wire to the equipment earth terminal. PE connection shall never be omitted or loosely connected.

Tighten all terminal screws to avoid poor contact and electric arcing.

10.3 Thermocouple Wiring

This controller supports Type K and Type J thermocouples. Confirm the thermocouple type before wiring.

Strictly distinguish the positive (+) and negative (-) poles of thermocouple cables. Reverse connection will result in abnormal temperature readings and alarms.

Route thermocouple signal cables separately from power cables to minimize electromagnetic interference.

Insert thermocouple connectors into the matched channel terminals and fasten the latches to prevent accidental disconnection.

Do not pull, twist or squeeze signal cables during installation.

10.4 Heater Wiring

Prior to connection, inspect heaters and cables for short circuit, open circuit and

insulation damage.

Connect both ends of each heater cable to the corresponding output terminals of individual control channels.

Secure all terminals tightly. Loose connections may cause overheating, component burnout or fire hazards.

Each channel is designed for one independent heater circuit. Do not connect multiple heaters to a single output to avoid overload.

The maximum output current per loop is 15 A and the maximum output power is 3.3 kW. Operation beyond rated load is prohibited.

10.5 Auxiliary&Communication Wiring(if applicable)

USB Connection: Insert the USB cable into the reserved port for data logging and curve checking. Do not plug or unplug the USB cable while the equipment is operating under full load.

Arrange all external cables neatly. Protect cables from being crushed, trampled, as well as exposure to oil, sharp edges and temperatures above 70 ℃.

10.6 Final Inspection Before Power-On

Recheck all power lines,thermocouple lines,heater lines and earth connections thoroughly.

Confirm no short circuit,misconnection or loose terminals exist.

Ensure ventilation openings are unobstructed and a minimum clearance of 5 cm is maintained around the unit.

Complete all inspections,close the enclosure,then restore power supply for commissioning.

11 Routine Maintenance and Servicing

Important Note: All maintenance work must be performed with the equipment fully powered off, locked out and completely cooled down.

11.1 Daily Cleaning

Wipe the equipment surface with a dry soft cloth only. Never use water, liquid detergent or corrosive solvents to clean the unit. Keep ventilation openings free from dust accumulation.

11.2 Regular Inspection

Check power terminals, thermocouple and heater connectors periodically for looseness, oxidation or damage. Verify the protective earth (PE) connection is always firm and reliable.

11.3 Cable Check

Inspect all external cables regularly. Replace cables with damaged insulation, cracks or ageing immediately. Prevent cables from being squeezed, pulled or exposed to high temperature, oil and sharp edges.

11.4 Component Replacement

Only use original or equivalent certified spare parts for replacement. After part replacement, recheck wiring, insulation and connection status before powering on.

11.5 Long-term Shutdown Storage

If the equipment will be out of service for a long time, disconnect the main power supply completely. Place the unit in a dry, dust-free environment with no corrosive substances.

11.6 Professional Servicing

Internal inspection, repair and component overhaul shall only be carried out by qualified and authorized professional technicians. Unauthorized disassembly is prohibited.

12 Transportation,Storage and Disposal(WEEE)

Compliant with 2012/19/EU (WEEE Directive) for AC 230/400V 3P+N+PE, 50Hz equipment.

12.1 Transportation

General Safety: Disconnect power, cool down, and secure all loose parts before transport. Use original packaging or equivalent anti- shock/anti- vibration materials.

Environmental Protection: Avoid exposure to rain, snow, direct sunlight, extreme temperatures (−20 ° C to +60 ° C) and humidity (>85% RH).

Handling:

Do not drop, tilt >15° , or place heavy loads on the unit.

Keep ventilation openings clear during transit.

Labeling: Mark with “Fragile”, “Keep Dry”, “WEEE Symbol (crossed-out wheeled bin)”.

Prohibited: Transport with flammable, corrosive or hazardous substances.

12.2 Storage

Environment:

Temperature: −10 ° C to +40 ° C

Humidity: ≤75% RH, non- condensing

Dry, clean, dust- free, well- ventilated; no corrosive gases or chemicals.

Warehousing:

Store on level, impermeable surfaces with spill containment; use weatherproof covering.

Elevate off floor (≥10 cm) to avoid moisture.

Stacking: max. 2 layers, no heavy items on top.

Periodic Check: Inspect monthly for damage, corrosion, or pest infestation.

Long - term Storage (>3 months): Disconnect all cables, clean, and seal in moisture- proof cover.

12.3 Waste Disposal (WEEE Compliance)

Legal Basis: This equipment is subject to EU WEEE Directive 2012/19/EU (AC ≤1000V).

Separate Collection:

Do not dispose with unsorted municipal waste.

Deliver to authorized collection points, distributors, or producer take - back schemes.

Hazardous Components:

Contains PCBs, capacitors, and electronic boards; must be dismantled and treated by certified WEEE recyclers.

Remove and recycle batteries separately (per Battery Directive).

Treatment Requirements:

Drain all fluids; recover metals (Cu, Al, steel), plastics, and precious materials.

Dispose of ozone- depleting or high- GWP gases per (EC) No 1005/2009.

Marking: Product bears the WEEE symbol (crossed - out wheeled bin) to indicate separate collection.

Producer Responsibility: Producers must register in EU member states, join PROs, and fund collection/treatment.

12.4 Final Note

Non- compliant disposal may cause environmental pollution and legal penalties. Always follow local WEEE regulations and use authorized recyclers.

13 Warranty Terms & Disclaimer

13.1 Warranty Terms

This product is covered by a 12-month limited warranty starting from the date of delivery/installation.

Within the warranty period, the manufacturer will provide free repair or replacement of parts for faults resulting from defective materials or workmanship.

The warranty is only valid when the product is installed, operated and maintained in accordance with this user manual.

The user shall retain the purchase documents and product serial number for warranty verification.

13.2 Disclaimer

The warranty shall become invalid, and the manufacturer accepts no liability for damages arising from the following circumstances:

Malfunction or damage caused by incorrect installation, wiring or operation against the instructions.

Damage caused by the use of non-original or non-compliant cables, accessories and spare parts.

Damage due to abnormal power supply, overvoltage, lightning strike, water ingress, corrosion, severe vibration or external impact.

Operation beyond the rated technical parameters, load limits and specified environmental conditions.

Unauthorized disassembly, modification or repair performed by personnel without official approval.

Damage caused by natural disasters, accidents and other force majeure events.

Normal wear and tear of consumable components during daily use.

The manufacturer shall not be liable for any indirect economic loss or personal injury caused by non-compliant operation.

14 Revision History

V1.0 | 2026-06-07 | First official release

Final Statement

This manual may be revised for product improvement without prior notice. All specifications and illustrations are for reference only. The manufacturer reserves the right of final interpretation. Unauthorized copying is prohibited. This document complies with EU Low Voltage Directive 2014/35/EU.

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