TIMEGA 田美佳®

MTC-I Series

Hot Runner Temperature Controller



User Manual

MTC-I.26.0

Contents

1 Must Read Before Operation 1
1.1 Requirements for Manual Storage and Operator Qualifications 1
1.2 General Safety Specifications 1
1.3 Cable wiring 2
1.4 Maintenance, Modification and Liability Statement 2
2 safety instruction 4
2.1 High-Risk Warning ⚠ 4
2.2 Warning ⚠ 4
2.3 Notes ⚠ 4
3 Product Introduction and Application Scope 5
3.1 Product Overview 5
3.2 Scope of Application 5
4 Technical Parameters and Features 6
4.1 Technical Parameters 6
4.2 Function 6
4.3 Parameter 7
4.4 Power cable distribution 7
5 Operation Panel Instructions 8
6 Operating Instructions 9
6.1 Operating Instructions for Temperature Control Card 9
6.1.1 Startup & Shutdown 9
6.1.2 Temperature Setting 10
6.1.3 Parameter setting 10
6.1.4 Restore factory settings 10
6.1.5 Replace the temperature control card 10
6.2 Notes (Touch Screen Version) 10
7 Troubleshooting 11
8 Electrical Principles Introduction 12
9 Installation Environment and Installation Requirements 13
9.1 Installation Environment 13
9.2 Installation Requirements 13
10 Detailed Wiring Instructions 15
10.1 Important Warning Information 15
10.2 Power supply wiring, power-line connection 15

10.3 Thermocouple wiring 15
10.4 Heater wiring 16
10.5 Auxiliary Circuits and Communication Wiring (if configured) 16
10.6 Final inspection before power-on 16
10.7 Fan maintenance 16
11 Routine Maintenance and Upkeep 17
11.1 Daily Cleaning 17
11.2 Regular inspection 17
11.3 Cable inspection 17
11.4 Component replacement 17
11.5 Long-term shutdown storage 17
11.6 Professional maintenance 17
12 Transportation, Storage and Disposal 18
12.1 Transport, carriage, conveyance, traffic, transit 18
12.2 Storage 18
12.3 Waste disposal 19
12.4 Supplementary Provisions 19
13 Warranty Terms and Disclaimer 20
13.1 Warranty Terms 20
13.2 Disclaimer 20
14 Revision Record 22

1 Must Read Before Operation

1.1 Requirements for Manual Storage and Operator Qualifications

All personnel engaged in the installation, commissioning, operation, maintenance and overhaul of this equipment must possess the corresponding qualifications and be able to fully understand this manual. All users must abide by the following provisions:

- Keep this manual properly for future reference.
- This manual is an integral part of the product.
- Retain this manual throughout the entire service life of the product.
- Hand over this manual to all subsequent product owners and operators.
- Timely file all supplementary revisions into this manual.

Applicable personnel: Certified electricians and professional technical p ersonnel

1.2 General Safety Specifications

Please strictly abide by all safety procedures to avoid electric shock, perso nal injury and fire accidents. Equipment commissioning must strictly comply w ith the requirements of local safety laws, regulations and specifications.

In industrial workplaces, it is imperative to comply with the accident prev ention regulations formulated by industry associations for electrical systems and operating equipment.

Equipment must be kept dry and shall not be operated outside the rated e nvironmental condition range. When selecting operating conditions and working environments, the protection level of the equipment shall be fully considered.

This equipment is strictly prohibited from being used in flammable and ex plosive environments.

It shall be confirmed that the equipment has sufficient mechanical stability, and protective measures shall be taken to prevent the equipment from slipping off the installation surface.

Verify that the rated voltage marked on the nameplate is consistent with t he on-site power supply voltage.

Prevent power cords and connecting cables from being squeezed, bumped or pulled violently. All cables shall be kept away from oil contamination, sharp edges and high-temperature areas above 70 degrees Celsius.

It is strictly forbidden to touch the power plug with wet hands.

The docking connectors at the rear of the equipment must be fastened wit h the latches locked to prevent accidental loosening and power failure.

1.3 Cable wiring

- All wiring work must be carried out after the power supply is cut off.
- Arrange cables reasonably to prevent people from tripping over.
- It is necessary to ensure that external equipment such as injection molds a re reliably connected to the protective grounding wire.

It is prohibited to place containers holding liquid above the equipment to avoid potential safety hazards. Strictly prevent debris, liquid, dust and moisture from intruding into the interior of the equipment, otherwise it will very easily cause short circuits, fires or electric shock accidents.

Before cleaning the equipment, you must unplug the power cord and com pletely cut off the power supply.

The installation location of the equipment should ensure that the main po wer switch is easy to operate for emergency power off.

The feet of the equipment must not be removed. A heat dissipation gap o f at least 5 cm shall be reserved at the rear of the chassis, and the equipment draws in cooling air from the surroundings and the bottom.

1.4 Maintenance, Modification and Liability Statement

All maintenance and overhaul operations shall only be carried out by certi fied and authorized personnel. Equipment operators must be familiar with the p erformance of this machine, fully understand the relevant safety risks, and stric tly comply with accident prevention regulations and general occupational health and safety specifications.

The manufacturer and supplier shall not be liable for any damage caused by unauthorized modification of the equipment.

Before carrying out equipment operations, the power supply of the equipment must be cut off, and lockout-tagout measures shall be implemented to prevent accidental power-on.

If personal injury and property loss are caused by failure to comply with the requirements of this operation, maintenance and safety manual, the product warranty shall be automatically invalidated, and the manufacturer shall not bear any legal liability for such losses.

⚠ All safety operation codes corresponding to the warning signs, nameplates and labels on the equipment must be strictly observed.

Dispose of packaging materials properly. Random placement of materials such as plastic films and foams will pose safety hazards.

2 safety instruction

2.1 High-Risk Warning ⚠

High voltage exists inside the equipment. Before opening the chassis, performing wiring or carrying out maintenance operations, be sure to cut off the main power supply and implement the Lockout-Tagout (LOTO) procedure. Live working is strictly prohibited to prevent electric shock accidents.

The temperature of the external heating element can be as high as over 450 degrees Celsius. During equipment operation and before the equipment is completely cooled down, never touch the heating components and wiring terminals to avoid severe scalds.

It is forbidden to use this equipment in explosive, humid or water-intruded places to prevent electric leakage and fire.

2.2 Warning ⚠

The equipment must be reliably connected to the protective earthing (PE) wire. Loose or broken ground wires may cause electric shock and damage the equipment.

Strictly distinguish between Type K and Type J thermocouples, and incorrect wiring or reversed positive and negative poles is strictly prohibited. Before connecting the heater, the insulation performance of the cable must be tested, and the insulation resistance shall not be less than 1 megaohm.

Do not block the ventilation vents, and reserve at least 5 centimeters of heat dissipation space around the equipment to prevent overheating and fire.

Only certified electricians may disassemble internal components or modify internal wiring.

2.3 Notes ⚠

Do not connect/disconnect thermocouple and heater connectors when powered on.

Use only original or equivalent factory spare parts. Non-standard parts impair safety protection.

Rated supply voltage: 230~400 V AC. Do not use power outside this range.

3 Product Introduction and Application Scope

3.1 Product Overview

This hot runner temperature controller is an industrial-grade professional temperature control device specially developed for the hot runner systems of injection molds. The product adopts high-precision microprocessor control technology, which can accurately monitor and stably control the temperature of hot runner heating elements in real time.

This machine has stable output, rapid temperature control response and high control precision, is equipped with a perfect fault detection function, and can give an alarm for thermocouple disconnection, short circuit, over-temperature and abnormal heating load. It can effectively avoid faults such as temperature drift, raw material scorching and circuit burning in injection molding production, ensure the stable quality of injection molding, and improve production efficiency.

The whole machine has a compact modular structure, is easy to install, operate and maintain, and can meet the use requirements of long-term continuous industrial production.

3.2 Scope of Application

This temperature controller is only used for indoor industrial temperature control of the hot runner system of injection molding machines.

It is applicable to various hot runner molds equipped with K-type and J-type thermocouple heating systems, and meets the needs of mass production, mold testing and sample production in the plastic injection molding industry.

This equipment is for professional industrial use only. Do not use it in household environments, explosive areas, open outdoor areas, or working conditions with humidity and condensation.

4 Technical Parameters and Features

4.1 Technical Parameters

- 1. Temperature control difference: ±0.5%
- 2. Cold junction compensation error: ≤±1° C temperature coefficient
- 3. Temperature control range: Type K/Type J thermocouple 0-450° C
- 4. Total output power: 66KW (maximum)
- 5. Maximum single output current: 15A
- 6. Alarm range: 0-100° C, freely settable
- 7. Applicable thermocouple models: Type K, Type J
- 8. Working power supply: AC220V (three-phase four-wire 380V)
- 9. Digital PID regulation
- 10. Working environment: -10° C to 60° C ambient temperature, 35%-85% relative humidity
- 11. Maximum number of control loops per unit: 120

4.2 Function

- 1. Color screen display
- 2. Chinese message alarm
- 3. Current and output ratio display
- 4. Fuse damage prompt
- 5. Thermocouple fault detection
- 6. Heating tube fault detection
- 7. Full industrial-grade electronic components
- 8. Linear voltage control output, which better protects the heating tube
- 9. Overvoltage alarm
- 10. Chinese/English color screen display

4.3 Parameter

- P1 Mode Setting Auto/Manual
- P2 Manual Output 0%-100%
- P3 Thermocouple Type J/K Type
- P4 Alarm Function Alarm/Disabled
- P5 Over-temperature Range 0-50℃
- P6 Low-temperature Range 0-50℃
- P7 Temperature Correction -50℃-50℃
- P8 Temperature Unit ℃/℉
- P9 Signal Output Mode Continuous/Pulse
- P10 Soft Start Time 0-99min
- P11 Soft Start Output 0%-100%
- P12 Temperature Compensation Value Ambient Temperature (Not Settable)
- P13 P Parameter Initial Value (Settable)
- P14 I Parameter Initial Value (Settable)
- P15 D Parameter Initial Value (Settable)
- P16 D2 Parameter Initial Value (Settable)
- P17 PID Mode Positional/Self-tuning/Incremental (If temperature control is unstable, enable the self-tuning function)
- P18 Serial Number 001-120
- P19 Current Limit 5.0A-16.0A
- P20 Restore Factory Settings Cancel/Reset
- P21 Communication Setting Cancel/Communication (For touch screen version)
- P22 Language Setting Chinese/EN
- P23 Short Circuit Detection 20-99 (If the heater short circuit alarm prompt appears on startup, simply increase this parameter)
- P24 Follow Disabled/0-120

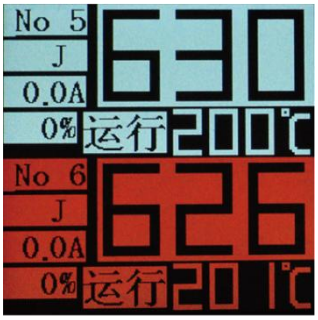
4.4 Power cable distribution

Red (3 pieces) -- Live wire

Blue (1 piece) -- Neutral wire

Yellow-green (1 piece) -- Grounding wire

5 Operation Panel Instructions



On the temperature control module, temperature setting and other operations are performed by rotating the knob. The LCD display of the temperature control module supports full Chinese/English display, showing temperature control serial number, thermocouple model, current, current output ratio, operating status and fault information on the screen. The panel is equipped with an operating knob, power status indicator and communication indicator, and the temperature control modules can be interchanged between any temperature control zones.

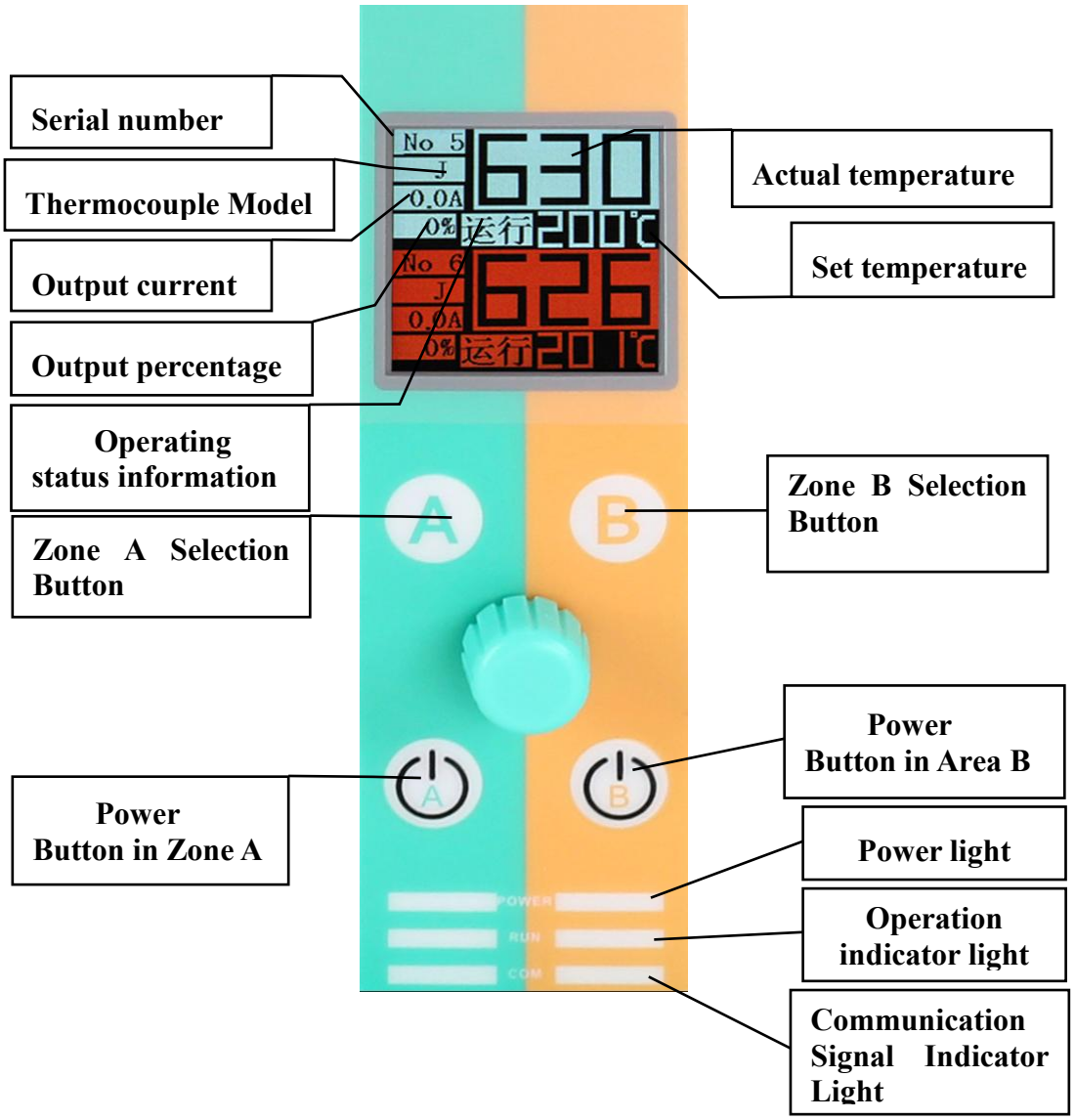


Adopting a one-card dual-control control mode, the volume of the machine is reduced by 50% compared with peer products, achieving high integration, compactness and exquisiteness. The interior adopts a design of dual interfaces and dual card slots, thus realizing a stable temperature control mechanism.



6 Operating Instructions

6.1 Operating Instructions for Temperature Control Card



6.1.1 Startup & Shutdown

First, connect the power incoming line and the mold connecting cable properly. After checking that all connections are correct, turn on the air switch on the back of the machine.According to the front panel or key,At this time, the power supply of the corresponding circuit of the machine is turned on, and it will enter the heating working state. If there is an alarm, it will not enter the heating working state.

After the device enters the working state locally, press the or key on

the front, the control card will stop outputting and enter the standby state.。

Note: If the machine is not used for a long time, please turn off the air circuit breaker on the back.

6.1.2 Temperature Setting

Press  or  key,select the corresponding temperature control zone for which you need to set the temperature.Turn the knob again,Adjust the temperature settings. After completing the settings, please press down the knob  to confirm, and the temperature setting is finally completed.

6.1.3 Parameter setting

Press the  or  key to select the corresponding temperature control zone for which parameters need to be set,press and hold the knob  for 2 seconds,enter the parameter settings, turn the knob  clockwise or counterclockwise to enter the parameter selection, find the required parameter, press the knob to enter this parameter, turn the knob to select the corresponding value, after the setting is completed, press the knob  again to confirm the setting. Then press the  or  key on the front panel to exit the home page.

6.1.4 Restore factory settings

Enter the P20 parameter, select this parameter as Confirm, then press the knob  down, and all operations and parameters will be restored to their initial values.

6.1.5 Replace the temperature control card

First remove the panel fixing screws, then pull out the temperature control card, insert the new temperature control card, and tighten the screws.

6.2 Notes (Touch Screen Version)

1. After the touch screen establishes a communication connection with the temperature control card, local operations cannot be performed on the temperature control card itself, including the start-stop switch and temperature setting. If the touch screen is powered off for more than 20 seconds, the temperature control card will automatically restore the local operation permission, and independent start-stop control and temperature setting can be carried out.

2. If the touch screen is damaged or malfunctioning 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.

7 Troubleshooting

1. After turning on the air switch, the screen of the temperature control card emits a continuous red alarm sound -- the neutral wire and live wire are connected reversely or the neutral wire is missing.

2. After startup, the temperature control card emits a continuous alarm sound -- the thermocouple is disconnected, or the heater is short-circuited / open-circuited. Please check whether the thermocouple, heater and connecting cables are loose.

3. After startup, the temperature keeps rising and the output current remains unchanged until a high temperature alarm occurs -- the silicon controlled rectifier (SCR) is short-circuited, and the temperature control card needs maintenance.

4. The temperature control is unstable and the output current value fluctuates greatly -- the neutral wire is missing. Please check the power supply plug to eliminate the fault.

5. The POWER indicator light of the temperature control card does not light up -- please check whether the power supply is connected or whether there is a phase loss.

6. If the system prompts a heating short circuit during startup, please check whether the thermocouple and heater are connected reversely. If there is no reverse connection, appropriately increase the P23 short-circuit detection parameter threshold.

7. If the temperature control is unstable, you can enable the auto-tuning function of P17.

8 Electrical Principles Introduction

This device adopts a three-phase four-wire AC380V (line voltage) (3P+N+PE), takes the phase voltage 220V as the operating power supply of the device, the single-loop output voltage is 220V, and the voltage range is 230-400V, which is compatible with industrial power grids. The internal circuit consists of a signal acquisition unit, main control unit, drive unit, power output unit and multiple protection circuits.

The thermocouple converts temperature changes into analog electrical signals, which are sent to the microprocessor after cold junction compensation and signal processing. The processor calculates the temperature deviation through the digital PID algorithm and outputs the corresponding drive signal.

The drive signal controls the conduction angle of the thyristor module, so as to adjust the power supply of the heater and achieve high-precision constant temperature control.

At the same time, the real-time monitoring circuit monitors the power phase sequence, neutral line status, loop current, working conditions of the thermocouple and heater. Once an abnormality is detected, the system immediately activates the sound and light alarm and performs protection actions to prevent equipment damage and safety accidents.

9 Installation Environment and Installation Requirements

9.1 Installation Environment

This temperature control equipment is specially developed for indoor industrial production scenarios and is only allowed to be installed in a professional, independent and standardized equipment room with basic environmental regulation conditions.

Operating ambient temperature: -10 ℃ ~40 ℃ . Excessively high ambient temperature will accelerate the aging of components, while excessively low temperature will cause abnormal operation of the display screen and relays.

Operating ambient humidity: relative humidity 35%~85%, no condensation. Excessively high humidity can easily cause line short circuits and metal corrosion; excessively low humidity can easily generate static electricity which breaks down chips.

Corrosive gases, liquids, dust and conductive impurities are prohibited in the installation site. Corrosive and conductive pollutants will corrode the lines and shorten the service life of the equipment.

The equipment must be kept away from strong electromagnetic interference sources to prevent the temperature control accuracy from being affected. Strong interference will cause distortion of the thermocouple temperature signal.

Installation in flammable and explosive, humid areas and outdoor open-air environments is prohibited. This unit does not have an explosion-proof structure, and use in hazardous areas will cause hidden dangers of fire and electric shock.

9.2 Installation Requirements

Place the device on a stable, level and dry installation surface to ensure the device is secure. Vibration and tilting may cause loosening of internal circuits and solder joints.

Reserve a heat dissipation gap of at least 5 cm at the back and around the device, and never block the ventilation openings. Blocked ventilation openings will trigger overheat protection and even burn out power components.

Do not remove the feet of the device, otherwise it will affect the ventilation and

heat dissipation effect at the bottom. The feet form the cooling air inlet channel at the bottom of the device.

The power supply voltage, frequency and wiring system must be consistent with the parameters on the device nameplate. Mismatched power supply parameters will directly damage internal electrical components.

All wiring operations must be carried out in a completely power-off state. Live wiring poses risks of electric shock and circuit short circuit.

Lay the power supply cables and signal control cables separately, and protect the cables from squeezing, stretching, oil contamination, sharp edges and corners, and ambient temperatures above 70° C. Separate wiring can reduce signal interference, and cable protection can avoid insulation layer aging and electric leakage.

The device must be reliably connected to the protective earth (PE) to ensure electricity safety.

Grounding method: Fasten the grounding wire firmly to the special PE grounding post on the device body through a flat washer and a spring lock washer. Make sure the screws are tightened to prevent poor contact. It is forbidden to directly wind the wire around the screw without a terminal.

Grounding wire specification: Select a solid copper core wire with a cross-sectional area of no less than 2.5 square millimeters. If the main power cable is larger than 4 square millimeters, the diameter of the grounding wire should match that of the power cable.

Wiring specification: The protective grounding wire must be an independent dedicated cable, and it is strictly forbidden to share the conductor with the live wire and the neutral wire. The grounding circuit shall not be omitted, disconnected or falsely connected. Independent and reliable PE grounding can avoid electric shock accidents when the insulation is damaged.

After installation, check whether all terminals, cables and connectors are fastened to prevent poor contact or accidental falling off. Loose wiring will cause heating and sparking, and lead to unstable temperature control.

The main power switch should be easy to operate for emergency shutdown, ensuring that operators can cut off the power quickly in abnormal situations.

10 Detailed Wiring Instructions

10.1 Important Warning Information

All wiring operations must be carried out after the main power supply is completely cut off. Strictly implement the power-off, tagging and locking (LOTO) procedure to prevent accidental power supply. Before operation, be sure to wait for the equipment and external components to cool down sufficiently.

10.2 Power supply wiring, power-line connection

Verify that the on-site power supply meets the rated parameters: three-phase four-wire with grounding (3P+N+PE), line voltage AC 380V, phase voltage AC 220V, 50Hz/60Hz.

Identify each cable clearly: 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, and connect the neutral line N to the dedicated neutral terminal.

Firmly connect the protective earth line PE to the equipment grounding terminal. Omission of grounding or false connection is strictly prohibited.

Tighten all terminal screws to prevent arcing and ignition caused by poor contact.

10.3 Thermocouple wiring

This thermostat is compatible with K-type and J-type thermocouples. Be sure to confirm the thermocouple model before wiring.

Strictly distinguish the positive (+) and negative (-) poles of the thermocouple cable. Reverse polarity will cause abnormal temperature display and trigger an alarm.

Thermocouple signal cables must be laid separately from power cords to minimize electromagnetic interference.

Insert the thermocouple plug into the corresponding temperature zone terminal and lock the buckle to prevent the line from loosening.

Pulling, twisting, or squeezing the signal cable is strictly prohibited during installation.

10.4 Heater wiring

Before wiring, check whether the heater and cables have short circuits, open circuits or insulation damage problems.

Connect the wires at both ends of each heater to the output terminals of the corresponding temperature control channel respectively.

All wiring terminals must be tightened. Loose terminals will cause overheating, component burning, and even fire hazards.

Each channel is only allowed to be connected to one independent heating circuit. It is forbidden to connect multiple groups of heaters in parallel on a single output to prevent overload.

The maximum output current of a single circuit is 15A, and the maximum power is 3.3kW. Overload operation is strictly prohibited.

10.5 Auxiliary Circuits and Communication Wiring (if configured)

USB Connection: Insert the data cable into the reserved port to enable data recording and temperature curve viewing. When the device is running at full load, plugging or unplugging the USB data cable is prohibited.

All external cables shall be arranged neatly to avoid being pressed or stepped on, and keep away from oil stains, sharp edges and corners, and high temperature environments above 70℃.

10.6 Final inspection before power-on

Re-conduct a full re-inspection of power cords, thermocouple wires, heating wires and grounding circuits. Confirm that there are no problems such as short circuits, incorrect wiring, or loose terminals.

Ensure that the equipment's ventilation openings are unobstructed, and reserve at least 5 centimeters of heat dissipation space around the body of the machine.

After all inspections are completed, close the chassis, and then you can connect the power supply for debugging.

10.7 Fan maintenance

Clean the cooling fan every 30 days to prevent dust from jamming the fan.

11 Routine Maintenance and Upkeep

Important Note: All maintenance operations must be carried out only after the equipment is completely powered off, locked and tagged, and fully cooled down.

11.1 Daily Cleaning

Only use a dry soft cloth to wipe the surface of the device. It is strictly prohibited to clean the device with water, liquid detergent or corrosive solvents. Keep the ventilation openings free from dust accumulation and blockage.

11.2 Regular inspection

Regularly check whether the power terminals, thermocouples and heater connectors are loose, oxidized or damaged, and confirm that the protective earth (PE) connection is firm and reliable.

11.3 Cable inspection

Regularly inspect all external cables. Cables with damaged insulation, cracks, or aging shall be replaced immediately. Avoid squeezing or pulling the cables, and keep them away from high temperature, oil contamination, and sharp edges.

11.4 Component replacement

Replacement parts must only use original factory parts or qualified spare parts of equivalent specifications. After replacing the components, recheck the wiring, insulation and connection conditions before powering on.

11.5 Long-term shutdown storage

If the equipment is to be out of service for a long time, completely cut off the main power supply and store it in a dry, dust-free environment free of corrosive substances.

11.6 Professional maintenance

Internal inspection, maintenance of the equipment and overhaul of its components shall only be performed by certified and authorized professional technical personnel, and unauthorized disassembly of the equipment is prohibited.

12 Transportation, Storage and Disposal

This device is powered by a three-phase four-wire system (3P+N+PE), with a line voltage of 380V AC, a phase voltage of 220V AC, and a frequency of 50 Hz or 60 Hz.

12.1 Transport, carriage, conveyance, traffic, transit

General Safety: Cut off the power supply before transportation, wait for the equipment to cool down, and secure all loose components. Use the original factory packaging or shock-proof and vibration-resistant materials of the same grade.

Environmental Protection: Avoid rain, snow and direct sunlight. The ambient temperature shall be controlled within -20℃~+60℃, and the relative humidity shall not exceed 85%.

Handling Requirements: Falling is strictly prohibited. The inclination angle shall not exceed 15 degrees, and heavy objects shall not be stacked on top of the equipment. Keep the ventilation openings unobstructed during transportation.

Prohibited Items: It is not allowed to transport together with flammable, corrosive and dangerous goods.

12.2 Storage

Environmental Conditions:

Temperature: -10 ℃ ~ +40 ℃ Humidity: Relative humidity ≤ 75%, no condensation. The environment shall be dry, clean, dust-free, well-ventilated, and free of corrosive gases and chemical substances.

Storage Requirements:

Place on a flat and impermeable ground, take anti-leakage protection measures, and cover with a rainproof protective layer. The equipment shall be elevated at least 10 cm above the ground to prevent moisture.

Stacking Requirements:

A maximum of two layers can be stacked, and no heavy objects shall be placed on the top.

Regular Inspection:

Check the equipment monthly for damage, rust, or pest infestation.

Long-term Storage (over 3 months):

Disconnect all cables, clean the equipment, and seal it with a moisture-proof cover for storage.

12.3 Waste disposal

This device is an electrical and electronic product. Do not discard it with ordinary household waste.

The device has built-in electronic components such as printed circuit boards and capacitors. After scrapping, please comply with the environmental protection regulations of the country/region where the device is sold, and hand it over to a qualified professional electronic waste recycling agency for disassembly, recycling and treatment; the built-in battery needs to be disassembled separately and disposed of in accordance with local battery recycling regulations.

Copper, aluminum, steel, plastics and precious metals can be separated during the recycling process to prevent harmful substances from polluting the water and soil environment.

12.4 Supplementary Provisions

Failure to dispose of this device in accordance with local environmental protection regulations may cause environmental pollution, and you shall bear corresponding legal liabilities. Please uniformly hand it over to a formal recycling institution for disposal.

13 Warranty Terms and Disclaimer

13.1 Warranty Terms

This product is covered by a 12-month limited warranty, which commences from the date of delivery or installation.

During the warranty period, if a malfunction occurs due to defects in raw materials or manufacturing process issues, the manufacturer will provide free repair or spare parts replacement services.

This warranty is only valid if installation, operation and maintenance are carried out in strict accordance with this instruction manual.

Users shall properly keep the purchase voucher and product serial number for warranty verification.

13.2 Disclaimer

Under any of the following circumstances, the warranty will automatically become void, and the manufacturer shall not bear any responsibility for the resulting damage.

1.Failures or damages caused by improper installation, wiring or operation in non-compliance with the requirements of the instruction manual

2.Damage to the equipment caused by the use of non-original, unqualified cables, accessories and spare parts

3.Damage caused by abnormal power supply, overvoltage, lightning strike, water ingress, corrosion, violent vibration or external impact

4.Operate equipment beyond the rated technical parameters, load limits and specified environmental conditions

5.Unauthorized disassembly, modification or self-repair without the manufacturer's permission

6.Damage caused by force majeure such as natural disasters and accidents

7.Natural wear and tear of wearing parts during normal use

Although the Company has designed a variety of protective measures in the controller, users should still set up appropriate protective devices in the controller application system and fully consider the possible losses caused by the reliability of

the controller. The Company declares that, except for the controller itself, it shall not be liable for any compensation for all losses such as personal injury and property damage caused by the reliability of the controller or other reasons.

14 Revision Record

V1.0 | 2026-08-07 | First official release

Final Declaration

This manual may be revised at any time due to product upgrade and optimization without prior notice. All technical parameters and illustrations are for reference only. The manufacturer reserves the right of final interpretation. Unauthorized reproduction of this document is strictly prohibited.

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