Coliao STC-1000

Coliao STC-1000 Digital Temperature Controller 12V

INSTRUCTION MANUAL

Model: STC-1000 (12V Version)

1. Introduction

Thank you for choosing the Coliao STC-1000 Digital Temperature Controller. This device is designed for precise temperature control, offering both heating and cooling functions. It is suitable for a wide range of applications including aquariums, terrariums, vivariums, chicken incubators, laboratories, and other temperature-controlled systems. This manual provides detailed instructions for installation, operation, and maintenance to ensure optimal performance and longevity of your device.

Image 1.1: The STC-1000 controller shown in typical applications such as a greenhouse for plants and an incubator for chicks, demonstrating its versatility in temperature management.

2. Product Overview and Components

The STC-1000 is a microcomputer digital LED display temperature controller. It features a flame-retardant shell for durability and safety. The package includes the following components:

- 2 x STC-1000 Digital Temperature Controllers (12V version)
- 2 x NTC 10K Waterproof Sensor Probes (1 meter length)
- 1 x Introduction Manual (this document)

Image 2.1: A pair of STC-1000 Digital Temperature Controllers, each accompanied by its NTC waterproof sensor probe, as included in the package.

Image 2.2: A close-up view of a single STC-1000 controller, highlighting its compact design and the attached NTC sensor probe.

3. Specifications

Feature	Specification
Model	STC-1000
Power Supply	DC 12V
Temperature Measurement Range	-50°C to 99°C
Temperature Control Range	-50°C to 110°C
Measurement Accuracy	±0.2°C
Resolution	0.1°C
Control Accuracy	±1°C
Sensor	NTC 10K L=1M waterproof probe
Power Consumption	<3W
Ambient Temperature	0°C to 60°C
Storage Temperature	-30°C to 75°C
Relative Humidity	20-84%
Mounting Size	71mm x 29mm

Feature	Specification
Front Panel Size	75mm x 34.5mm
Overall Size	75mm x 34.5mm x 85mm
Material	Polycarbonate (PC)
Display Type	LED

Image 3.1: Detailed dimensions of the STC-1000 controller, showing its length, width, and height in millimeters and inches for installation planning.

4. Setup and Wiring

Important Safety Note: Wiring should only be performed by individuals familiar with electrical connections. Ensure the power supply is disconnected before attempting any wiring. This device operates on DC 12V. Incorrect wiring can damage the unit or pose a safety hazard.

The STC-1000 features a terminal block for connections. Refer to the diagram below for proper wiring. Strictly distinguish the interface of the relay, sensor, and power. The sensor lead and power wire should be kept at a proper distance to avoid interference.

Image 4.1: Top and bottom views of the STC-1000 controller. The top view shows the display and buttons, while the bottom view reveals the terminal block with a clear wiring diagram for power supply, NTC sensor, heating output, and cooling output connections.

1. **Power Supply (12V DC):** Connect your 12V DC power source to the designated terminals (often pins 1 and 2).
2. **NTC Sensor:** Connect the NTC waterproof sensor probe to the sensor terminals (often pins 3 and 4). The sensor is non-polar, so connection order does not matter.
3. **Heating Output:** Connect your heating device (e.g., heating pad, lamp) to the heating relay output terminals (often pins 5 and 6).
4. **Cooling Output:** Connect your cooling device (e.g., fan, chiller) to the cooling relay output terminals (often pins 7 and 8).

Ensure all connections are secure and insulated to prevent short circuits.

5. Operating Instructions

The STC-1000 features a digital display and four control buttons for easy operation.

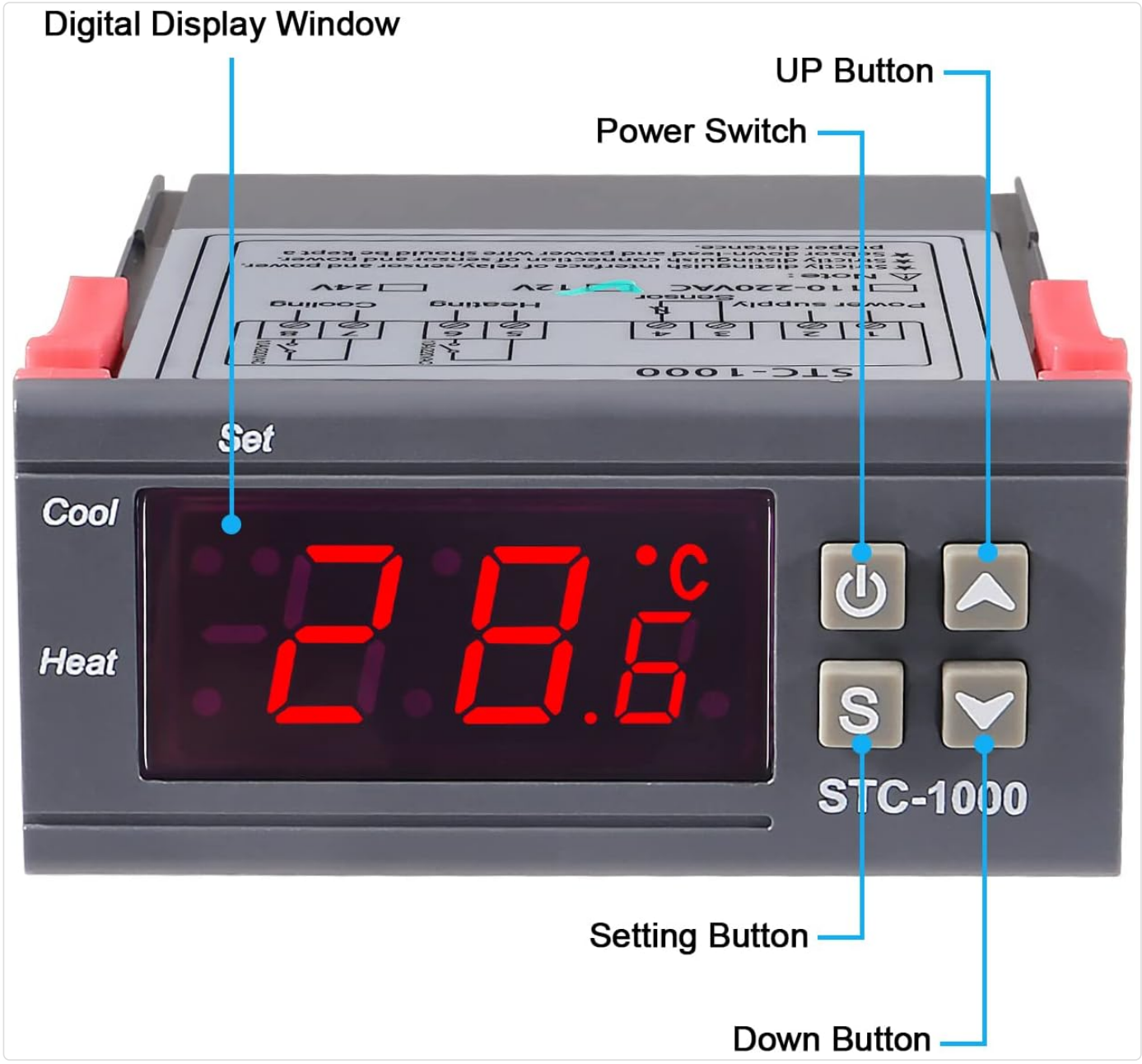


Image 5.1: Front panel of the STC-1000, clearly labeling the Digital Display Window, Power Switch, UP Button, Setting Button (S), and Down Button.

- **Power Button ( ):** Press to turn the device ON/OFF.
- **'S' (Set) Button:** Used to enter and exit parameter setting mode.

- **Up (▲) Button:** Increases values or navigates through menu options.
- **Down (▼) Button:** Decreases values or navigates through menu options.

5.1. Viewing Current Temperature

Upon powering on, the LED display will show the current temperature measured by the NTC sensor.

5.2. Setting Temperature Parameters

1. **Enter Setting Mode:** Press and hold the 'S' button for 3 seconds. The display will show "F1".
2. **Navigate Parameters:** Use the Up (▲) and Down (▼) buttons to cycle through parameters (F1, F2, F3, F4).
3. **View/Modify Parameter Value:** While a parameter (e.g., F1) is displayed, press the 'S' button briefly to view its current value. Use the Up (▲) and Down (▼) buttons to adjust the value.
4. **Save and Exit:** After setting all desired parameters, press and hold the 'S' button for 3 seconds to save the settings and exit. If no button is pressed for 10 seconds, settings will be saved automatically, and the device will return to normal operation.

5.3. Parameter Functions

- **F1: Temperature Setting Value (SV)**
  - This is the desired temperature you want to maintain.
  - Range: -50℃ to 99℃.
- **F2: Hysteresis/Difference Value (D)**
  - This value determines the temperature difference between the set point and when the heating/cooling output activates.
  - Example: If SV = 25℃ and D = 2℃:
    - **Heating Mode:** Heater turns on at 23℃ (SV - D), turns off at 25℃ (SV).
    - **Cooling Mode:** Cooler turns on at 27℃ (SV + D), turns off at 25℃ (SV).
  - Range: 0.3℃ to 10℃.
- **F3: Temperature Calibration (C)**
  - Used to correct any deviation between the displayed temperature and the actual temperature.
  - Adjust this value if the sensor reading is consistently inaccurate compared to a known reference thermometer.
  - Range: -10℃ to 10℃.
- **F4: Delay Start Time (PT)**
  - Sets a delay before the heating or cooling output activates after the temperature condition is met. This protects compressors in cooling systems.
  - Range: 0 to 10 minutes. (0 = no delay)

5.4. Heating and Cooling Modes

The STC-1000 automatically determines whether to operate in heating or cooling mode based on the relationship between the Temperature Setting Value (F1) and the Hysteresis Value (F2).

- **Heating Mode:** If the Start Temperature (F1 - F2) is less than the Stop Temperature (F1), the device operates in heating mode. The heater will activate when the temperature drops below (F1 - F2) and deactivate when it reaches F1.
- **Cooling Mode:** If the Start Temperature (F1 + F2) is greater than the Stop Temperature (F1), the device operates in cooling mode. The cooler will activate when the temperature rises above (F1 + F2) and deactivate when it reaches

F1.

6. Maintenance

- **Cleaning:** Wipe the controller's surface with a soft, dry cloth. Do not use abrasive cleaners or solvents. Ensure no liquids enter the device.
- **Sensor Care:** The NTC sensor probe is waterproof. However, avoid bending the cable sharply or subjecting it to excessive force. Periodically check the sensor cable for any signs of damage.
- **Environmental Conditions:** Ensure the controller is operated within the specified ambient temperature and humidity ranges to prevent damage.
- **Power Supply:** Always use a stable 12V DC power supply. Fluctuations can affect performance or damage the unit.

7. Troubleshooting

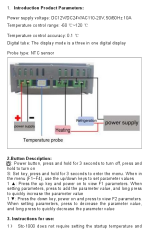
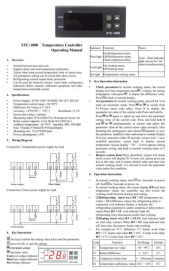
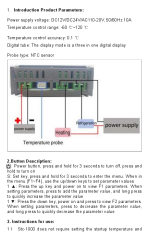
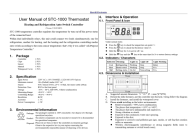
Problem	Possible Cause	Solution
Display shows "LLL" or "HHH"	Sensor error (open circuit or short circuit) or temperature out of range.	Check sensor connection. Replace sensor if damaged. Ensure temperature is within -50°C to 99°C.
Display shows "---"	Sensor not connected or damaged.	Verify sensor connection. Replace sensor if necessary.
Controller not turning ON/OFF heating/cooling	Incorrect parameter settings (F1, F2, F4), wiring error, or faulty relay.	Review F1, F2, and F4 settings. Check wiring connections. Test heating/cooling devices independently.
Inaccurate temperature reading	Sensor calibration needed (F3), sensor placement, or faulty sensor.	Use F3 to calibrate the temperature. Ensure sensor is placed correctly and not affected by external heat sources. Replace sensor if faulty.
Display is blank	No power or power button is off.	Check 12V DC power supply connection. Press the power button.

8. Warranty and Support

Coliao products are manufactured to high-quality standards. This product comes with a standard manufacturer's warranty against defects in materials and workmanship. Please refer to your purchase documentation for specific warranty terms and duration.

For technical support, troubleshooting assistance, or warranty claims, please contact your retailer or the Coliao customer service department through the contact information provided at the point of purchase. Please have your product model number (STC-1000) and purchase date available when contacting support.

Related Documents - STC-1000

	[STC-1000 Temperature Controller User Manual and Specifications] Detailed user manual and technical specifications for the STC-1000 temperature controller, covering product parameters, button functions, usage instructions, and control examples for heating and cooling applications.
	[STC-1000 Temperature Controller Operating Manual] Operating manual for the STC-1000 Temperature Controller, detailing its overview, specifications, wiring diagrams, key instructions, and operation guidelines for heating and cooling systems.
	[STC-1000 Temperature Controller User Manual and Specifications] Detailed user manual and technical specifications for the STC-1000 temperature controller, covering product parameters, button functions, usage instructions, and control examples for heating and cooling applications.
	[STC-1000 Temperature Controller Operation Manual] This manual provides detailed instructions for operating the STC-1000 Temperature Controller, including setup, wiring, parameter settings, and troubleshooting.
	[STC-1000 Thermostat User Manual: Heating and Refrigeration Auto Switch Controller] User manual for the Haswill Electronics STC-1000 thermostat, a heating and refrigeration auto switch controller. Covers specifications, operation, dimensions, wiring, configurations, and error troubleshooting.
	[STC-1000 Thermostat User Manual: Heating and Refrigeration Auto Switch Controller] User manual for the STC-1000 thermostat, a heating and refrigeration auto switch controller by Haswill Electronics. Learn about its specifications, installation, operation, and configuration for optimal temperature regulation.