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Inkbird ITC-106VH

Inkbird ITC-106VH PID Temperature Thermostat Controller User Manual

Model: ITC-106VH

1. Product Overview

The Inkbird ITC-106VH is a precise PID temperature thermostat controller designed for various applications requiring accurate temperature regulation. It features a dual display for simultaneous viewing of measured (PV) and set (SV) temperatures, and supports both Centigrade and Fahrenheit units. This controller is particularly suitable for systems with a water cycle.



Figure 1: Front Panel of the ITC-106VH Controller. The top red display shows the Process Value (PV), and the bottom green display shows the Set Value (SV). Control buttons are located below the displays.

2. Safety Information

- Ensure the power supply voltage matches the controller's requirements (AC 100-240V 50/60Hz).
- All wiring should be performed by a qualified professional to prevent electrical hazards.
- Do not operate the controller in environments exceeding specified temperature and humidity ranges.
- Regularly inspect wiring for damage or loose connections.
- This device is not UL listed. Exercise caution and consider additional safety measures, such as external fusing, especially in 240VAC applications, to mitigate potential risks associated with inrush current or component failure.

3. Setup and Installation

3.1 Mounting

The ITC-106VH controller is designed for flush mounting. The cutout size required is 45x45mm. Use the provided mounting bracket and screw terminals for secure installation.



Figure 2: Mounting Bracket. This bracket is used to secure the controller into a panel cutout.

3.2 Wiring

Refer to the wiring diagram on the side of the unit for correct connections. Ensure all connections are tight and properly insulated. The controller supports AC 100-240V power input and provides an SSR output.



Figure 3: Wiring Diagram. This diagram illustrates the terminal connections for power, sensor, and output.



Figure 4: Screw Terminals. These terminals are used to connect the power supply, sensor, and output devices.

- **Power Input:** Connect AC 100-240V to the designated power terminals.
- **Sensor Input:** Connect your temperature probe (e.g., K-type thermocouple) to the sensor input terminals (TC+, TC-).
- **SSR Output:** Connect your Solid State Relay (SSR) to the SSR output terminals.

4. Operating Instructions

4.1 Power On/Off

Connect the controller to a power source (AC 100-240V). The display will illuminate, showing the current measured temperature (PV) and the set temperature (SV).

4.2 Setting Temperature (SV)

1. Press the **SET** button once. The SV display will begin to flash.
2. Use the **Up** (▲) and **Down** (▼) arrow buttons to adjust the desired set temperature.
3. Press the **SET** button again to confirm the new set temperature and exit the setting mode.

4.3 Parameter Settings

To access advanced parameters (e.g., PID parameters, alarm settings, temperature unit selection), press and hold the **SET** button for several seconds until the parameter code appears on the PV display.

1. Use the **Up** (▲) and **Down** (▼) buttons to navigate through the parameter codes.
2. Press the **SET** button to view the value of the selected parameter.
3. Use the **Up** (▲) and **Down** (▼) buttons to modify the parameter value.
4. Press **SET** to save the change and move to the next parameter, or press and hold **SET** to exit the parameter setting mode.

4.4 Auto-Tuning (AT/RUN)

The auto-tuning function helps the controller optimize its PID parameters for stable temperature control. This is typically performed during initial setup or if the controlled system changes significantly.

1. Set your desired temperature (SV).
2. Press and hold the **AT/RUN** button for approximately 3-5 seconds. The **AT** indicator will light up, and the controller will begin the auto-tuning process.
3. During auto-tuning, the temperature may oscillate around the set point. Allow the process to complete, which can take some time depending on the system.
4. Once auto-tuning is complete, the **AT** indicator will turn off, and the controller will operate with the newly optimized PID parameters.

5. Maintenance

- **Cleaning:** Wipe the controller's front panel with a soft, dry cloth. Do not use abrasive cleaners or solvents.
- **Environmental Conditions:** Ensure the operating environment remains within -10°C to 55°C with 35-85% relative humidity (non-condensing). Avoid exposure to icy conditions.
- **Storage:** Store the controller in a dry place with temperatures between -25°C and 65°C, avoiding icy or condensing conditions.
- **Relay Life:** The internal relay has a mechanical life expectancy of at least 10,000,000 operations and an electrical life expectancy of at least 10,000,000 operations.
- **Data Retention:** Stored data is retained for approximately 10 years.

6. Troubleshooting

- **Display Not Working:**
  - Check power connections to ensure the controller is receiving AC 100-240V.
  - Verify that the power supply is stable and within the operating voltage range (85-110% of rated voltage).
- **Incorrect Temperature Readings:**
  - Ensure the temperature probe is correctly connected to the sensor input terminals.
  - Check the probe for damage or corrosion.
  - Verify that the sensor type configured in the controller's parameters matches the connected probe.
  - Consider performing an auto-tuning cycle if the system characteristics have changed.
- **Output Not Activating/Deactivating:**
  - Check the wiring to the SSR output and the connected heating/cooling device.
  - Verify that the set temperature (SV) and process value (PV) are within the desired control range.
  - Review alarm settings and ensure they are configured appropriately.
  - If using an SSR, ensure it is functioning correctly.
- **Unstable Temperature Control (Overshoot/Undershoot):**
  - Perform an auto-tuning cycle to optimize PID parameters for your specific system.
  - Check for external factors affecting temperature stability, such as drafts or inconsistent heat sources.
- **Controller Feels Warm:**
  - Some heat generation during operation is normal. Ensure adequate ventilation around the controller, especially if mounted in an enclosed panel. If excessive heat is observed, disconnect power and inspect for wiring issues or internal component problems.

7. Specifications

Feature	Specification
Front Panel Dimension	DIN 48mm(W) x 48mm(L)
Power Supply Voltage	AC 100-240V 50/60Hz
Operating Voltage Range	85% ~ 110% of Rated Voltage
Power Consumption	Approx. 5VA (100~240VAC)
PV Display	4-digit, 9.9mm height Red LED
SV Display	4-digit, 8mm height Green LED
Display Accuracy	±0.2%FS 0.1°C (<1000°C); 1°C (≥1000°C)
Sampling Period	0.5 seconds
Temperature Compensation	0-50°C
Relay Life Expectancy (Mechanical)	≥10,000,000 operations
Relay Life Expectancy (Electrical)	≥10,000,000 operations

Feature	Specification
Weight	Approx. 140g (5.6 ounces)
Environmental Conditions	-10~55°C (no icy or condensation), RH 35-85% Humidity
Storage Temperature	-25~65°C (no icy or condensation)
Data Storage	10 years
Cutout Size	45x45mm
Mounting Method	Flush mounting and screw terminals
Material	Plastic
Included Components	Temperature Probe

8. Warranty and Support

8.1 Warranty Information

Specific warranty details for the Inkbird ITC-106VH controller should be obtained directly from the manufacturer or the authorized seller at the time of purchase. Please retain your proof of purchase for warranty claims.

8.2 Customer Support

For technical assistance, troubleshooting, or inquiries regarding your Inkbird ITC-106VH controller, please refer to the official Inkbird website or contact their customer support channels. Inkbird also maintains an online community where users can pose questions and seek advice.

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