

## ZFX W1209A

# ZFX W1209A 30A Digital Temperature Controller Instruction Manual

Model: W1209A

## 1. PRODUCT OVERVIEW

The ZFX W1209A is a high-precision digital temperature controller designed for a wide range of applications requiring accurate temperature management. It features a clear 3-digit LED display, an NTC waterproof probe for fluid temperature control, and a robust 30A relay output. This manual provides essential information for the proper setup, operation, and maintenance of your W1209A temperature controller.



Figure 1: Main view of the ZFX W1209A Digital Temperature Controller, showing the green PCB, LED display, control buttons, and terminal blocks.

## 2. KEY FEATURES

- **High Precision and Wide Measurement Range:** Capable of measuring and controlling temperatures from -50°C to 110°C with 0.1°C accuracy.
- **Waterproof NTC Probe:** Includes a durable NTC 10K waterproof sensor, suitable for controlling fluid temperatures.
- **Easy Installation and Operation:** Designed for straightforward setup and user-friendly control.
- **Clear LED Display:** Features a bright 0.7-inch 3-digit LED display for easy temperature monitoring.
- **Stable Performance:** Engineered for reliable and long-term operation.
- **High Current Output:** Equipped with a 30A relay for controlling high-power loads.

# W1209 DIGITAL TEMPERATURE CONTROLLER

Control Range: -50°C~110°C



Figure 2: The W1209A controller highlighting its digital display and control range of -50°C to 110°C.

## 3. SETUP AND WIRING

Before connecting, ensure all power sources are disconnected. Refer to the wiring diagram below for correct connections. Incorrect wiring can damage the device or connected equipment.

1. **Power Supply (12V DC):** Connect a 12V DC power source to the two terminals labeled "12V Power Supply". Ensure correct polarity (positive to '+' and negative to '-').

2. **NTC Sensor:** Plug the NTC waterproof temperature probe into the "Sensor Socket" connector.
3. **Relay Output:** Connect the device you wish to control (e.g., heater, cooler) to the "Relay Output" terminals. This is a dry contact relay, meaning it acts as a switch. You will need to provide power to your controlled device separately, routed through these relay contacts. The relay can handle up to 30A.

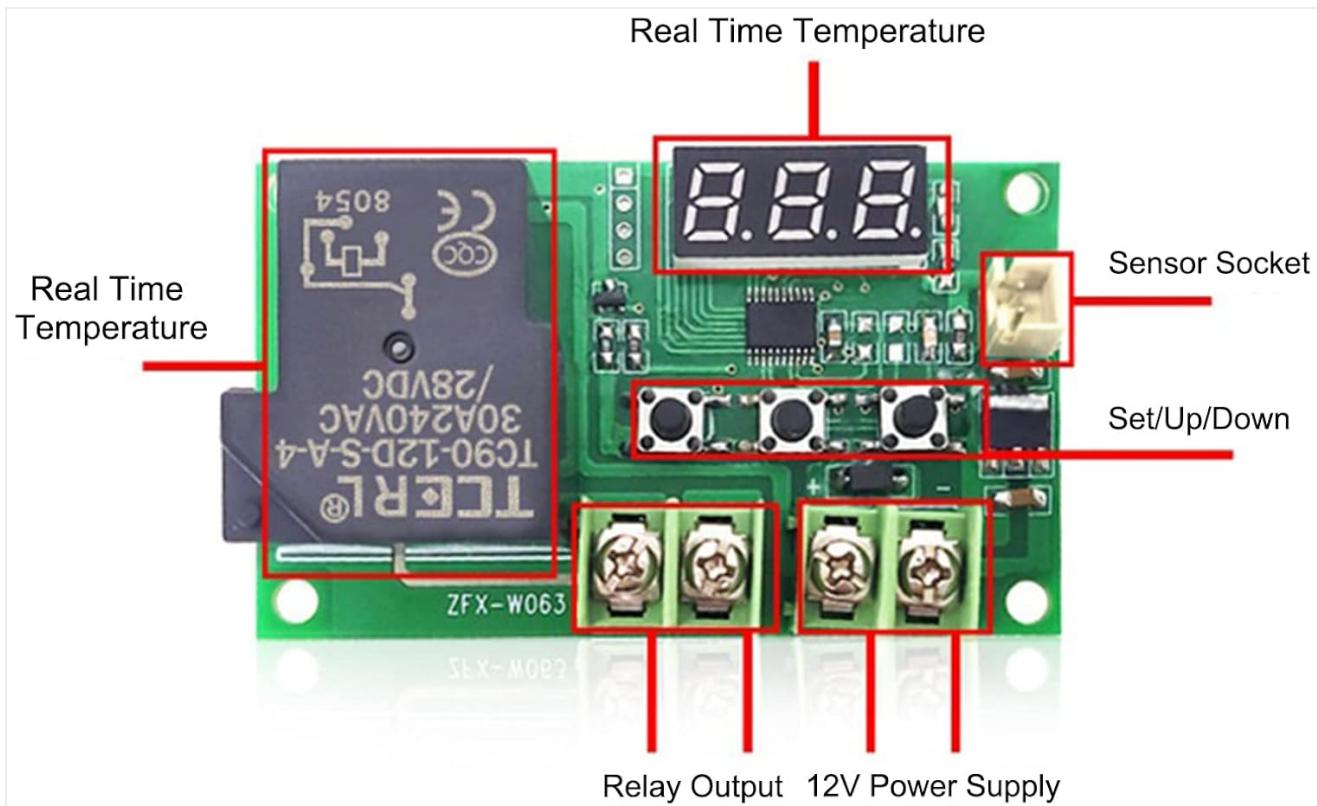


Figure 3: Detailed wiring diagram of the W1209A controller, showing connections for the sensor, 12V DC power supply, and relay output.

After all connections are made, you can apply 12V DC power to the controller. The LED display will show the current temperature measured by the NTC probe.

## 4. OPERATING INSTRUCTIONS

The W1209A controller has three buttons: SET, UP, and DOWN.

### 4.1. Setting the Target Temperature

1. Press the **SET** button once. The display will flash, indicating the current target temperature.
2. Use the **UP** and **DOWN** buttons to adjust the target temperature to your desired value.
3. Press **SET** again to confirm and save the setting, or wait a few seconds for it to save automatically.

### 4.2. Accessing Parameter Settings (P0-P6)

To access advanced settings, press and hold the **SET** button for approximately 5 seconds. The display will show "P0". Use the **UP** and **DOWN** buttons to navigate through the parameters (P0 to P6).

Once you select a parameter (e.g., P0), press **SET** again to view its current value. Use **UP** and **DOWN** to change the value. Press **SET** to confirm the new value and return to the parameter list, or hold **SET** to exit all settings.

#### Parameter Descriptions:

- **P0: Cooling/Heating Mode (C/H)**
  - **H (Heating Mode):** The relay closes when the current temperature is below the set temperature minus

the hysteresis. It opens when the current temperature reaches the set temperature.

- **C (Cooling Mode):** The relay closes when the current temperature is above the set temperature plus the hysteresis. It opens when the current temperature reaches the set temperature.

- **P1: Hysteresis Setting (0.1-30°C)**

Sets the difference between the turn-on and turn-off temperatures to prevent rapid cycling of the relay.

- **P2: Upper Limit of Temperature Setting (110°C)**

Defines the maximum adjustable target temperature.

- **P3: Lower Limit of Temperature Setting (-50°C)**

Defines the minimum adjustable target temperature.

- **P4: Temperature Correction (-7.0 to 7.0°C)**

Allows for calibration of the temperature reading if there is a discrepancy with a known accurate thermometer.

- **P5: Delay Start Time (0-10 minutes)**

Sets a delay before the relay activates after the temperature condition is met. Useful for compressors or other equipment that requires a delay.

- **P6: High Temperature Alarm (0-110°C)**

If the current temperature exceeds this value, the display will show "HHH" and the relay will disconnect.

#### 4.3. Restoring Factory Settings

To restore the controller to its factory default settings, power off the device. Then, press and hold both the **UP** and **DOWN** buttons simultaneously while powering on the device. The display will show "888" to confirm the reset.

### 5. SPECIFICATIONS

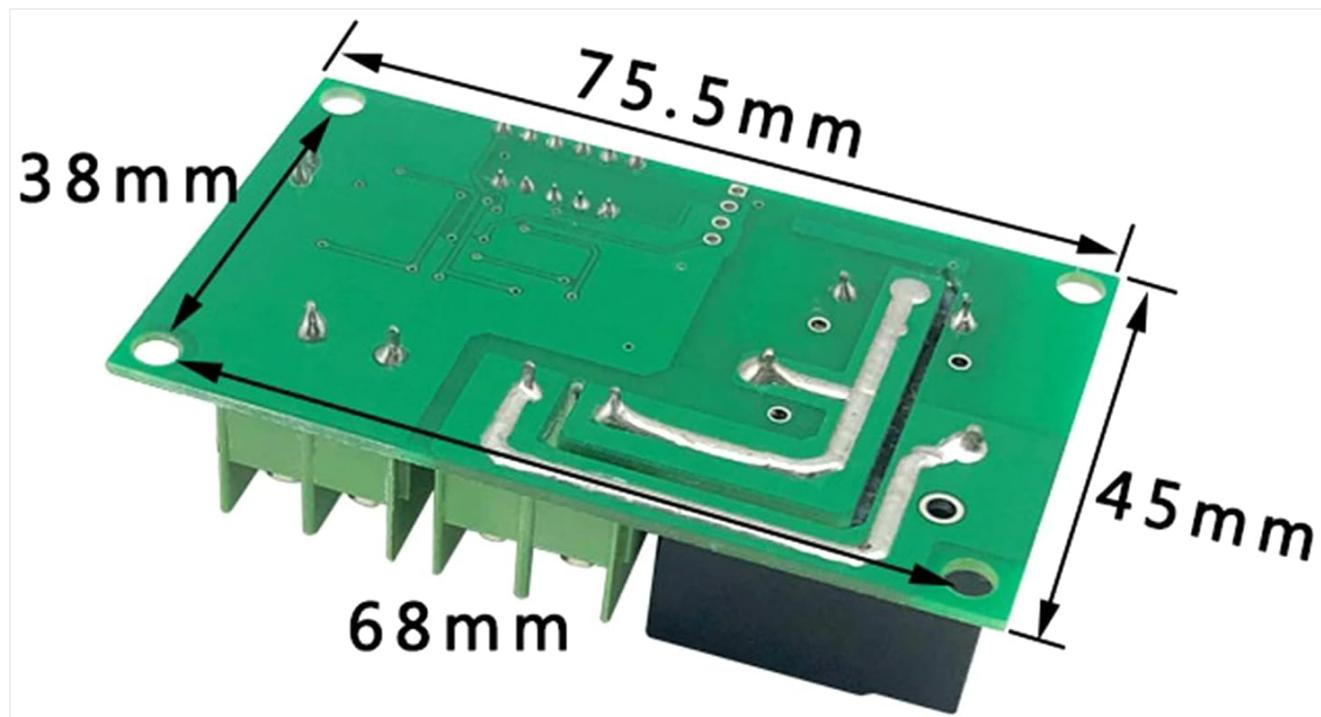


Figure 4: Dimensions of the ZFX W1209A controller, measuring approximately 75.5mm x 45mm.

Parameter	Value
Model	ZFX-W1209A
Input Voltage	DC 12V

Parameter	Value
Output	30A Relay
Temperature Control Range	-50°C ~ 110°C
Temperature Measurement Accuracy	0.1°C
Control Accuracy	0.1°C
Refresh Rate	0.5 seconds
Temperature Sensor	NTC 10K (300mm length)
High Temperature Protection	0°C ~ 110°C (P6 setting)
Operating Environment Temperature	-10°C ~ 60°C
Operating Environment Humidity	20% ~ 85%
Dimensions	75.5mm x 45mm
Package Contents	1 Temperature Controller with Probe

## 6. TROUBLESHOOTING

- **Display shows "LLL":** Indicates the sensor is disconnected or damaged. Check the sensor connection or replace the sensor.
- **Display shows "HHH":** Indicates the measured temperature exceeds the upper limit (P6 setting) or the sensor is short-circuited. Check the sensor and the P6 setting.
- **Display shows "---":** Indicates the controller is in high-temperature protection mode (P6 activated) or the temperature is below the lower limit.
- **Controller not powering on:** Verify the 12V DC power supply connection and ensure correct polarity. Check the power source itself.
- **Relay not activating:**
  - Check if the target temperature and current temperature conditions are met for the selected heating/cooling mode (P0).
  - Verify the hysteresis setting (P1).
  - Check if a delay start time (P5) is active.
  - Ensure the controlled device is properly wired to the relay output and has its own power supply.
- **Inaccurate temperature reading:** Use the temperature correction parameter (P4) to calibrate the sensor against a known accurate thermometer.

## 7. MAINTENANCE

The ZFX W1209A temperature controller requires minimal maintenance. Keep the device clean and free from dust and moisture. Ensure all connections are secure. Avoid exposing the controller to extreme temperatures or corrosive environments beyond its specified operating range.

## **8. WARRANTY AND SUPPORT**

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Specific warranty information for this product is not provided in the available documentation. For support or warranty inquiries, please contact your retailer or the manufacturer directly with your purchase details.

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