Dual Zone Temperature Controller User Guide

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for use with:

Dual Zone Temperature Controller, PN 22991006

prepared by GPD Global® Documentation Dept.

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Content

Warranty

General Warranty. Subject to the remedy limitation and procedures set forth in the Section "Warranty Procedures and Remedy Limitations," GPD Global warrants that the system will conform to the written description and specifications furnished to Buyer in GPD Global's proposal and specified in the Buyer's purchase order, and that it will be free from defects in materials and workmanship for a period of one (1) year. GPD Global will repair, or, at its option, replace any part which proves defective in the sole judgment of GPD Global within one (1) year of date of shipment/invoice. Separate manufacturers' warranties may apply to components or subassemblies purchased from others and incorporated into the system. THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY AND ALL OTHER WARRANTIES,EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Limitations. GPD Global reserves the right to refuse warranty replacement, where, in the sole opinion of GPD Global the defect is due to the use of incompatible materials or other damages from the result of improper use or neglect.

This warranty does not apply if the GPD Global product has been damaged by accident, abuse, or has been modified without the written permission of GPD Global.

Items considered replaceable or rendered unusable under normal wear and tear are not covered under the terms of this warranty. Such items include fuses, lights, filters, belts, etc.

Warranty Procedures and Remedy Limitations. The sole and exclusive remedy of the buyer in the event that the system or any components of the system do not conform to the express warranties stated in the Section "Warranties" shall be the replacement of the component or part. If on-site labor of GPD Global personnel is required to replace the non-warranted defective component, GPD Global reserves the right to invoice the Buyer for component cost, personnel compensation, travel expenses and all subsistence costs. GPD Global's liability for a software error will be limited to the cost of correcting the software error and the replacement of any system components damaged as a result of the software error. In no event and under no circumstances shall GPD Global be liable for any incidental or consequential damages; its liability is limited to the cost of the defective part or parts, regardless of the legal theory of any such claim. As to any part claimed to be defective within one (1) year of date of shipment/invoice, Buyer will order a replacement part which will be invoiced in ordinary fashion. If the replaced part is returned to GPD Global by Buyer and found by GPD Global in its sole judgment to be defective, GPD Global will issue to Buyer a credit in the amount of the price of the replacement part. GPD Global's acceptance of any parts so shipped to it shall not be deemed an admission that such parts are defective.

Specifications, descriptions, and all information contained in this manual are subject to change and/or correction without notice.

Although reasonable care has been exercised in the preparation of this manual to make it complete and accurate, this manual does not purport to cover all conceivable problems or applications pertaining to this machine.

Overview

The Dual ZoneTemperature Controller is a table top temperature controller for controlling the temperature of fixtures/devices. It can control four heating elements, a maximum of two thermal zones, and a single temperature set point. Any element can be assigned to any of the two zones.

The dual zone error protection feature protects the Dual ZoneTemperature Controller from exceeding either a high or low temperature set point, and improper pairing of thermal elements with connections.

Power to the Dual ZoneTemperature Controller can be controlled manually or remotely. The Dual ZoneTemperature Controller itself does not generate heat.

About this Manual

This user guide provides an overview of the controller, plus set up and operating instructions.

For details about programming the individual zone temperature controls, refer to the *Integrated Temperature Controller User Guide*, PN 2200-0253M..

Safety Notice

HIGH VOLTAGE: SHOCK HAZARD - Do NOT open the Dual ZoneTemperature Controller case/cabinet as this may expose you to the high voltage terminals inside.

CAUTION: Use controller in a clean environment. Air is drawn through the cabinet side vents to cool the power supply.

CAUTION: The Dual ZoneTemperature Controller case/cabinet itself may consume up to less than 10 Amps but is capable of passing through up to 20 Amps, so if a high heat fixture is connected to the Dual ZoneTemperature Controller, the Dual ZoneTemperature Controller can draw up to the fixture's maximum temperature.

Proper Use

The Dual ZoneTemperature Controller is intended to control the temperature of either a portion of or the entirety of the fixture/device to which it is connected up to a defined set point and within a defined temperature range.

Scope of Supply

- Tabletop Dual ZoneTemperature Controller, PN 22991006
- Power Cable, PN 6000-0843
- *Dual ZoneTemperature Controller User Guide*, PN 22940005
- *Integrated Temperature Controller User Guide*, PN 2200-0253M.

User Interface

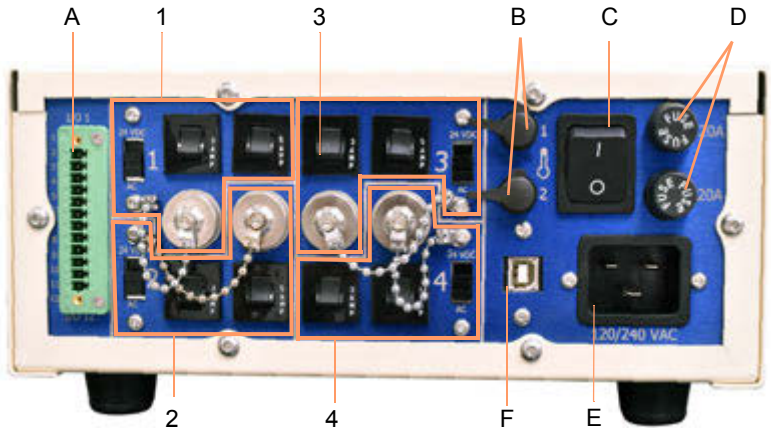
Controls

Figure 1: *Controller front panel*

1	Zone 1 Control	Zone temperature controllers. For a zone to function: A - The zone control must be set up for Zone Control Selection Matching. This is set at the factory. For details, refer to the Integrated Temperature Controller User Guide, PN 2200-0253M. B - A thermal device must be plugged into the Temperature Input receptacle that corresponds with the zone; e.g., Zone 1 requires a device be plugged into Temperature Input 1 (refer to Figure 2 on page 3).
2	Zone 2 Control	
3	Element Zone selectors 1 2 3 4	Assigns which zone control (1 or 2) will regulate thermal element (1, 2, 3, or 4). Setting choices: • I = zone 1 • 0 = off • II = zone 2
4	Zone Mode control Zone 1 modes Zone 2 modes	Assigns which mode will regulate the zone. Setting choices: • ON = manual mode; on • OFF = manual mode; off • I/O = automatic mode; remotely controlled by inputs/outputs

Connections

Figure 2: *Controller rear panel*



A	I/O connector	12 pin
1	Thermal Element 1	
	Selector 1	Select either AC or DC for thermal element
	Connection	Connection for thermal element
	3 Amp	DC breaker
	6 Amp	AC breaker
2	Thermal Element 2	
	Selector 2	Select either AC or DC for thermal element
	Connection	Connection for thermal element
	3 Amp	DC breaker
	6 Amp	AC breaker
3	Thermal Element 3	
	Selector 3	Select either AC or DC for thermal element
	Connection	Connection for thermal element
	3 Amp	DC breaker
	6 Amp	AC breaker
4	Thermal Element 4	
	Selector 4	Select either AC or DC for thermal element
	Connection	Connection for thermal element
	3 Amp	DC breaker
	6 Amp	AC breaker
B	Temperature Input 1 2	Measures the temperature of the thermal device plugged into the corresponding zone; e.g., Temperature Input 1 corresponds to the element(s) in Zone 1 (refer to Figure 1 on page 2). Accepts RTD, thermister, thermocouple, or analog input.
C	Power control	Switches on/off power to the Dual ZoneTemperature Controller.
D	Fuses	2 per temperature controller. Not for replacement by customer.
E	Power outlet	Pass Source; i.e., sets the Dual ZoneTemperature Controller elements to match the power source is plugged in (120 or 240 V).
F	Watlow Adapter	Communication port; RS485

Set Up

Setting up the Dual ZoneTemperature Controller involves connecting it to a power source and an external thermal device (heater/cooler), defining thermal zones and the zone operating mode, and, if needed, modifying the temperature controller parameter values.

To set up the Dual ZoneTemperature Controller:

1. Plug the provided power cable into the power outlet.
2. Plug from 1 to 4 elements into the corresponding Thermal Element connections.
3. For each element plugged in per prior step:
   a. Set the corresponding Selector switch to either AC or 24 VDC.
   b. Verify an external device is connected to the Temperature Input for the corresponding zone.
   c. Set the corresponding Zone Selector to either zone I, zone II, or Off.
4. Set the Zone Mode control to a manual mode setting (On or Off) or to the automatic I/O setting.
5. As needed, change the value of the factory settings in Zone Control (Watlow temperature controllers). Contact the GPD Global Service Department for *Dual ZoneTemperature Controller Service Guide*, PN 22940007.

Operations

Power On/Off

Power to the Dual ZoneTemperature Controller can be controlled manually or remotely.

Manual Control

To turn the power on/off manually, use the On/Off settings on either the Zone Mode control switch or the Power control.

Remote Control

The Dual ZoneTemperature Controller can be controlled remotely by using the I/O setting on the Zone Mode control switch.

Dual Zone Protection Alarm

The Dual ZoneTemperature Controller has a dual zone error protection feature that protects it from:

- temperatures exceeding either a high or low temperature set point, and
- improper pairing of thermal elements with connections.

High or Low Temperature Alarm

The default setting is for a high temperature set point; this can be changed to a low temperature set point

Alarm Indicator:

Zone 1 Control and Zone 2 Control are both disabled.

Condition:

Temperature of the element(s) exceeds the temperature set point.

Action:

Silence Alarm - refer to *Integrated Temperature Controller User Guide*, PN 2200-0253M..

Thermal Element and Connection

Alarm Indicator:

Zone 1 Control and/or Zone 2 Control display ALARM and the Zone Fault I/O is tripped.

Condition:

One or more Thermal Element connections were improperly set up.

Action:

Clear alarm and inspect connection - refer to *Integrated Temperature Controller User Guide*, PN 2200-0253M.. Run again. If alarm behavior occurs again, inspect settings.

Silence / Clear Alarm

If either Watlow controller hits a high temperature alarm ***when two thermal input sensors are in use,*** both controllers are disabled. Alarm 1 is Watlow setting. This alarm must be silenced for the unused zone to enable operation of the other/single zone.

To silence an active alarm:

1. Push the green Advance button once.
2. Use the UP/DOWN arrow keys to find SIL.
3. Push the green Advance button or the Infinity button to execute the action.

Specifications

Capacity

Thermal zones . . . . . 2 maximum. Any of the up to 4 elements can be assigned to any zone.
Temperature range to safely operate:
Minimum temperature . . Ambient (surrounding environment)
Maximum temperature‡ 144° C (291°F)
Temperature set point . . . . . Single set point. In-range default is ±3° C (37.4° F)
Zones 1 and 2 both default to heat but can be configured to cool.
External device compatibility . . Can turn on/off nearly anything 24 DC or source AC
External input . . . . . 18-32V signal in to enable; 24V 200 mA maximum out

‡ Maximum temperature is dependent on the device being controlled. Even though the Dual ZoneTemperature Controller is only limited by the maximum heating capability of the Watlow temperature controller, this setting may be higher than the device/fixture being heated can tolerate.

Mechanics/Electronics

Voltage . . . . . 120/240 VAC
Current . . . . . 20 Amps
Frequency . . . . . 50/60 Hz
Earth Ground and Neutral Return
AC heat elements . . . . . operate at source voltage
Weight . . . . . approximately 5 kg (11 lb)
Dimensions (W x D x H) . . . . . 25 cm x 28 cm x 11.5 cm (9.84” x 11.02” x 0.45”)

Ambient Data

Operating temperature . . . . . -10-40° C
Storage temperature . . . . . -20-60° C
Max. relative humidity . . . . . 35-95% non-condensing
Vibration resistance . . . . . 10-55 Hz (amplitude 1.5 mm, x-, y-, z-axis 2 hours ea.)
Protection class III
Shock resistance . . . . . 50 g (x-, y-, z-axis 3 times each)

System Management

Lockout & Password Security

Password lock out feature is available for each temperature controller. For details, refer to *Lockout and Password Security* in the *Integrated Temperature Controller User Guide*, PN 2200-0253M.

USB to 485 EZ Converter

Downloadable drivers (third party device) recommended by Watlow to enable communication with both controllers - as long as they are set to different zone addresses - are available from the following URL.

CAUTION: Using the downloadable drivers may affect interaction between the two controllers.

B&B Electronics ULinx – 485USBTB-2W:

https://support.advantech-bb.com/download?product_model_name=BB-485USBTB-2W#Driver

Housekeeping

Maintenance

The Dual ZoneTemperature Controller does not require maintenance; however, it is recommended that you clean the external surfaces and check the connections at regular intervals. Wipe down all external surfaces with a soft, clean cloth or blow with compressed air.

Spare Parts

Description	Part No.	Qty
Fuse, 20A	4300-0175	2 per temperature controller
Foot/Bale	22991053	1

***WARNING**: Procedures requiring access to the machine (or fixture) interior should only be performed by qualified maintenance or technical personnel fully aware of all safety precautions.*

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