Aqua Logic, Inc
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DC SERIES DUAL STAGE DIGITAL TEMPERATURE CONTROL INSTRUCTION MANUAL FOR ALL TITAN HEAT PUMPS

Model No. DC24D

Thank you for purchasing our digital temperature controller. It is designed to provide on/off control for commercial heating and cooling applications. It is equipped with a red LED display that provides a constant readout of the water temperature and a touch keypad that allows the user to easily and accurately select the setpoint temperature, differential, and heating/cooling modes of operation. The control enclosure has an NEMA 4X rating but, if installed outdoors, it should be protected against the direct weather.

Installation.

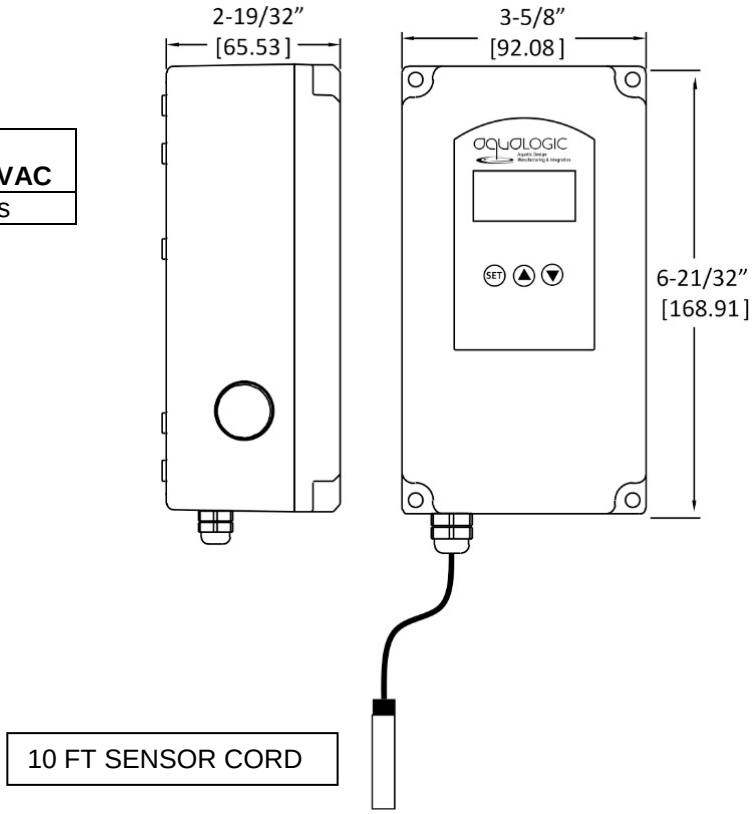
1. Mount control on a wall or any vertical surface that water can't splash on it.
2. Install the temperature sensor in a dry sensor well.
3. Install wiring per wiring schematic.

Note: For your safety have a qualified electrician install the controller.

Probe Range:
NTC: -58 to 230°F (-50 to 110°C).
Input: NTC 10k Ω @ 77°F (25°C)
Control Type: Dual stage On/Off.
Power Requirements: 12 to 24 AC-DC VAC 50 / 60 Hz (±10%)
Power Consumption: 3.6VA.
Accuracy: ±1% Full Scale.
Display: 3 digits plus sign.
Resolution: 1° ≥ 100°.
Memory Backup: Non-volatile memory.
Ambient Temperature: 32 to 104°F (0 to 40°C).
Weight: 2.5 lbs (1134 g).
Front Protection: NEMA 4X (IP66).
Agency Approvals: CE, UL, cUL.

Controller power rating by model number.

Model	Input	Max. Out1 HP SPDT and Max. Out2 Watts SPDT at 240 VAC
DC24D	24 VAC	Up to -1/2 HP and 500 watts



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Temperature Controller Set-up

This digital controller has been pre-programmed with all the necessary parameters to ensure reliable service and operation. The controller is pre-set from the factory with a temperature range from 30 °F to 100 °F with a display resolution of 1 degree °F and with a 1 °F temperature differential.

Note: Always have the cooling set point (Out1) equal to or higher than the heating (Out2) set point. DO NOT OVERLAP THESE SET POINTS



To modify the Set Points SP1 and SP2.

Press the “SET” button. OUT1 LED and out1 set value will flash on the display.
Modify the out1 set point value using up arrow ▲ to increase or the down arrow ▼ to decrease the set point.
Press the SET button to store the out1 set point value and advance to out2 set point value.
Modify the out2 set point value using up arrow ▲ to increase or the down arrow ▼ to decrease the set point.
Press the SET button to store the value and return to the home screen.
OUT1 Indicates the cooling mode and the OUT2 is the heating mode is energized.

Operation Modes

When in the cooling mode (Out1) the water temperature needs to go above the set point by one degree for it to activate the chiller. It will turn off once the water temperature has reached set point.

In the heating mode (Out2) the water temperature has to go down below the set point by one degree to activate the heater. It will turn off once the water temperature has reached the set point.

To calibrate the sensor and change other program parameters.

If the displayed water temperature on the control is different from the system water temperature then, an adjustment to the control can be done. The easiest way to calibrate the control is to press and hold the "Set" button for 8 seconds. The parameter “O” will be displayed. Then press the “SET” button and the “SP” will be displayed. Use the down ▼ or up ▲ arrow until you see the menu parameter "P1". Then press the “SET” button one time. The display will show “0”. Press the up or down arrows to adjust to the temperature offset. Once you have set the correct temperature offset, press "SET" button one more time and then wait 1 minute or press the “SET” and the “DOWN” ▼ arrow buttons at the same time to quit the programming. The display should return to the water temperature. The display should read the correct water temperature readout.

See page 3 ”DC DUAL STAGE TEMPERATURE CONTROL PROGRAMMABLE PARAMETERS TABLE” to change other settings

To adjust other parameters in the control contact Aqua Logic, Inc. for help.
PH: 858.292.4773 or email: info@aqualogicinc.com

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DC DUAL STAGE TEMPERATURE CONTROL PROGRAMMABLE PARAMETERS TABLE

Parr	Description	Units	Range	Factory Set (°F)	Set (°C)
SP1	Set Point 1 out1 (CHILLER)	Degrees	r4 to r6	75	25
SP2	Set Point 2 out2 (HEATER)	Degrees	r5 to r7	75	25
r0	Dependency SP1 – SP2	Range	ind / dep	ind	ind
r1	Differential for SP1	Degrees	0.1 to 20	1	.5
r2	Differential for SP2	Degrees	0.1 to 20	1	.5
r3	Band differential	Degrees	0.1 to 20	1	.5
r4	Lower value for SP1	Degrees	-99 to r6	30	0
r5	Lower value for SP2	Degrees	-99 to r7	30	0
r6	Higher value for SP1	Degrees	r4 to 302	100	40
r7	Higher value for SP2	Degrees	r5 to 302	100	40
r8	Regulation or operating mode	Range	On1/On2/nEU	On1	On1
A0	Alarm differential	Degrees	0.1 to 20	1	1
A1	Maximum alarm probe 1	Degrees	0.1 to 99	100	40
A2	Maximum alarm probe 2	Degrees	0.1 to 99	-	-
A3	Minimum alarm probe 1	Degrees	0.1 to 99	35	0
A5	Alarm verification time	h-m	0.0 to 18	1	1
A4	Minimum alarm probe 2	Degrees	0.1 to 99	-	-
A6	Alarm probe 1 selection	Range	AHL/Ano/AH/AL	Ano	Ano
A7	Alarm probe 2 selection	Range	AHL/Ano/AH/AL	Ano	Ano
c0	Minimum relay stop time	Minutes	0 to 240	1	0
c1	Operation relay 1	Range	dir/inv	Dir	Dir
c2	Operation relay 2	Range	dir/inv	inv	inv
c3	Default relay 1	Range	Opn/Clo	Opn	Opn
c4	Default relay 2	Range	Opn/Clo	Opn	Opn
P0	Temperature scale selection	Range	°C / °F	F	C
P1	Calibration water probe 1	Degrees	-20 to 20	0	0
P2	Calibration water probe 2	Degrees	-20 to 20	0	0
P3	Decimal Point	Option	no / yes	yes	Yes
P4	Probe displayed	Option	sd1/sd2	sd1	Sd1
P5	Number of probes	Option	1 / 2	1	1
H0	Factory reset values	Option	0	0	0
H1	Keyboard protection	Option	no / yes	no	No
H2	Operation led OUT1	Option	dir/inv	dir	dir
H3	Operation led OUT2	Option	dir/inv	dir	dir
H4	Address for serial communicate	Range	0 to 999	0	0
H5	Access code to parameters	Range	0 to 999	0	0
H6	Probe Type	Option	PTC / NTC	NTC	NTC

PARAMETER DESCRIPTIONS

SP1 = Out1 Set Point. Cool mode.
SP2 = Out2 Set Point. Heat mode

Error Messages

In normal operation, the probe temperature will be shown. In case of alarm press the “SET” and the “DOWN” ▼ arrow buttons at the same time to quit the alarm. An error messages will be shown:

- **Er** – Memory error
- **--** Shorted –circuited probe error
- **oo-** Open probe

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Limited Warranty

Aqua Logic, Inc. warrants this temperature controller to be free of defects in materials or workmanship for a period of one (1) year from the date of purchase. This controller has a one (1) year limited warranty.

Warranty **EXCEPTIONS**:

- The warranty applies only to the original end user and is not transferable.
- The limited warranty may not be modified by verbal statements by the manufacturer, distributors, retailers, their agents nor any other party.
- The warranty covers only the repair or replacement of the ***AQUA LOGIC*** product. ***AQUA LOGIC*** denies all liability for any other loss including but not limited to loss of equipment, income, livestock or personal injury.
- ***AQUA LOGIC*** does not warrant the suitability of the product for the end user's application.
- All warranties are voided by the following:
  --Product labels defaced or removed.

  --Product improperly installed or maintained by the user or their agent.

  --Product abused, misused, or damaged by the user.

  --Product misapplied to the application.

  --Product damage caused by freezing, extremely cold or extremely high temperatures.
- ***AQUA LOGIC*** shall not be liable for the cost of field repairs, inspection, installation, replacement, etc., without prior written authorization and/or valid authorization number.
- ***AQUA LOGIC*** shall not be liable for shipping damage or loss.
- ***AQUA LOGIC*** shall not be liable for unauthorized shipping costs to return warranty items to ***AQUA LOGIC.***

In the event of a defect or failure of this product, RETURN THE CONTROLLER WITH PROPER PACKAGING along with pre-authorized issued RMA number, proof of purchase and/or a copy of the original bill of sale to the address below, freight prepaid. COD shipments will be refused. After inspection, to ascertain that there is a defect due to material or workmanship and that the product is still under warranty, Aqua Logic will repair or replace the product at our discretion and return ship the unit, Aqua Logic liability is limited to the cost of defective materials. In no case will Aqua Logic assume liability for consequential damage resulting from any failure. Not covered by this warranty are damage due to corrosion, abuse, accidental, alterations, unreasonable or improper use. Aqua Logic is not liable for payment or field repair work without prior written authorization.

Call or email Aqua Logic for a RMA number.
PH: 858.292.4773
email to: info@aqualogicinc.com
Return the controller to this address below with a copy of the RMA inside the box within 30 days to:
Aqua Logic, Inc.
Attn: Return Dept. RMA# (put your number here)
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San Diego, CA. 92126

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