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**Instruction Manual for HX-DX and HX-DXHP Heat Exchangers**  
3 / 2017



Model No. HX-36DX



Model No. HX-120DX

**Check packing slip and product to see if they match. If not, contact Aqua Logic immediately!!**

**Important: Unpacking your heat exchanger.**

This heat exchanger was properly packed and accepted by the transportation company for shipment. It is the responsibility of the transportation company to deliver it to you in perfect condition.



**APPARENT DAMAGE OR LOSS**

If, upon delivery, the shipping container or equipment indicates DAMAGE IN TRANSIT, such damaged goods should not be accepted until the transportation company's agent has noted on the freight bill, which he will give you, the nature and extent of the damage. If any part of this shipment is LOST IN TRANSIT, have the shortage noted on the freight bill by the agent.

**CONCEALED DAMAGE**

Remove crate cover to inspect the unit for damage.

If, when this equipment is unpacked, shipping damage is discovered which was not apparent upon delivery, notify the transportation company IMMEDIATELY to inspect the damaged equipment. The inspector is REQUIRED to provide you with a DAMAGE INSPECTION report.

**THIS INSPECTION MUST BE REQUESTED WITHIN FIFTEEN (15) DAYS OF DELIVERY. DO NOT MOVE DAMAGED SHIPMENTS FROM POINT OF DELIVERY. RETAIN ALL CONTAINERS AND PACKING FOR INSPECTION.**

Protect yourself. File your claim immediately with the transportation company! Remember, Aqua logic Inc. is not responsible for any damage after the carrier accepts a shipment. Claim for FULL VALUE REIMBURSEMENT should be made by you against the transportation company. Replacement of the damaged equipment should be requested by the purchaser as a new order.

## Very Important!

1. The standard target fluid temperature is limited to a range of 40° F to 85° F on all heat exchangers (evaporator). Without special factory installed equipment, possible damage to the unit can occur when attempting to access fluid temperatures outside this range. Aqua Logic, Inc.'s warranty does not apply to application temperatures under 40°F or above 85° F without special factory modifications.
2. Water going to the heat exchanger should be protected by filters to keep debris from collecting in the evaporator PVC shell. Clogged shells lead to heat exchange problems and will void the warranty.
3. Improperly installed or out of adjustment rapid sand filters can put sand into the stream of water flowing into the heat exchanger. This condition is similar to “sand blasting” and may abrade holes in plumbing lines and or the evaporator titanium tubes. Conditions like these would void the Aqua Logic, Inc. warranty.

### 40° F to 85° F Process Temperature Applications

Wetted parts contain titanium, PVC plastic, rubber, and polymer. These materials are non-reactive with fresh and salt water. You must consult with Aqua Logic, Inc. if any other fluids are to be pumped through the chiller.

If humid or wet conditions exist where the heat exchanger is to be located, care must be taken to prevent water from getting on electrical components.

4. Allow only qualified licensed HVAC personnel connect copper refrigerant plumbing and electric power to heat exchanger. Installation must be done in accordance with local and national codes.
5. Field install the provided interlock device (water flow switch) which prevents the chiller from energizing without the water pump being on. Follow the provided installation instructions on how to plumb this interlock in the correct matter.
6. **Fluid must flow through the heat exchanger at all times.** See specification sheet or product label for minimum and maximum flow rates. Flow rates less than specification may result in evaporator freeze-up and cracking of the evaporator shell. Aqua Logic Inc. does not warranty the evaporator shell operating under low flow conditions and compressor burn outs due to a condition called refrigerant “flood back”.
7. Incoming water pressure to the evaporator must not exceed 50 PSIG. Over pressuring the evaporator may cause damage to the PVC shell, which is **not** covered under warranty.

## WARNING:

The heat exchanger is filled with a high pressure charge of dry nitrogen. Care must be taken when installing this unit.

## Installation Instructions:

**Warning:** Unit comes with a high pressure dry nitrogen charge on the copper plumbing side. Care must be taken when installed.

1. Place the heat exchanger on a level concrete floor for models HX-90 thru HX-240. For model HX-3 thru HX-60 mount on wall or shelf that can support the weight the unit with water in it. Have at least two (2) feet of space around the unit to allow room for access to the unit and for maintenance. Also, allow clearance above to remove the PVC shell for cleaning (models HX-90 thru HX-240). If the unit is to be mounted outdoors, it must be placed in to a weather proof housing to protect from direct weather and rain.
2. Have qualified licensed HVAC personnel connect copper refrigerant plumbing and electric power to heat exchanger.

Installation must be done in accordance with local and national codes.

3. Install the provided interlock device (water flow switch) which prevents the chiller from energizing without the water pump being on. Follow the provided installation instructions on how to plumb this interlock in the correct way.
4. Connect the plumbing from the pool to the heat exchanger PVC water fittings on the front of the heat exchanger. Be careful not to over tighten the plastic fittings. See “Heat Exchanger By-pass Plumbing”
5. Check for water leaks.

**Installation must proceed in accordance with national building and electrical codes by qualified technicians only.**


## HX-DX CHILLER TEMPERATURE CONTROLLER PROGRAMING

This DX heat exchanger is supplied digital single stage temperature controller with LED display. This digital controller has been pre-programmed with all the necessary parameters to ensure reliable service & operation. The digital controller has pre-set 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.

### Temperature Controller Set-up

To modify the set point\* temperature. Press and release the "SET" button. SP will be displayed. Press the "SET" button again and the pre-programmed set point temperature will be displayed. Press the up arrow ▲ to increase or the down arrow ▼ to decrease the set point.

Once the desired set point value has been selected, do not touch any of the keys for 1 minute. The control will then revert to displaying the current water temperature, but will now control the water temperature to the desired set point.

 This indicates that the output is energized or that the compressor is connected. It waits for the programmed minimum stop time (delay) of 1 minute to turn on the compressor.

### Temperature Differential:

When the water has reached the set point temperature, the chiller will switch off and will not switch back on until the water temperature has increased by 1 °F. This value is known as the temperature differential between on and off cycles. (See "Temperature Control Parameters Table" to change the settings.)

### Controller Display Calibration:

If the displayed water temperature on the control is different from the system water temperature, than 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. Wait 4 seconds. 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 correct water temperature readout.

(See "DC24S SINGLE 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 email: info@aqualogicinc.com



**DC24S SINGLE STAGE TEMPERATURE CONTROL PROGRAMMABLE PARAMETERS TABLE**

Parr.	Description	Units	Range	Factory Set	Note	
1	SP1	Set Point	Degrees	r1 to r6	75	
2	r0	Differential / Hysteresis	Degrees	1 to 20°	1	
3	r1	Lower value set point	Degrees	-50 to 150 °C -50 to 302 °F		
4	r2	Higher value set point	Degrees	-50 to 150 °C -50 to 302 °F		
5	d0	Heating or Cooling	Option	Ht or Co	Co	
6	d2	Time for Defrosting	Minutes	0 to 59	0	
7	d8	Interval Time between Defrosts	Hours	0 to 24	0	
8	c0	Min. time stop for compressor	Minutes	0 to 59	1	
9	c1	Continuous cycle time	Hours	0 to 24	0	
10	c2	On time of fault cycle	Minutes	0 to 99	5	
11	c3	Off time of fault cycle	Minutes	0 to 99	5	
12	P0	Temperature scale selection	Option	°C / °F	F	
13	P1	Ambient Probe Adjustment	Degrees	-10 to 10°	0	
14	H5	Parameter Access Code	Number	0 to 99	0	
15	H6	Probe input type	Option	Ptc / Ntc	Ptc	
16	t0	Max. temperature on display	Degrees	-50 to 150 °C -50 to 302 °F		

**Error Messages**

In normal operation, the probe temperature will be shown. In case of alarm or error, the following messages will be shown:

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

## HX-DXHP HEAT PUMP TEMPERATURE CONTROLLER PROGRAMMING

This DXHP heat exchanger is supplied with a digital dual stage temperature controller that has cooling and heating modes. This digital controller has been pre-programmed with all the necessary parameters to ensure reliable service & operation. The digital controller has pre-set 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.

### Temperature Controller Set-up

To modify the set point\* temperature on the out1 (Chill mode) and the out2 (Heat mode).

Press the “SET” button, the numbers will blink off and on and the out1 (Cooling mode) LED is on. The pre-programmed set point temperature will be displayed. Press the up arrow ▲ to increase or the down arrow ▼ to decrease the set point. Then press the set button again and the out2 (Heating mode) LED will light up. Press the up or down arrows to change the setting.

Once the desired set point value has been selected, do not touch any of the keys for 1 minute or press the “SET” and “DOWN” arrow ▼ at the same time. The control will then revert to displaying the current water temperature, but will now control the water temperature to the desired set point.

### Temperature Differential:

When the water has reached the set point temperature the chill mode will switch off and will not switch back on until the water temperature has increased by 0.3°C. This value is known as the temperature differential between on and off cycles. This also would apply to the heating mode. (See “Temperature Control Parameters Table” to change the settings.)

### \*Chiller / Heat Mode Set-up

#### Chiller Mode Setting

Set the “SP1” control set point to 75 °F. The chiller mode will activate when the water temperature reaches 1 degree above the set point at 76 °F.

#### Heating Mode Setting

Set the “SP2” control set point 75 °F. The heat mode will activate when the water temperature reaches one degree below the set point at 74 °F.

For example:

Setting the cooling mode (out 1 / SP1) is set at 75 °F with a 1 degree differential. (76 °F ON, 75 °F OFF)

Setting the heating mode (out 2 / SP2) is set at 75 °F with a 1 degree differential. (74 °F ON, 75 °F OFF)

**\*Note: Always set the cooling value higher or the same as the heating value.**



### **Controller Display Calibration:**

If the displayed water temperature on the control is different from the system water temperature, than an adjustment to the control sensor 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 blink. Wait 4 seconds. Press the "SET" button and SP1 will display. Use the down or up arrow until you see the menu parameter "P1". 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 time and then wait 1 minute or press the "SET" and the "DOWN" arrow ▼ at the same time. The display should read correct water temperature readout.

(See "DC24D DUAL STAGE TEMPERATURE CONTROL PROGRAMMABLE PARAMETERS TABLE"  
To change any settings.)

### **Error Messages**

In normal operation, the probe temperature will be shown. In case of alarm or error, the following messages will be shown:

- **Err** – Memory error.
- **ErP**- Error of the probe not shown on the display.
- **AH1** – Maximum temperature alarm. Probe 1
- **AL1** - Minimum temperature alarm. Probe 1
- **AH2** – Maximum temperature alarm. Probe 2
- **AL2** - Minimum temperature alarm. Probe 2
- **--** Shorted –circuited probe error
- **ooo**- Open probe

To adjust other parameters in the control contact Aqua Logic, Inc. for help.  
PH: 858.292.4773 email: [info@aqualogicinc.com](mailto:info@aqualogicinc.com)



## **DC24D DUAL STAGE TEMPERATURE CONTROL PROGRAMMABLE PARAMETERS TABLE**

<b>Parr.</b>	<b>Description</b>	<b>Units</b>	<b>Range</b>	<b>Factory Set</b>	<b>Note</b>	
1	SP1	Set Point 1 out1	Degrees	r4 to r6	75	
2	SP2	Set Point 2 out2	Degrees	r5 to r7	75	
3	r0	Dependency SP1 – SP2	Range	ind / dep	ind	
4	r1	Differential for SP1	Degrees	0.1 to 20	1	
5	r2	Differential for SP2	Degrees	0.1 to 20	1	
6	r3	Band differential	Degrees	0.1 to 20	1	
7	r4	Lower value for SP1	Degrees	-99 to r6	30	
8	r5	Lower value for SP2	Degrees	-99 to r7	30	
9	r6	Higher value for SP1	Degrees	r4 to 302	100	
10	r7	Higher value for SP2	Degrees	r5 to 302	100	
11	r8	Regulation or operating mode	Range	On1/On2/nEU	on1	
12	A0	Alarm differential	Degrees	0.1 to 20	1	
13	A1	Maximum alarm probe 1	Degrees	0.1 to 99	1	
14	A2	Maximum alarm probe 2	Degrees	0.1 to 99	-	
15	A3	Minimum alarm probe 1	Degrees	0.1 to 99	1	
16	A4	Minimum alarm probe 2	Degrees	0.1 to 99	-	
17	A5	Alarm varication time	h-m	0 to 18	1	
18	A6	Alarm probe 1 selection	Range	AHL/Ano/AH/AL	AHL	
19	A7	Alarm probe 2 selection	Range	AHL/Ano/AH/AL		
20	c0	Minimum relay stop time	Minutes	0 to 240	1	
21	c1	Operation relay 1	Range	dir/inv	inv	
22	c2	Operation relay 2	Range	dir/inv	dir	
23	c3	Fail Default relay 1	Range	Opn/Clo	Opn	
24	c4	Fail Default relay 2	Range	Opn/Clo	Opn	
25	P0	Temperature scale selection	Range	°C / °F	F	
26	P1	Calibration water probe 1	Degrees	-20 to 20	0	
27	P2	Calibration water probe 2	Degrees	-20 to 20		
28	P3	Decimal Point	Range	no / yes	yes	
29	P4	Probe displayed	Range	sd1/sd2	sd1	
30	P5	Number of probes	Range	1 / 2	1	
31	H0	Factory reset values	Option	0	0	
32	H1	Keypad tamper protection	Option	No / Yes	no	
33	H2	Operation of Out1 LED	Option	Dir / inv	dir	
34	H3	Operation of Out2 LED	Option	Dir / inv	dir	
35	H4	Address for serial comm	Range	0 to 999	0	
36	H5	Access code to parameters	Range	0 to 999	0	
37	H6	Probe type selection	Option	Ptc or ntc	Ptc	

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## HEAT EXCHANGER CLEANING IMPORTANT SAFETY INSTRUCTIONS

### **WARNING:**

#### **SAVE THESE INSTRUCTIONS!!!**

To guard against injury, basic safety precautions should be observed including the following:

- **DO** read and follow all safety instructions.
- **DO** read and observe all the notices in this instruction sheet.
- **DO** make sure unit is mounted securely before operating.
- **DO** carefully examine this unit after installation.
- **DO NOT** allow water to freeze in unit. Severe damage may result.
- **DO NOT** store unit in extremely hot or cold areas. Damage may result.
- **DO NOT** exceed the maximum rating of 40-psi for this unit or serious damage may result.
- **DO NOT** perform bleach [organic removal] flush with muriatic acid [mineral removal] at the same time. The resultant poisonous gas can be extremely dangerous or deadly.

### Heat Exchanger Cleaning:

#### NOTE:

The heat exchanger should be cleaned approximately every 12 months or as needed to allow proper performance. On some models this process may be done without removal of the heat exchanger shell. (i.e., water flushing system)

### **WARNING:**

When using bleach and acid special care should be observed.  
Always wear hand, eye and body protection. Use rubber gloves.

**DO** pour acid or bleach into the water. **DO NOT** pour water into acid or bleach solution.  
**DO NOT** perform acid and bleach flushing at the same time. The gas generated by the mixture is poisonous and can result in serious injury or death.

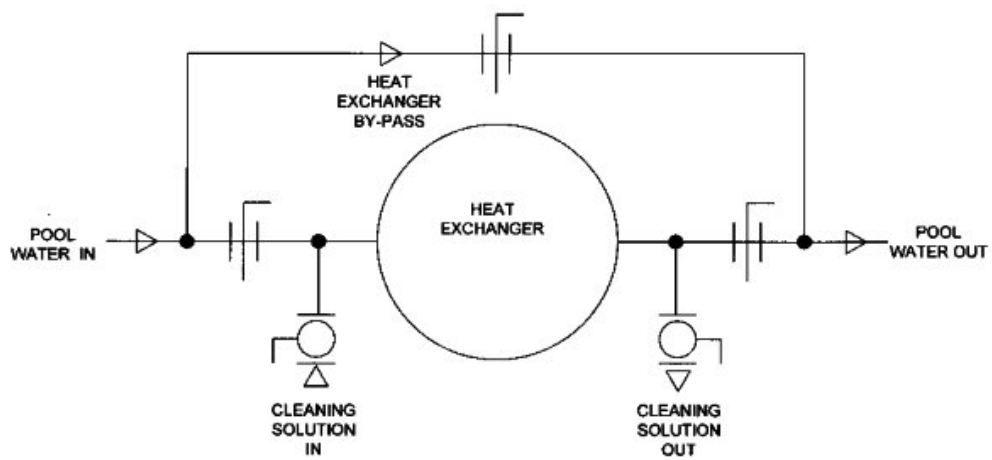
### To remove organic deposits from titanium tube bundle without removing the shell:

- Isolate the heat exchanger. (see drawing below)
- Mix 1 part bleach to 3 parts distilled water in five gallon bucket or larger container.
- Circulate via pump the solution through heat exchanger for approximately one to two hours or as needed.
- Thoroughly rinse heat exchanger with clean water.

### To remove mineral deposits from titanium tube bundle:

Use the same steps as above, but use muriatic acid instead of bleach. Be sure to follow the muriatic acid manufacturer's instructions for use and safety.

## Heat exchanger plumbing by-pass schematic





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## Limited Warranty Terms (PLEASE READ CAREFULLY):

All Heat exchangers (evaporators) manufactured by **Aqua Logic, Inc.** (hereafter called **Aqua Logic**) have a parts only warranty for a period of one (1) year from the date of purchase by the original purchaser. Any **Aqua Logic** product found to be defective within the warranty period will be repaired or replaced at the option of **Aqua Logic**

**Aqua Logic** will not warrantee and be responsible for sizing and providing the refrigeration line set, connection of the outdoor condensing unit to the indoor heat exchanger, charging with refrigerant and startup of the system.

On split chiller and heat pump installations, **Aqua Logic** will not warranty refrigerate components and copper lines between condenser and heat exchanger.

### Our warranty does not include the following:

- Damage caused by freezing, inadequate or no water flow.
- Damage caused by improper installation or maintenance by user or their agent.
- Damage caused due to misapplication of the product.
- Damage caused by corrosion, abuse, accident, alteration or improper use.
- Damage caused by flood, fire, earthquake, tornado or other acts of God.
- Damage caused by electrical spikes, surges, brownouts or improper voltage or amperage.
- Damage caused by failure of any third party equipment (ie., controller, pump, etc.)
- Incidental damage to other equipment, property or livestock.
- Damage caused by a refrigeration technician in the field with poor installation technique ie., incorrect refrigerant copper line size between condensing unit and heat exchanger, bad brazed copper joints and dirty copper lines.

In the event of a defect or failure of the product, immediately contact **Aqua Logic** for assistance. **Aqua Logic** will at their discretion:

- Provide user-replaceable parts to restore the unit to proper operation.
- Provide a Return Authorization (RMA) number to return the unit with original packaging to Aqua Logic, Inc., 9558 Camino Ruiz, San Diego, CA 92126 by prepaid freight. You need to include the serial number as well as proof of purchase and /or a copy of the original bill of sale along with the RMA number. COD shipments will be refused