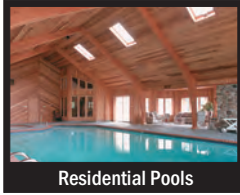


**DESERT AIRE EXPERTAIRE™ SERIES**

# Dehumidifiers for Industrial, Commercial and Residential Applications



Residential Pools



Commercial Pools



Libraries



Pipe Galleries



Manufacturing Facilities



Industry, public works, municipal services and indoor pools are just a few of the many applications that our ExpertAire™ dehumidifiers effectively cover. ExpertAire™ is an enduring product line for Desert Aire that represents the culmination of our core expertise in dehumidification. The ability of these units to be applied to diverse applications combined with their flexibility to appropriately regulate the introduction of outdoor air to a facility makes them a true energy efficient workhorse that consistently performs time and again.

**OPTIMIZING SOLUTIONS THROUGH SUPERIOR DEHUMIDIFICATION TECHNOLOGY**



### AHRI STANDARD 910 - MOISTURE REMOVAL CAPACITY

The Air-Conditioning, Heating and Refrigeration Institute (AHRI) created Standard 910 as an industry-wide standard for manufacturers, engineers, installers, contractors and end users. The purpose of this standard was to establish, for indoor pool dehumidifiers: definitions; classifications; requirements for testing and rating; minimum data requirements for published ratings; operating requirements; marking and nameplate data; and conformance conditions.

Standard 910 has created new provisions to measure the capacity and effectiveness of pool dehumidifiers. For example, the standard defines Moisture Removal Capacity (MRC) as the amount of condensate a unit produces, as impacted by coils, circulating fans and other components in the air stream, excluding supplementary heating, cooling or outdoor air, and is expressed in lb/h (kg/h). Also, it defines Moisture Removal Efficiency (MRE) as a ratio of the MRC divided by the unit's power input at any given set of rating conditions, and is expressed in lbs of moisture/kWh (kgs of moisture/kWh).

### EXPERTAIRE™ MEETS AHRI 910

Desert Aire's ExpertAire™ Series dehumidifiers have been designed with this standard in mind. First, we've used the latest coil design technology to increase evaporator and condenser capacity while simultaneously reducing their pressure drop. This combination yields the highest MRE available.

Secondly, the coils were designed from the onset to use R410a refrigerant. The entire industry was required to change over to this refrigerant by 2010. In 2006, we had already introduced our ExpertAire™ series with R410a, thus optimizing this system's design and performance well in advance of the deadline.

Desert Aire has also submitted the ExpertAire™ Series to an independent testing laboratory for positive verification of its MRC's and MRE'S. The AHRI Certified seal is your reassurance of our unit's dehumidification capabilities

### FEATURES

Many applications need the removal of unwanted moisture. If unchecked, this moisture causes condensation on walls, windows and floors. This can create problems with a building's structural integrity and consequently endanger customers and employees.

In manufacturing, a humid environment can also contribute to lowered productivity by damaging product or increasing cycle times.

Desert Aire's ExpertAire™ Series products are designed for applications with air temperatures between 65° and 95°F (18° and 35°C) that require moisture removal between 4 and 100 lbs (2 and 45 kg) per hour.

An ExpertAire™ dehumidifier optimizes moisture removal by using a specially designed coil to maximize the system's latent capability, thus yielding 3 to 4 times the moisture removal capacity over a standard air conditioning system. Each system also includes a hot gas reheat coil that is sized for 100% rejection of the recovered energy. This coil allows the unit to continue to dehumidify without over-cooling the space.

These systems also feature an optional capacity control design which protects the coil from freezing during low temperature/low load operation. In addition, the system helps to eliminate high load nuisance service trips by re-balancing the refrigerant system. ExpertAire™ models are fully protected with IEC starters, overloads and refrigerant switches.

ExpertAire™ dehumidifiers feature scroll compressors for high efficiency and long life. Other components are also designed for longevity such as our cabinet which is manufactured from galvalume with a high impact, powder coat textured paint finish.

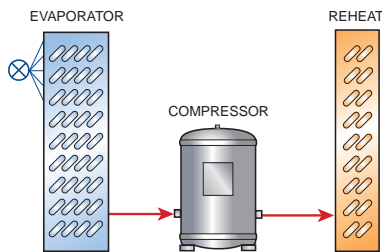
A distinct feature of these dehumidifiers is that they can be equipped with an outdoor air intake connection to help meet ASHRAE 62 standards. Outdoor air is introduced after the evaporator coil but prior to the reheat condenser to guarantee moisture removal capacities. In addition, the units are equipped with an evaporator bypass damper. This feature automatically adjusts the evaporator air volume to maintain proper air distribution over the coil in all modes of operation.

Our ExpertAire™ dehumidifiers also offer a control that enables the unit to completely close the outdoor air damper when a facility is in an unoccupied mode. Because no outdoor air is being introduced for ventilation, this feature eliminates the need to further condition the outdoor air (heating, dehumidification or cooling) which in return, helps save energy.

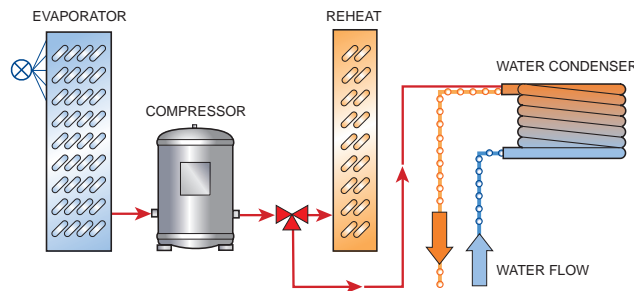
## REFRIGERATION CONFIGURATIONS

ExpertAire™ is available in one of the following five configurations.

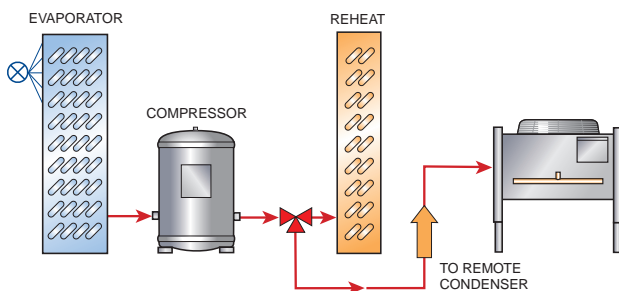
**REHEAT ONLY...** This is the standard design that removes moisture from the air at the evaporator coil and reheats the dehumidified air before returning it to the space.



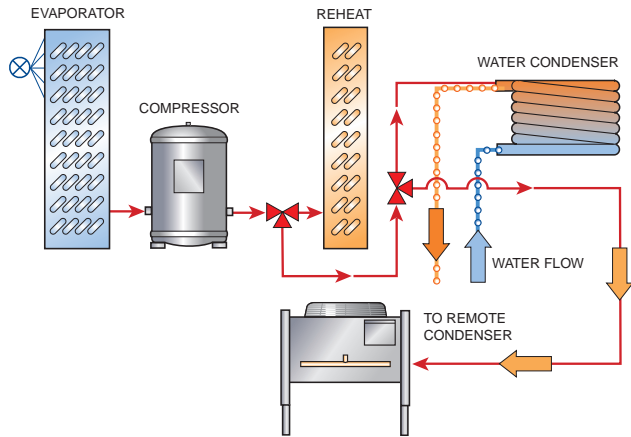
**REHEAT & WATER ...** In addition to the reheat coil, a water condensing coil is added to the circuit. Either circuit can become the primary heat sink allowing the circuit's latent and sensible energy to be directed to a water source or returned to the air.



**REHEAT & REMOTE CONDENSER READY ...** This option allows the dehumidification process to continue when cooling is required in the zone being conditioned.

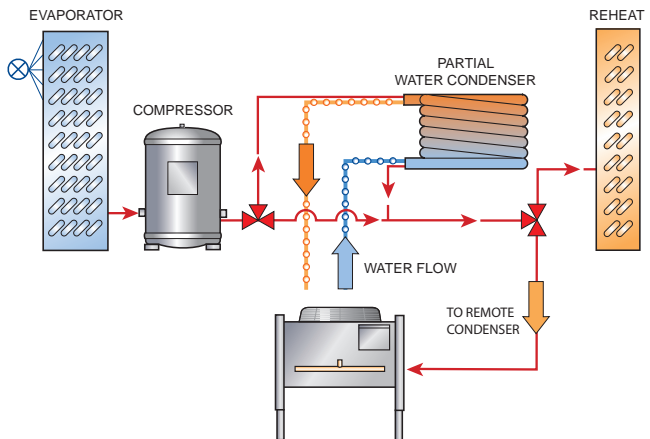


**REHEAT & WATER & REMOTE CONDENSER READY...** This is a combination of all heat sink options available. This option is chosen when pool water heating and air condition are all required. All heat sinks are sized to reject 100% of the recovered energy.



**REHEAT & PARTIAL WATER & REMOTE CONDENSER READY...**

Comprised of a partially sized water coil, a full sized reheat coil, a full sized remote condenser and two three-way valves, this circuit provides the most flexibility in heat rejection. The first three-way valve always provides the option to send refrigerant to the water condenser. After leaving the water condenser, the refrigerant is then sent to a second three-way valve which can transfer the remaining heat to either a reheat coil or remote condenser. However, if there is no call for water heating, the first three-way valve delivers the refrigerant to the second three-way valve which can then reject all energy either to the reheat coil or remote condenser.



For more information visit [www.desert-air.com](http://www.desert-air.com)

**DESERT  
AIRE**

## STANDARD EXPERTAIRE™ SERIES FEATURES

### FILTERS - THREE OPTIONS

- 4" MERV 8 filters

### EVAPORATION COIL

- R410a standard refrigerant
- standard rifled tube, lanced fin coils
- die-formed, aluminum, extruded fins are damage resistant

### DRAIN PAN

- stainless steel pan minimizes corrosion
- sloped design avoids hazardous puddling

### REFRIGERANT REHEAT COIL

- R410a standard refrigerant
- die-formed, aluminum, fins are damage resistant
- adequate coil separation avoids re-hydration

### STANDARD AUXILIARY HEAT OPTIONS

- auxiliary heat options are internal to horizontal (LC) units and external to vertical (LV) units.
- electric heat
- hot water coil

### ELECTRICAL SERVICE

- single point connection

### CABINET CONSTRUCTION

- horizontal (LC) unit panels constructed of sturdy 18-gauge galvanized steel
- vertical (LV) unit panels constructed of sturdy 20-gauge galvanized steel
- removable side panels provide easy access to all serviceable elements
- panels coated with high-yield polyester, textured, fingerprint-resistant powder-coat paint
- paint meets:
  - 1000-hour salt spray test
  - 160 in-lb direct impact resistance
  - 1000-hour humidity resistance

### INSULATION

- closed cell foam insulation superior to fiberglass insulation – eliminates fiber-release into air
- insulation meets:
  - ASTM mold, mildew, moisture resistance specifications
  - NFPA fire specifications
  - UL specifications

### AIR OR WATER-COOLED OR REHEAT OR COMBINATIONS (PAGE 3)

- reheat only
- reheat and water
- reheat and remote condenser ready
- reheat and water and remote condenser ready
- reheat and partial water and remote condenser ready

### ADDITIONAL OPTIONS INCREASE FLEXIBILITY

- premium high-efficiency blower motors available to help achieve LEED points
- optional Electrofin E-coating coil coating available for corrosive environments
- single phase available on 1-8 ton units
- unit-mounted optional power disconnects (fused and non-fused)
- contact factory for non-standard options
- units available in 1-15 tons

All referenced publications are available as PDF files at [www.desert-air.com](http://www.desert-air.com). Supporting literature includes:

- Technical Bulletin 5 - Ventilation Air for Indoor Pools
- Technical Bulletin 7 - Indoor Pool Dehumidification
- Technical Bulletin 8 - Pool Room Design Summary
- Application Note 10 - Swimming Pool Dehumidifier Sizing
- Application Note 11 - Industrial Dehumidifier Sizing
- Application Note 12 - Water Treatment Plant and Pumping Station Dehumidifier Sizing



Standard ExpertAire™ Horizontal Unit with Optional Outdoor Air Box



ExpertAire™ Horizontal Unit with Quick Disconnect and Protective Hood on Outdoor Air Box

## OPTIMIZING SOLUTIONS THROUGH SUPERIOR DEHUMIDIFICATION TECHNOLOGY

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## EXPERT HELP WITH YOUR POOL ROOM

### Dehumidification Protects Your Investment

Don't jeopardize your investment in an indoor pool by allowing excessive moisture to condense on and inside walls, ceilings and floors. Dehumidification controls humidity levels which can contribute to condensation and the growth of mold and mildew.

### Dehumidification Saves Energy Over Conventional Ventilation

Conventional ventilation systems attempt to control pool room humidity by exhausting warm, moist air and bringing in outdoor air. The result is huge annual energy expenses. As dehumidifiers dry the pool room air, they capture heat energy from warm air and the moisture it contains. By carefully choosing where to release energy, dehumidifiers can give you big savings on energy bills.

### Moisture Load Calculations

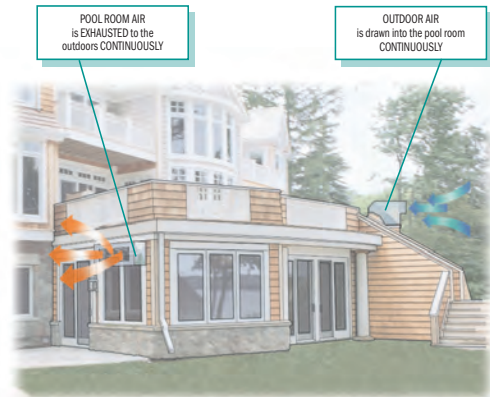
With thousands of successful installations in reliable operation, Desert Aire has the experience to provide the right dehumidification solution for your pool room. The key to proper moisture control is to understand how much moisture will be in the pool room air under various conditions. Desert Aire representatives use advanced software to calculate moisture loads and select the right dehumidifier quickly and accurately. *Application Note 10: Swimming Pool Dehumidifier Sizing* explains the theory behind the calculations.

### HVAC System Design Information

Your contractor is responsible for understanding the heating and cooling loads for a pool room, and the heating requirements for the pool water. You will need to agree on acceptable pool room air and water temperatures. Auxiliary heating and cooling needs beyond what can be supplied by the dehumidifier should be addressed by your contractor.

### Installation and Operation Support

Desert Aire's knowledgeable service personnel, plus a network of factory-trained refrigeration contractors, ensure excellent installation and service support. The most comprehensive warranty in the industry protects our dehumidifiers, remote condensers and controls



#### Conventional Ventilation

##### Cold Outdoor Air

Huge bills for heating outdoor air while previously warmed air is exhausted outdoors.

##### Hot Outdoor Air

Space is overheated when outdoor air is warmer than inside. Creates uncomfortable environment.

##### Humid Outdoor Air

Pool room humidity cannot be controlled.

#### With A Desert Aire Dehumidifier

##### Cold Outdoor Air

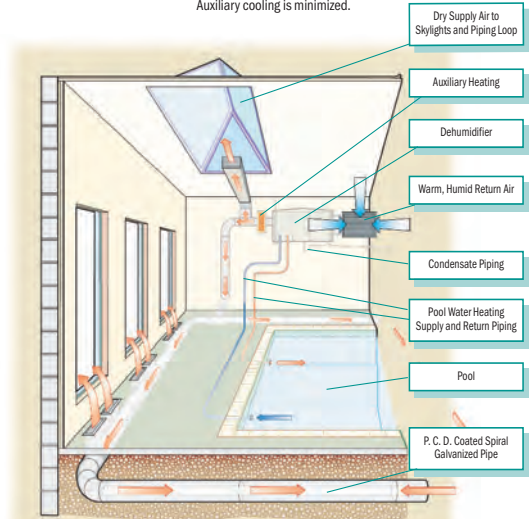
Captured heat is released into recirculating air to minimize auxiliary heating

##### Hot Outdoor Air

Dehumidifier cools by sending captured heat outdoors to remote condenser. Auxiliary cooling is minimized.

##### Humid Outdoor Air

Pool room humidity is carefully controlled.



Consult with a Desert Aire sales representative





### Proven Effective

The electro-deposition process is the most automatic, controllable, and efficient method for applying a corrosion inhibiting coating to a metallic work piece. The process dictates that all metal surfaces are coated in an even, uniform finish. All coil surfaces reach an average e-coat dry film thickness of 1 mil (0.001"). It meets the 5B rating cross-hatch adhesion per ASTM B3359-93. Corrosion durability is confirmed through testing to no less than 5,000 hours salt spray resistance per ASTM B117-90 using scribed aluminum test coupons.

### Comparison to Fin Stock Coatings

Not all coil coatings are the same. Many dehumidifier companies use a fin stock coating that is applied to the aluminum stock before the coil is manufactured. This means the edges of the fin, the copper tubes and the steel header remain uncoated.



Figure 2 - Photo of a coated coil

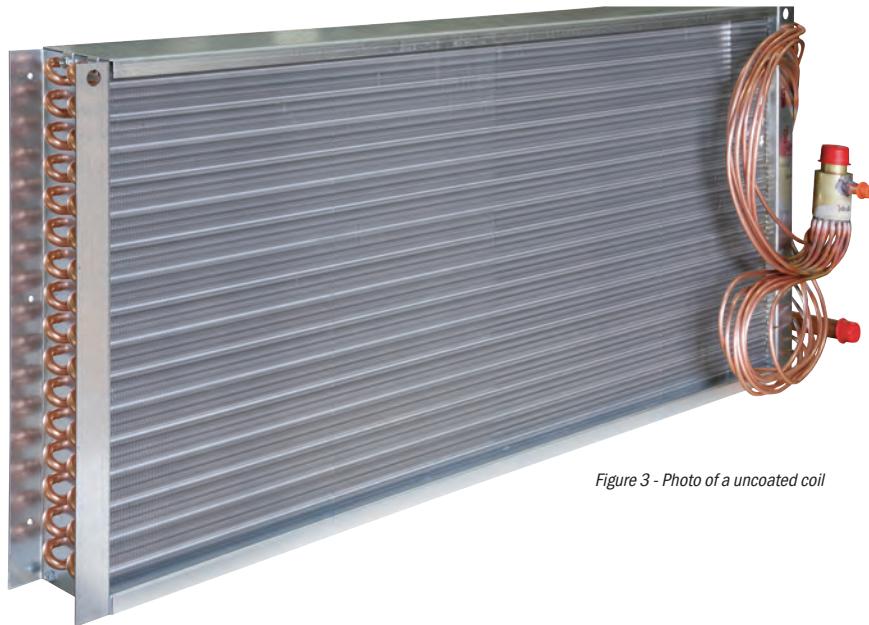


Figure 3 - Photo of an uncoated coil

CORROSION RESISTANT COILS

for more information: [www.desert-air.com](http://www.desert-air.com)



**OPTIONAL HOT WATER HEATING OPTIONS**

Desert Aire provides auxiliary heating options for its ExpertAire™ Series product line that are sized to meet the winter heating requirements of the zone.

Desert Aire sizes the heating elements to precisely match the load requirement of the system. This internal heating coil is a two row coil. The heaters are automatically controlled by the unit’s microprocessor to maintain zone temperature. A customer supplied hot water control valve is modulated from the controller with a 0 to 10 VDC direct acting signal. Please refer to figure 1 for a typical installation.

**HWC Design Inputs**

The coil is selected for each customer’s particular application based on the following criteria:

- Entering water temperature (EWT), typically between 140° F and 180° F
- Leaving water temperature (LWT), typically 20 degrees less than the EWT
- MBH capacity desired
- Entering air temperature (EAT), winter design for your area
- Leaving air temperature (LAT), typically neutral to a maximum of 100° F
- GPM flow rate desired
- If there are fluid pressure drop restrictions to be aware of.
- Type and concentration of glycol used

For freeze protection Desert Aire uses a capillary type temperature sensor which is attached across the downstream face of the coil. Freezestat is set at 38 °F with an auto reset switch. If engaged the unit controls would respond by closing the outdoor air damper, open the hot water coil valve 100%, and log the alarm on the controller.

To size the control valve, please provide a qualified vendor the water temperature, flow rate (gpm) and the requirement for a 0 to 10VDC signal and they will select the appropriate valve to purchase.

Optional ElectroFin coil coating is available.

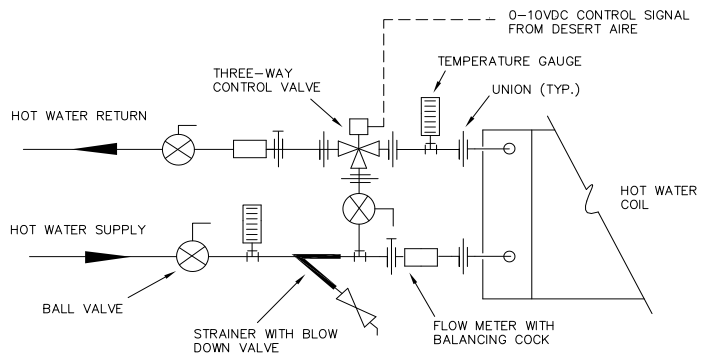


Figure 1 - Hot Water Piping Detail

**Consult with a Desert Aire sales representative**



### OPTIONAL AUXILIARY ELECTRIC HEATING OPTIONS

Desert Aire provides auxiliary electric heating options for the ExpertAire™ Series that are sized to meet the winter heating requirements of the zone.

Desert Aire sizes the heating elements to precisely match the load requirement of the system. The heaters are automatically controlled by the units microprocessor, using a two stage, time delayed sequence.

#### Design Specifications

The following list highlights the noteworthy features of the ExpertAire™ Series electric heaters:

- System Single Point Power to Dehumidifier
- NiCr 60 Corrosion-Resistant Element
- Welded Construction Using 20 MSG Galvanized Steel
- Automatic Reset High Temperature Limit Safety Switch
- Manual Reset High Maximum Temperature Limit Safety Switch
- Air Flow Pressure Switch
- Fusing as Required for Each 48 Amp Circuit
- Fused Circuits per N.E.C., UL, and CSA

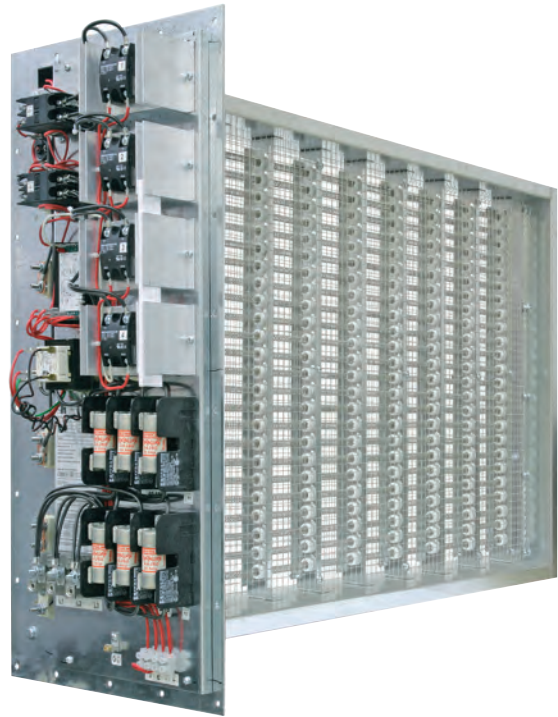


Figure 1 - Detail of Electric Heating Element for LC Series Unit



Figure 2 - Detail of Electric Heating Element for LV Series Unit

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