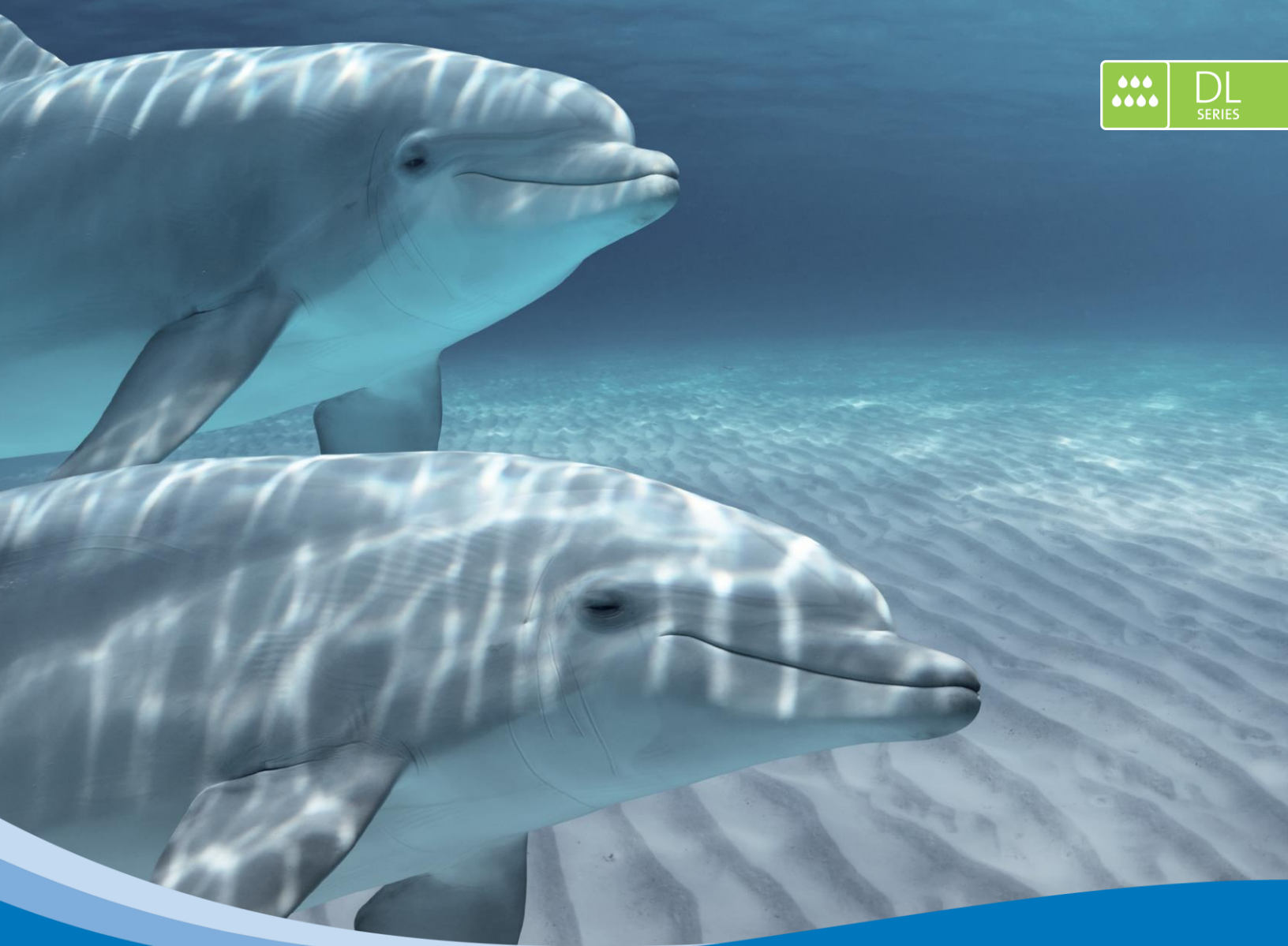




DL  
SERIES



# CONDAIR DL SERIES

In-duct evaporative humidifier and cooler

Selection Guide

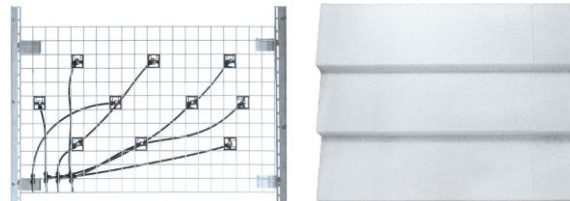


 **conda**ir

## Condair DL Series

### Two adiabatic humidification methods intelligently combined

The Condair DL hybrid humidifier is based exclusively on the advantages of the two humidification principles of atomization and evaporation. This results in the sustainable resolution of key problems which can emerge when these technologies are used individually. The humidification system is therefore the first choice in terms of hygiene, energy efficiency and cost-effectiveness.



#### Atomize + Evaporate

The humidifying water is atomized by stainless steel atomizing nozzles at low pressure. The atomizing nozzles have an adjustable spray output and are optimally distributed over the entire cross-section of the device. A high evaporation efficiency and a uniform humidity distribution are achieved by this layout.

The evaporator unit made of premium ceramic is placed at the end of the humidification distance. It captures the humidifying water and ensures the best possible re-evaporation. The ceramic plates thus allow the most effective utilization of the high-grade humidifying water, while also preventing water accumulation in downstream components.

#### Why the DL Series?



##### Efficient low-pressure systems

The low-pressure mode of operation translates to significant energy savings due to the lesser compression work.



##### Aerosol-free air

Using the patented ceramic evaporator unit, the humidifying water is completely separated from the air current and effectively evaporated.



##### Effective degermination

The HygienePlus® concept includes a series of measures for effective germ neutralization. The key element here is the patented silver ionization guaranteeing reliable hygiene and safety.



##### Precise control

The unique combination of the spray circuit drive and continuous water quantity control allows precise control accuracy.

Load Sizing

Humidifiers

Distributors

Controls

Accessories

Summary

Name:  Duplicate this zone:  
 DL Selection

Load Size Method:   
 System Type:    
 Calculation Method:

Set "System Type" to "In Duct Humidification"

Set "Calculation Method" to "Adiabatic"

**Load Calculations**

Ventilation Load (H):  
1,427.1 lbs/hr

Total Humidification Load (Htot):  
1,427.1 lbs/hr

Absorption Distance:  
0 ft

Duct Velocity  
278 ft./min

**Duct Details**

Duct Type:    
 Duct Orientation:

Duct Width (in.):   
 Duct Height (in.):   
 Duct Thickness (in.):

Enter the internal dimensions of the duct, **not** the size of humidification unit desired. HELP software will determine the appropriate humidifier dimensions.  
 Max. duct width for a DL unit is 330.7 in. (8400 mm), and max. duct height is 157.5 in. (4000 mm).

**Air Volume**

Outside Air (%):   
 Air Volume (CFM):

Maximum air velocity for the DL Series is 492.13 ft/min (2.5 m/s), or 787.40 ft/min (4 m/s) with a droplet separator.

"Outside Air (%)" is directly related to the amount of humidification capacity required – the more OA brought in, the higher the humidification load. To ensure proper performance of the humidifier, sizing must be based on the maximum amount of OA.  
**Note:** OA% will affect the quantity and configuration of nozzles required.

Selecting "Use Outside Design Conditions" will pull the ASHRAE weather data for your project location.

Select "Override Outside Design Conditions" to enter a custom altitude, outside temperature and outside humidity.

**Outside**

Altitude (f):   
 Outside Temp (°F):   
 Outside Humidity (%):

**Humidifier Conditions**

Leaving Temp. (°F): 70.23  
 Entering Temp. (°F):   
 Leaving Humidity (%): 42  
 Entering Humidity (%):

"Entering Temp" represents the air temperature entering the humidifier.  
 If there is a preheat coil upstream of the humidifier, "Entering Temp" is equal to the air temperature leaving this preheat coil.  
 It is important that this value is accurate as it will affect the sizing and performance of the humidifier.

Load Sizing

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Summary

## 2.2 Configure Product



Temperature drop due to adiabatic cooling effect.

Amount of preheat required.

Total pressure drop across the humidifier.

Estimated water to drain.

Total water sprayed by the system.

Total weight of the system.

Length of the AHU feed throughs.



### Solution

1 x DL Type A - Standard  
 DL A8382 3988 683 L 15 75 0  
 Adiabatic Cooling:  
 14.8 °F  
 Pre-Heat:  
 1517380 BTU/hr  
 Pressure Drop:  
 0.09 in. H<sub>2</sub>O  
 Water Losses:  
 9.4 US gal/hr  
 Total Water Usage:  
 1505.56 lb/h  
 Evaporator Weight  
 4053 lbs  
 Feed Through Length:  
 2.95 in

Model:

DL Type A - Standard

Type A: with booster pump  
 Type B: without booster pump

Most applications will use a Type A system. The booster pump ensures efficient performance of the low-pressure nozzles, helping to overcome static pressure in the duct.

Country:

Canada

Staging Control:

31

The number of stages is related to the level of control accuracy. More stages means higher precision.

Silicon Free Model:

Standard Evaporator

Choose the silicone free model to ensure components are free of any silicone residue. E.g., for painting applications.

Manifold Connection Side:

Left

Specify whether the connections leading to the nozzle grid will be leaving the left or right side of the central unit.

E.g. Left side connection  
 Right side connection



Load Sizing

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## 2.2 Configure Product



Service Access Upstream Only?



- 1 Checking this box notifies Condair that access space is required below the nozzle grid.

Cable Length:

<3ft

"Cable Length" refers to the distance between the control & central unit. The control & central unit rack is required for UL certification, so this value will always be "<3ft".

Hose Length:

16ft

- 2 "Hose Length" refers to the length of hose between the central unit and nozzle grid.

Section Length (in):

24.00

- 3 "Section Length" refers to the total length of the unit, from the start of the nozzle grid to the end of the ceramics.

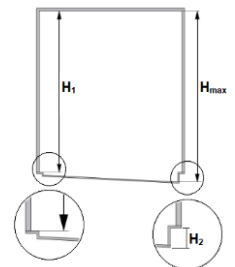
Maximum Duct Height (in):

161.00

"Maximum Duct Height" ( $H_{max}$ ) is equal to the internal height of the duct ( $H_1$ ) + the depth of the drain pan ( $H_2$ ). This value **must** be accurate. If "Maximum Duct Height" is less than "Duct Height" (pg. 2), order entry cannot be processed.

Example: From pg. 1,  $H_1 = 157$  in. If the drain pan has a depth of 4 in.,  $H_{max} = H_1 + H_2 = 157 + 4 = 161$  in.

**Note:** whenever "Duct Height" is changed, make sure to update "Maximum Duct Height" accordingly. Help Software does not do this automatically.

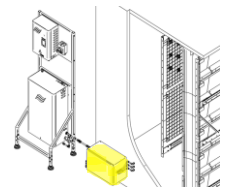


External Valve Block



Check this box if the valve block should be located external to the central unit, allowing the central unit to be placed up to 82 ft (25 m) away from the AHU.

**Note:** if this feature is selected, "Hose Length" then becomes the distance from the nozzle grid to the valve block.



Distance to Pump (ft):

20.00


"Distance to Pump" will appear if the external valve block is selected. This refers to the distance from the central unit to the valve block.

Droplet Separator (Optional)




The droplet separator will be automatically selected if air velocity exceeds 492.13 ft/min (2.5 m/s).

Select which options you would like to include. The most common are:

+



**DL, Clamping Bracket for Bottom Seal**  
DL\_OPTION\_15

This inexpensive option is necessary for all DL projects. The clamping brackets hold the rubber sealing in place against the bottom of the drain pan so that it does not lift due to the air velocity. This prevents air bypass under the ceramics, which can lead to lower system efficiency.

+


**Sterile Filter**  
DL\_FILTER


The sterile filter with automatic self-monitoring is installed upstream of the booster pump, extending the life of the booster pump. Provides additional hygiene safety.

+


**Leak Detection System**  
DL\_OPTION\_01


The leak detection system provides an additional safety sensor in the central unit. If the sensor detects the presence of water accumulating at the bottom of the central unit, it will shut down the unit and trigger a fault alarm.

Additional options:

+



**DL Water Temperature Monitoring**  
DL\_OPTION\_14

Water temperature value can be processed in the control unit to trigger a two-stage temperature flush. The flushing should prevent the hydraulic system from freezing due to the movement of the water.

+



**Compressed Air Flushing Connection for DL Type A**  
DL\_OPTION\_11

Additional fittings and connection points to allow the system to be dried and flushed with compressed air. This can be used for summer shut-downs, periodic inspections, or cases where additional flushing and disinfection is required.

+



**External drain**  
DL\_OPTION\_08

Used to flush the supply pipe from the reverse osmosis to the DL. When flushing, the water in the supply pipe will thereby not flow through the DL but will be guided into the drain. Please consider space conditions.

+



**DL External Water Filter**  
DL\_OPTION\_13

The external water filter serves as a pre-filter and is installed at the water inlet prior to the central unit.

+


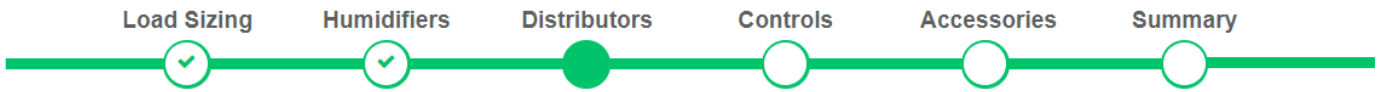
**DL Relay External Dosage H2O2**  
DL\_OPTION\_10

Germ neutralization can be carried out by H<sub>2</sub>O<sub>2</sub> disinfection rather than silver ions.

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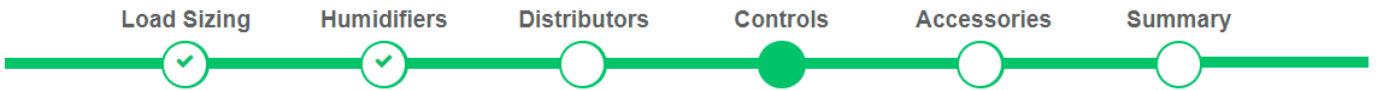
**Disinfection for Service**  
DL\_OPTION\_09

A T-connector and check valves are added to the hydraulic system, allowing a disinfectant to be introduced. Not recommended for systems with load > 400 lb/hr due to pressure loss.



**i** This product does not require a distributor configuration. Please proceed to the next step.

Distributors are not required for adiabatic humidification.



#### 4.1 Choose Selection Type

**i** Please select Manual or Assisted selection to configure controls for this zone.

Manual Selection  Assisted Selection  None

#### 4.2 Choose Controls



Controls by Condair



Controls by Others

**i** Please select the controls you require based on the signal type and channel.

Signal Type:

Channels:

#### Condair Single Channel Demand

|  |                                     |
|--|-------------------------------------|
| Channel 1 Location:  | <input type="text" value="Duct"/>   |
| Outdoor Temperature Sensor:                                      | <input type="text" value="None"/>   |
| Include Air Proving Switch:                                      | <input checked="" type="checkbox"/> |
| Include On/Off High Limit Switch:                                | <input checked="" type="checkbox"/> |
| Building Automation System Gateway: <a href="#">More Info...</a> | <input type="text" value="Modbus"/> |

The DL is equipped with the Next Generation Integrated Controller which includes Modbus and BTL (BACnet Testing Laboratories) Certified BACnet IP and BACnet MSTP as standard. Selecting these here does not add any items to the bill of materials but ensures the unit ships ready to be configured.

Lonworks capability (add-on card) can be selected for an additional charge.

| Tag          | Description   | Part Number | Qty |
|--------------|---|-------------|-----|
| DL Selection | Switch Air Proving (duct airflow safety interlock)  | 2598427     | 1   |
|              | 0-10V Dig. Duct Humidistat pkg                      | 2597929     | 1   |
|              | Humidistat, On/Off, High Limit, Digital, Duct Mount | 2597935     | 1   |

An air proving switch and high limit device are always required, whether supplied by Condair or others.

Load Sizing    Humidifiers    Distributors    Controls    Accessories    Summary



Please select any common options you would like for this zone. You may edit the quantity where applicable.

Accessories can be selected as desired.

Load Sizing    Humidifiers    Distributors    Controls    Accessories    Summary



Below is the list of materials for this zone. You can add another zone or go back to the project home page to view your bill of materials and generate documents.

### Complete Parts and Humidifiers List



This section displays a summary of the full system selection. One DL consists of several components, all of which are indicated with the "DL\_" prefix.

| Tag          | Description   | Part Number                 | Qty |
|--------------|---|-----------------------------|-----|
| DL Selection | DL Type A - Standard                                | DL A8382 3988 683 L 31 75 0 | 1   |
|              | Central Unit Rack                                   | DL_OPTION_06                | 1   |
|              | 31 Stage Control Option                             | DL_REGELUNG_31              | 1   |
|              | DL External Valve Block                             | DL_OPTION_12                | 1   |
|              | 0-10V Dig. Duct Humidistat pkg                      | 2597929                     | 1   |
|              | Humidistat, On/Off, High Limit, Digital, Duct Mount | 2597935                     | 1   |
|              | Switch Air Proving (duct airflow safety interlock)  | 2598427                     | 1   |

Core DL unit

Specific configurations, additional options, controls & accessories



**Questions?** For help with any of your humidification projects, contact your local Condair representative.

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