

# Aircel

## Desiccant Air Dryers

### AHLD Series

### Heatless Desiccant Air Dryer

70 - 8,000 scfm



# AHLD E-Series Heatless Dryer

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### 70 - 8,000 scfm

Since 1994, Aircel has been delivering quality, industry leading compressed air dryers and accessories for production lines and facilities all over the world.

Our precise engineering and designs provide reliable products that will protect your operations for years to come.

Based in Maryville, Tennessee, Aircel is a multi-industry manufacturing leader. Aircel's highly-specialized, engineered products and technologies are powering facilities all over the world. Our products serve industries such as textile, food and beverage, automotive, production, PET market, breathing air, pneumatic instrumentation, and more.

Designed for maximum energy savings, the Aircel AHLD E-Series dryers are reliable, **fully automatic, heatless desiccant dryers with integrated Energy Management System for purge reduction**. Each model combines innovative engineering and technically advanced, highly durable components to produce the most reliable heatless dryers available on the market.

The Aircel Programmable Controller (APC) provides complete, reliable control of the system with text descriptions of each step in the sequence of operation.

The AHLD E-Series reliable operation and robust valving requires virtually no user adjustment or maintenance. **Our precision engineered components and design deliver outstanding service life and operational durability.**

For ease of installation, ultimate dryer protection, and downstream customer process protection, the AHLD E-Series comes complete with standard filtration system consisting of inlet coalescing pre-filter with automatic drain and outlet particulate after filter with manual drain.



### AHLD Series At a Glance

- Heatless adsorption produces continuous low dew point without heat and dew point spikes at switchover. This provides a simple, reliable, and cost-effective compressed air dryer system.
- Integrated Energy Management System maximizes your return on investment by delivering significant energy savings even during various loads and air demands.
- A relative humidity sensor with light and alarm is included in the middle of each tower to maintain dew point.

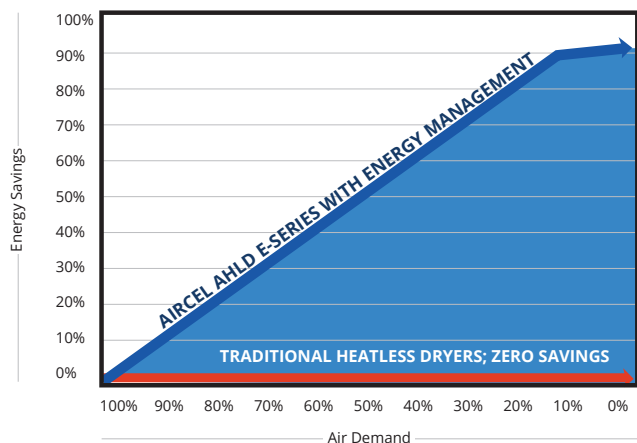


# Energy Management Made Standard

The Aircel Programmable Controller (APC) with Energy Management System (EMS) is standard on the AHLD E-Series dryer systems. This EMS, or demand cycle control system, reduces purge air and optimizes dryer performance by monitoring the moisture at the mid portion of the tower desiccant bed. This allows for quick response to moisture changes while maintaining the low outlet dew point.

The control system automatically adjusts the regeneration cycle, maintaining outlet dew point and extending the drying cycle during periods of lower loading. Switching is less frequent, reducing dryer maintenance and fully utilizing desiccant capacity. This addition improves reliability and performance while sustaining the low outlet dew point. **The end result is an overall purge reduction and significant energy savings.**

- Integrated Energy Management System maximizes your return on investment by delivering significant energy savings during varying loads and air demands.
- Constant mid-bed desiccant humidity monitoring ensures a low outlet dew point throughout cycle.
- Controller displays energy savings (hours), cycle modes (dryer operation) and alarm conditions.
- Outlet dew point selection and dew point displayed (provided with outlet dew point monitoring option)



# AHLD E-Series | Standard Features

## Tower Pressure Gauges

Large, easy-to-read 3.5" diameter dial

## Inlet Valves

Highly reliable, long-life, and consistent operation designed to reduce seal wear and leakage. Models up to 750 scfm have automatic piston valves. Models 1000 and up utilize high performance butterfly valves.

## Regulated and Filtered Pilot Air

Ensures reliable pneumatic control operation

## Mounted Pre and After Filter

- 1 micron pre-filter with automatic condensate drain
- 5 micron outlet after filter with manual drain

## Aircel Programmable Controller (APC)

- NEMA 4 steel electrical enclosure
- Power On/Off switch and light
- Dryer operation status, alarms, and energy savings displayed
- Electrical panel UL 508A rated
- Keypad push button

## LED Tower Operation

Indicates sequence of operation (drying and regenerating) for towers

## Pilot Solenoid

Highly reliable and long lasting



## Outlet Valves

Highly reliable, long-life, and consistent operation designed to reduce seal wear and leakage. Models up to 750 scfm have automatic piston valves. Models 1000 and up utilize check valves.

## Thermal Relief Valves

ASME UV stamped set at 200 psi for models below 750 scfm; 150 psi for models above 1,000 scfm

## Desiccant Fill Port

For easy desiccant replacement of premium grade activated alumina with high moisture capacity

## Energy Management System

Monitors mid-bed humidity, saving energy by extending drying times and reducing overall regeneration purge

## ASME Carbon Steel Vessels with High Efficiency, Premium Grade Desiccant

- Below 750 scfm: 200 psi at 450°F
- Above 1000 scfm: 150 psi at 450°F

## Desiccant Drain Port

For easy desiccant removal

## Purge Exhaust Mufflers

For low noise with built-in safety relief valve

## Purge Exhaust Valves

Highly durable valve. Models up to 1,250 scfm have angle-body piston valves. Models above 1,500 scfm have high performance butterfly valves

## Rugged Steel Frame

Mounted on durable platform

## Standard Features

- All pneumatic control package (no electricity required)
- Various configurations of pre-piped filters and bypass valve packages
- Failure to switch alarm using pressure transducers (monitors for correct vessel pressure during dryer operation, energizes alarm if incorrect)
- Outlet dew point monitoring
- Optional communications: Profibus-DP, AS-I, CANpen, DeviceNet, and Ethernet
- High pressure dryer system up to 7,000 psig
- NEMA 7 explosion-proof electrical classification (class 1, division 2, group C and D)

## Optional Equipment

- Remote start/stop control
- Stainless steel desiccant supports and air diffusers to prevent channeling
- Counter current regeneration, upflow drying, and downflow depressurization
- 3/16" premium grade F200 activated alumina high capacity desiccant for pressure dew point performance
- Easy installation with single point connection for electrical supply power and inlet/outlet air connections
- Dry relay contact alarm for remote indication of system alarms
- Adjustable (5 & 10 minute) NEMA cycle
- Standard communication through RS-232/RS-485 combo port

## AHLD Dryer Configurations & Options

	AHLD-E	CDP	AHCR	AHLD300PSI
<b>Dew Point</b>	-40°F	-100°F	-40°F	-40°F
<b>Energy Management System Standard</b>	√	X	√	Optional
<b>Electrical Enclosure</b>	NEMA 4	NEMA 4	NEMA 4X	NEMA 4
<b>Optional All Pneumatic Control</b>	√	√	√	√
<b>Control Air and Instrument Tubing</b>	Nylon	Nylon	304 Stainless Steel	304 Stainless Steel
<b>ISO 8573.1 Air Class</b>	2.2.2	2.1.2	2.2.2	2.2.2
<b>Paint</b>	Alkyd Enamel	Alkyd Enamel	Epoxy, Maritime	Alkyd Enamel

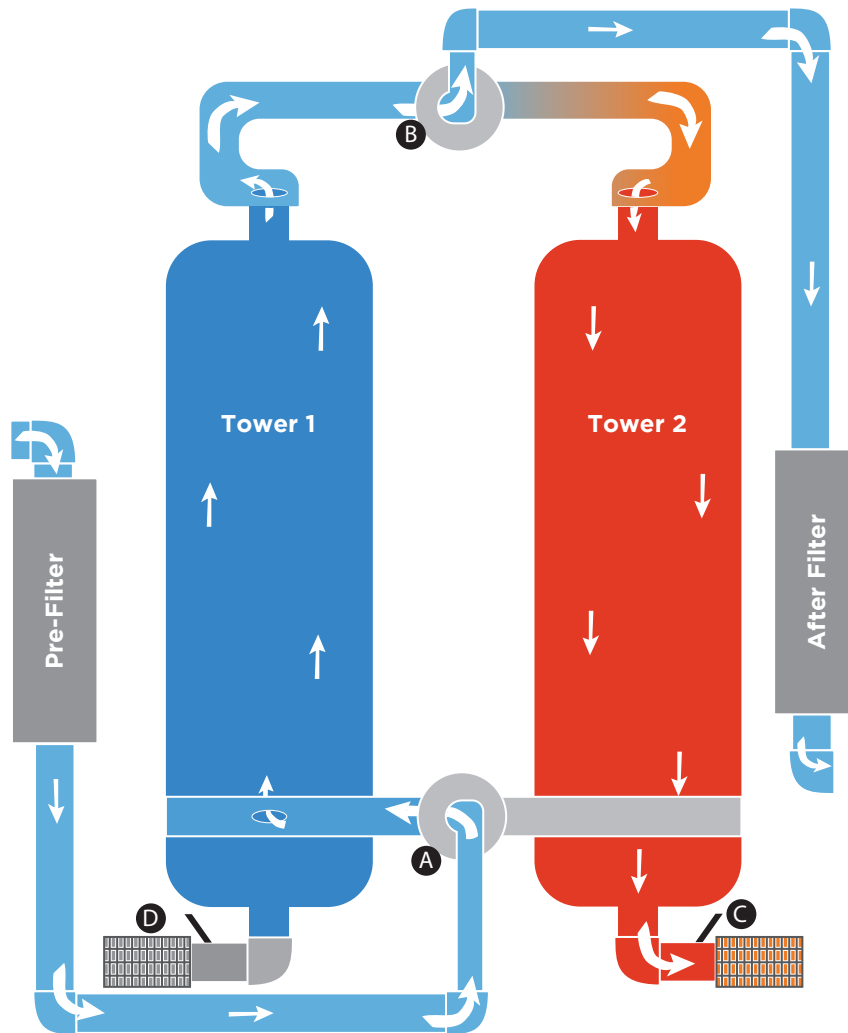
**Critical Dew Point Series (CDP)** • The CDP Series provide an ultra-low -100°F outlet dew point in a heatless, regenerative desiccant dryer. Designed to ensure low dew point for critical applications such as semi-conductors, cryogenics, and medical devices.

**Corrosion Resistant Series (AHCR)** • The AHCR Series is a rugged desiccant dryer with NEMA 4X stainless steel electrical enclosure, stainless steel control air tubing, no yellow metals, and marine-grade industrial paint (UV resistant outdoor, caustic resistant paint) applied with the Aircel Premium Paint Process.

**300 PSI Max Pressure Series (AHLD300PSI)** • The AHLD-300 PSI heatless dryer series combines the reliability and efficiency of the AHLD, plus a maximum pressure rating of 300 psig and a maximum working pressure of 270 psig.



## AHLD E-Series | How It Works



- Compressed air flows through the pre-filter to remove oil and then enters the on-line Tower 1 through valve (A).
- Air moves upward, where the desiccant removes moisture from the air stream. The majority of clean, dry compressed air exits valve (B) and cycles through the after filter to then flows downstream.
- During the drying process, a small amount of the clean air exiting valve (B) travels to Tower 2 (shown in regeneration mode) to assist in the regeneration process.
- To regenerate Tower 2, valve (C) opens and the tower is depressurized to near atmospheric pressure. The air flowing from valve (B) moves down the tower, removing moisture from the desiccant bed. Once it travels to the bottom of Tower 2, it exits the tower through valve (C) and the exhaust muffler to ambient.
- Once Tower 2 is fully regenerated, valve (C) will close, repressurizing Tower 2 to line pressure with the slight airflow coming through valve (B).
- Next, valve (D) will open to depressurize Tower 1 and valve (A) will switch (not pictured), directing wet incoming air to Tower 2 for drying while Tower 1 is regenerating the desiccant bed.
- This process will repeats continuously every 5 minutes unless the Energy Management System is extending drying time period during low load conditions to a maximum of 30 minutes each cycle. The Energy Management System continually monitors the mid-bed humidity level in the drying tower to save energy by extending the drying cycle (up to 30 minutes).

# AHLD E-Series | Specifications

Model Number	Capacity	Voltage	Connection	Weight (lbs)	Dimensions (in.)		
					Height	Width	Depth
AHLD-70 E	70	115-1-60	3/4" NPT	410	72	26	22
AHLD-100 E	100		1" NPT	490	75	30	24
AHLD-150 E	150		1" NPT	560	75	30	24
AHLD-200 E	200		1-1/2" NPT	800	85	34	24
AHLD-250 E	250		1-1/2" NPT	870	85	34	24
AHLD-300 E	300		1-1/2" NPT	990	86	46	30
AHLD-350 E	350		2" NPT	1,020	87	46	30
AHLD-450 E	450		2" NPT	1,140	87	46	30
AHLD-500 E	500		2" NPT	1,250	89	50	30
AHLD-600 E	600		2" NPT	1,450	89	50	30
AHLD-750 E	750		2" NPT	1,850	90	50	30
AHLD-1000 E	1,000		3" FLG	2,800	94	66	40
AHLD-1250 E	1,250		3" FLG	4,000	98	70	40
AHLD-1500 E	1,500		3" FLG	4,600	99	70	40
AHLD-2000 E	2,000		4" FLG	5,800	109	82	50
AHLD-2500 E	2,500		4" FLG	7,800	120	109	65
AHLD-3000 E	3,000		4" FLG	9,200	120	118	65
AHLD-3500 E	3,500		6" FLG	9,900	120	120	70
AHLD-4000 E	4,000		6" FLG	10,900	120	128	70
AHLD-4500 E	4,500		6" FLG	12,100	120	128	70
AHLD-5000 E	5,000	6" FLG	13,200	131	138	80	
AHLD-6000 E	6,000	6" FLG	15,800	131	138	80	
AHLD-7000 E	7,000	8" FLG	17,700	156	148	97	
AHLD-8000 E	8,000	8" FLG	19,300	164	150	97	

Capacity rated in accordance with CAGI ADF 200 @ 100 psig, 100°F inlet, 100°F ambient and a PDP of -40°F

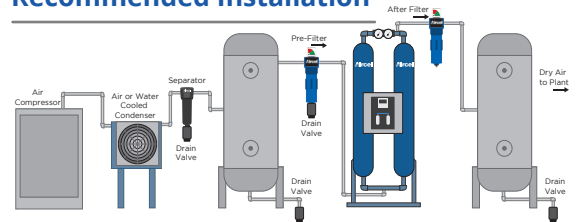
**Operating pressure:** 60 to 180 psig (models 70 - 750); 60 - 135 psig (models 1,000 - 8,000)

**Ambient air temperature:** 38°F to 120°F

**Inlet air temperature:** 40°F to 120°F

For larger capacities, higher pressures, and custom dryer options, please contact an Aircel factory representative

## Recommended Installation



## Capacity Correction Factors

### To Size the Dryer Capacity for Actual Conditions

Adjusted Capacity = scfm x C1 x C2

Example:

Dryer Model: AHLD-100  
 Standard Capacity: 100 scfm  
 Actual Operating Conditions:  
 100°F inlet temperature: C1 = 1  
 120 psig system pressure: C2 = 1.8

Adjusted Capacity: 100 scfm x (1 x 1.8) = 118 scfm

### To Size the Dryer Model for Actual Conditions

Adjusted Capacity = scfm / (C1 x C2)

Example:

Given Flow: 350 scfm  
 Actual Operating Conditions:  
 100°F inlet: C1 = 1  
 120 psig system pressure: C2 = 1.18

Adjusted Capacity: 350 scfm / (1 x 1.18) = 297 scfm  
 Selected Dryer Model: AHLD-300

### Correction Factors for Differing Inlet Air Temperature (C1)

Inlet Temperature (°F)	70	80	90	100	105*	110*	115*	120*
Correction Factor	1.2	1.15	1.1	1	0.9	0.8	0.7	0.6

\* For inlet temperature above 100°F, molecular sieve desiccant is required.

### Correction Factors for Differing System Air Pressure (C2)

System Pressure (psig)	60	70	80	90	100	110	120	130	140	150
Correction Factor	0.65	0.73	0.82	0.91	1	1.09	1.18	1.27	1.35	1.44

\* For inlet pressure above 135 (models 1,000+), consult factory.



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