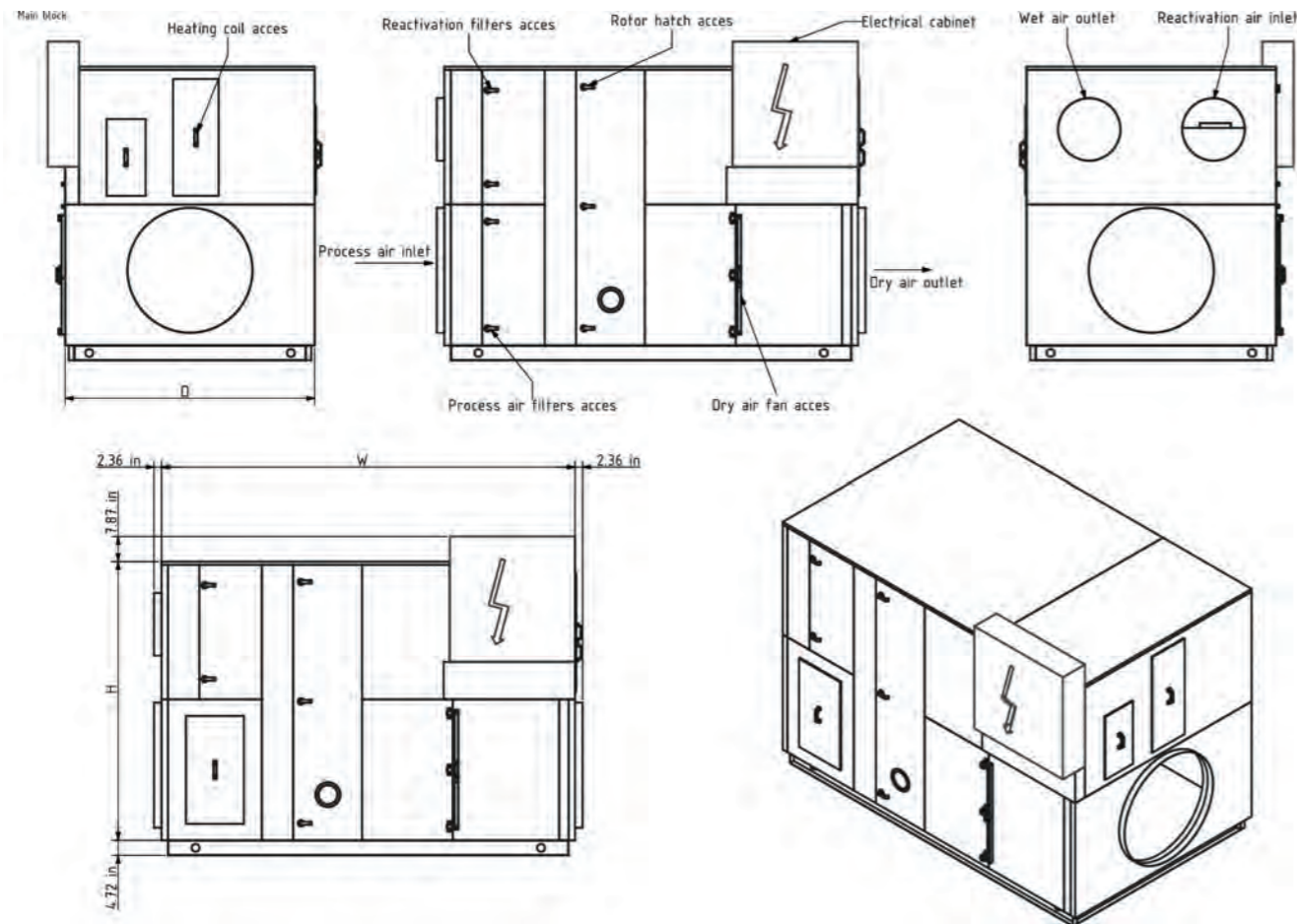


## Measurements & sizes / Dimensions

The DESSICA DS units are composed of a central block and upstream or downstream complementary modules (air to be treated and/or dry air).

### Main block



\*on DS1 and DS2, wet air outlet on back side

Size	Lenght		Height		Depth		Main block		Additional modules (without chassis)	
	mm	in	mm	in	mm	in	kgs	lbs	H mm	H in
DS 1	1704	67	1294	51	930	37	500	1102	793	31
DS 2	1804	71	1494	59	1350	53	700	1543	793	31
DS 3	2304	91	1494	59	1550	61	900	1984	893	35
DS 4	2904	114	2030	80	1850	73	1750	3858	1198	47
DS 5	3304	130	2229	88	2100	83	3400	7496	1323	52

Execution dimensions, especially length from complementary modules, are defined on project phase. DS 5 central section is delivered in two parts. Add-on modules are also delivered separately to be mounted on site.

**DESSICA**  
dry air technics

NORTH AMERICA BUSINESS PARTNER  
EUREACH  
1545, boul. de l'Avenir, Suite 220,  
Laval (Qc), CANADA, H7S 2N5  
Phone: +1 866 613 4280

HEADQUARTER  
30 allée des artisans  
Parc d'activités de Fétan  
01600 Trévoux - FRANCE  
Phone: +33 4 74 08 44 44  
info@dessica-dryair.com

www.dessica-dryair.com

## DS product range

Modular units for dehumidification and air treatment



- Modular and adaptable
- Double skin insulation 2 inches
- PLC automated control
- Indoor & outdoor versions
- Integrated Heat Recovery

### Description

**DESSICA DS** systems are modular dehumidification and air treatment units (hygrometry, temperature and dust) specially designed to meet the requirements of users for building or industries.

These systems include the latest innovations for adsorption desiccant rotors and use the new energy saving system (Dessica's patent).

DESSICA DS systems offers a complete solution including filtration, heat exchangers and adapted regulation system.

The third generation PPS and PPX silica gel desiccant rotors mounted on our air dryers contains a high active silica gel component. It provides a high dehumidification performance and reduce energy consumption compared to other silica gel desiccant rotors of the same dimensions.

They are made of self-supporting panels (pre-lacquered sheet, galvanized steel or stainless steel 304L or 316L) double skinned (without aluminum sides) insulated by 2-inches high-density mineral wool. Two models are available: outdoor or indoor installation.

Envelope (Classified according to EN1886)

Mechanical resistance: class 2A

Thermal performance :

- Thermal transmission : class T2
- Thermal bridging : class TB2
  - Filter drift leak : class F9
  - Airtightness casing : class B

### Applications

DESSICA DS systems supplies dry air to drying processes, production processes or again packaging and storage environments. They are designed to treat air or be installed in air conditions between 5 F and 105 F (-15 °C and 40 °C).

Mastering hygrometry makes it possible to control specifics products or systems :

- the production capacity of drying systems (ovens, towers, fluidized beds, etc...)
- clogging and bulking of pulverized products
- corrosion
- condensation
- the quality of hygroscopic materials
- the development of bacteria and the spread of micro-organisms
- icing
- the humidity level of buildings
- mold

Some industries such as **pharmaceutical, food processing, energy, metallurgy and electronics** requires a precise and high dry air quality, this is what DESSICA DS systems provide.

## Operating principle of the desiccant rotor with an integrated heat recovery



The DS system uses two independent air flows. The main air flow will be dried, the secondary air flow of lesser volume will be used to evacuate the moisture retained by the desiccant rotor.

Two fans move two distinct air streams through the desiccant rotor. The main air stream or air to be treated passes through the slowly rotating silica gel rotor. Silica gel is a high-performance hygroscopic material able to retain the moisture content from ambient air. By floating through the rotor, the humid air loses its moisture captured by the silica gel material. The dry air is then totally usable.

The secondary air flow, called reactivation air, serves to evacuate the moisture retained by the rotor silica gel component. A part of the air volume passes through the rotor by the heat recovery sector, cooling down the dehydrating material by simultaneously raising the air temperature. The remaining flow by-passing the rotor is mixed with the purge flow.

The preheated air is then brought to a final temperature of approximately 210 F to 270 F (100 °C to 130 °C) by additional heating provided by electric, steam or direct gas coil. It will then pass through the rotor by counter current from process air flow to dry off the silica gel from its moisture. The moisture air (wet air) leaves the dryer to be evacuated outside the premises or building.

## DS units installed Indoor (examples)



## DS units installed Outdoor (examples)



## Configuration

In addition to adsorption air-drying system, DESSICA DS units can integrate the following equipment and functions :

- Reactivation heater :
  - steam heat exchanger
  - water heat exchanger
  - direct gas burner
  - electrical heater
- Filtration :
  - Pre-Filtration G4 to F8 (one or two rows)
  - Final filtration F8 to H14
- Air flows isolation (manual or motorised dampers)
- Post-heating or post-cooling :
  - chilled water heat exchanger
  - hot water or steam heat exchanger
  - electrical coil
  - direct evaporative cooler
- Humidification :
  - steam humidifier
  - trickle humidifier

Each system can be supplied with an electrical cabinet grouping power and control elements including :

- LED (voltage presence / start / defaults alarm)
- emergency stop function
- PLC with a monitor
- buttons (Clearance / ON / OFF)

The standard information or orders are as follows :

- remote operation order
- default warning
- return to operation
- emergency stop remote

The following items are available on screen :

- operating mode
- defaults
- setpoint settings and control parameters (if present).

The automated control panel supports the following functions:

- start and stop sequence
- machine safety
- defaults & warning

Available options :

- MODBUS communication
- humidity control
- temperature control
- air flow control
- graphic control screen
- historical data
- wheel rotation control
- filling filters control
- GSM communication module (incompatible with MODBUS)

## DESSICA DS system selection

DS system size depends mainly of the front air velocity towards the various internal components, therefore the process air flow. Each component must be selected according to its own selection criteria. Usually, the desiccant rotor, the filtration systems, the chilled and hot water heat exchangers selection is crucial to define the casing sections from a DS unit. Other parameters may limit the airflow, such as the level of humidity or filtration to be achieved on outlet air or as well the fan's dimensions.

The quick selection tables below are based on the sole criteria from desiccant rotor

Ø rotor	mm	in																					
Size 1	450	18																					
	550	22																					
Size 2	630	25																					
	700	28																					
	770	30																					
Airflow CMH			400	800	1 200	1 600	2 000	2 400	2 800	3 200	3 600	4 000	4 400	4 800									
Airflow CFM			236	472	708	944	1 180	1 416	1 652	1 888	2 124	2 360	2 596	2 832									

Ø rotor	mm	in																					
Size 3	870	34																					
	965	38																					
	1 050	41																					
Size 4	1 220	48																					
	1 300	51																					
	1 370	54																					
Size 5	1 525	60																					
	1 730	68																					
Airflow CMH			1 500	3 000	4 500	6 000	7 500	9 000	10 500	12 000	13 500	15 000	16 500	18 000	19 500	21 000	22 500	24 000					
Airflow CFM			885	1 770	2 655	3 540	4 425	5 310	6 195	7 080	7 965	8 850	9 735	10 620	11 505	12 390	13 275	14 160					