



# DFRIGO series

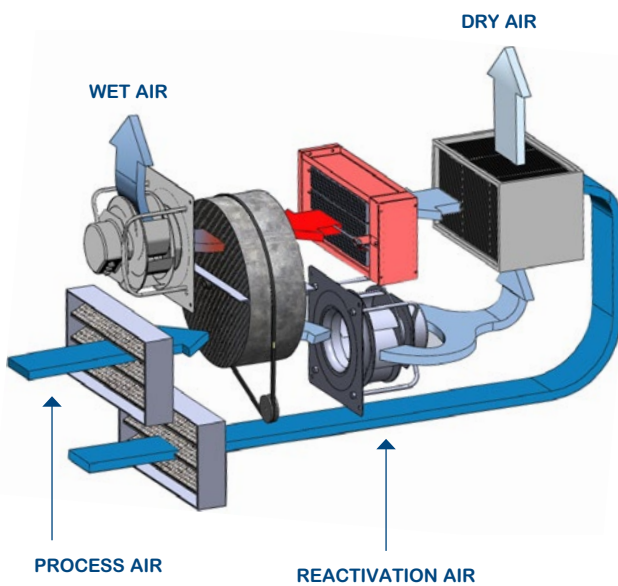
Desiccant rotor  
air dehumidifiers for  
refrigerated zones  
and processes



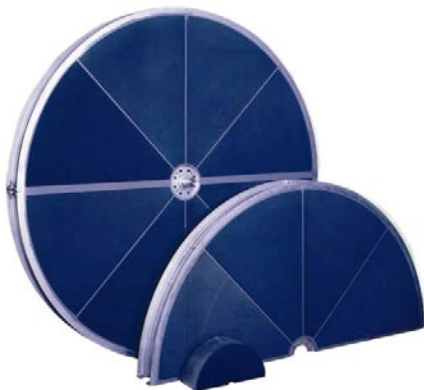


## Description

### Operating principle



### Fisair desiccant rotors



Our DFRIGO series dehumidifiers work in a very simple way, which consists in the constant and simultaneous flow of two airflows through a desiccant rotor in opposite directions, and through a recovery plate heat exchanger. An airflow for drying (process air) and an airflow of rotor reactivation (wet air). After filtering, the process air enters the desiccant rotor, and relinquishes most of its water vapour content. It is then extracted from the dehumidifier using an EC fan as dry air, passes through the recovery plates where it gives up the sensible heat gained in the rotor, and is subsequently driven into the system or zone being treated. The recovery plates enable an isenthalpic dehumidification process. The rotor reactivation air is taken from the exterior, filtered, preheated in the recovery plates and post-heated by an electric heater. When it is hot enough to transport the water vapour held in the desiccant rotor, an EC fan extracts this wet air from the dehumidifier, and drives it out of the unit.

### ADVANTAGES



- **Prevention of the formation of ice and frost.**
- **Reduction in installation energy consumption.**
- **Operating without breakdowns or accidents at work caused by ice.**
- **Increase in refrigerated product quality**

The design of our dehumidifiers fosters uniform and constant working, as well as easy installation and minimal maintenance. High performance silica gel desiccant rotors dehumidify the treated air through the adsorption of water vapour molecules, which means their behaviour does not change in low humidity conditions. Synthesized silica gel is a chemically and thermally stable material, which does not therefore deliquesce, as in the case of other desiccant materials. Consequently, its performance over time is constant, and our units have a long operating life. Its chemical resistance and the fact it can be washed with water results in its longevity. Standard units achieve treated air humidity levels with dew points up to  $-25^{\circ}\text{C}$ , or even lower on demand.

## Technical data

**Our range of DFRIGO dehumidifiers covers the needs of a large number of refrigerated processes in which ambient humidity is a problem.**



DFRIGO models

		DFRIGO-0200	DFRIGO-0400
Process/dry air	(m <sup>3</sup> /h)	1350	2700
Dry air available pressure	(Pa)	180	900
Wet reactivation air	(m <sup>3</sup> /h)	800	1570
Wet air available pressure	(Pa)	550	440
RC (reactivation coil) electrical power	(kW)	13,5	24
Total electrical power	(kW)	15,3	28,2
Specific capacity ΔX (*)	(g/kg)	1,26	1,21
(Dry air) Dry bulb temp./Dew point temp.(*)	(°C)	-6/-27	-6/-27
Drying capacity (*)	(kg/h)	2,3	4,3
Dimensions (mm)	Length (A)	1850	1890
	Width (B)	1020	1240
	Height (C)	1345	1485
Weight	(kg)	320	540

(\*)

Technical data are subject to change without prior notification.

1. Process and reactivation air input conditions -10°C and 95% R.H.  
For other conditions, consult capacity diagram.
2. Performance according to rated installed heater power.
3. 400V / III / 50 Hz electricity connection and 24 Vcc operating voltage.  
Other power supply available.



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Air dehumidifiers  
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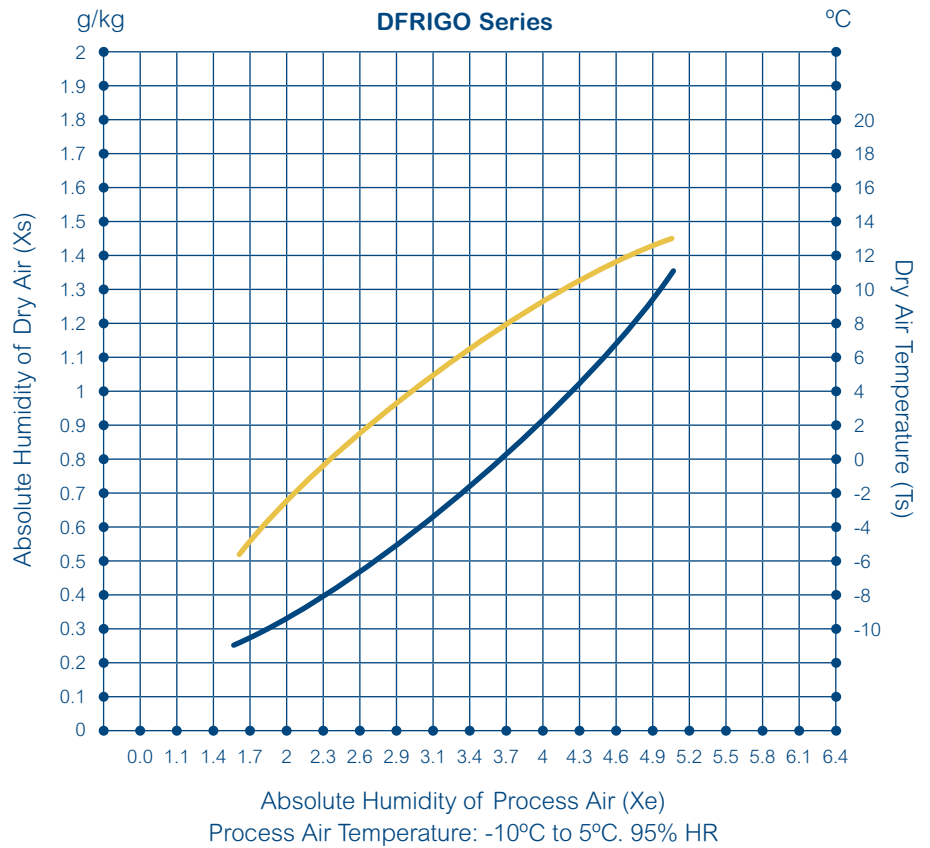
### Graphs of capacities (\*)



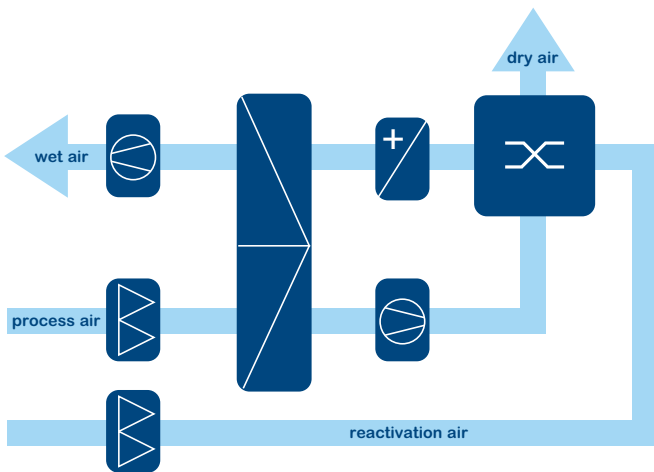
Technical data subject  
to change without prior notification

(\*)

For other operating conditions,  
request the corresponding capacity

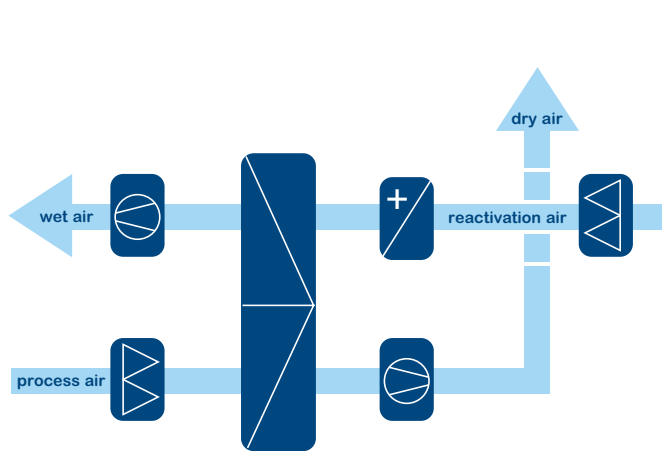


#### DFRIGO ECO



- Designed to prevent ice and condensation by drying the air at the loading gock (or prechamber) of the cold storage.
- Optimized for process air and reactivation air at the same conditions (temperature and humidity).
- Integrated heat recovery system.
- High-efficiency motor-driven centrifugal ventilator with EC tecnology.
- ErP 2016 ready.

#### DFRIGO HPR

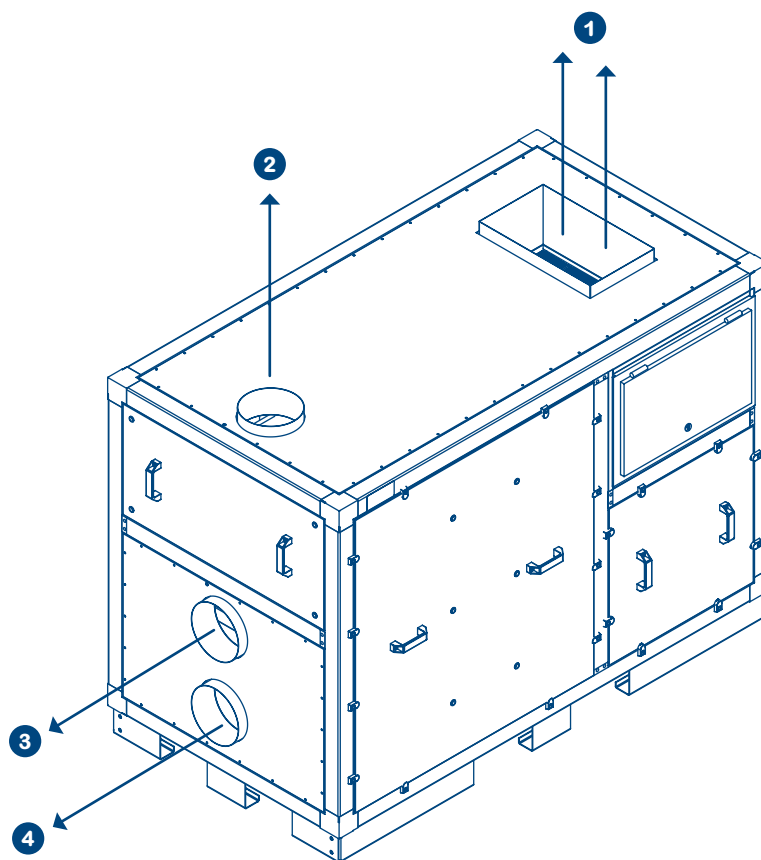
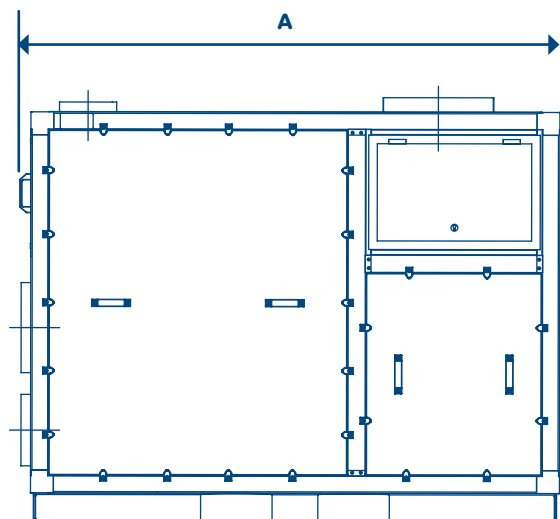


- Designed to prevent ice and condensation by drying the air at the cold storage (supplying dry air at the cold storage door).
- For process air and reactivation air at different conditions (temperature and humidity).
- High-efficiency motor-driven centrifugal ventilator with EC tecnology.
- ErP 2016 ready.

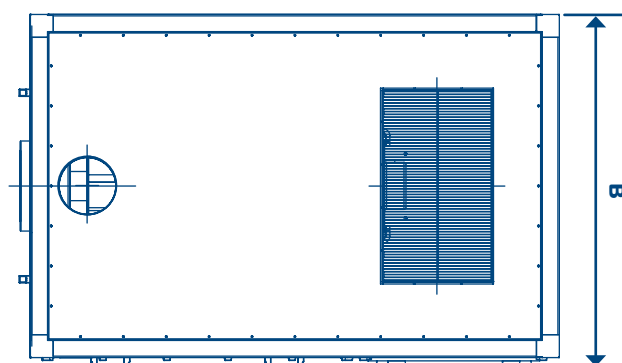
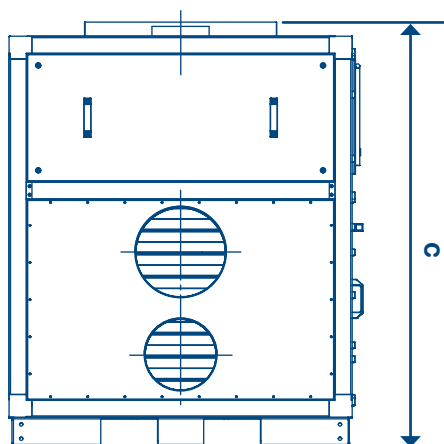
Width	Height	Lenght	Weight
<b>DFRIGO 0200 ECO</b>			
1020 mm	1350 mm	1860 mm	350 kg
<b>DFRIGO 0400 ECO</b>			
1240 mm	1500 mm	1900 mm	540 kg

Width	Height	Lenght	Weight
<b>DFRIGO 0400 ECO</b>			
1240 mm	1500 mm	1900 mm	576 kg

## Overall dimensions



1. Dry Air
2. Wet Air
3. Process Air
4. Reactivation Air

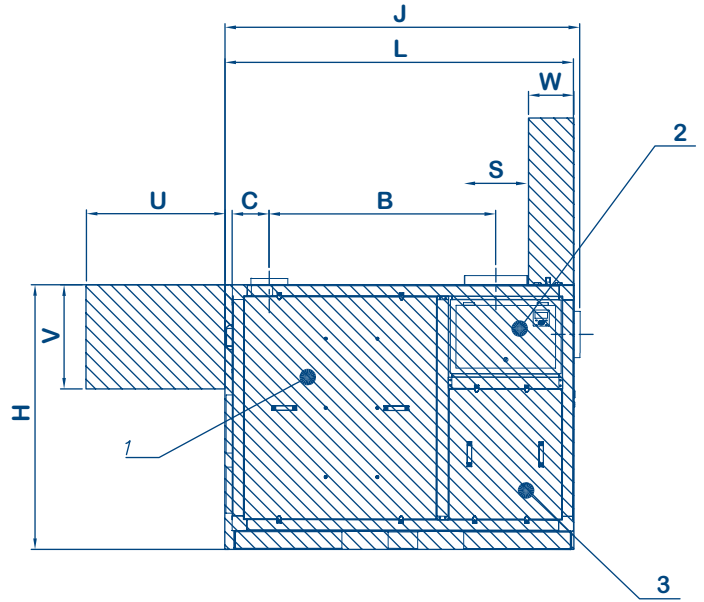
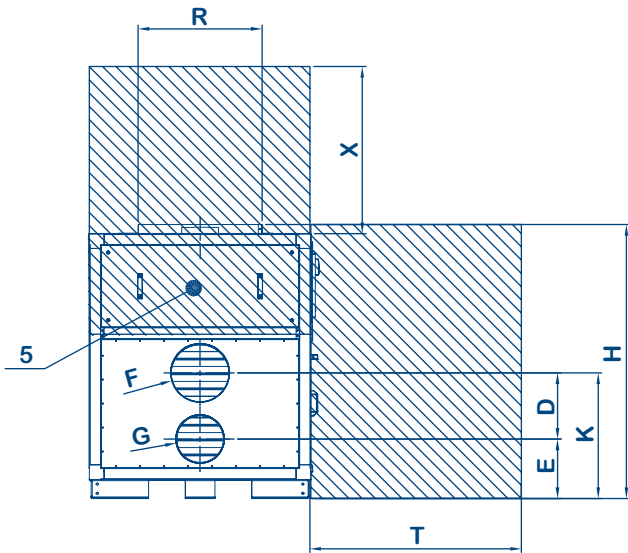


### DFRIGO models

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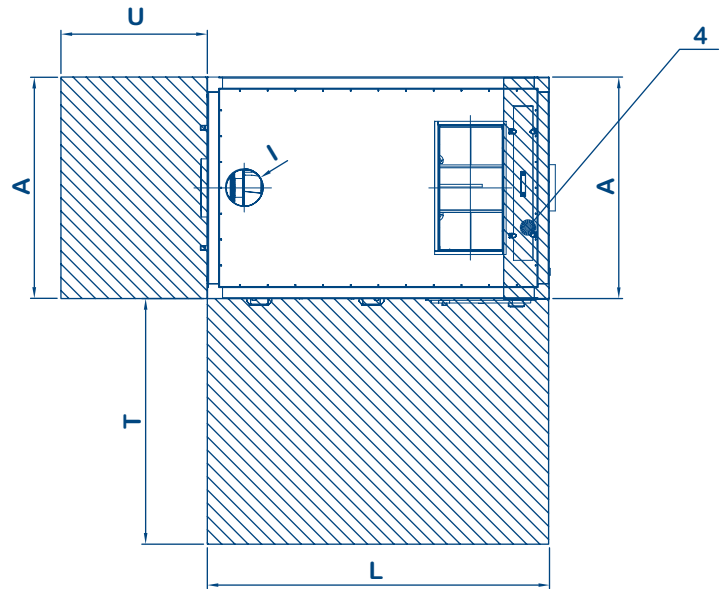


## Service spaces



DFRIGO models

	DFRIGO-0200 ECO	DFRIGO-0400 ECO	DFRIGO-0400 HPR
L	1856 mm	1889 mm	1922 mm
A	1018 mm	1238 mm	1238 mm
H	1343 mm	1485 mm	1485 mm
B	1254 mm	1225 mm	1225 mm
C	200 mm	200 mm	200 mm
D	305 mm	359 mm	-
E	325 mm	320 mm	-
F	ø200 mm	ø315 mm	ø315 mm
G	ø200 mm	ø250 mm	-
I	ø200 mm	ø200 mm	ø200 mm
J	-	-	679 mm
K	-	-	1165 mm
M	-	-	ø250 mm
S	272 mm	342 mm	342 mm
R	472 mm	672 mm	672 mm
T	1100 mm	1300 mm	1300 mm
U	700 mm	800 mm	800 mm
V	650 mm	800 mm	800 mm
W	-	-	300 mm
X	-	-	775 mm





## Specifications

DFRIGO model silica gel desiccant rotor FISAIR air dehumidifiers manufactured as self-supporting compact units including:

- Construction with an single aluminium chassis casing, and zinc plated panels coated in PVC RAL-7035, with thermal bridge breakage between interior plenums and exposed surfaces.
- Pallet benching made of hot galvanized laminate sheeting. Enamelled polyurethane finish RAL-7035.
- 60mm thick extruded polystyrene insulation to prevent condensation.
- Solid silica gel rotor.
- EC technology motor-fan with grading and certification in compliance with the current ErP.
- Removable filters with G4 grading and blocking pressure control switches.
- Plate heat exchanger in aluminium, cross flow type.
- PLR microprocessor for the operational management and supervision of the dehumidifier.
- Low charge electric heater with electronic regulation by solid state relay.
- Analogical sensor inlets for temperature levels, relative humidity, condensation temperature/dew point.
- 2.7" HMI light for supervision of states, input of records, and level readings.
- Timer and direct working modes. Hours service counter.
- Regulation of constant airflows in both circuits (process air/ dry air and reactivation air/wet air).
- Hydraulic connections with self-sealing opening for the entry of process and reactivation air and discharge of wet air.

## Typical applications



Refrigeration logistics



Refrigerated environments



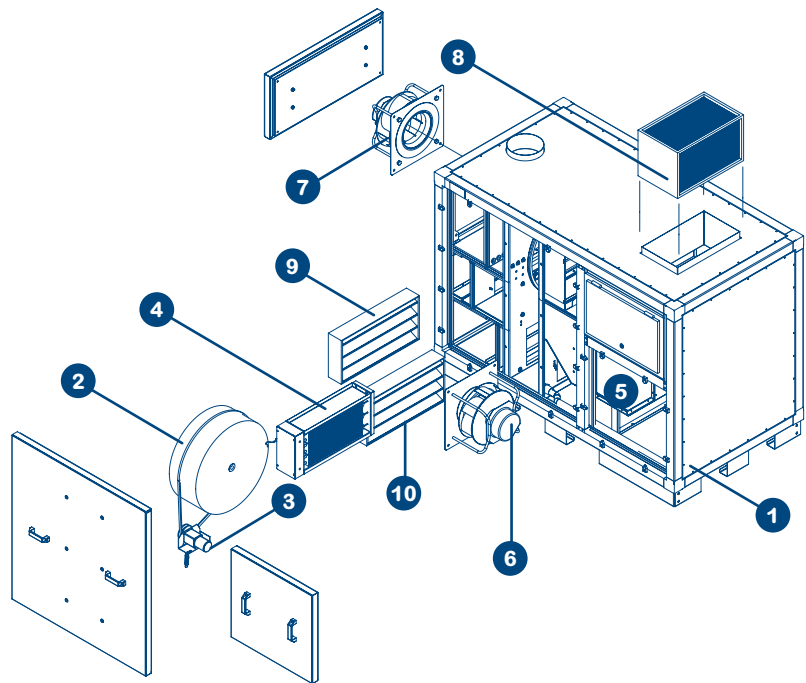
Freezing tunnels



Refrigerated stands and shelving



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## Main components

### Main mechanical components

1. Basic module
2. Silica gel desiccant rotor
3. Rotor spinning gear motor
4. Reactivation air heater
5. PLR electrical control panel and suitable protections
6. Dry air fan
7. Wet air fan
8. Sensible heat static recovery
9. Process air filter
10. Reactivation air filter

### Main monitoring components

- HMI display and keyboard IP-55
- Pressure transmitter for process airflow calculation.
- Pressure transmitter for reactivation airflow calculation.
- Reactivation air temperature sensor.
- Inductive detector for rotation control.
- Differential pressure switch for process filter control.
- Differential pressure switch for reactivation filter control.
- Supply air temperature transmitter.

## Operational limits (1)

FISAIR DFRIGO SERIES							
Parameter							
MODEL	Process inlet dry bulb temperature range	Process inlet relative humidity range	Reactivation inlet dry bulb temperature range	Reactivation inlet relative humidity range	Designed to be installed under the direct action of the rain and sun	Temperature range in the area where you will install the unit	Relative humidity in the area where you will install the unit
DFRIGO ECO	-10°C to 15°C	No restrictions	(2)	No restrictions	It is required additional protection provided by others.	-15°C to 40°C	-15°C to 40°C
DFRIGO HPR	-25°C to 15°C		-25°C to 35°C			<95%	<95%

(1) The performances of the unit will be affected depending of the working conditions. If your unit needs to work under other operating conditions, please, get in touch with FISAIR.

(2) Process air and reactivation air must be at the same conditions (temperature and humidity).