FRAL

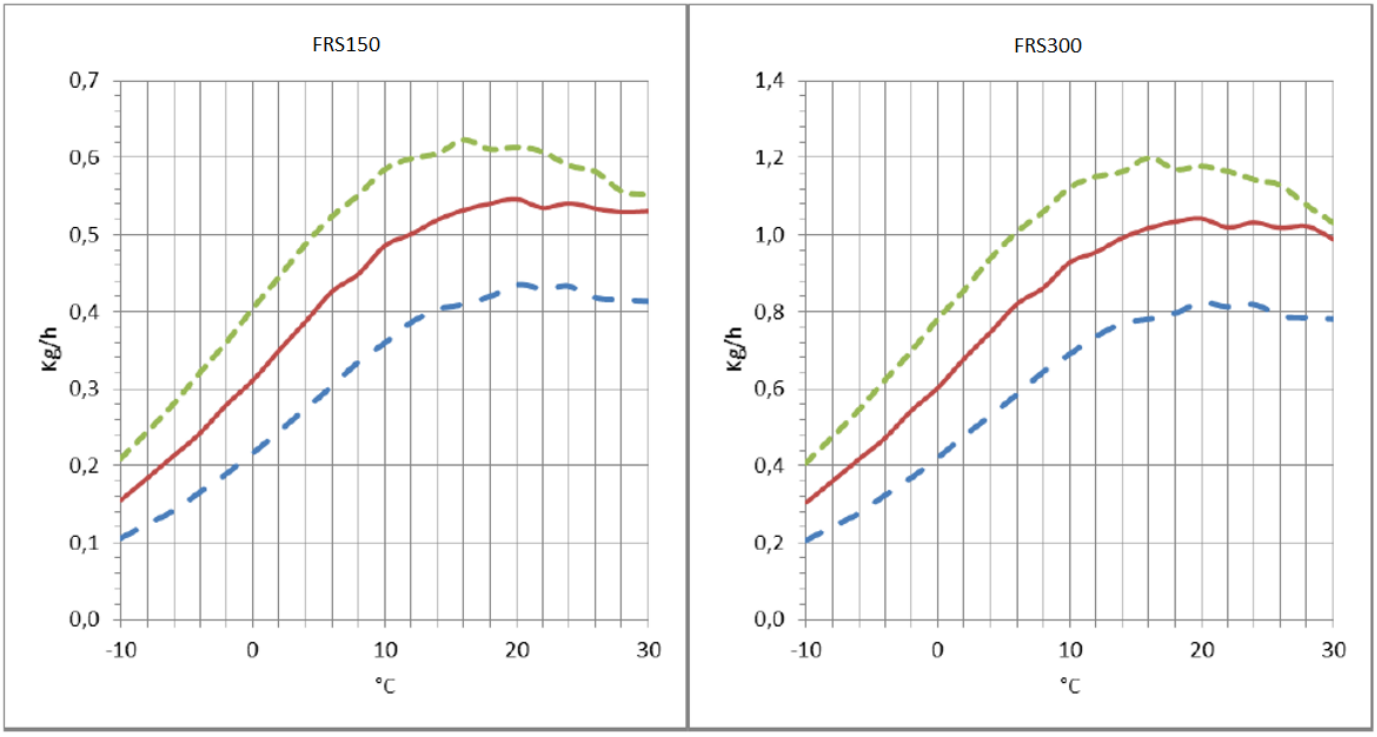
RIGHT HUMIDITY ON DEMAND

Adsorption Dehumidifiers FRS150 - 300

TECHNICAL DATA			
MODELLO	**DHS**	**150**	**300**
Performances			
Dehumidification Capacity *	Kg/h	0,57	1,1
Fans			
Process air flow	m^3/h	150	300
Static pressure	Pa	100	150
Fan nominal power	W	52	102
Regeneration air flow	m^3/h	50	100
Static pressure	Pa	100	150
Fan nominal power	W	-	-
Drive Motor			
Nominal power	VA	3,7	3,7
Regeneration			
Regereration type		Electric	Electric
Installed power	KW	0,7	1,4
Temperature rise in the heating coil	°C	80	80
Electrical characteristics			
Power supply	Volt/Ph/Hz	230/1+N/50 ±5%	230/1+N/50 ±5%
Maximum power absorbed standard units	KW	0,76	1,51
Maximum current absorbed standard units	A	4	7
Noise level			
Sound pressure **	dB (A)	42	42
Sound power **	dB (A)	70	70

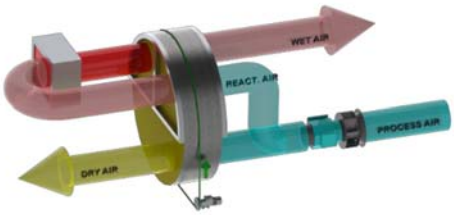
** Conditions at 20°C 60% RH*
*** Sound pressure level calculated in free field, 10 meters from unit, direction factor Q = 2, according to ISO 9614*

DEHUMIDIFICATION CAPACITY
Approximate capacity in Kg/h with different relative humidity values of inlet process air (RH%).



PRINCIPLE OF OPERATION

he dehumidifier works by using two streams of air; the main one consists of the air to be dehumidified, a second flow - of minor capacity - is instead used to regenerate the dehumidifying rotor. A fan inside the dehumidifier creates these two streams of air crossing the rotor in opposite directions. The air to dehumidify - also called "process air", crosses the silica gel impregnated drying rotor. Silica gel is a highly hygroscopic material that absorbs water vapor from the air. During the passage of the rotor, the air releases its moisture content to the rotor itself. The dehumidified air is then sent to the production room or to the dehumidifying process. The dehumidification process can take place between temperatures between -30°C and +40°C. During the process the rotor rotates very slowly and is equipped with a transmission system with gear motor and belt. The so-called "regeneration air" is used by the system to remove the absorbed moisture and bring it to the outside: it is heated by an internal dehumidifier battery up to about + 100 ° C and crosses the rotor in the opposite direction to the " process air and subject it to an inverse process for which the rotor sheds its moisture content and resets its initial absorbing capacity. Regeneration air is ejected warm and humid and must be sent out of the treated environment.



STRUCTURE

The structure of the dehumidifier is made of galvanized steel and steel AISI_304. The top panel can be removed for maintenance on electrical components and all other internal mechanical parts. The dehumidifier connections can be made with standard spiral ducts.

FANS

Fans are directly coupled to single-phase or three-phase motors rated at IP55, ISO F, class B. They are accessible for maintenance by removing the inspected top panel. The process and regenerator fans immediately start to dehumidify the system.

ROTOR

The desiccant rotor installed in the dehumidifier is the best currently available to the market, offering approximately 8% better moisture removal capacity and 25% less air pressure drop than the leading competitor. The rotor has a finely fluted structure manufactiured from corrugated and heat resistant material and offering a huge contact surface area for the process air stream in a very small volume. The fluted and laminar nature of the structure affords a high contact area with the passing air flow to maximise moisture removal.
The rotor is not affected by saturated air and can therefore be used in conjunction with a pre-cooling coil. Additionally, the rotor will not be damaged if either of the airflows stop for any reason. The rotor does not shed particles and will not support the spread of flame (non-combustible).

TRANSMISSION SYSTEM

A belt drive system is used to turn the rotor. This movement is typically between 6 and 12 rph, and uses a powerful direct drive motor and reduction gearbox, operating on a belt with frictional contact with the outer rim of the rotor drum. A belt tensioning system is used to maintain correct belt tension and avoid slip. The rotation of the rotor is visible by removal of the front access panel so correct operation can be determined. The rotor is suspended on ball bearings around a central steel shaft.

REGENERATION AIR HEATING COIL

Electrical. The electric regeneration battery has self-regulating PTC elements, with modulating power system to increase the efficiency of the dehumidifier field and save energy.

FILTERS

The dehumidifier has two separate G2 filters: on the process air and regeneration air inlet.

ELECTRICAL PANEL

The electric panel is made in compliance with European regulations 73/23 and 89/336. Access to the electrical panel is possible by removing the top panel of the unit. In all units, the following components are installed as standard: main switch, ammeter, external connection humidifier connector. The panel is also equipped with a switch for manual or automatic dehumidification control.

VERSION

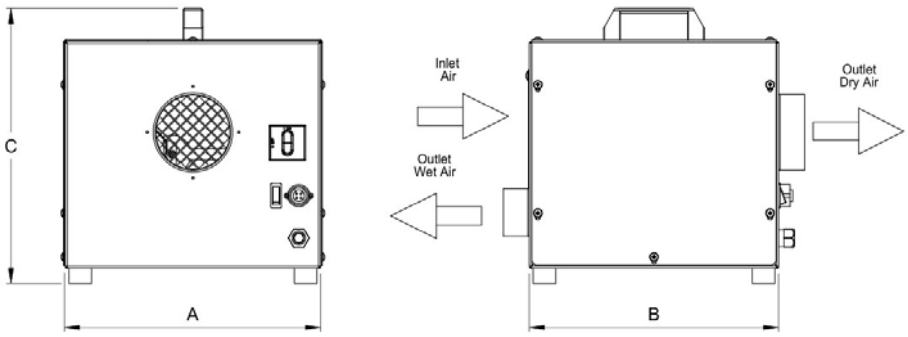
FR… Standard

FR/M01 Construction version, with pivoting wheels and working hour meter

Model FRS	Code	150	300
Painted steel frame		-	-
Satin stainless steel frame 304		●	●
Construction site version with pivoting wheels	M01	○	○
Main power switch		●	●
Frame Handed version	M	-	-
Filters G2 process and reactivation		●	●
Filters F5, F7, F9		-	-
Electronic PLC control and touch-screen terminal		-	-
Remote terminal	TR	-	-
Different power supply voltage		○	○
Proportional control PWM regenerationheaters	PWM	-	-
Process filter alarm	ALFP	-	-
Regeneration filter alarm	ALFR	-	-
Mechanical humidistat for duct 30÷100% IP65 1 step	ADKM1	○	○
Mechanical humidistat for duct or wall 10÷100% IP54 1 step	ADKMH1	○	○
Mechanical humidistat for duct or wall 10÷100% IP54 2 steps	ADKMH2	○	○
Mechanical humidistat for wall 2 steps with duct probe temperature / relative humidity range -30÷70°C / 0÷100%	ADKW + ADKH1	○	○
Electronic humidistat for wall 2 steps with duct probe temperature / relative humidity range NTC / 10÷90%	ADKW + ADKH2	○	○
Electronic humidistat for wall 2 steps with wall probe temperature / relative humidity range NTC / 10÷90%	ADKW + ADKH3	○	○

● *standard,* ○ *optional,* – *not available.*

Dimensions



Model	FRS	150	300
A	mm	345	425
B	mm	330	380
C	mm	365	445
Empty weight	Kg	12	16
Connections			
Process and regeneration air inlet	mm	130 x 130	130 x 130
Dry air outlet	mm	Ø 100	Ø 160
Wet air outlet	mm	Ø 63	Ø 80