

AIRDRY

Adsorption dehumidifiers
for cold rooms

ADI / ADO 1500÷4500



TFT
DRY AIR SOLUTIONS

TECHNICAL DATA

MODEL	ADI / ADO	1500	3000	4500
Performances				
Dehumidification Capacity *	Kg/24h	29,8	60,5	92,2
Fans				
Process air flow	m ³ /h	1500	3000	4500
Static pressure	Pa	350	370	420
Fan nominal power	KW	0,72	1,25	2,4
Reactivation air flow	m ³ /h	200	320	500
Static pressure	Pa	360	350	260
Fan nominal power	KW	0,37	0,37	0,37
Motordrive				
Nominal power	W	10	10	10
Regeneration				
Regeneration type		Electrical	Electrical	Electrical
Installed power	KW	6,6	10,2	15,3
Temperature rise in the heating coil	°C	90	90	90
Electrical characteristics				
Power supply	Volt/Ph/Hz	400/3/50 ±5%	400/3/50 ±5%	400/3/50 ±5%
Maximum power absorbed standard units	KW	7,95	12,08	18,22
Maximum current absorbed standard units	A	12,75	18,65	27,85
Noise level				
Sound pressure **	dB (A)	70 _{IN} 76 _{OUT}	77 _{IN} 83 _{OUT}	83 _{IN} 89 _{OUT}
Sound power **	dB (A)	91	98	104

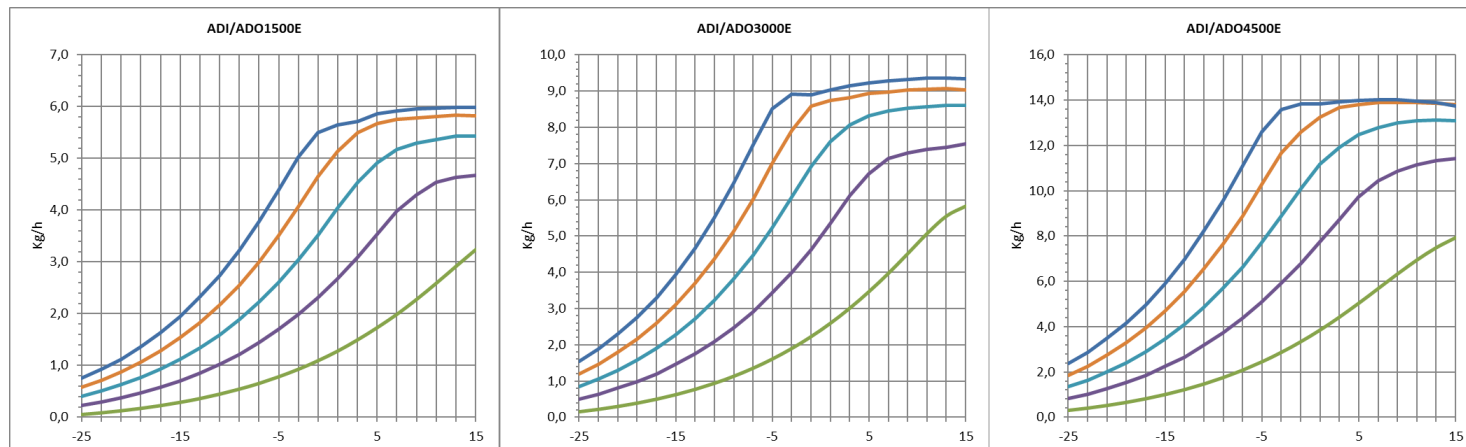
* At conditions of regeneration air inlet 20°C 60% RH and process air inlet -18°C 100%

** Sound pressure level calculated in free field, 1 meters from unit, direction factor Q = 2, according to ISO 9614 (free-mouthed without ducting)

DEHUMIDIFICATION CAPACITY

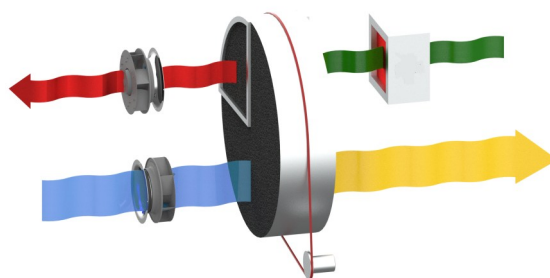
Approximate capacity in Kg/h with different relative humidity values of inlet process air (RH%).

— 20% RH
 — 40% RH
 — 60% RH
 — 80% RH
 — 100% RH



PRINCIPLE OF OPERATION

The ADI and ADO versions of AirDry are the only dehumidifiers specially developed to be installed inside and outside cold rooms. The very cold environment requires special features to ensure reliable and efficient operation of the unit. The AirDry system is designed to achieve reliable and energy efficient operation of the dehumidifier. Installing an AirDry dehumidifier eliminates the problem of ice formation in cold rooms. Its installation is very simple: simply place the unit inside (ADI) or outside (ADO) a cold room close to a wall and carry out minimal ducting. Regeneration air is simply taken from a room adjacent to the cold room. Immediately after start-up, the unit will begin to reduce ice and frost formation.



STRUCTURE

The structure of the dehumidifier is made of galvanised steel and AISI304 stainless steel with sandwich panels. The upper panel can be removed for maintenance of electrical components, while access to all internal mechanical parts is gained by removing the front/rear panels for the ADI version and the upper panel for the ADO version. An insulated box protects the regeneration fan from low temperatures. Connections to the dehumidifier can be made with standard spiral ducts.

FANS

The fans are directly coupled to an IP55, ISO F, Class B three-phase motor. They are all directly driven by fixed-speed direct-start devices. They are accessible for maintenance by removing the inspection panel.

ROTOR

The dehumidifier has a rotor made of desiccant material. The rotor has a honeycomb structure made of corrugated, heat-resistant sheets containing the desiccant material silica gel, which creates a high number of axial fluid threads and at the same time a high absorption surface area in a small volume. Furthermore, the rotor is not damaged if the process or regeneration fan should fail during operation. The rotor is non-combustible and non-flammable.

TRANSMISSION SYSTEM

A belt drive system drives the movement of the rotor. The belt pulls on the outer edge of the rotor and is guided by a pulley on the geared motor. A special device maintains the correct belt tension to prevent belt slippage. The correct direction of rotation and drive can be checked by opening the front panel. The rotor is fitted with ball bearings. The rotor shaft is made of steel.

REGENERATION AIR HEATING COIL

The electrical regeneration coil has steel elements, connected in a star configuration and controlled by a single step for regulation. Optionally, regulation with continuous power modulation (PWM) is possible; this control system increases the efficiency of the dehumidifier and achieves greater energy savings.

FILTERS

The dehumidifier has two separate G4 filters: one on the process air inlet and the other on the high temperature regeneration air inlet. For the ADI version, the regeneration and process air filter can be remotely operated.

PLC CONTROL WITH LED TERMINAL

All units are supplied with PLC control and LED terminal. The PLC controls the following functions: regeneration temperature control, thermal protection, regeneration post-cooling timing, component start-up sequence, alarm reset, dehumidification humidity control, on/off damper control for process and regeneration air. The PLC is set up for step control from an external humidistat, and accepts analogue signals from humidity sensors. In addition, the microcontroller can be connected to remote control BMS systems via a MODBUS connection.

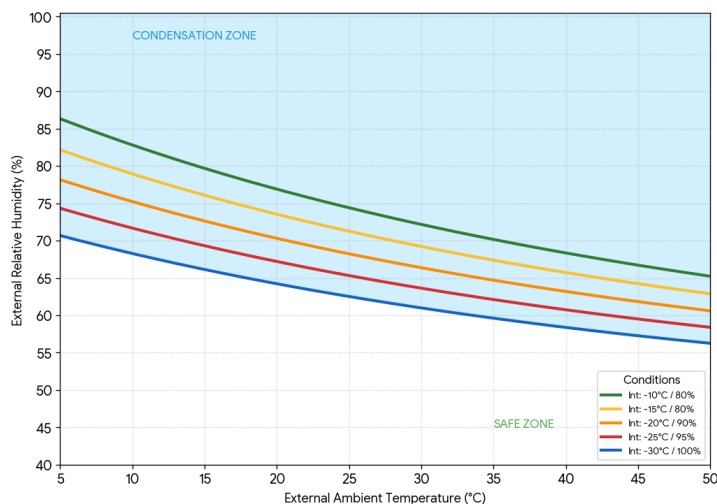


ELECTRICAL PANEL

The electrical panel is manufactured in compliance with European standards 73/23 and 89/336. The electrical panel is accessible from the top of the unit by means of a special opening device. The following components are installed in all units as standard: main switch, thermal-magnetic circuit breakers (to protect the fans and electric heaters), fan relay, geared motor relay, relay for electric heaters (option for SSR), automatic heater of the regeneration fan compartment. The switchboard is also equipped with terminal board with dry contacts for remote ON OFF control and dry contacts for general alarm.

ADO INSTALLATION LIMITS

Installation limits for the ADO series, between process air conditions and outdoor ambient conditions.



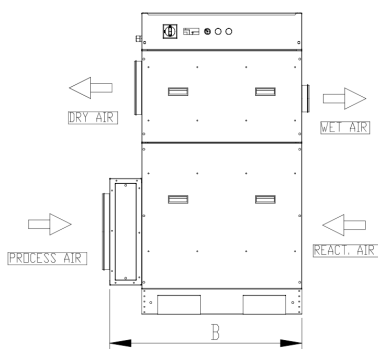
VERSION

ADI... Standard with satin-finished 304 stainless steel outer frame
 ADO... Standard with satin-finished 304 stainless steel outer frame

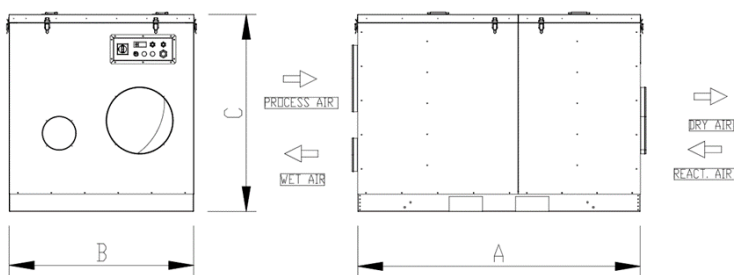
Model ADI / ADO	Code	1500	3000	4500
AISI304 stainless steel frame satin-finished on the outside		●	●	●
Frame made entirely of 304 stainless steel and satin-finished on the outside	TTX	○	○	○
G4 process and regeneration filters		●	●	●
Filters F5, F7, F9		-	-	-
PLC electronic control and touch terminal		●	●	●
Remote terminal	TR	○	○	○
Different supply voltage		○	○	○
PWM proportional control of regeneration resistors	PWM	○	○	○
Process fan speed variator	VFD	-	-	-
Regeneration fan speed variator	VFD	-	-	-
Dirty process air filter indication	ALFP	○	○	○
Dirty regeneration air filter indication	ALFR	○	○	○
Probe RH%, DewPoint	H1	○	○	○
RS485 ModBus serial interface.		●	●	●

● standard, ○ optional, – not available

Dimensions ADI



Dimensions ADO



Model	ADI	1500	3000	4500
A	mm	670	890	1000
B	mm	900	1050	1210
C	mm	1415	1525	1590
Empty weight	Kg	180	225	265
Connections				
Process air inlet	mm	Ø 355	Ø 400	Ø 400
Dry air outlet	mm	Ø 250	Ø 355	Ø 400
Reactivation air inlet	mm	Ø 315	Ø 315	Ø 315
Wet air outlet	mm	Ø 125	Ø 200	Ø 250

Model	ADO	1500	3000	4500
A	mm	1537	1660	1801
B	mm	1032	1063	1187
C	mm	1022	1176	1276
Empty weight	Kg	245	290	350
Connections				
Process air inlet	mm	Ø 355	Ø 400	Ø 500
Dry air outlet	mm	Ø 355	Ø 400	Ø 500
Reactivation air inlet	mm	Ø 150	Ø 200	Ø 250
Wet air outlet	mm	Ø 150	Ø 200	Ø 250