

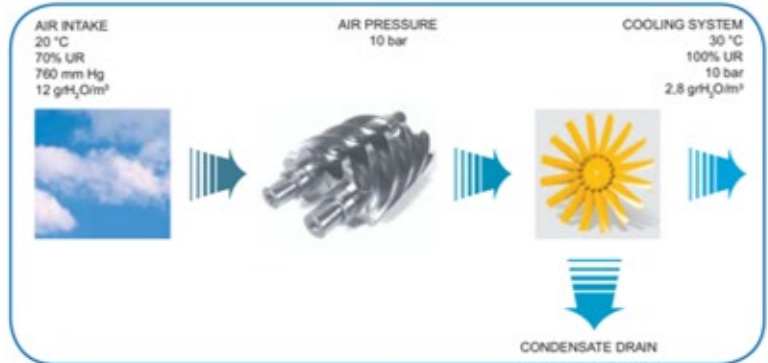
## Adsorption air dryers

ADS 1 ÷ 215



# COMPRESSED AIR

A compressor that operates in an ambient temperature of 20°C and 70% relative humidity, takes in 12 gr of water for every Nm<sup>3</sup> of air.



Compressed air is cooled at 30°C and condensed water vapour is separated, while 2.8 gr of water for every Nm<sup>3</sup> of air that condense can remain in the air (compressed at 10 bar as in the example) in vapour form.

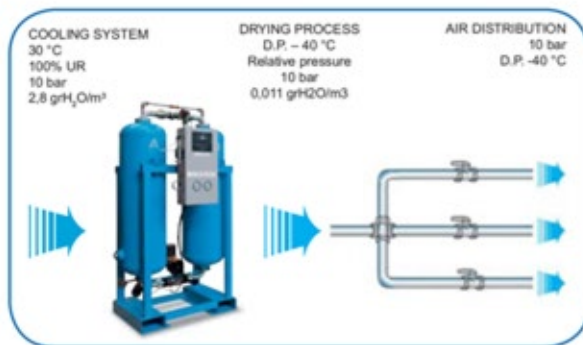
In the event of particularly rapid expansion and/or particular ambient conditions, compressed air for the application may be cooled to such an extent that the temperature drops below its Dew Point.

If the temperature falls below its dew point (\*), further condensation takes place resulting in separation of humidity and formation of condensate.

(\* The Dew Point is the value of the temperature when we have the max. water vapour concentration in the air, at one specific pressure.

Over time, this may lead to:

- serious damage to the distribution network, the machines using the compressed air and the final product.
- plugs of ice forming in the tubing in certain situations.



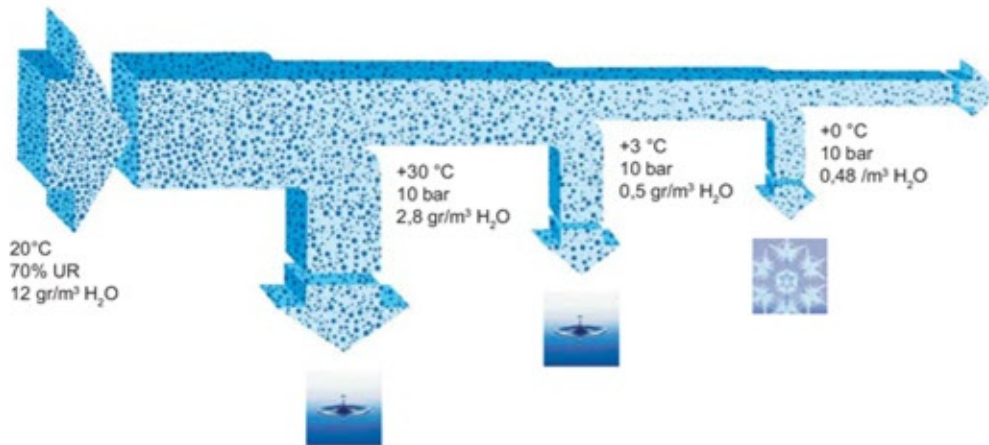
Today compressed air is a primary and essential source of energy for most production processes, from small businesses to large industries.

Filtered compressed air is no longer sufficient. Modern industries require compressed air that is increasingly filtered with low dew point and condensate.

Maintaining the correct dew point for compressed air ensures correct operation throughout the production process.

MARK has over 30 years' experience in drying compressed air, and offers the optimum solution to satisfy any demand.

# DRYING PROCESS



The cooling process does not allow the temperature to fall below 0°C (solidification of water). However, specific applications or particular ambient conditions require dew point temperatures of below 0°C.

Only adsorption dryers can achieve this, because condensate separation takes place WITHOUT lowering the temperature of the compressed air or gas.

## Principle

### Drying phase:

Wet air from the compressors passes through inlet filter ① which removes the oil and enters into tower A.

The desiccant contained in it adsorbs the water vapor molecules.

After a fixed (STD) or variable time (CD) the 3 way valve ② deviates the airflow from tower A to tower B and it becomes the operative tower.

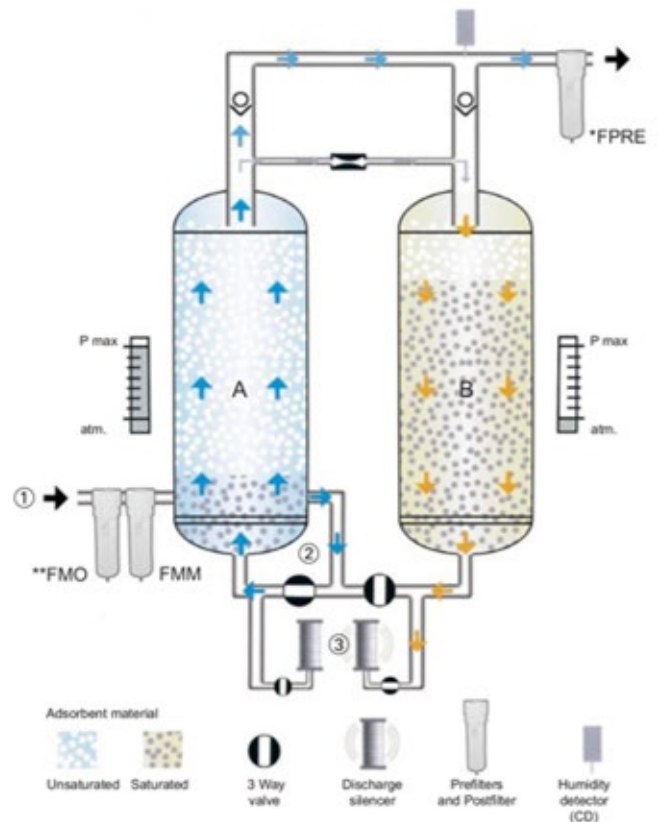
### Regeneration phase:

During the drying phase in the tower A, some dry air is deviated into the top of tower B, extracting the trapped water vapor from the desiccant material. During this phase, tower B is open to the atmosphere, allowing the purge air to expand.

The silencers ③ on the outlet ensure quiet operation.

### Pressurization phase:

Once regeneration has taken place and tower B is pressurized, the 3 way valve ② changes air flow again.



Notes:

\* On ADS1-10 outlet filter is built inside of the desiccant cartridges.

\*\* Recommended but not included on ADS1-80.



# ADS 1 - 10 RANGE

## ADS 1 – 10 STD Compact execution



- ① Prefilter removes particulates and coalesced liquids from the air stream.
- ② Removable front panel allows for easy access for servicing without disconnecting the pipe system.
- ③ Postfilters, integrated in the dryer, removes particulate in the air stream.
- ④ Electronic control housed in an IP65 box, which enables:
  - regeneration cycle management
  - regulation status
  - default diagnosis
  - remote default report

- Versatile installation with multiport system and six possible connections.
- Compact, reduced footprint, simple design.
- This module can be installed horizontally or vertically, can stand on the floor or be mounted on a wall (optional mounting kit available).
- The inlet prefilter FMM is delivered loose with the dryer but it can be directly fixed on it. The outlet postfilters FPRE are integrated in the dessicant cartridges.
- Aluminium head, base and cylinders prevent corrosion.
- Easy to maintain:
  - Maintenance operations can be performed without disconnecting tubing.
  - Absorbent cartridge with built-in postfilter.
- Automatic electronic control to manage the dryer and phase status with an automatic fault diagnosis, including alarms.
- Each tower is fitted with a high efficiency silencer for quiet operation.



Multiport inlet and outlet; this arrangement ensures easy and fast installation.

### TECHNICAL INFO

- Capacities from 114 up to 990 l/1' at 7 bar.
- Standard dew point - 40 °C.  
(-70°C. by derating the FAD).
- Max. working pressure 16 bar.
- Working pressure range 4 - 16 bar.
- Voltage: 12-24V DC 50/60Hz.  
: 100-115-230V AC 50/60Hz.

# ADS 20 - 80 RANGE

## ADS 20 - 80 STD

(CD: control dew point as option)



- Reliable operation with standard components tested for continuous service.
- The compact dryer can be installed on the floor (floor mounted kit as standard).
- The inlet prefilter FMM and the outlet postfilter FPPE, have to be mounted on the air distribution line. The filters are included but not pre-mounted.

- ① Base frame makes it easy to transport by fork lift.
- ② Pressure gauge – tower A.
- ③ Pressure gauge – tower B.
- ④ Stainless steel purge nozzle.
- ⑤ Air outlet connection.
- ⑥ Air inlet connection.
- ⑦ High efficiency silencers with integrated safety valve.



### TECHNICAL INFO

- Capacities from 1920 up to 7800 l/1' at 7 bar.
- Standard dew point -40°C.  
(-70°C. as an option together with derating the FAD).
- Max. working pressure 16 bar.
- Working pressure range 4 - 16 bar.
- Voltage: 115-230V AC 50/60Hz.

# ADS 110 - 215 RANGE

## ADS 110 - 215

STD: electronic timer control

CD: control dew point



Developed with high quality components, ADS dryers guarantee a stable dew point of  $-40^{\circ}\text{C}$ . The use of an optimized desiccant volume and a wide vessel, ensure a low air speed and a longer contact time.

Purge phases are controlled by an electronic timer on the standard models (ADS/STD).

There is also control dew point version (ADS/CD) where the drying phase is dew point dependent and is controlled by our electronic dew point management system.

The two inlet prefilters FMO-FMM and the outlet postfilter FPRE have to be mounted on the air distribution line. The filters are included but not pre-mounted.

- ① Wide vessels for optimum air speed and reliable drying. Unit is rather low for its capacity due to flanges that are built into the vessels.
- ② Air outlet connection.
- ③ Robust frame, including fork lift slots for easy installation.
- ④ Pressure Dew Point sensor (ADS/CD).
- ⑤ Pressure Dew Point digital display (ADS/CD).
- ⑥ Two manometers integrated in the control panel to show pressure in the vessels A/B.
- ⑦ Stainless steel purge nozzle.
- ⑧ Galvanized piping with flanged connections.
- ⑨ High efficiency silencers with integrated safety valve.
- ⑩ Air inlet connection.
- ⑪ Stainless steel 3 way valve – long service interval.



### TECHNICAL INFO

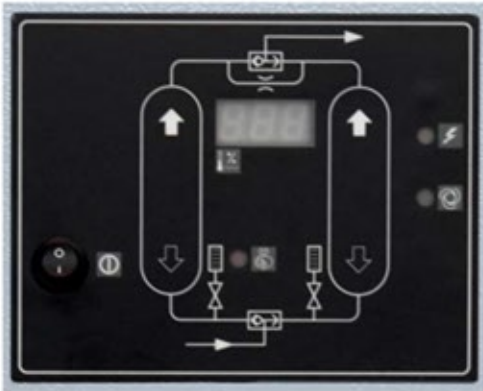
- Capacities from 10800 up to 21600 l/1' at 7 bar.
- Standard dew point  $-40^{\circ}\text{C}$ .  
( $-70^{\circ}\text{C}$ . an option together with derating the FAD).
- Max. working pressure 11 and 16 bar.
- Working pressure range 4-11 bar and 11-16 bar.
- Voltage: 230V AC 50/60Hz.





# CONTROL DEW POINT - CD

## How to decrease your consumption?



The electronic Pressure Dew Point control (CD) extends the drying phase of the dryer's cycle. It is done by measuring PDP of compressed air on the dryer outlet and only switching the columns when desiccant in the active tower is saturated. The regeneration part of the cycle stays fixed.

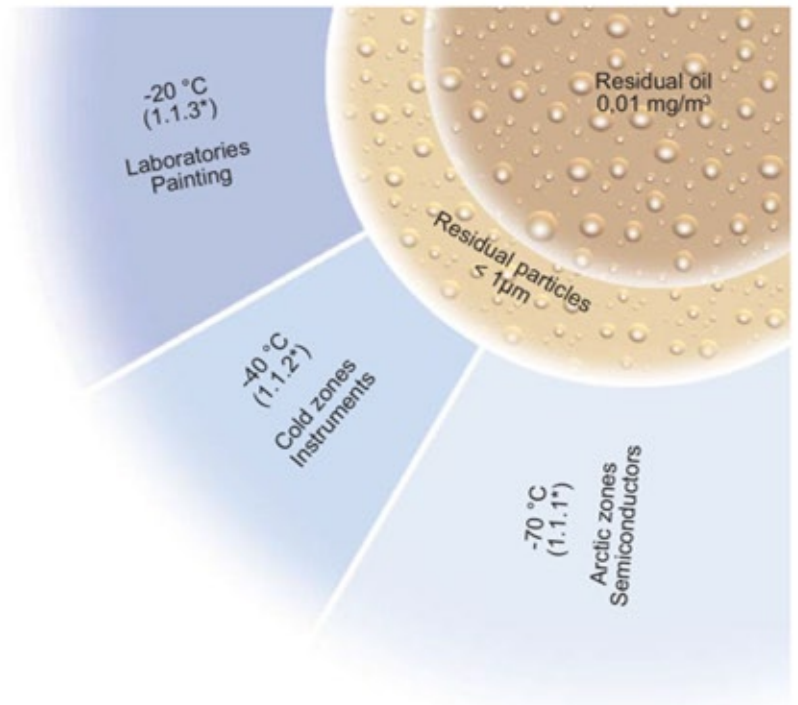
As most of the time compressor and dryer runs < 100% load, this results in a significant extension of the drying time and a reduction in purge air consumption.

Typically the extra investment in a Pressure Dew Point control is paid back in a few months by savings made on dryer running costs.

## Quality air with the ADS dryer

### Particularly for:

- The chemical and pharmaceutical Industries.
- Petrochemical plants.
- Food industry.
- Transportation of hygroscopic materials.
- Quality painting.
- Textile production.
- Semiconductors.
- Cable pressurization.
- Beer and drinks production.
- Applications in low-temperature environments.



\* Quality class according to ISO 8573-1



Original parts fit the best.

Only they will guarantee the original performance of your machine. To ensure maximum working efficiency and a long life time, every part must conform to specific technical standards. With the use of Original Parts you are certain about the quality, life time, utilized material and the impact on other components. All these aspects are important to make the right choice for spare parts. Only with original components can you be sure about these factors. Therefore your best choice is an Original Part.

## TECHNICAL DATA

Type	Max. working pressure		Operating pressure	Air treatment capacity			Standard Dew Point	FMO 0,1 µm 0,1 mg/mc	FMM 0,01 µm 0,01 mg/mc	FPRE 1 µm n.a. mg/mc	Inlet / outlet connections	Dimensions			Weight
	bar	psi		bar	l/1'	m³/h						cfm	°C.	Pre filters	
<b>ADS 1</b>	16	232	7,0	114	7	4,1	-40	n.a.	FMM 10	INTEGRATED IN THE DRYER	3/8"	281	92	445	13
<b>ADS 2</b>	16	232	7,0	168	10	5,9	-40	n.a.	FMM 10		3/8"	281	92	504	14
<b>ADS 3</b>	16	232	7,0	282	17	10	-40	n.a.	FMM 10		3/8"	281	92	635	17
<b>ADS 4</b>	16	232	7,0	426	26	15,3	-40	n.a.	FMM 10		3/8"	281	92	815	20
<b>ADS 7</b>	16	232	7,0	708	42	24,7	-40	n.a.	FMM 10		3/8"	281	92	1065	24
<b>ADS 10</b>	16	232	7,0	990	59	34,7	-40	n.a.	FMM 10		3/8"	281	92	1460	31
<b>ADS 20</b>	16	232	7,0	1920	115	67,7	-40	n.a.	FMM 20	FPRE 20	3/4"	550	177	998	50
<b>ADS 24</b>	16	232	7,0	2400	144	84,8	-40	n.a.	FMM 20	FPRE 20	3/4"	550	177	998	50
<b>ADS 27</b>	16	232	7,0	2700	162	95,3	-40	n.a.	FMM 33	FPRE 33	3/4"	550	177	1243	60
<b>ADS 36</b>	16	232	7,0	3600	216	127	-40	n.a.	FMM 33	FPRE 33	1"	550	378	999	100
<b>ADS 42</b>	16	232	7,0	4200	252	148	-40	n.a.	FMM 60	FPRE 60	1"	550	378	999	100
<b>ADS 55</b>	16	232	7,0	5400	324	191	-40	n.a.	FMM 60	FPRE 60	1"	550	378	1243	120
<b>ADS 60</b>	16	232	7,0	6000	360	212	-40	n.a.	FMM 60	FPRE 60	1 1/2"	550	540	998	150
<b>ADS 80</b>	16	232	7,0	7800	468	275	-40	n.a.	FMM 85	FPRE 85	1 1/2"	550	540	1243	180
<b>ADS 110</b>	11	159	7,0	10800	648	381	-40	FMO 130	FMM 130	FPRE 130	1 1/2"	960	754	1716	445
	16	232	12,5	12900	774	456									
<b>ADS 130</b>	11	159	7,0	13200	792	466	-40	FMO 130	FMM 130	FPRE 130	1 1/2"	960	754	1716	445
	16	232	12,5	15900	954	561									
<b>ADS 180</b>	11	159	7,0	18000	1.080	636	-40	FMO 170	FMM 170	FPRE 170	2"	1064	833	1832	600
	16	232	12,5	21600	1.296	763									
<b>ADS 215</b>	11	159	7,0	21600	1.296	763	-40	FMO 250	FMM 250	FPRE 250	2"	1118	859	1869	650
	16	232	12,5	25800	1.548	911									

**Notes:**

① Reference conditions:

- Operating pressure: see the technical data table.
- Operating temperature: 35°C.
- Relative humidity: 100%

② Filters are delivered loose with the dryer:

- ADS1-10: the filters can be directly fixed on the dryer.
- ADS20-215: the filters have to be mounted on the air distribution line.

For working pressure different from " operating pressure " use the correction factors table.

**Correction factors**

	ADS/16 bar															
Air Inlet Pressure - bar	4	5	6	7	8	9	10	11	12	13	14	15	16			
ADS1 up ADS 80	0,62	0,75	0,87	1	1,12	1,25	1,37	1,5	1,62	1,75	1,87	2	2,12			

**Correction factors**

	ADS/11 bar											ADS/16 bar				
Air Inlet Pressure - bar	4	5	6	7	8	9	10	11	11	12,5	13	14	15	16		
ADS110 up to ADS215	0,47	0,68	0,84	1	1,1	1,2	1,3	1,38	0,89	1	1,04	1,11	1,19	1,24		

**Correction factors**

Air Inlet Temperature °C.	20	25	30	35	40	45	50
ADS1 up to ADS10	1,07	1,06	1,04	1	0,88	0,78	0,55
ADS20 up to ADS215	1	1	1	1	0,84	0,71	0,55

**Correction factors**

Pressure Dew Point °C.	-40	-70
ADS1 up to ADS215	1	0,7



According to

