

# **SWIMMING POOL**

Dehumidification for swimming pools and spas



# Why dehumidification is so important

A high degree of water evaporation in indoor pools and, especially in combination with the high ambient temperatures, leads to enormous humidities and an unpleasant feeling of being oppressively hot. For those using the swimming pool, these climatic conditions not only detract from personal well-being, but also pose a serious risk to the health of visitors and swimming pool staff in the form of circulatory problems. The damp air provides germs and bacteria with the perfect breeding ground. Given the bathing guests' light clothing, these can very quickly get into contact with human skin and, in the worst case, cause infections or diseases.

Alongside the potential health hazards, warm humid air also has an impact on the structural elements of the building. In so-called "cold spots" in particular, such as glass surfaces, metallic components, or exterior walls, the evaporated water condenses and can lead to the formation of mould and corrosion over longer periods. The resulting damage leads to shorter maintenance and repair cycles of the building's infrastructure, entailing operating interuptions and therefore, and above all, higher costs.

Operators of swimming pools should therefore insist on a contemporary dehumidification system being installed.

## Energy-efficient dehumidification is an expert field

The simplest version is supposed to be intuitive ventilation of the indoor swimming pool using windows and doors or by means of ventilation. However, it is just as expensive as intuitive ventilation of living spaces during a heating period (e.g. in the form of a permanently open window). The dilemma is that significant energy is expended to bring

the air fed from the outside to the temperature required inside.

Condair's dehumidification systems, developed especially for use in swimming pools, by comparison, work significantly more efficiently and sustainably.

Available in a variety of capacities and comfort levels, their technology is based on a cooling circuit, in which a compressor compresses the refrigerant within and is throttling espanded on a Valve.

The advantage is that with this technology, dehumidification and tempering operations are carried out up to 60 percent more economically compared with conventional systems working with outdoor and exhaust air.

One central aspect of contemporary air conditioning equipment in indoor swimming pools is the energy recovered from the dehumidification process. All Condair's swimming pool dehumidifiers provide heat recovery by means on the principle of the heat pump.

The principle is that the humid air going out from the indoor swimming pool firstly flows through the evaporator. It is cooled down during this process and the humidity in the air is condensed out.

The dehumidified air then flows through the condenser. The arising heat is then

the condenser. The arising heat is then added productively to the supplay air. Swimming pool operators benefit from noticeable savings in energy expenditure thanks to this technology, as the heat is recovered within the heat pump circuit and again fed to the air in the indoor pool through the dry supply air.









#### CONDAIR **DP-W**

#### Wall-Mounted Dehumidifiers

Condair's DP-W swimming pool dehumidifiers are not just used as a retrofit into existing indoor pools—they are also hugely popular, as they are cheap and easy to install. Given their relatively low construction depth of between 260 and 310 mm, they do not take up much space and are therefore particularly easy to install and retrofit.

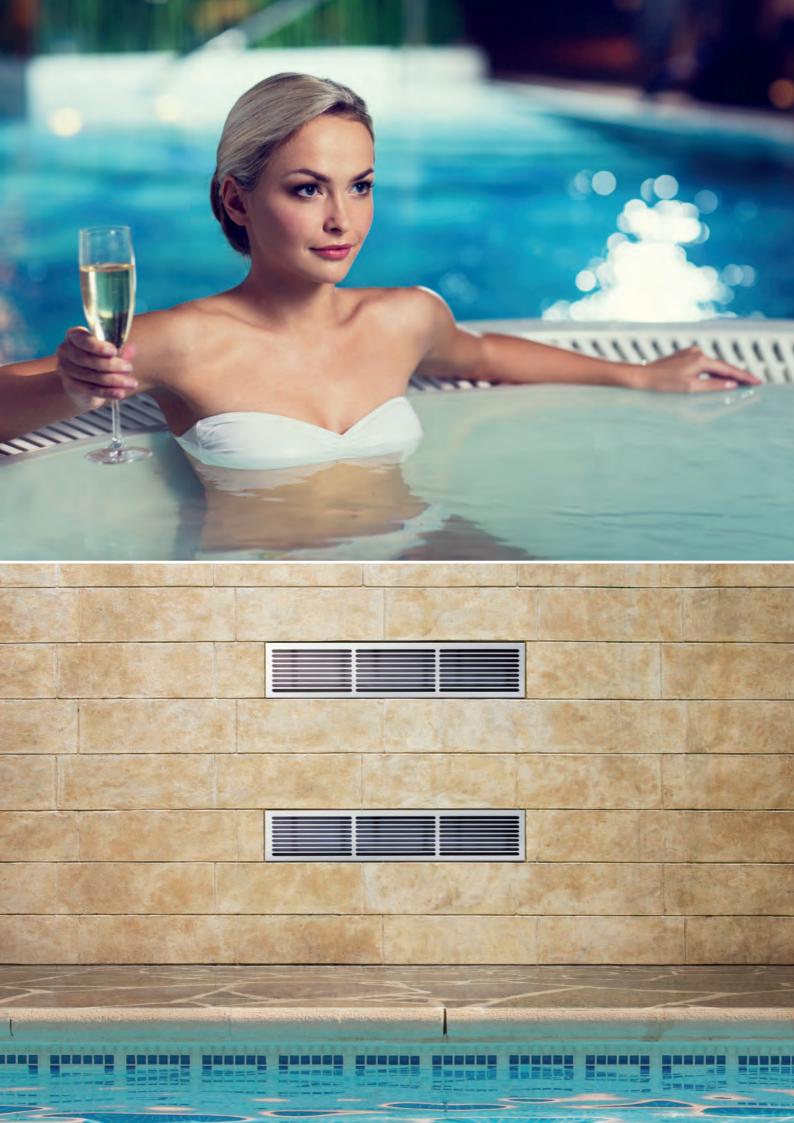
For use in smaller private swimming pools, as required, right up to medium-sized indoor pools, the Condair DP-W series is available in five different capacities 49 to 190 liters per day. The dehumidifier including its refrigeration circuit is fitted on the wall and only needs to be connected to the power supply and a condensation drain to be up and running straight away.

As a stand-alone solution, the Condair DP-W is ready for use in the shortest time. Its pleasantly quiet operation is impressive and fits seamlessly into the existing architecture of the room thanks to its reduced design with rounded, soft edges. Use of the refrigerant R410A and the integrated heat recovery means that the DP-W series works particularly efficiently. Extracting exhaust heat from the heat pump circuit, and feeding it back directly to

the ambient air very effectively makes sparing use of resources and saves a great deal on energy costs.

To achieve this, the Condair DP-W can be extended to include a hot water coil or an electric heater, electronic or mechanical humidity sensors, supporting feet, and further accessories. Depending on the requirement, it can be retrofitted to form a comprehensive air conditioning device that performs a variety of even more humidity control functions. Its triedand-tested, internal control electronics result in a sustainable and economic operation. All parameters can be operated particularly conveniently. Its user-friendly control interface makes the Condair DP-W a lasting contribution to permanently easing the burden on operating staff.







#### CONDAIR DP-R

#### Dehumidifiers for near-wall installation

Condair's DP-R model offers highly effective solutions for efficient dehumidification, especially for concealed installations. Taking into account the structural design of indoor swimming pools, Condair DP-R dehumidifiers were specially developed as rear wall units. They save space internally as a result, have no adverse effect upon the pool's spatial and conceptual design, while offering a particularly high degree of comfort for its users.

As the entire technical structure of the dehumidifier is accommodated on the wall of a neighboring room or in a separate utility room, all operating noises caused by sound-emitting components, such as compressor or fan, are nearly completely eliminated from the swimming hall.

Similar to the range of Condair's wall mounted units, Condair DP-R pool dehumidifiers are available in five different sizes and maximum dehumidifying capacities of 49 to 190 L/day.

The dehumidifier can be installed easily onto the rear wall of the indoor pool and can be connected to the inside of the pool area via two wall openings using Condair's optional air plenum and chillers.

Less space is therefore required inside the pool area, and with little extra effort. Condair's DP-R dehumidification system is only visible in the form of unobtrusive returns and supply air grilles.

It goes without saying that Condair's approved-and-tested heat recovery system, based on a heat pump circuit, also guarantees the lowest possible heat losses in the DP-R series, meaning sustainable dehumidification, even in continuous operation. Hot water coils and electric heaters, electronic or mechanical humidity sensors, and further accessories extend the functional scope of the Condair DP-R swimming pool dehumidifier—and fully in line with a comprehensive compact solution for the entire air conditioning technology of a swimming pool.





#### CONDAIR DP-C

#### Ceiling-Mounted Dehumidifiers

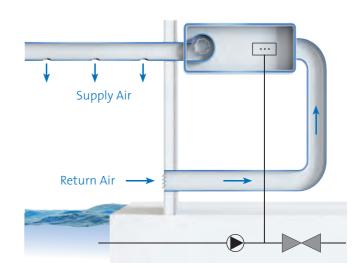
The Condair DP-C is a particularly compact solution for dehumidification. This model's flat design makes it ideal for mounting below the ceiling or in a suspended ceiling. This type of mounting is particularly suitable if there is no mechanical plant room or the existing room is too small to install a floor-mounted unit. Ventilation ducts must be installed for the insertion of the dehumidified air as well as the extraction of the moist exhaust air to/from the pool area. This work has to be provided by the customer. All sound-emitting components, such as compressor and fan, are located outside the swimming pool area. This keeps the noise emissions at a minimum and the operation easy.

The Condair DP-C pool dehumidifiers are available in five different sizes and maximum dehumidifying capacities of 49 to 190 l/day. As an alternative to the optionally available hot water coils or electric heater, electronic or mechanical sensors and a partial heat recovery is available to partially transfer the recovered heat from the dehumidifier directly into the water of the pool.



## Features of the dehumidifier Condair DP-C:

- Effective dehumidification
- Energy-efficient heat pump principle
- Refrigerant R410A
- Quiet fans
- Very compact, flat housing
- Opt. partial heat recovery is available to heat the water of the pool
- Numerous options





plant room is available, Condair DP dehumidifiers can be integrated into the utility room. Where ventilation ducts lead the air to their specific locations. The recirculated air process ensures a safe and energy-efficient dehumidification, regardless of the pool's operating hours. The broad product mix with a total of ten air flow ranges and maximum dehumidification capacities of 73 to 940 I/day can cover a wide range of applications.

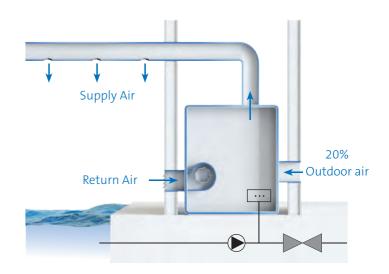
The integrated heat recovery ensures a significant reduction in heating costs, as a large volume of the heat recovered from the heat pump circuit is fed back into the indoor swimming pool and, in some cases, is able to completely replace heating for the space because of the equipment's high performance. Around 20% of the generated heat energy can be used to heat the water in the pool via an optional partial heat recovery. Installing a heat recovery system in order to heat the pool's water temperature is useful, particularly in the therapeutic area where high room temperatures usually prevail, as the system can prevent the room from overheating. As an option, the units can be equipped with a hot water coil or an electric heater for quick heating of the indoor air or to support the existing room heating system.

outdoor air.

A wide range of options is available for the Condair DP series of swimming pool dehumidifiers. All can be adapted to meet the specific requirements of the indoor pool.

#### Features of the Condair DP dehumidifier

- Effective dehumidification
- Powerful heat pump circuit
- Partial heat recovery to heat pool water
- Hot water or electric heater
- Custom-made designs upon request







#### CONDAIR **DP-HE**

#### High-Efficiency Dehumidifier

In large swimming pools, indoor aqua parks, saunas, and in hotels, sport and wellness facilities, the highly efficient dehumidifiers from the Condair DP-HE guarantee reliable temperature and humidity control, even under extreme climatic conditions. In addition to Condair's approved and tested heat recovery principle via the refrigerant circuit, an additional plate heat exchanger is fitted into the DP-HE to keep the energy required to maintain the desired internal temperature as low as possible in indoor pools. Condair's DP-HE series is available in seven different models and achieves significant performance values with maximum dehumidification capacities of 133 L/day up to 565 L/day in the pure recirculation mode. Its performance capacity during operation with outside air is even more impressive. Condair's high-efficiency dehumidifiers dry up to 1054 L/day in continuous operation and therefore ensures sophisticated humidity regulation in highly frequented indoor pools. Equipped with an automatic external air mixing function, which regulates automatically, depending on the operating mode selected, Condair DP-HE is used primarily by operators of larger swimming pools and wellness facilities, who place equal value on maximum ease of operation and highest possible operational reliability and comfort.

**Functional principle** 

The supply air flows is drawing warm and humid air trough an air filter and a cross-flow heat exchanger. At the heat exchanger a part of the enthalpy is transferred to the supply air, afterwards up to 30% of the air flow can be extracted via the build in exhaust air fan. The remaining air volume passes through the evaporator coil and gets dehumidified to its required value. After dehumidifying 30% fresh air can be mixed into the total air flow again.

The entire air flow is then passing through the second inlet of the cross-flow heat exchanger, where the heat is recovered from the air coming out of the pool area.

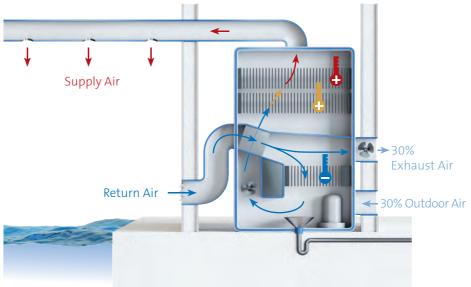
The preheated airflow passes through the condenser and enters the pool area as supply air. At very low external air temperatures or operation with a mixture of fresh air, it can occur that the necessary temperature level is not reached. In this case, a hot water heating coil is fitted inside that heats up the air to the required temperature.

As up to 30% of fresh air can be added, it significantly improves the air quality. The fresh air also has a positive effect on dehumidification performance, as this generally has a lower humidity level than the air in the indoor pool. Less energy is therefore required for the dehumidification process via the refrigerant circuit. Compared with the usual dehumidifer models on the market, they have up to 30 percent greater dehumidifying capacity thanks to the dual-use cross-flow heat exchanger with a in total lower power consumtion.

The energy efficiency can be further optimized by using the separately available energy saving setback system which can be utilized while the pool is not in use. The flexible options allows that the maximum efficiency can be achieved at any given utilization rate during the day.

## Features of the dehumidifier Condair DP-HE

- Automatically adding up to 30% fresh air
- Twice-use of the cross-flow heat exchanger
- Optional partial heat recovery for heating the pool water
- Hot water heater is included standard
- Electronic controller





This outdoor air must then be reheated, which takes a huge amount of energy. This method is therefore incredibly wasteful.

Considerably more energy-efficient is the humidity control offered by dehumidification systems specially for use in swimming pools. To recover energy, all Condair's dehumidifiers work using the heat pump principle. This results in significant savings in operating costs, as the heat recovered in the heat pump circuit is fed back into the room's heating.



## WALL-MOUNTED

## Condair **DP-W**



Technical Data		DP 50-W	DP 75-W	DP 100-W	DP 150-W	DP 200-W
Dehumidification capacity at 30°C – 80%	l/24h	49	73	95	155	190
Dehumidification capacity at 30°C – 60%	l/24h	39	56.7	77.4	118.3	146.7
Dehumidification capacity at 28°C – 60%	l/24h	35.9	51.6	1.1	101.6	132.3
Dehumidification capacity at 26°C – 60%	l/24h	33.4	47.3	65.8	93.4	121.3
Air flow	m³/h	500	800	1000	1400	1650
Availiable external pressure (external preassure optional)	Pa			40		
Nominal power consumption (1)(6)	kW	0.9	1.2	1.6	1.9	2.5
Maximum power consumption (2)(6)	kW	1.2	1.5	2	2.3	3.1
Electrical heater (optional)	kW	3 6				6
Maximum current consumption	А	3.9	5.6	8.4	10.5	13.2
Hot Water coil (optional) (4)	kW	3.5	7	7	11.5	11.8
Operating range (Humidity/Temperature)	% RH		50-	-99% RH / 20–36	°C	
Power supply	V/Ph/Hz			230/1/50		
Sound pressure level (3)	dB(A)	47	50	50	52	54
Refrigerant/volume	Type / g	R410A / 470	R410A / 600	410A / 600 R410A / 700 R41		/1200
CO <sub>2</sub> equivalent <sup>(10)</sup>	t-CO₂e	0.98 1.25 1.46 2.		51		
Dimensions (H x W x D)	mm	750 x 835 x 260 750 x 1135 x 260 840 x 1384 x 3			84 x 310	
Weight	kg	50	64	68	99	102

## **INSTALLATION BEHIND PARTITION**

## Condair **DP-R**



Technical Data		DP 50-R	DP 75-R	DP 100-R	DP 150-R	DP 200-R	
Dehumidification capacity at 30°C – 80%	l/24h	49	73	95	155	190	
Dehumidification capacity at 30°C – 60%	l/24h	39	56.7	77.4	118.3	146.7	
Dehumidification capacity at 28°C – 60%	l/24h	35.9	51.6	1.1	101.6	132.3	
Dehumidification capacity at 26°C – 60%	l/24h	33.4	47.3	65.8	93.4	121.3	
Air flow	m³/h	500	800	1000	1400	1650	
Availiable external pressure (external preassure optional)	Pa			40			
Nominal power consumption (1)(6)	kW	0.9	1.2	1.6	1.9	2.5	
Maximum power consumption (2)(6)	kW	1.2	1.5	2	2.3	3.1	
Electrical heater (optional)	kW		3 6			6	
Maximum current consumption	А	3.9	5.6	8.4	10.5	13.2	
Hot Water coil (optional) (4)	kW	3.5	7	7	11.5	11.8	
Operating range (Humidity/Temperature)	% RH		50-	-99% RH / 20-36	°C		
Power supply	V/Ph/Hz			230/1/50			
Sound pressure level (3)	dB(A)	47	50	50	52	54	
Refrigerant/volume	Type / g	R410A / 470	.10A / 470 R410A / 600 R410A / 700 F		R410A	R410A / 1200	
CO <sub>2</sub> equivalent <sup>(10)</sup>	t-CO₂e	0.98 1.25 1.46 2.51		51			
Dimensions (H x W x D)	mm	680 x 706 x 250	680 x 10	06 x 250	770 x 12	255 x 300	
Weight	kg	41	57	61	82	87	

#### **CEILING-MOUNTED**

#### Condair **DP-C**



Technical Data		DP 50-C	DP 75-C	DP 100-C	DP 150-C	DP 200-C
Dehumidification capacity at 30°C – 80%	l/24h	49	73	95	155	190
Dehumidification capacity at 30°C – 60%	l/24h	39	56.7	77.4	118.3	146.7
Dehumidification capacity at 28°C – 60%	l/24h	36	51.6	71.1	101.6	132.3
Dehumidification capacity at 26°C – 60%	l/24h	33.5	47.3	65.8	93.4	121.3
Air flow	m³/h	500	800	1000	1400	1650
Availiable external pressure (external preassure optional)	Pa			50-150		
Nominal power consumption (1)(6)	kW	0.97	1.29	1.76	2.07	2.74
Maximum power consumption (2)(6)	kW	1.2	1.5	2	2.3	3.1
Electrical heater (optional)	kW		3 6			б
Maximum current consumption	А	3.9	5.6	8.4	10.5	13.2
Hot Water coil (optional) (4)	kW	3.5	7.5	8.5	13	14
Operating range (Humidity/Temperature)	kW		1.1	1.7	2.3	3
Power supply	% RH		50-	–99% RH / 20–36	°C	
Sound pressure level (3)	V/Ph/Hz			230/1/50		
Refrigerant/volume	dB(A)	50	52	54	59.5	61.5
CO <sub>2</sub> equivalent <sup>(10)</sup>	Type / g	R410A / 470	R410A	4/600	R410A/900	R410A / 1200
Dimensions (H x W x D)	t-CO₂ e	0.75 1.25 1.8		1.88	2.51	
Weight	mm	360 x 710 x 700 460 x 900 x 980 560 x 1			560 x 10	50 x 1160
Weight	kg	63	95	122	131	140

(8) without outdoor air supply (9) incl. 30% outdoor air supply (-5°C, 80% r.H.) (10) R410A global warming potential (GWP) = 2088 CO<sub>2</sub>e

<sup>(1)</sup> at  $t_R$  = 30°C; relative humidity = 80% r.H. (2) at  $t_R$  = 35°C; relative humidity = 75% r.H. (3) Laboratory values in 1 m in the open air in accordance with ISO 9614, actual values may vary

<sup>(4)</sup> at  $t_R$  = 30°C; water temperature 80/70°C, compressor in standby (5) at  $t_R$  = 30°C; relative humidity = 80%; water temperature 27/32°C (6) without electrical heater (7) sound power level compliant with ISO 9614

#### MAIN UNIT

## Condair **DP**



Technical Data		DP 75	DP 100	DP 150	DP 200	
Dehumidification capacity at 30°C – 80%	l/24h	73	95.2	157.1	194.3	
Dehumidification capacity at 30°C – 60%	l/24h	56.6	76.5	111	145.3	
Dehumidification capacity at 28°C – 60%	l/24h	51.6	71.1	103	133.5	
Dehumidification capacity at 26°C – 60%	l/24h	47.3	65.8	92.6	123.3	
Air flow	m³/h	800	1000	1500	1800	
Availiable external pressure (external preassure optional)	Pa		50-	-150		
Nominal power consumption (1)(6)	kW	1.4	1.82	2.27	2.9	
Maximum power consumption (2)(6)	kW	1.59	2.05	2.68	3.44	
Electrical heater (optional)	kW		3	6		
Maximum current consumption	А	7.8	9.1	12.4	15.7	
Hot Water coil (optional) (4)	kW	7.5	8.5	13.9	15.2	
Partial heat recovery unit (5)	kW	1.1	1.7	2.3	3	
Humidity/temp. operating range	% RH		50–99% RF	H / 20-36°C		
Power supply	V/Ph/Hz		230/	/1/50		
Sound pressure level (3)	dB(A)	52	54	60	62	
Refrigerant/volume	Type / g	R410/	R410A / 550 R410			
CO <sub>2</sub> equivalent <sup>(10)</sup>	t-CO₂ e	1.	1.15 2.3			
Dimensions (H x W x D)	mm	800 x 80	00 x 400	1000 x 1060 x 550		
Weight	kg	85	90	130	135	

Technical Data		DP 270	DP 350	DP 450	DP 550	DP 750	DP 950
Dehumidification capacity at 30°C – 80%	l/24h	263.1	340.2	418.8	566.8	751.1	939.3
Dehumidification capacity at 30°C – 60%	l/24h	185.1	262.3	336.3	425	596.4	759.7
Dehumidification capacity at 28°C – 60%	l/24h	168.9	242.9	313.5	392.6	554.7	706.7
Dehumidification capacity at 26°C – 60%	l/24h	153.4	223.9	290.8	359.6	513.5	654.6
Air flow	m³/h	3500	42	200	5500	7000	8500
Compression available (higher compression optional)	Pa			50-	150		
Nominal power consumption (1)(6)	kW	5.18	6.49	9.42	10.1	12.88	19.6
Maximum power consumption (2)(6)	kW	6.6	7.99	9.85	13	16	21
Electrical heater (optional)	kW	9 9/18					
Maximum current consumption	А	12	14.2	17.9	22	27	39
Hot Water coil (optional) (4)	kW	22.8	24	24	42	49	56
Partial heat recovery unit (5)	kW	1.8	2.2	2.7	3.5	-	-
Humidity/temp. operating range	% RH			50–99% RH	1/20-36°C		
Power supply	V/Ph/Hz			400/	'3/50		
Sound pressure level (3)	dB(A)	63	6	54		66	
Refrigerant/volume	Type / g	g R410A/ 3000 R410A/2500 R410A/ 9000 R4		R410A	/8000		
CO <sub>2</sub> equivalent (10)	t-CO₂e	6.26	5.	22	18.79	16	5.7
Dimensions (H x W x D)	mm	1378 x 1154 x 704 1750 x 1504 x 854			54		
Weight	kg	207	211	215	415	423	430

<sup>(1)</sup> at  $t_e$  = 30°C; relative humidity = 80% r.H. (2) at  $t_e$  = 35°C; relative humidity = 75% r.H. (3) Laboratory values in 1 m in the open air in accordance with ISO 9614, actual values may vary

<sup>(4)</sup> at  $t_R$  = 30°C; water temperature 80/70°C, compressor in standby (5) at  $t_R$  = 30°C; relative humidity = 80%; water temperature 27/32°C (6) without electrical heater (7) sound power level compliant with ISO 9614

#### HIGH-EFFICIENCY DEHUMIDIFIER

### Condair **DP-HE**



Technical Data		DP 1500-HE	DP 2000-HE	DP 2800-HE	DP 3500-HE
Dehumidification capacity at 30°C–60% (8)	l/24h	132.7	162.3	248.9	310.7
Dehumidification capacity at 30°C–60% <sup>(9)</sup>	I/24h	223	290.9	444.8	552.2
Dehumidification capacity at 28°C–60% (8)	l/24h	123.4	152	232.2	290
Dehumidification capacity at 28°C–60% <sup>(9)</sup>	l/24h	236.3	309.8	472.9	575.7
Dehumidification capacity at 26°C–60% (8)	l/24h	114.4	140.8	218.3	270.2
Dehumidification capacity at 26°C–60% <sup>(9)</sup>	l/24h	212.1	276.9	423.2	525.4
Air flow	m³/h	1500	2000	2800	3500
Available external preassure	Pa	200			
Fresh air available max.	m³/h	450	600	845	1050
Nominal power consumption (1)	kW	1.97	2.54	3.44	5.27
Maximum current consumption	А	6.8	9.4	12.7	17.7
Hot Water coil (optional) (4)	kW	18	23	28	33
Power supply	V/Ph/Hz		400/	/3/50	
Sound pressure level (3)	dB(A)	63	63	66	66
Refrigerant/volume	Type / g	R410A	R410A / 1600		R410A / 3000
CO <sub>2</sub> equivalent (10)	t-CO₂e	3.34	3.34	5.22	6.26
Dimensions (H x W x D)	mm	1770 x 1000 x 640 1850 x 1500 x 75			500 x 750
Weight	kg	290	305	400	420

Technical Data		DP 4200-HE	DP 5200-HE	DP 6000-HE		
Dehumidification capacity at 30°C–60% (8)	l/24h	376	464.4	565.2		
Dehumidification capacity at 30°C–60% <sup>(9)</sup>	l/24h	587.5	746.4	907.5		
Dehumidification capacity at 28°C–60% (8)	l/24h	350.4	434.1	527.2		
Dehumidification capacity at 28°C–60% <sup>(9)</sup>	l/24h	618.9	766.5	930.2		
Dehumidification capacity at 26°C–60% (8)	l/24h	325.8	407.8	492.4		
Dehumidification capacity at 26°C–60% <sup>(9)</sup>	l/24h	545.8	681	822.2		
Air flow	m³/h	4200	5200	6000		
Available external preassure	Pa		200			
Fresh air available max.	m³/h	1260	1560	1800		
Nominal power consumption (1)	kW	5.86	7.74	9.94		
Maximum current consumption	А	18.5	20.9	25.8		
Hot Water coil (optional) (4)	kW	53	64	70		
Power supply	V/Ph/Hz		400/3/50			
Sound pressure level (3)	dB(A)	68	6	9		
Refrigerant/volume	Type / g		R410A / 5000			
CO <sub>2</sub> equivalent (10)	t-CO₂e	10.44				
Dimensions (H x W x D)	mm	1950 x 1950 x 1250				
Weight	kg	570	590	620		

<sup>(1)</sup> at  $t_R$  = 30°C; relative humidity = 80% r.H. (2) at  $t_R$  = 35°C; relative humidity = 75% r.H. (3) Laboratory values in 1 m in the open air in accordance with ISO 9614, actual values may vary

<sup>(4)</sup> at  $t_R = 30^{\circ}$ C; water temperature  $80/70^{\circ}$ C, compressor in standby (5) at  $t_R = 30^{\circ}$ C; relative humidity = 80%; water temperature  $27/32^{\circ}$ C (6) without electrical heater

<sup>(6)</sup> without electrical heater (7) sound power level compliant with ISO 9614

## A comprehensive service

We offer a wide and comprehensive range of dehumidification options. For this reason, we recommend that when it comes to selecting your system, you consult a specialist who can offer objective, expert advice for planners, installers, and operators.

The experts at Condair are happy to help you plan, design, and select the best dehumidification system to meet your needs.

# Advice - Design - Supply - Commissioning Maintenance - Spares

Condair has manufacturing facilities in Asia, North America and Europe, as well as sales operations in 20 countries and distributors in over 50 more. Our staff and service technicians have specialist technical knowledge, and also product-specific experience in the optimal execution of installation and maintenance of equipment.





