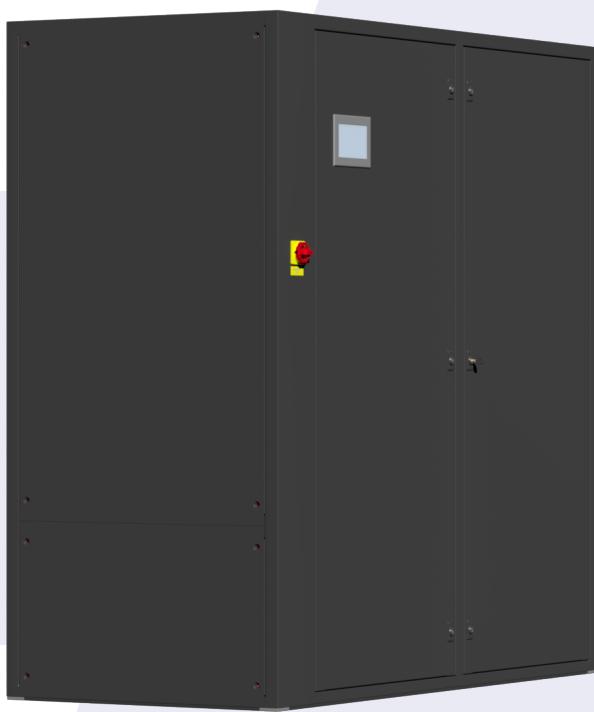


Delta DX/DC

DIRECT EXPANSION PRECISION AIR CONDITIONERS



- ▶ EFFICIENT COOLING FOR WIDE OPERATING RANGE
- ▶ PRECISE TEMPERATURE/HUMIDITY CONTROL
- ▶ HIGH-AVAILABILITY DUAL-COOL MODELS

20-100kW

56 MODELS: DOWNFLOW OR UPFLOW, SINGLE OR DUAL CIRCUIT



SCROLL



R410a



EC-FANS



MICROCHANNEL



UPFLOW



DOWNFLOW

Efficient and precise cooling

DELTA DX/DC CLOSE CONTROL COOLING SYSTEM PROVIDES PRECISE AND RELIABLE CONTROL OF INDOOR TEMPERATURE, HUMIDITY, AND AIRFLOW FOR PROPER OPERATION OF ELECTRONIC EQUIPMENT IN THE DATA CENTERS AND OTHER CRITICAL APPLICATIONS. AS THE HEAT DENSITY OF ELECTRONIC EQUIPMENT IN MODERN DATA CENTERS CONTINUE TO INCREASE, THE APPLICATION OF DELTA DX/DC SOLUTION MAINTAINS THE EFFICIENCY OF THE COOLING SYSTEM AND PERFORM AT OPTIMAL LEVELS.



Finned-tube heat exchangers

Delta DX/DC family features fin-tube heat exchangers with small-diameter inner grooved copper tubes and state-of-the-art aluminium fins. Inner grooving increases the internal surface space, while the groove's torsion promotes turbulent flow, improved refrigerant mixing, and eliminates incorrect refrigerant distribution, resulting in improved performance of the heat exchanger.

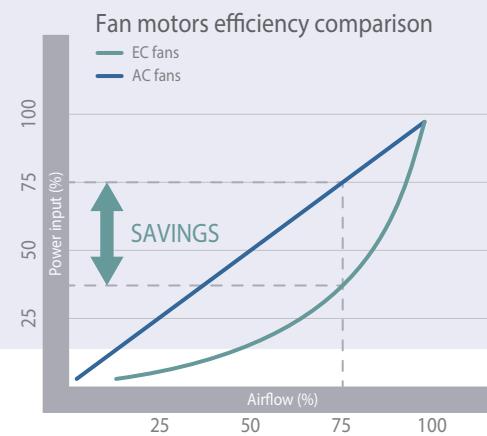
A small tube diameter requires less refrigerant and is able to withstand higher pressures. The fin geometry has been optimized to achieve improved heat transfer while retaining low airside pressure drops. The laboratory experiments showed that heat exchanger coils manufactured using small-diameter tubing reduced tube weight by 35%, fin weight by 30%, and lowered internal coil volume by 40% compared to the previous generation.

Latest generation radial EC-fans

Delta DX/DC features the backward-curved radial fans with unique blade geometry and offers increased airflow by smaller impeller size, wider efficiency range, and low sound output. EC motors use commutation electronics to sense the rotor position and adjust supply current, thus eliminating the need for mechanical brushes to deliver current to the motor windings. Elimination of physical contact reduces internal wear within the fan motor and significantly increases reliability. Electronically commutated motors feature overtemperature protection and are maintenance free and have a longer lifetime in comparison to any other type of motors.



Delta's air conditioners control the operation of the fans via built-in Modbus communications capabilities. This allows continuous fan health monitoring and also ensures minimum power draw at both full-load and part-load operation.



Centralized thermal control

The control hub of Delta DX/DC is a sophisticated microprocessor with control logic specially developed for direct expansion air conditioners. It integrates all components such as fans, valves, and sensors, thus managing the system's performance and power consumption, responding to the changes in cooling demand and environmental conditions - temperature and humidity, and controlling the operation of networked units. With our advanced control logic, the customers can apply various control strategies based on either constant temperature or pressure control.

The customer can manage the unit's performance either locally or remotely. The software allows configuring multiple units simultaneously by replicating the configuration and parameters onto a group of networked units, thus reducing commissioning time.



EER
UP TO
4.53

Dual-cool system

The dual-cool system provides thermal management from two independent cooling sources, with direct expansion and chilled water technologies, and provides a wide range of cooling solutions with a focus on either energy efficiency or system reliability. The Delta's control hub manages the system by activating DX or CW cooling circuits in accordance with the user settings. Chilled water circuit features 2-way regulating valve to control the cooling capacity.

Package, options and accessories

Description					
General					
Steam humidification system (standard/high duty)	<input type="checkbox"/>	Condensate discharge pump	<input type="checkbox"/>	Thermal and noise insulation	<input checked="" type="checkbox"/>
Dehumidification system	<input type="checkbox"/>	Floor stand	<input type="checkbox"/>	Motorized backdraft damper	<input type="checkbox"/>
Multi-stage electric heater w/ thyristor control	<input type="checkbox"/>	Noise-reduction shells for compressors	<input type="checkbox"/>	Air intake/discharge plenum	<input type="checkbox"/>
Refrigeration					
Electronic expansion valves (EEVs)	<input checked="" type="checkbox"/>	Solenoid valve on liquid line	<input type="checkbox"/>	Threaded connections	<input checked="" type="checkbox"/>
Solenoid valve on liquid line	<input type="checkbox"/>	Temperature probes on compressors suction/discharge	<input checked="" type="checkbox"/>	Brazed connections	<input type="checkbox"/>
Liquid receivers	<input type="checkbox"/>	Pressure transmitters on compressors suction/discharge	<input checked="" type="checkbox"/>	Filter-driers	<input checked="" type="checkbox"/>
Waterside (DC models)					
2-way regulating valve	<input checked="" type="checkbox"/>	3-way regulating valve	<input type="checkbox"/>	Temperature probes on water inlet/outlet	<input checked="" type="checkbox"/>
Airsides					
Constant temperature control	<input checked="" type="checkbox"/>	EC fans w/ Modbus connectivity	<input checked="" type="checkbox"/>	Temperature/humidity probe (loose)	<input type="checkbox"/>
Constant airflow control	<input type="checkbox"/>	Temperature probes on air intake/discharge	<input checked="" type="checkbox"/>	Grade G4 air filtration w/ filter change switch	<input checked="" type="checkbox"/>
Constant pressure control	<input type="checkbox"/>	Differential pressure switch	<input type="checkbox"/>	Grade F5 air filtration w/ filter change switch	<input type="checkbox"/>
Electric and controls					
Touch screen HMI	<input type="checkbox"/>	BMS connectivity	<input checked="" type="checkbox"/>	Dual power supply w/ changeover switch	<input type="checkbox"/>
Soft-starter	<input type="checkbox"/>	SNMP connectivity	<input checked="" type="checkbox"/>	Controller backup power supply	<input type="checkbox"/>
Power factor capacitors	<input type="checkbox"/>	Phase sequence control	<input type="checkbox"/>	Remote monitoring software	<input type="checkbox"/>

Standard feature
 Optional feature

Model identification

Delta	DX	D	80	/	2
Type	DX	Direct expansion air conditioner			
	DC	Dual-cool direct expansion + chilled water			
Air discharge arrangement	D	Downflow			
	U	Upflow			
Nominal capacity		in kW			
Refrigeration circuits		Number of circuits			

Frame sizes

Code	F1	F2	F3	F4	F5	F6
Width	mm	1095	1295	1595	1895	2195
Depth	mm	775	925	925	925	925
Height	mm	1950	1975	1975	1975	1975

Scroll compressors



The scroll compressors employed in the Delta DX/DC design is the result of large-scale research and development efforts underway since 1979. These efforts have led to the production of the most advanced scroll compressor design currently available for air-conditioning applications. Compressors feature onboard protection, communications, and real-time diagnostics streamed directly to the unit controller.

Delta DX/DC units are perfectly suitable for both constant heat load and variable heat load applications. The customers of Delta DX/DC systems with R410a optimized scroll compressors can benefit from the quiet operation, unmatched reliability and low operating cost.

Frame and assembly

Extensive use of aluminum components in Delta design makes the whole construction lightweight, yet durable. We paid special attention to Delta's enclosure airtightness to prevent leaks and maximize airside efficiency. The assembly of the units has been engineered for application flexibility, and as a result, Delta air conditioners are perfectly suitable for new and retrofit applications. Detachable face panels allow easy and quick access to unit internals for check and maintenance procedures.

Technical Specifications

Delta DX		DX U15/1	DX U20/1	DX U25/1	DX U30/1	DX U35/1	DX U40/1	DX U45/1
Upflow		F1	F1	F1	F2	F2	F2	F2
Frame size								
Air inlet temperature: 26°C; Relative humidity 40%; Condensing temperature 45°C								
Total cooling capacity	kW	20.2	22.4	26.8	33.2	38.5	42.6	46.4
Net cooling capacity	kW	19.4	21.4	25.7	31.8	36.5	40.6	44.4
Energy efficiency (EER)	kW/kW	4.53	4.13	4.02	4.41	4.21	4.22	4.18
Power input	kW	4.5	5.4	6.7	7.5	9.1	10.1	11.1
Supply air temperature	°C	15.8	15.5	14.4	15.2	15.1	14.9	14.2
Compressors				Scroll compressors				
Quantity		1	1	1	1	1	1	1
Power input	kW	3.7	4.5	5.6	6.2	7.2	8.1	9.1
Fans				EC-motor radial fans				
Quantity		1	1	1	1	1	1	1
Airflow	m³/h	5700	6100	6400	8700	10000	11000	11000
Power input	kW	0.8	0.9	1.1	1.3	1.9	2.0	2.0
Heat exchangers				RTPF				
Quantity		1	1	1	1	1	1	1
Refrigeration circuits				R410a				
Quantity		1	1	1	1	1	1	1
Dimensions and weight								
Width	mm	1095	1095	1095	1295	1295	1295	1295
Depth	mm	775	775	775	925	925	925	925
Height	mm	1950	1950	1950	1975	1975	1975	1975
Weight	kg	315	325	335	420	425	435	445

Delta DC		DC U15/1	DC U20/1	DC U25/1	DC U30/1	DC U35/1	DC U40/1	DC U45/1
Upflow		F1	F1	F1	F2	F2	F2	F2
Frame size								
DX mode: Air inlet temperature: 26°C; Relative humidity 40%; Condensing temperature 45°C								
Total cooling capacity	kW	20.3	22.1	26.2	32.5	37.6	41.4	45.4
Net cooling capacity	kW	19.5	21.1	25.0	31.1	35.6	39.4	43.3
Energy efficiency (EER)	kW/kW	4.51	4.06	3.92	4.30	4.09	4.10	4.09
Power input	kW	4.5	5.5	6.7	7.6	9.2	10.1	11.1
Supply air temperature	°C	15.4	15.2	14.2	14.8	14.8	14.6	14.0
CW mode: Air inlet temperature: 26°C; Relative humidity 40%; Water inlet/outlet temperatures 10/15°C								
Total cooling capacity	kW	20.8	22.0	22.8	32.2	36.2	38.4	38.4
Net cooling capacity	kW	20.0	21.0	21.7	30.8	34.2	36.4	36.4
Energy efficiency (EER)	kW/kW	25.7	22.2	20.0	23.7	17.8	19.0	19.0
Power input	kW	0.8	1.0	1.1	1.4	2.0	2.0	2.0
Supply air temperature	°C	15.1	15.2	15.3	14.9	15.2	15.4	15.4
Compressors				Scroll compressors				
Quantity		1	1	1	1	1	1	1
Power input	kW	3.7	4.5	5.6	6.2	7.2	8.1	9.1
Fans				EC-motor radial fans				
Quantity		1	1	1	1	1	1	1
Airflow	m³/h	5700	6100	6400	8700	10000	11000	11000
Power input	kW	0.8	1.0	1.1	1.4	2.0	2.0	2.0
Heat exchangers				RTPF				
Quantity		2	2	2	2	2	2	2
Refrigeration circuits				R410a				
Quantity		1	1	1	1	1	1	1
Water circuit				100% water				
Water flow	m³/h	3.6	3.8	3.9	5.6	6.2	6.6	6.6
Pressure drop	kPa	17	19	20	10	12	14	14
Dimensions and weight								
Width	mm	1095	1095	1095	1295	1295	1295	1295
Depth	mm	775	775	775	925	925	925	925
Height	mm	1950	1950	1950	1975	1975	1975	1975
Weight	kg	335	325	335	420	425	435	445

Technical Specifications

Delta DX	DX U50/2	DX U55/2	DX U60/2	DX U70/2	DX U80/2	DX U90/2	DX U100/2	
Upflow	F3	F4	F4	F5	F5	F6	F6	
Air inlet temperature: 26°C; Relative humidity 40%; Condensing temperature 45°C								
Total cooling capacity	kW	49.8	56.3	63.5	77.2	84.4	94.5	106.0
Net cooling capacity	kW	47.6	54.1	61.0	73.7	81.0	90.9	102.0
Energy efficiency (EER)	kW/kW	4.02	4.20	4.26	4.36	4.31	4.32	4.14
Power input	kW	12.4	13.4	14.9	17.7	19.6	21.9	25.6
Supply air temperature	°C	14.5	15.4	14.6	15.1	14.4	14.2	13.2
Compressors								
Quantity		2	2	2	2	2	2	2
Power input	kW	10.2	11.2	12.4	14.3	16.2	18.3	22.0
Fans								
Quantity		1	2	2	2	2	2	2
Airflow	m³/h	12000	15000	16000	20000	20000	22000	22000
Power input	kW	2.2	2.2	2.5	3.4	3.4	3.6	3.6
Heat exchangers								
Quantity		1	1	1	1	1	1	1
Refrigeration circuits								
Quantity		2	2	2	2	2	2	2
Dimensions and weight								
Width	mm	1595	1895	1895	2195	2195	2495	2495
Depth	mm	925	925	925	925	925	925	925
Height	mm	1975	1975	1975	1975	1975	1975	1975
Weight	kg	540	620	640	745	750	845	850

Delta DC	DC U50/2	DC U55/2	DC U60/2	DC U70/2	DC U80/2	DC U90/2	DC U100/2	
Upflow	F3	F4	F4	F5	F5	F6	F6	
DX mode: Air inlet temperature: 26°C; Relative humidity 40%; Condensing temperature 45°C								
Total cooling capacity	kW	48.6	55.1	61.9	75.4	82.5	92.0	104.0
Net cooling capacity	kW	46.4	52.9	59.3	71.9	79.0	88.1	94.9
Energy efficiency (EER)	kW/kW	3.92	4.11	4.13	4.24	4.19	4.09	3.95
Power input	kW	12.4	13.4	15.0	17.8	19.7	22.5	26.2
Supply air temperature	°C	14.2	15.0	14.4	14.7	14.1	14.0	13.1
CW mode: Air inlet temperature: 26°C; Relative humidity 40%; Water inlet/outlet temperatures 10/15°C								
Total cooling capacity	kW	45.6	54.5	56.2	81.7	81.7	92.8	92.8
Net cooling capacity	kW	43.4	52.2	53.6	78.2	78.2	88.5	88.5
Energy efficiency (EER)	kW/kW	20.4	23.8	22.0	23.5	23.5	21.9	21.9
Power input	kW	2.2	2.3	2.6	3.5	3.5	4.2	4.2
Supply air temperature	°C	14.6	15.1	15.2	13.8	13.8	13.4	13.4
Compressors								
Quantity		2	2	2	2	2	2	2
Power input	kW	10.2	11.1	12.4	14.3	16.2	18.3	22.0
Fans								
Quantity		1	2	2	2	2	2	2
Airflow	m³/h	12000	15000	16000	20000	20000	22000	22000
Power input	kW	2.2	2.3	2.6	3.5	3.5	4.2	4.2
Heat exchangers								
Quantity		2	2	2	2	2	2	2
Refrigeration circuits								
Quantity		2	2	2	2	2	2	2
Water circuit								
100% water								
Water flow	m³/h	7.9	9.4	9.7	14.1	14.1	16.0	16.0
Pressure drop	kPa	23	11	12	26	26	33	33
Dimensions and weight								
Width	mm	1595	1895	1895	2195	2195	2495	2495
Depth	mm	925	925	925	925	925	925	925
Height	mm	1975	1975	1975	1975	1975	1975	1975
Weight	kg	540	620	640	745	750	845	850

Technical Specifications

Delta DX Downflow	DX D15/1	DX D20/1	DX D25/1	DX D30/1	DX D35/1	DX D40/1	DX D45/1	
Frame size	F1	F1	F1	F2	F2	F2	F2	
Air inlet temperature: 26°C; Relative humidity 40%; Condensing temperature 45°C								
Total cooling capacity	kW	20.2	22.4	26.8	33.2	38.5	42.6	46.4
Net cooling capacity	kW	19.4	21.4	25.7	31.8	36.5	40.6	44.4
Energy efficiency (EER)	kW/kW	4.53	4.13	4.02	4.41	4.21	4.22	4.18
Power input	kW	4.5	5.4	6.7	7.5	9.1	10.1	11.1
Supply air temperature	°C	15.8	15.5	14.4	15.2	15.1	14.9	14.2
Compressors								
Quantity		1	1	1	1	1	1	1
Power input	kW	3.7	4.5	5.6	6.2	7.2	8.1	9.1
Fans								
Quantity		1	1	1	1	1	1	1
Airflow	m³/h	5700	6100	6400	8700	10000	11000	11000
Power input	kW	0.8	0.9	1.1	1.3	1.9	2.0	2.0
Heat exchangers								
Quantity		1	1	1	1	1	1	1
Refrigeration circuits								
Quantity		1	1	1	1	1	1	1
Dimensions and weight								
Width	mm	1095	1095	1095	1295	1295	1295	1295
Depth	mm	775	775	775	925	925	925	925
Height	mm	1950	1950	1950	1975	1975	1975	1975
Weight	kg	315	325	335	420	425	435	445

Delta DC Downflow	DC D15/1	DC D20/1	DC D25/1	DC D30/1	DC D35/1	DC D40/1	DC D45/1	
Frame size	F1	F1	F1	F2	F2	F2	F2	
DX mode: Air inlet temperature: 26°C; Relative humidity 40%; Condensing temperature 45°C								
Total cooling capacity	kW	20.3	22.1	26.2	32.5	37.6	41.4	45.4
Net cooling capacity	kW	19.5	21.1	25.0	31.1	35.6	39.4	43.3
Energy efficiency (EER)	kW/kW	4.51	4.06	3.92	4.30	4.09	4.10	4.09
Power input	kW	4.5	5.5	6.7	7.6	9.2	10.1	11.1
Supply air temperature	°C	15.4	15.2	14.2	14.8	14.8	14.6	14.0
CW mode: Air inlet temperature: 26°C; Relative humidity 40%; Water inlet/outlet temperatures 10/15°C								
Total cooling capacity	kW	20.8	22.0	22.8	32.2	36.2	38.4	38.4
Net cooling capacity	kW	20.0	21.0	21.7	30.8	34.2	36.4	36.4
Energy efficiency (EER)	kW/kW	25.7	22.2	20.0	23.7	17.8	19.0	19.0
Power input	kW	0.8	1.0	1.1	1.4	2.0	2.0	2.0
Supply air temperature	°C	15.1	15.2	15.3	14.9	15.2	15.4	15.4
Compressors								
Quantity		1	1	1	1	1	1	1
Power input	kW	3.7	4.5	5.6	6.2	7.2	8.1	9.1
Fans								
Quantity		1	1	1	1	1	1	1
Airflow	m³/h	5700	6100	6400	8700	10000	11000	11000
Power input	kW	0.8	1.0	1.1	1.4	2.0	2.0	2.0
Heat exchangers								
Quantity		2	2	2	2	2	2	2
Refrigeration circuits								
Quantity		1	1	1	1	1	1	1
Water circuit								
100% water								
Water flow	m³/h	3.6	3.8	3.9	5.6	6.2	6.6	6.6
Pressure drop	kPa	17	19	20	10	12	14	14
Dimensions and weight								
Width	mm	1095	1095	1095	1295	1295	1295	1295
Depth	mm	775	775	775	925	925	925	925
Height	mm	1950	1950	1950	1975	1975	1975	1975
Weight	kg	335	325	335	420	425	435	445

Technical Specifications

Delta DX Downflow	DX D50/2	DX D55/2	DX D60/2	DX D70/2	DX D80/2	DX D90/2	DX D100/2	
Frame size	F3	F4	F4	F5	F5	F6	F6	
Air inlet temperature: 26°C; Relative humidity 40%; Condensing temperature 45°C								
Total cooling capacity	kW	49.8	56.3	63.5	77.2	84.4	94.5	106.0
Net cooling capacity	kW	47.6	54.1	61.0	73.7	81.0	90.9	102.0
Energy efficiency (EER)	kW/kW	4.02	4.20	4.26	4.36	4.31	4.32	4.14
Power input	kW	12.4	13.4	14.9	17.7	19.6	21.9	25.6
Supply air temperature	°C	14.5	15.4	14.6	15.1	14.4	14.2	13.2
Compressors								
Quantity		2	2	2	2	2	2	2
Power input	kW	10.2	11.2	12.4	14.3	16.2	18.3	22.0
Fans								
Quantity		1	2	2	2	2	2	2
Airflow	m³/h	12000	15000	16000	20000	20000	22000	22000
Power input	kW	2.2	2.2	2.5	3.4	3.4	3.6	3.6
Heat exchangers								
Quantity		1	1	1	1	1	1	1
Refrigeration circuits								
Quantity		2	2	2	2	2	2	2
Dimensions and weight								
Width	mm	1595	1895	1895	2195	2195	2495	2495
Depth	mm	925	925	925	925	925	925	925
Height	mm	1975	1975	1975	1975	1975	1975	1975
Weight	kg	540	620	640	745	750	845	850

Delta DC Downflow	DC D50/2	DC D55/2	DC D60/2	DC D70/2	DC D80/2	DC D90/2	DC D100/2	
Frame size	F3	F4	F4	F5	F5	F6	F6	
DX mode: Air inlet temperature: 26°C; Relative humidity 40%; Condensing temperature 45°C								
Total cooling capacity	kW	48.6	55.1	61.9	75.4	82.5	92.0	104.0
Net cooling capacity	kW	46.4	52.9	59.3	71.9	79.0	88.1	94.9
Energy efficiency (EER)	kW/kW	3.92	4.11	4.13	4.24	4.19	4.09	3.95
Power input	kW	12.4	13.4	15.0	17.8	19.7	22.5	26.2
Supply air temperature	°C	14.2	15.0	14.4	14.7	14.1	14.0	13.1
CW mode: Air inlet temperature: 26°C; Relative humidity 40%; Water inlet/outlet temperatures 10/15°C								
Total cooling capacity	kW	45.6	54.5	56.2	81.7	81.7	92.8	92.8
Net cooling capacity	kW	43.4	52.2	53.6	78.2	78.2	88.5	88.5
Energy efficiency (EER)	kW/kW	20.4	23.8	22.0	23.5	23.5	21.9	21.9
Power input	kW	2.2	2.3	2.6	3.5	3.5	4.2	4.2
Supply air temperature	°C	14.6	15.1	15.2	13.8	13.8	13.4	13.4
Compressors								
Quantity		2	2	2	2	2	2	2
Power input	kW	10.2	11.1	12.4	14.3	16.2	18.3	22.0
Fans								
Quantity		1	2	2	2	2	2	2
Airflow	m³/h	12000	15000	16000	20000	20000	22000	22000
Power input	kW	2.2	2.3	2.6	3.5	3.5	4.2	4.2
Heat exchangers								
Quantity		2	2	2	2	2	2	2
Refrigeration circuits								
Quantity		2	2	2	2	2	2	2
Water circuit								
100% water								
Water flow	m³/h	7.9	9.4	9.7	14.1	14.1	16.0	16.0
Pressure drop	kPa	23	11	12	26	26	33	33
Dimensions and weight								
Width	mm	1595	1895	1895	2195	2195	2495	2495
Depth	mm	925	925	925	925	925	925	925
Height	mm	1975	1975	1975	1975	1975	1975	1975
Weight	kg	540	620	640	745	750	845	850

The development of Kaltra products and services is continuous and the information in this document may not be up to date. Please check the current position with Kaltra.