Delta CW/CWU

CHILLED WATER PRECISION AIR CONDITIONERS

- EFFICIENT COOLING FOR WIDE OPERATING RANGE
- HIGH-AVAILABILITY DUAL-CIRCUIT MODELS
- DESIGNED FOR INSTALLATION FLEXIBILITY

10-200kW

160 MODELS: DOWNDLOW OR UPFLOW, SINGLE OR DUAL CIRCUIT, EQUIPPED WITH AC OR EC FANS

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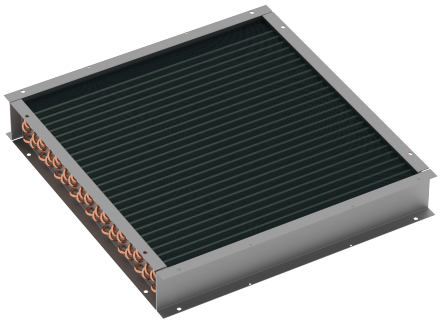
Precise, reliable thermal control

DELTA CW/CWU AIR CONDITIONERS PROVIDE PRECISE AND RELIABLE CONTROL OF INDOOR TEMPERATURE, HUMIDITY AND AIRFLOW FOR PROPER OPERATION OF COOLED EQUIPMENT. DELTA CW/CWU AIR CONDITIONERS ARE AVAILABLE IN DOWN OR TOP AIR DISCHARGE DESIGNS, WITH INTEGRATED OR UNDERFLOOR FANS, WITH EITHER SINGLE OR DUAL WATER CIRCUITS, AND DIFFERENT HEAT EXCHANGER PERFORMANCE.

Finned-tube heat exchangers

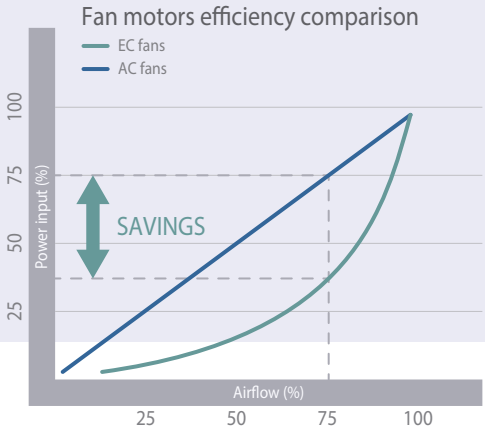
Delta CW/CWU family features fin-tube heat exchangers with small-diameter inner grooved copper tubes and aluminium fins. Inner grooving increases the internal surface space, while the groove's torsion promotes turbulent flow, improved cooling media mixing, and eliminate cooling media maldistribution, resulting in improved heat exchanger performance.

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 CW/CWU 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' 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 CW/CWU is a sophisticated microprocessor with control logic specially developed for chilled water 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
49.4

Frame and assembly

Extensive use of aluminuim 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.

Single/dual independent water circuits with smart balancing system

Delta CW/CWU units are available in single- or dual-circuit configuration, with the latter featuring fully independent loops, each connected to the dedicated cooling coil. When connected to separate chilled water sources, dual-circuit models can be used for redundancy purposes in high-availability applications. The flow is controlled with the aim of balancing valves. We make available the following circuit arrangements:

- With a single 2-way balancing valve for the systems without bypass
- A system with two 2-way balancing valves installed on water outlet connection and on the bypass
- With 3-way valve and manual balancing valve on the bypass line

The flow balancing is based on continuous pressure drop measurements on return and bypass lines. Depending on these measurements, Delta air conditioner adjusts two-way valve and maintains necessary water flow through the cooling coils, thus avoiding the need for manual balancing. Automatic balancing system fits ideally with variable-flow chilled water systems.

Package, options and accessories

Description					
General					
Steam humidification system	□	Condensate discharge pump	□	Thermal and noise insulation	■
Dehumidification system	□	Floor stand (CW models)	□	Motorized backdraft damper	□
Multi-stage electric heater w/ thyristor control	□	Floor stand (CW models) w/ blind paneling	□	Air intake/discharge plenum	□
Waterside					
2-way regulating + 2-way balancing valves	□	2-way regulating valve (no bypass)	■	Test connections on water inlet/outlet	■
3-way regulating + manual balancing valves	□	Temperature probes on water inlet/outlet	■	Leakage detection	□
Airside					
EC fans w/ Modbus connectivity	■	Temperature probes on air intake/discharge	■	Temperature probe (loose)	□
AC fans	□	Differential pressure switch	□	Humidity probe (loose)	□
Constant temperature control	■	Smoke detection	□	Grade G4 air filtration w/ filter change switch	■
Constant pressure control	□	Fire detection	□	Grade F5 air filtration w/ filter change switch	□
Electric and controls					
Touch screen HMI	□	BMS connectivity	■	Dual power supply w/ changeover switch	□
Controller backup power supply	□	SNMP connectivity	■	Remote monitoring software	□

■ Standard feature
□ Optional feature

Model identification

Delta CWU D 120 S - H - E

Type	CW	Chilled water - integrated fans
	CWU	Chilled water - underfloor fans
Air discharge arrangement	D	Downflow
	U	Upflow
Nominal capacity		in kW
Chilled water circuit(s)	S	Single-circuit models
	D	Dual-circuit models
Heat exchanger performance	R	Standard
	H	High
	U	Ultra-high
Fan type	A	AC-motor radial fans
	E	EC-motor radial fans

Frame sizes

		F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11
Width	mm	645	795	1095	1095	1295	1625	1875	2175	2495	2895	3495
Depth	mm	675	675	775	925	925	925	925	925	925	925	925
Height	mm	1925	1925	1925	1925	1985	1985	1985	1985	1985	1985	1985
Underfloor height (CWU)	mm	-	-	-	-	525	525	525	525	525	525	525

Technical Specifications

Delta CW Downflow, single-circuit		CW D10 SR	CW D20 SR	CW D30 SR	CW D40 SR	CW D50 SR	CW D60 SR	CW D70 SR	CW D80 SR	CW D100 SR	CW D120 SR	CW D140 SR	CW D160 SR
Frame size		F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F11
Fluid: water 100%; Water inlet/outlet temperatures: 10/15°C; Air inlet temperature: 26°C; Relative humidity 40%													
Total cooling capacity	kW	10.5	17.2	26.6	37.3	44.8	58.2	68.5	83.5	98.6	115.0	132.0	164.0
Net cooling capacity	kW	10.1	16.2	25.0	35.1	42.7	55.3	65.1	79.5	92.5	109.2	124.0	158.3
Energy efficiency (EER)	kW/kW	28.4	19.5	16.0	17.0	20.8	20.1	19.7	21.0	15.9	17.9	20.5	25.5
Power input	kW	0.37	0.88	1.66	2.20	2.15	2.90	3.47	3.98	6.22	6.42	6.44	6.44
Supply air temperature	°C	15.2	15.5	15.8	15.7	15.8	15.4	15.8	15.7	15.6	15.6	15.5	12.8
Weight	kg	215	255	325	330	380	465	530	590	655	755	900	965
Fans		EC-motor radial fans											
Quantity		1	1	1	1	1	2	2	2	3	3	3	3
Airflow	m^3/h	3000	5000	7750	10750	13000	16250	20000	24250	28250	33000	37250	37250
External static pressure	Pa	20	20	20	20	20	20	20	20	20	20	20	20
Power input	kW	0.37	0.88	1.66	2.20	2.15	2.90	3.47	3.98	6.22	6.42	6.44	6.44
Heat exchangers		RTPF											
Quantity		1	1	1	1	1	1	1	1	1	1	1	1
Water flow	m^3/h	1.81	2.95	4.58	6.43	7.72	10.00	11.80	14.40	17.00	19.80	22.50	28.30
Pressure drop	kPa	14.5	37.6	34.5	28.6	32.7	33.8	31.3	26.7	38.7	39.4	53.4	42.1

Delta CW Downflow, dual-circuit		CW D10 DR	CW D20 DR	CW D30 DR	CW D40 DR	CW D50 DR	CW D60 DR	CW D70 DR	CW D80 DR	CW D100 DR	CW D120 DR	CW D140 DR	CW D160 DR
Frame size		F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F11
Fluid: water 100%; Water inlet/outlet temperatures: 10/15°C; Air inlet temperature: 26°C; Relative humidity 40%													
Total cooling capacity	kW	10.5	17.2	26.6	37.3	44.8	58.2	68.5	83.5	98.6	115.0	132.0	164.0
Net cooling capacity	kW	10.2	16.1	24.8	35.2	42.3	55.1	64.8	78.8	92.0	108.3	123.2	157.8
Energy efficiency (EER)	kW/kW	32.8	17.4	14.7	17.4	17.5	18.8	18.3	17.3	14.7	16.1	17.2	21.4
Power input	kW	0.32	0.99	1.81	2.14	2.56	3.10	3.74	4.82	6.72	7.14	7.66	7.66
Supply air temperature	°C	15.2	15.6	15.8	15.7	15.8	15.4	15.8	15.7	15.6	15.6	15.5	12.9
Weight	kg	235	280	355	375	430	535	605	680	770	880	1050	1115
Fans		EC-motor radial fans											
Quantity		1	1	1	1	1	2	2	2	3	3	3	3
Airflow	m^3/h	3000	5000	7750	10750	13000	16250	20000	24250	28250	33000	37250	37250
External static pressure	Pa	20	20	20	20	20	20	20	20	20	20	20	20
Power input	kW	0.32	0.99	1.81	2.14	2.56	3.10	3.74	4.82	6.72	7.14	7.66	7.66
Heat exchangers		RTPF											
Quantity		2	2	2	2	2	2	2	2	2	2	2	2
Water flow	m^3/h	1.81	2.95	4.58	6.43	7.72	10.00	11.80	14.40	17.00	19.80	22.50	28.30
Pressure drop	kPa	14.5	37.6	34.5	28.6	32.7	33.8	31.3	26.7	38.7	39.4	53.4	42.1

Delta CW Upflow, single-circuit		CW U10 SR	CW U20 SR	CW U30 SR	CW U40 SR	CW U50 SR	CW U60 SR	CW U70 SR	CW U80 SR	CW U100 SR	CW U120 SR
Frame size		F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
Fluid: water 100%; Water inlet/outlet temperatures: 10/15°C; Air inlet temperature: 26°C; Relative humidity 40%											
Total cooling capacity	kW	10.5	17.2	26.6	37.3	44.8	58.2	68.5	83.5	98.6	115.0
Net cooling capacity	kW	10.1	16.2	25.0	35.1	42.7	55.3	65.1	79.5	92.4	109.2
Energy efficiency (EER)	kW/kW	28.4	19.5	16.0	17.0	20.8	20.1	19.7	21.0	15.9	17.9
Power input	kW	0.37	0.88	1.66	2.20	2.15	2.90	3.47	3.98	6.22	6.42
Supply air temperature	°C	15.2	15.6	15.8	15.7	15.8	15.4	15.8	15.5	15.6	15.6
Weight	kg	205	240	300	320	345	430	485	535	600	680
Fans		EC-motor radial fans									
Quantity		1	1	1	1	1	2	2	2	3	3
Airflow	m^3/h	3000	5000	7750	10750	13000	16250	20000	24250	28250	33000
External static pressure	Pa	20	20	20	20	20	20	20	20	20	20
Power input	kW	0.37	0.88	1.66	2.20	2.15	2.90	3.47	3.98	6.22	6.42
Heat exchangers		RTPF									
Quantity		1	1	1	1	1	1	1	1	1	1
Water flow	m^3/h	1.81	2.95	4.58	6.43	7.72	10.00	11.80	14.40	17.00	19.80
Pressure drop	kPa	14.5	37.6	34.5	28.6	32.7	33.8	31.3	26.7	38.7	39.4

Technical Specifications

Delta CW Upflow, dual-circuit		CW U10 DR	CW U20 DR	CW U30 DR	CW U40 DR	CW U50 DR	CW U60 DR	CW U70 DR	CW U80 DR	CW U100 DR	CW U120 DR
Frame size		F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
Fluid: water 100%; Water inlet/outlet temperatures: 10/15°C; Air inlet temperature: 26°C; Relative humidity 40%											
Total cooling capacity	kW	10.5	17.2	26.6	37.3	44.8	58.2	68.5	83.5	98.6	115.0
Net cooling capacity	kW	10.2	16.1	24.8	35.2	42.3	55.1	64.8	78.7	91.9	108.3
Energy efficiency (EER)	kW/kW	32.8	17.4	14.7	17.4	17.5	18.8	18.3	17.3	14.7	16.1
Power input	kW	0.32	0.99	1.81	2.14	2.56	3.10	3.74	4.82	6.72	7.14
Supply air temperature	°C	15.2	15.6	15.8	15.7	15.8	15.4	15.8	15.7	15.6	15.6
Weight	kg	225	260	335	365	400	490	560	625	700	805
Fans		EC-motor radial fans									
Quantity		1	1	1	1	1	2	2	2	3	3
Airflow	m^3/h	3000	5000	7750	10750	13000	16250	20000	24250	28250	33000
External static pressure	Pa	20	20	20	20	20	20	20	20	20	20
Power input	kW	0.32	0.99	1.81	2.14	2.56	3.10	3.74	4.82	6.72	7.14
Heat exchangers		RTPF									
Quantity		2	2	2	2	2	2	2	2	2	2
Water flow	m^3/h	1.81	2.95	4.58	6.43	7.72	10.00	11.80	14.40	17.00	19.80
Pressure drop	kPa	14.5	37.6	34.5	28.6	32.7	33.8	31.3	26.7	38.7	39.4

Delta CW Downflow, single-circuit		CW D10 SH	CW D20 SH	CW D30 SH	CW D40 SH	CW D50 SH	CW D60 SH	CW D70 SH	CW D80 SH	CW D100 SH	CW D120 SH	CW D140 SH
Frame size		F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11
Fluid: water 100%; Water inlet/outlet temperatures: 10/15°C; Air inlet temperature: 26°C; Relative humidity 40%												
Total cooling capacity	kW	11.7	19.7	30.8	38.4	48.9	58.2	76.4	89.9	100.0	117.0	152.5
Net cooling capacity	kW	11.4	18.8	29.4	36.6	46.7	55.2	72.7	86.2	95.7	112.3	146.8
Energy efficiency (EER)	kW/kW	35.5	22.1	21.5	21.3	21.9	19.7	21.0	23.6	20.5	20.6	23.0
Power input	kW	0.33	0.89	1.43	1.80	2.23	2.96	3.64	3.81	4.88	5.67	7.21
Supply air temperature	°C	15.2	15.4	14.9	15.1	15.3	15.6	14.9	14.9	14.7	14.9	14.9
Weight	kg	215	255	325	330	380	470	530	590	660	755	905
Fans		EC-motor radial fans										
Quantity		1	1	1	1	1	2	2	2	3	3	3
Airflow	m^3/h	3250	5500	8250	10500	13500	16750	20500	24250	26500	31500	39500
External static pressure	Pa	20	20	20	20	20	20	20	20	20	20	20
Power input	kW	0.33	0.89	1.43	1.80	2.23	2.96	3.64	3.81	4.88	5.67	6.62
Heat exchangers		RTPF										
Quantity		1	1	1	1	1	1	1	1	1	1	1
Water flow	m^3/h	2.02	3.39	5.31	6.62	8.42	10.00	13.20	15.50	17.30	20.20	26.2
Pressure drop	kPa	17.9	42.1	47.6	38.7	46.2	26.2	45.8	65.2	54.7	51.3	45.3

Delta CW Downflow, single-circuit		CW D10 SU	CW D20 SU	CW D30 SU	CW D40 SU	CW D60 SU	CW D80 SU	CW D100 SU	CW D120 SU	CW D140 SU	CW D160 SU	CW D180 SU
Frame size		F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11
Fluid: water 100%; Water inlet/outlet temperatures: 10/15°C; Air inlet temperature: 26°C; Relative humidity 40%												
Total cooling capacity	kW	15.3	24.8	38.6	48.2	62.1	76.8	94.7	111.0	122.0	144.0	183.0
Net cooling capacity	kW	15.0	23.9	37.1	46.3	59.8	73.7	91.0	107.0	117.4	138.0	176.2
Energy efficiency (EER)	kW/kW	49.4	27.3	26.4	25.6	26.4	24.7	25.7	27.5	24.2	24.4	26.4
Power input	kW	0.31	0.91	1.46	1.88	2.35	3.11	3.68	4.03	5.04	5.90	6.93
Supply air temperature	°C	11.5	12.5	12.1	12.3	12.3	12.3	12.2	12.4	12.2	12.3	12.2
Weight	kg	220	260	330	335	385	480	540	600	670	765	930
Fans		EC-motor radial fans										
Quantity		1	1	1	1	1	2	2	2	3	3	3
Airflow	m^3/h	3250	5500	8250	10500	13500	16750	20500	24250	26500	31500	39500
External static pressure	Pa	20	20	20	20	20	20	20	20	20	20	20
Power input	kW	0.31	0.91	1.46	1.88	2.35	3.11	3.68	4.03	5.04	5.90	6.93
Heat exchangers		RTPF										
Quantity		1	1	1	1	1	1	1	1	1	1	1
Water flow	m^3/h	2.64	4.27	6.64	8.30	10.72	13.22	16.33	19.14	21.02	24.8	31.50
Pressure drop	kPa	51.4	31.8	43.2	55.4	45.5	49.8	52.7	40.5	513.	54.9	92.1

Technical Specifications

Delta CWU Downflow, single-circuit		CWU D40 SR	CWU D60 SR	CWU D80 SR	CWU D100 SR	CWU D120 SR	CWU D140 SR	CWU D180 SR
Frame size		F5	F6	F7	F8	F9	F10	F11
Fluid: water 100%; Water inlet/outlet temperatures: 10/15°C; Air inlet temperature: 26°C; Relative humidity 40%								
Total cooling capacity	kW	49.0	72.4	81.9	106.0	122.0	145.0	186.0
Net cooling capacity	kW	46.6	68.0	77.2	99.2	116.0	138.0	178.4
Energy efficiency (EER)	kW/kW	20.4	16.1	17.1	16.1	19.4	20.7	21.4
Power input	kW	2.40	4.50	4.80	6.60	6.30	7.00	8.70
Supply air temperature	°C	15.5	15.0	15.4	15.5	15.3	15.4	15.3
Weight	kg	410	520	595	695	795	910	1105
Fans					EC-motor radial fans			
Quantity		1	2	2	3	3	3	4
Airflow	m^3/h	14000	19750	23000	30000	34000	41000	52000
External static pressure	Pa	20	20	20	20	20	20	20
Power input	kW	2.40	4.50	4.80	6.60	6.30	7.00	8.70
Heat exchangers					RTPF			
Quantity		1	1	1	1	1	1	1
Water flow	m^3/h	8.45	12.52	14.13	18.25	21.13	25.04	32.13
Pressure drop	kPa	40.3	57.7	46.2	46.4	65.5	66.3	59.0

Delta CWU Downflow, dual circuit		CWU D40 DR	CWU D60 DR	CWU D80 DR	CWU D100 DR	CWU D120 DR	CWU D140 DR	CWU D180 DR
Frame size		F5	F6	F7	F8	F9	F10	F11
Fluid: water 100%; Water inlet/outlet temperatures: 10/15°C; Air inlet temperature: 26°C; Relative humidity 40%								
Total cooling capacity	kW	49.0	72.4	81.9	106.0	122.0	145.0	186.0
Net cooling capacity	kW	46.9	67.3	77.2	98.3	115.0	137.0	176.4
Energy efficiency (EER)	kW/kW	23.0	14.0	17.1	13.7	16.7	17.2	18.4
Power input	kW	2.13	5.18	4.80	7.72	7.32	8.43	10.10
Supply air temperature	°C	15.5	15.0	15.4	15.5	15.3	15.4	15.3
Weight	kg	490	585	670	785	895	1035	1255
Fans					EC-motor radial fans			
Quantity		1	2	2	3	3	3	4
Airflow	m^3/h	14000	19750	23000	30000	34000	41000	52000
External static pressure	Pa	20	20	20	20	20	20	20
Power input	kW	2.13	5.18	4.80	7.72	7.32	8.43	10.10
Heat exchangers					RTPF			
Quantity		2	2	2	2	2	2	2
Water flow	m^3/h	8.45	12.52	14.13	18.25	21.13	25.04	32.13
Pressure drop	kPa	40.3	57.7	46.2	46.4	65.5	66.3	59.0

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.