DAIKIN

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Technically better...

EWAD-CZ

Air cooled screw chillers

Product manual

CZXS (High Efficiency - Standard Noise) - Cooling Capacity from 672 to 1802 kW
CZXL (High Efficiency - Low Noise) - Cooling Capacity from 672 to 1802 kW
CZXR (High Efficiency - Reduced Noise) - Cooling Capacity from 635 to 1712 kW
Performance according to EN14511.
Refrigerant: R134a

Code	CSS - Rev. 9.5
Date	November 2015
EWAD-CZ	R3.7.6

Table of content

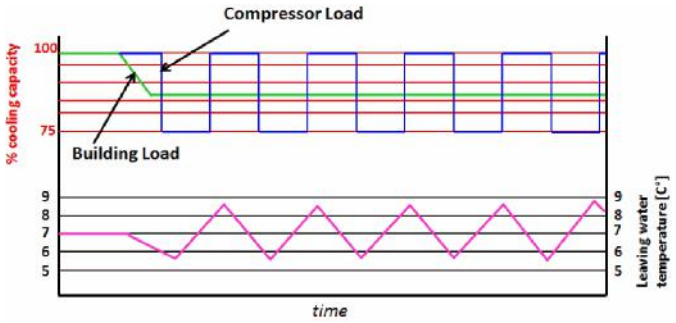
EWAD-CZ

Low operating cost and extended operating life This chiller range is the result of careful design, aimed to optimize the energy efficiency of the chillers, with the objective of bringing down operating costs and improving installation profitability, effectiveness and economical management.
The chillers feature a high efficiency single screw Inverter driven compressor design, large condenser coil surface area for maximum heat transfer and low discharge pressure, advanced technology condenser fans and a 'shell&tube' evaporator with low refrigerant pressure drops.

Outstanding reliability The chillers have two or three truly independent refrigerant circuits, in order to assure maximum safety for any maintenance, whether planned or not. They are equipped with a rugged compressor design with advanced composite compressor gaterotors material, a proactive control logic and are full factory-run-tested to optimized trouble-free operation.

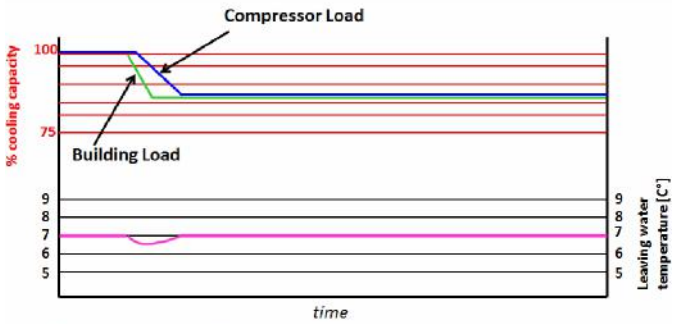
Infinite capacity control Cooling capacity control is infinitely variable by means of a Inverter driven screw compressor controlled by microprocessor system. Each unit has infinitely variable capacity control from 100% down to 13,5%. This modulation allows the compressor capacity to exactly match the building cooling load without any leaving evaporator water temperature fluctuation. This chilled water temperature fluctuation is avoided only with a stepless control.

With a compressor load step control in fact, the compressor capacity, at partial loads, will be too high or too low compared to the building cooling load. The result is an increase in chiller energy costs, particularly at the part-load conditions at which the chiller operates most of the time.



EWLT fluctuaction with steps capacity control (4 steps)

Units with stepless regulation offer benefits that the units with step regulation are unable to match. The ability to follow the system energy demand at any time and the possibility to provide steady outlet water temperature without deviations from the set-point, are the two points that allow you to understand how the optimum operating conditions of a system can be met through the use of a unit with stepless regulation.



EWLT fluctuaction with stepless capacity control

Superior control logic The new MicroTech III controller provides an easy to use control environmental. The control logic is designed to provide maximum efficiency, to continue operation in unusual operating conditions and to provide a history of unit operation. One of the greatest benefits is the easy interface with LonWorks, Bacnet, Ethernet TCP/IP or Modbus communications.

High part load efficiency High efficiency at full load, but especially maximum efficiency at part load conditions - which is the majority of the operating time of a chiller - are the factors that allow considerable savings in a system's annual energy costs.
With the objective of bringing down these operating costs and improving a building's economical management, this inverter range has been designed to optimize the seasonal energy efficiency (ESEER).

Seasonal quietness Very low sound levels in part load conditions are achieved by varying the fan speed, but especially thanks to the variation of compressor frequency, which ensure the minimum sound level at all the time.

Quick comfort conditions The ability to vary the output power in direct relation to the cooling requirements of the system, allow the possibility to achieve building comfort conditions much faster at start-up.

Low starting current No current spikes at start-up. The starting current is always lower than current absorbed in the maximum operating conditions (FLA).

Displacement power factor always > 0.95 This inverter range can operate always with a displacement power factor > 0.95, which allows building owners to avoid power factor penalties and decrease electrical losses in cable and transformers.

Code requirements – Safety and observant of laws/directives Units are designed and manufactured in accordance with applicable selections of the following:

Construction of pressure vessel	97/23/EC (PED)
Machinery Directive	2006/42/EC
Low Voltage	2006/95/EC
Electromagnetic Compatibility	2004/108/EC
Electrical & Safety codes	EN 60204–1 / EN 60335-2-40
Manufacturing Quality Stds	UNI – EN ISO 9001:2004

Certifications Units are CE marked, complying with European directives in force, concerning manufacturing and safety. On request units can be produced complying with laws in force in non European countries (ASME, GOST, etc.), and with other applications, such as naval (RINA, etc.).

Versions This range is available as high efficiency version:

HIGH EFFICIENCY
13 sizes to cover a range from 635 up to 1802 kW with an ESEER up to 5.80.

The EER (Energy Efficiency Ratio) is the ratio of the Cooling Capacity to the Power Input of the unit. The Power Input includes: the power input for operation of the compressor, the power input of all control and safety devices, the power input for fans.

The ESEER (European Seasonal Energy Efficiency Ratio) is a weighed formula enabling to take into account the variation of EER with the load rate and the variation of air inlet condenser temperature.

ESEER = A x EER100% + B x EER75% + C x EER50% + D x EER25%

	A	B	C	D
K	0.03 (3%)	0.33 (33%)	0.41 (41%)	0.23 (23%)
T	35°C	30°C	25°C	20°C

K = Coefficient; T = Air inlet condenser temperature.

Sound configurations Standard, low and reduced sound configurations available as follows:

STANDARD SOUND
Condenser fan rotating at 900 rpm, rubber antivibration under compressor

LOW SOUND
Condenser fan rotating at 900 rpm, rubber antivibration under compressor, compressor sound enclosure.

REDUCED SOUND
Condenser fan rotating at 700 rpm, rubber antivibration under compressor, compressor sound enclosure.

Cabinet and structure The cabinet is made of galvanized steel sheet and painted to provide a high resistance to corrosion. Colour Ivory White (Munsell code 5Y7.5/1) (±RAL7044).The base frame has an eye-hook to lift the unit with ropes for an easy installation. The weight is uniformly distributed along the profiles of the base and this facilitates the arrangement of the unit.

Compressor The compressor is semi-hermetic, single-screw type with gate-rotor made with the latest high-strength fibre reinforced star material. Each compressor has one inverter managed by the unit microprocessor for infinitely modulating the capacity. An integrated high efficiency oil separator maximizes the oil separation and standard start is Inverter type.

Refrigerant The compressors have been designed to operate with R-134a, ecological refrigerant with zero ODP (Ozone Depletion Potential) and very low GWP (Global Warming Potential), resulting in low TEWI (Total Equivalent Warming Impact).

Evaporator (Shell&Tube) The unit is equipped with a direct expansion shell&tube evaporator with refrigerant evaporating inside the tubes and water flowing outside. The tubes are enhanced for maximum heat transfer and rolled into steel tube sheet and sealed.

The evaporators are single-pass on both the refrigerant and water sides for pure counter-flow heat exchange and low refrigerant pressure drops. Both attributes contribute to the heat exchanger effectiveness and total unit's outstanding efficiency. The water side is designed for 10 bar of maximum operating pressure and is provided with vents and drain.

The external shell is covered with a 20mm closed cell insulation material and the evaporator water connections are provided with victaulic kit (as standard). Each evaporator has 2 or 3 circuits, one for each compressor and is manufactured in accordance to 97/23/EC directive (PED). Water filter not available.

Condenser The condenser is manufactured with internally enhanced seamless copper tubes arranged in a staggered row pattern and mechanically expanded into lanced and rippled aluminum condenser fins with full fin collars. An integral sub-cooler circuit provides sub-cooling to effectively eliminate liquid flashing and increase cooling capacity without increasing the power input.

Condenser fans (ø 800) The condenser fans are propeller type with high efficiency design blades to maximize performances. The material of the blades is glass reinforced resin and each fan is protected by a guard. Fan motors are internally protected from overtemperature and are IP54.

Electronic expansion valve The unit is equipped with the most advanced electronic expansion valves to achieve precise control of refrigerant mass flow. As today's system requires improved energy efficiency, tighter temperature control, wider range of operating conditions and incorporate features like remote monitoring and diagnostics, the application of electronic expansion valves becomes mandatory.

Electronic expansion valves possess unique features: short opening and closing time, high resolution, positive shut-off function to eliminate use of additional solenoid valve, continuous modulation of mass flow without stress in the refrigerant circuit and corrosion resistance stainless steel body.

Electronic expansion valves are typically working with lower ΔP between high and low pressure side, than a thermostatic expansion valve. The electronic expansion valve allows the system to work with low condenser pressure (winter time) without any refrigerant flow problems and with a perfect chilled water leaving temperature control.

Refrigerant circuit Each unit has 2 or 3 independent refrigerant circuits and each one includes:

- Compressor Inverter driven with integrated oil separator
- Refrigerant
- Evaporator
- Air Cooled Condenser
- Electronic expansion valve
- Discharge line shut off valve
- Liquid line shut off valve
- Sight glass with moisture indicator
- Filter drier
- Charging valves
- High pressure switch
- High pressure transducers
- Low pressure transducers
- Oil pressure transducer
- Suction temperature sensor

Electrical control panel Power and control are located in the main panel that is manufactured to ensure protection against all weather conditions. The electrical panel is IP54 and (when opening the doors) internally protected against possible accidental contact with live parts. The main panel is fitted with a main switch interlocked door that shuts off power supply when opening.

Power Section

The power section includes compressors and fans protection devices, compressors and fans starters and control circuit power supply.

MicroTech III controller

MicroTech III controller is installed as standard; it can be used to modify unit set-points and check control parameters. A built-in display shows chiller operating status plus temperatures and pressures of water, refrigerant and air, programmable values, set-points. A sophisticated software with predictive logic, selects the most energy efficient combination of compressors, EEXV and condenser fans to keep stable operating conditions to maximise chiller energy efficiency and reliability.
MicroTech III is able to protect critical components based on external signals from its system (such as motor temperatures, refrigerant gas and oil pressures, correct phase sequence, pressure switches and evaporator). The input coming from the high pressure switch cuts all digital output from the controller in less than 50ms, this is an additional security for the equipment.
Fast program cycle (200ms) for a precise monitoring of the system. Floating point calculations supported for increased accuracy in Pressure / Temperature conversions.

Control section - main features

Control Section has the following feature.

- Management of the compressor stepless capacity and fans modulation.
- Chiller enabled to work in partial failure condition.
- Full routine operation at condition of:

- high ambient temperature value
- high thermal load
- high evaporator entering water temperature (start-up)

- Display of evaporator entering/leaving water temperature.
- Display of Outdoor Ambient Temperature.
- Display of condensing-evaporating temperature and pressure, suction and discharge superheat for each circuit.
- Leaving water evaporator temperature regulation (temperature tolerance = 0,1°C).
- Compressor and evaporator pumps hours counter.
- Display of Status Safety Devices.
- Number of starts and compressor working hours.
- Optimized management of compressor load.
- Fan management according to condensing pressure.
- Re-start in case of power failure (automatic / manual).
- Soft Load (optimized management of the compressor load during the start-up).
- Start at high evaporator water temperature.
- Return Reset (Set Point Reset based on return water temperature).
- OAT (Outside Ambient temperature) Reset.
- Set point Reset (optional).
- Application and system upgrade with commercial SD cards.
- Ethernet port for remote or local servicing using standard web browsers.
- Two different sets of default parameters could be stored for easy restore.

Safety device / logic for each refrigerant circuit

The following devices / logics are available.

- High pressure (pressure switch).
- High pressure (transducer).
- Low pressure (transducer).
- Fans circuit breaker.
- High compressor discharge temperature.
- High motor winding temperature.
- Phase Monitor.
- Low pressure ratio.
- High oil pressure drop.
- Low oil pressure.
- No pressure change at start.

System security

The following securities are available.

- Phase monitor.
- Low Ambient temperature lock-out.
- Freeze protection.

Regulation type

Proportional + integral + derivative regulation on the evaporator leaving water output probe.

MicroTech III

MicroTech III built-in terminal has the following features.

- 164x44 dots liquid crystal display with white back lighting. Supports Unicode fonts for multi-lingual.
- Key-pad consisting of 3 keys.
- Push'n'Roll control for an increased usability.
- Memory to protect the data.
- General faults alarm relays.
- Password access to modify the setting.
- Application security to prevent application tampering or hardware usability with third party applications.
- Service report displaying all running hours and general conditions.
- Alarm history memory to allow an easy fault analysis.

Supervising systems (on request)

MicroTech III remote communication

MicroTech III is able to communicate to BMS (Building Management System) based on the most common protocols as:

- ModbusRTU
- LonWorks, now also based on the international 8040 Standard Chiller Profile and LonMark Technology.
- BacNet BTP certifief over IP and MS/TP (class 4) (Native).
- Ethernet TCP/IP.

Standard Options (supplied on basic unit)

Double setpoint - Dual leaving water temperature setpoints.

Compressor thermal overload relays - Safety electronic devices that, added to the standard protection devices, protect compressor motors against overload and current unbalance.

Phase monitor - Device that monitors input voltage and stops the chiller in case of phase loss or wrong phase sequence.

Inverter compressor starter

Evaporator victaulic kit - Hydraulic joint with gasket for an easy and quick water connection.

20mm evaporator insulation - The external shell is covered with a 20mm closed cell insulation material.

Evaporator electric heater - Electric heater (controlled by a thermostat) to protect the evaporator from freezing down to -28°C ambient temperature, providing the power supply is on.

Electronic expansion valve

Discharge line shut-off valve - Installed on the discharge port of the compressor to facilitate maintenance operation.

Ambient outside temperature sensor and setpoint reset

Hour run meter

General fault contactor

Setpoint reset, Demand limit and Alarm from external device - Setpoint Reset: The leaving water temperature set-point can be overwritten with an external 4-20mA, through the ambient temperature, or through the evaporator water temperature ΔT. Demand Limit: Chiller capacity can be limited through an external 4-20mA signal or via network. Alarm from external device: The unit controller is able to receive an external alarm signal. The user can decide whether this alarm signal will stop the unit or not.

Fans circuit breakers - Safety devices that, added to the standard protection devices, protect fan motors against overload and overcurrent.

Main switch interlock door

Emergency stop

Options (on request)

MECHANICAL

Total heat recovery - Plate to plate heat exchangers for hot water production.

Partial heat recovery - Plate to plate heat exchangers for hot water production.

Brine version - Allows the unit to operate down to -8°C leaving liquid temperature (antifreeze required). Reccomended below +4°C

Evaporator flange kit

Condenser coil guards

Evaporator area guards

Cu-Cu condenser coil - To give better protection against corrosion by aggressive environments.

Cu-Cu-Sn condenser coil - To give better protection against corrosion in aggressive environments and by salty air.

Alucoat fins coil - Fins are protected by a special acrylic paint with a high resistance to corrosion.

Suction line shut-off valve - Installed on the suction port of the compressor to facilitate maintenance operation.

High pressure side manometers

Low pressure side manometers

One centrifugal pump (low lift– 100 kPa available static pressure) - Hydronic kit consists of: single direct driven centrifugal pump, water filling system with pressure gauge, safety valve, drain valve. The motor pump is protected by a circuit breaker installed in control panel. The kit is assembled and wired to the control panel. The pipe and pump are protected from freezing with an additional electrical heater.

One centrifugal pump (high lift– 200 kPa available static pressure) Hydronic kit consists of: single direct driven centrifugal pump, water filling system with pressure gauge, safety valve, drain valve. The motor pump is protected by a circuit breaker installed in control panel. The kit is assembled and wired to the control panel. The pipe and pump are protected from freezing with an additional electrical heater.

Two centrifugal pump (low lift) - Hydronic kit consists of: twin direct driven centrifugal pumps, water filling system with pressure gauge, safety valve, drain valve. The motor pump is protected by a circuit breaker installed in control panel. The kit is assembled and wired to the control panel. The pipe and pumps are protected from freezing with an additional electrical heater.

Two centrifugal pump (high lift) Hydronic kit consists of: twin direct driven centrifugal pumps, water filling system with pressure gauge, safety valve, drain valve. The motor pump is protected by a circuit breaker installed in control panel. The kit is assembled and wired to the control panel. The pipe and pumps are protected from freezing with an additional electrical heater.

Double pressure relief valve with diverter

Evaporator right water connections

ELECTRICAL / CONTROL

Under / Over voltage control - Electronic device that monitors and displays input voltage, and stops the chiller in case of phase loss, wrong phase sequence, or voltage exceeding minimum and maximum allowed values.

Energy meter - Device installed inside the control box that displays all chiller electrical power parameters at line input such as line voltage and phase current, input active and reactive power, active and reactive energy. An integrated RS485 module allows a Modbus communication to an external BMS.

Current limit - To limit maximum absorbed current of the unit whenever is required

Speedtrol (fan speed control device - ON/OFF - up to -18°C) - Continuous fan speed regulation on the first fan (VFD driven) of each circuit. It allows unit operation down to -18ºC.

Evaporator flow switch - Supplied separately to be wired and installed on the evaporator water piping (by the customer).

Compressors circuit breakers Safety devices that include in a single device all safety functions otherwise provided by standard fuses and optional thermal relays, such as protection against overcurrent, overload, current unbalance.

Fans speed regulation (+ fan silent mode) - Continuous fan speed regulation of all fans (VFD driven) for improved sound level of the unit during low ambient temperature operation. At very low temperatures, all fans except the first are switched off thus allowing unit operation down to -18°C.

Ground fault relay - To shut down the entire unit if a ground fault condition is detected.

Rapid restart - It allows the unit to start as fast as 30 seconds after power is restored (in case of power failure).

INSTALLATION

Rubber anti vibration mounts - Supplied separately, these are positioned under the base of the unit during installation. Ideal to reduce the vibrations when the unit is floor mounted.

Spring anti vibration mounts - Supplied separately, these are positioned under the base of the unit during installation. Ideal for dampening vibrations for installation on roofs and metallic structures.

OTHER

Container Kit

Witness test

Acoustic test

Refrigerant recovery unit - This option allows to stock refrigerant charge of 1 circuit for maintenance operation. Liquid receiver includes in/out shut-off valve and reliefe valve.

Transport kit

Machine type

EWA	= Air cooled chiller cool. only
EWY	= Air cooled chiller heat pump
ERA	= Air cooled condensing unit

Refrigerant

D	= R-134a
P	= R-407C
Q	= R-410A

Capacity class in kW (Cooling)

Always 3-digit code

Model series

A, B, …..

Inverter

Z	= Inverter

Efficiency level

X	= High Efficiency

Sound level

S	= Standard sound
L	= Low sound
R	= Reduced sound

EWAD CZXS

MODEL		740	830	900	C10	C11	C12	C13	C14
Capacity - Cooling (1)	kW	734	828	898	1033	1090	1232	1303	1444
Capacity control - Type	---	Steples	Steples	Steples	Steples	Steples	Steples	Steples	Steples
Capacity control - Minimum capacity	%	s 20.0	s 20.0	s 20.0	s 20.0	s 20.0	s 20.0	s 20.0	s 20.0
Unit power input - Cooling (1)	kW	239	269	309	343	380	404	447	494
EER (1)	---	3.07	3.07	2.90	3.01	2.87	3.05	2.92	2.93
ESEER	---	4.72	4.89	4.88	4.91	4.70	4.70	4.51	4.73
IPLV	---	5.68	5.72	5.79	5.73	5.56	5.58	5.45	5.61
CASING									
Colour (2)	---	IW	IW	IW	IW	IW	IW	IW	IW
Material (2)	---	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS
DIMENSIONS									
Height	mm	2540	2540	2540	2540	2540	2540	2540	2540
Width	mm	2285	2285	2285	2285	2285	2285	2285	2285
Length	mm	6725	7625	7625	8525	8525	10325	10325	11625
WEIGHT									
Unit Weight	kg	6000	6620	6870	7440	7440	8570	8970	9600
Operating Weight	kg	6250	6860	7110	7880	7880	8960	9360	9980
WATER HEAT EXCHANGER									
Type (3)	---	S&	S&	S&T	S&T	S&	S&	S&T	S&T
Water Volume	l	T	T	241	441	T	T	383	374
Nominal water flow rate - Cooling	l/s	248	241	43.	49.	441	383	62.	69.
Nominal Water pressure drop - Cooling	kPa	35.	39.	0	5	52.	59.	4	2
Insulation material (4)		2	7	65	63	3	0	52	62
AIR HEAT EXCHANGER									
Type (5)	---	HFP	HFP	HFP	HFP	HFP	HFP	HFP	HFP
FAN									
Type (6)	---	DPT	DPT	DPT	DPT	DPT	DPT	DPT	DPT
Drive (7)	---	DOL	DOL	DOL	DOL	DOL	DOL	DOL	DOL
Diameter	mm	800	800	800	800	800	800	800	800
Nominal air flow	l/s	65026	75863	75863	86701	86701	10837	10837	11921
Quantity	No.	12	14	14	16	16	6 20	6 20	4 22
Speed	rpm	900	900	900	900	900	900	900	900
Motor input	kW	21.0	24.5	24.5	28.0	28.0	35.0	35.0	38.5
COMPRESSOR									
Type	---	Asymm Single Screw	Asymm Single Screw	Asymm Single Screw	Asymm Single Screw	Asymm Single Screw	Asymm Single Screw	Asymm Single Screw	Asymm Single Screw
Oil charge	l	32	35	38	38	38	44	50	50
Quantity	No.	2	2	2	2	2	2	2	2
SOUND LEVEL									
Sound Power - Cooling	dB(A)	102	103	103	103	103	104	104	104
Sound Pressure - Cooling (8)	dB(A)	81	81	81	81	81	81	81	81
REFRIGERANT CIRCUIT									
Refrigerant type	---	R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a
Refrigerant charge	kg	146	162	162	200	200	250	250	250
N. of circuits	No.	2	2	2	2	2	2	2	2
PIPING CONNECTIONS									
Evaporator water inlet/outlet		168.3 mm	168.3 mm	168.3 mm	219.1 mm	219.1 mm	219.1 mm	219.1 mm	219.1 mm

Fluid: Water
(1) Cooling capacity, unit power input in cooling and EER are based on the following conditions: evaporator 12.0/7.0°C; ambient 35.0°C, unit at full load operation;
(2) IW: Ivory White; GPSS: Galvanized and Painted Steel Sheet; (3) PHE: Plate Heat Exchanger --- S&T: Single Pass Shell & Tube
(4) CC: Closed Cell; (5) HFP: High efficiency fin and tube type with integral subcooler
(6) DPT: Direct Propeller Type; (7) DOL: Direct On Line - VFD: Inverter - BRS: Brushless
(8) The values are according to ISO 9614 and Eurovent 8/1 for Eurovent certified units

EWAD CZXS

MODEL		C15	C16	C17	C18				
Capacity - Cooling (1)	kW	1538	1616	1701	1795				
Capacity control - Type	---	Steples	Steples	Steples	Steples				
Capacity control - Minimum capacity	%	s 20.0	s 13.0	s 13.0	s 13.0				
Unit power input - Cooling (1)	kW	538	564	596	619				
EER (1)	---	2.86	2.86	2.85	2.90				
ESEER	---	4.83	4.59	4.62	4.61				
IPLV	---	5.75	5.65	5.46	5.29				
CASING									
Colour (2)	---	IW	IW	IW	IW				
Material (2)	---	GPSS	GPSS	GPSS	GPSS				
DIMENSIONS									
Height	mm	2540	2540	2540	2540				
Width	mm	2285	2285	2285	2285				
Length	mm	12525	12525	13425	14325				
WEIGHT									
Unit Weight	kg	9940	11370	12190	12920				
Operating Weight	kg	10320	12220	13040	13790				
WATER HEAT EXCHANGER									
Type (3)	---	S&	S&	S&T	S&T				
Water Volume	l	T	T	850	871				
Nominal water flow rate - Cooling	l/s	374	850	81.	86.				
Nominal Water pressure drop - Cooling	kPa	73.	77.	5	0				
Insulation material (4)		7	4	69	65				
AIR HEAT EXCHANGER									
Type (5)	---	HFP	HFP	HFP	HFP				
FAN									
Type (6)	---	DPT	DPT	DPT	DPT				
Drive (7)	---	DOL	DOL	DOL	DOL				
Diameter	mm	800	800	800	800				
Nominal air flow	l/s	13005	12945	14014	15113				
Quantity	No.	1 24	5 24	3 26	0 28				
Speed	rpm	900	900	900	900				
Motor input	kW	42.0	42.0	45.5	49.0				
COMPRESSOR									
Type	---	Asymm Single Screw	Asymm Single Screw	Asymm Single Screw	Asymm Single Screw				
Oil charge	l	50	57	63	69				
Quantity	No.	2	3	3	3				
SOUND LEVEL									
Sound Power - Cooling	dB(A)	104	106	106	106				
Sound Pressure - Cooling (8)	dB(A)	81	83	83	83				
REFRIGERANT CIRCUIT									
Refrigerant type	---	R134a	R134a	R134a	R134a				
Refrigerant charge	kg	280	320	340	350				
N. of circuits	No.	2	3	3	3				
PIPING CONNECTIONS									
Evaporator water inlet/outlet		219.1 mm	273 mm	273 mm	273 mm				

Fluid: Water
(1) Cooling capacity, unit power input in cooling and EER are based on the following conditions: evaporator 12.0/7.0°C; ambient 35.0°C, unit at full load operation;
(2) IW: Ivory White; GPSS: Galvanized and Painted Steel Sheet; (3) PHE: Plate Heat Exchanger --- S&T: Single Pass Shell & Tube
(4) CC: Closed Cell; (5) HFP: High efficiency fin and tube type with integral subcooler
(6) DPT: Direct Propeller Type; (7) DOL: Direct On Line - VFD: Inverter - BRS: Brushless
(8) The values are according to ISO 9614 and Eurovent 8/1 for Eurovent certified units

EWAD CZXL

MODEL		740	830	900	C10	C11	C12	C13	C14
Capacity - Cooling (1)	kW	734	828	898	1033	1090	1232	1303	1444
Capacity control - Type	---	Steples	Steples	Steples	Steples	Steples	Steples	Steples	Steples
Capacity control - Minimum capacity	%	s 20.0	s 20.0	s 20.0	s 20.0	s 20.0	s 20.0	s 20.0	s 20.0
Unit power input - Cooling (1)	kW	239	269	309	343	380	404	447	494
EER (1)	---	3.07	3.07	2.90	3.01	2.87	3.05	2.92	2.93
ESEER	---	4.72	4.89	4.88	4.91	4.70	4.70	4.51	4.73
IPLV	---	5.68	5.72	5.79	5.73	5.56	5.58	5.45	5.61
CASING									
Colour (2)	---	IW	IW	IW	IW	IW	IW	IW	IW
Material (2)	---	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS
DIMENSIONS									
Height	mm	2540	2540	2540	2540	2540	2540	2540	2540
Width	mm	2285	2285	2285	2285	2285	2285	2285	2285
Length	mm	6725	7625	7625	8525	8525	10325	10325	11625
WEIGHT									
Unit Weight	kg	6280	6900	7150	7720	7720	8850	9250	9880
Operating Weight	kg	6530	7140	7390	8160	8160	9240	9640	10260
WATER HEAT EXCHANGER									
Type (3)	---	S&	S&	S&T	S&T	S&	S&	S&T	S&T
Water Volume	l	T	T	241	441	T	T	383	374
Nominal water flow rate - Cooling	l/s	248	241	43.	49.	441	383	62.	69.
Nominal Water pressure drop - Cooling	kPa	35.	39.	0	5	52.	59.	4	2
Insulation material (4)		2	7	65	63	3	0	52	62
AIR HEAT EXCHANGER									
Type (5)	---	HFP	HFP	HFP	HFP	HFP	HFP	HFP	HFP
FAN									
Type (6)	---	DPT	DPT	DPT	DPT	DPT	DPT	DPT	DPT
Drive (7)	---	DOL	DOL	DOL	DOL	DOL	DOL	DOL	DOL
Diameter	mm	800	800	800	800	800	800	800	800
Nominal air flow	l/s	65026	75863	75863	86701	86701	10837	10837	11921
Quantity	No.	12	14	14	16	16	6 20	6 20	4 22
Speed	rpm	900	900	900	900	900	900	900	900
Motor input	kW	21.0	24.5	24.5	28.0	28.0	35.0	35.0	38.5
COMPRESSOR									
Type	---	Asymm Single Screw	Asymm Single Screw	Asymm Single Screw	Asymm Single Screw	Asymm Single Screw	Asymm Single Screw	Asymm Single Screw	Asymm Single Screw
Oil charge	l	32	35	38	38	38	44	50	50
Quantity	No.	2	2	2	2	2	2	2	2
SOUND LEVEL									
Sound Power - Cooling	dB(A)	99	100	100	100	100	101	101	101
Sound Pressure - Cooling (8)	dB(A)	78	78	78	78	78	78	78	78
REFRIGERANT CIRCUIT									
Refrigerant type	---	R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a
Refrigerant charge	kg	146	162	162	200	200	250	250	250
N. of circuits	No.	2	2	2	2	2	2	2	2
PIPING CONNECTIONS									
Evaporator water inlet/outlet		168.3 mm	168.3 mm	168.3 mm	219.1 mm	219.1 mm	219.1 mm	219.1 mm	219.1 mm

Fluid: Water
(1) Cooling capacity, unit power input in cooling and EER are based on the following conditions: evaporator 12.0/7.0°C; ambient 35.0°C, unit at full load operation;
(2) IW: Ivory White; GPSS: Galvanized and Painted Steel Sheet; (3) PHE: Plate Heat Exchanger --- S&T: Single Pass Shell & Tube
(4) CC: Closed Cell; (5) HFP: High efficiency fin and tube type with integral subcooler
(6) DPT: Direct Propeller Type; (7) DOL: Direct On Line - VFD: Inverter - BRS: Brushless
(8) The values are according to ISO 9614 and Eurovent 8/1 for Eurovent certified units

EWAD CZXL

MODEL		C15	C16	C17	C18				
Capacity - Cooling (1)	kW	1538	1616	1701	1795				
Capacity control - Type	---	Steples	Steples	Steples	Steples				
Capacity control - Minimum capacity	%	s 20.0	s 13.0	s 13.0	s 13.0				
Unit power input - Cooling (1)	kW	538	564	596	619				
EER (1)	---	2.86	2.86	2.85	2.90				
ESEER	---	4.83	4.59	4.62	4.61				
IPLV	---	5.75	5.65	5.46	5.29				
CASING									
Colour (2)	---	IW	IW	IW	IW				
Material (2)	---	GPSS	GPSS	GPSS	GPSS				
DIMENSIONS									
Height	mm	2540	2540	2540	2540				
Width	mm	2285	2285	2285	2285				
Length	mm	12525	12525	13425	14325				
WEIGHT									
Unit Weight	kg	10220	11790	12610	13340				
Operating Weight	kg	10600	12640	13460	14210				
WATER HEAT EXCHANGER									
Type (3)	---	S&	S&	S&T	S&T				
Water Volume	l	T	T	850	871				
Nominal water flow rate - Cooling	l/s	374	850	81.	86.				
Nominal Water pressure drop - Cooling	kPa	73.	77.	5	0				
Insulation material (4)		7	4	69	65				
AIR HEAT EXCHANGER									
Type (5)	---	HFP	HFP	HFP	HFP				
FAN									
Type (6)	---	DPT	DPT	DPT	DPT				
Drive (7)	---	DOL	DOL	DOL	DOL				
Diameter	mm	800	800	800	800				
Nominal air flow	l/s	13005	12945	14014	15113				
Quantity	No.	1 24	5 24	3 26	0 28				
Speed	rpm	900	900	900	900				
Motor input	kW	42.0	42.0	45.5	49.0				
COMPRESSOR									
Type	---	Asymm Single Screw	Asymm Single Screw	Asymm Single Screw	Asymm Single Screw				
Oil charge	l	50	57	63	69				
Quantity	No.	2	3	3	3				
SOUND LEVEL									
Sound Power - Cooling	dB(A)	101	103	103	103				
Sound Pressure - Cooling (8)	dB(A)	78	80	80	80				
REFRIGERANT CIRCUIT									
Refrigerant type	---	R134a	R134a	R134a	R134a				
Refrigerant charge	kg	280	320	340	350				
N. of circuits	No.	2	3	3	3				
PIPING CONNECTIONS									
Evaporator water inlet/outlet		219.1 mm	273 mm	273 mm	273 mm				

Fluid: Water
(1) Cooling capacity, unit power input in cooling and EER are based on the following conditions: evaporator 12.0/7.0°C; ambient 35.0°C, unit at full load operation;
(2) IW: Ivory White; GPSS: Galvanized and Painted Steel Sheet; (3) PHE: Plate Heat Exchanger --- S&T: Single Pass Shell & Tube
(4) CC: Closed Cell; (5) HFP: High efficiency fin and tube type with integral subcooler
(6) DPT: Direct Propeller Type; (7) DOL: Direct On Line - VFD: Inverter - BRS: Brushless
(8) The values are according to ISO 9614 and Eurovent 8/1 for Eurovent certified units

EWAD CZXR

MODEL		700	790	850	980	C10	C11	C12	C13
Capacity - Cooling (1)	kW	696	786	849	972	1027	1166	1231	1327
Capacity control - Type	---	Steples	Steples	Steples	Steples	Steples	Steples	Steples	Steples
Capacity control - Minimum capacity	%	s 20.0	s 20.0	s 20.0	s 20.0	s 20.0	s 20.0	s 20.0	s 20.0
Unit power input - Cooling (1)	kW	246	274	318	351	393	412	459	493
EER (1)	---	2.83	2.86	2.67	2.77	2.61	2.83	2.68	2.69
ESEER	---	5.23	5.39	5.36	5.41	5.11	5.15	4.80	5.12
IPLV	---	6.14	6.32	6.37	6.34	6.05	5.96	5.67	6.03
CASING									
Colour (2)	---	IW	IW	IW	IW	IW	IW	IW	IW
Material (2)	---	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS	GPSS
DIMENSIONS									
Height	mm	2540	2540	2540	2540	2540	2540	2540	2540
Width	mm	2285	2285	2285	2285	2285	2285	2285	2285
Length	mm	6725	7625	7625	8525	8525	10325	10325	11625
WEIGHT									
Unit Weight	kg	6470	7100	7360	7950	7950	9120	9530	10180
Operating Weight	kg	6720	7340	7600	8390	8390	9500	9920	10550
WATER HEAT EXCHANGER									
Type (3)	---	S&	S&	S&T	S&T	S&	S&T	S&T	S&T
Water Volume	l	T	T	241	441	T	383	383	374
Nominal water flow rate - Cooling	l/s	248	241	40.	46.	441	55.8	58.	63.
Nominal Water pressure drop - Cooling	kPa	33.	37.	7	6	49.	43	9	6
Insulation material (4)		4	6	59	58	2	CC	48	57
AIR HEAT EXCHANGER									
Type (5)	---	HFP	HFP	HFP	HFP	HFP	HFP	HFP	HFP
FAN									
Type (6)	---	DPT	DPT	DPT	DPT	DPT	DPT	DPT	DPT
Drive (7)	---	DOL	DOL	DOL	DOL	DOL	DOL	DOL	DOL
Diameter	mm	800	800	800	800	800	800	800	800
Nominal air flow	l/s	4984	5815	5815	6645	6645	8307	8307	9138
Quantity	No.	312	114	114	816	816	220	220	022
Speed	rpm	700	700	700	700	700	700	700	700
Motor input	kW	9.4	11.0	11.0	12.5	12.5	15.7	15.7	17.3
COMPRESSOR									
Type	---	Asymm Single Screw	Asymm Single Screw	Asymm Single Screw	Asymm Single Screw	Asymm Single Screw	Asymm Single Screw	Asymm Single Screw	Asymm Single Screw
Oil charge	l	32	35	38	38	38	44	50	50
Quantity	No.	2	2	2	2	2	2	2	2
SOUND LEVEL									
Sound Power - Cooling	dB(A)	95	96	96	96	96	97	97	97
Sound Pressure - Cooling (8)	dB(A)	74	74	74	74	74	74	74	74
REFRIGERANT CIRCUIT									
Refrigerant type	---	R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a
Refrigerant charge	kg	146	162	162	200	200	250	250	250
N. of circuits	No.	2	2	2	2	2	2	2	2
PIPING CONNECTIONS									
Evaporator water inlet/outlet		168.3 mm	168.3 mm	168.3 mm	219.1 mm	219.1 mm	219.1 mm	219.1 mm	219.1 mm

Fluid: Water

(1) Cooling capacity, unit power input in cooling and EER are based on the following conditions: evaporator 12.0/7.0°C; ambient 35.0°C, unit at full load operation;

(2) IW: Ivory White; GPSS: Galvanized and Painted Steel Sheet; (3) PHE: Plate Heat Exchanger --- S&T: Single Pass Shell & Tube

(4) CC: Closed Cell; (5) HFP: High efficiency fin and tube type with integral subcooler

(6) DPT: Direct Propeller Type; (7) DOL: Direct On Line - VFD: Inverter - BRS: Brushless

(8) The values are according to ISO 9614 and Eurovent 8/1 for Eurovent certified units

EWAD CZXR

MODEL		C14	C15	C16	C17				
Capacity - Cooling (1)	kW	1437	1539	1624	1706				
Capacity control - Type	---	Steples	Steples	Steples	Steples				
Capacity control - Minimum capacity	%	s 20.0	s 13.0	s 13.0	s 13.0				
Unit power input - Cooling (1)	kW	523	585	617	638				
EER (1)	---	2.75	2.63	2.63	2.67				
ESEER	---	5.22	5.10	4.83	4.77				
IPLV	---	6.21	6.17	5.89	5.85				
CASING									
Colour (2)	---	IW	IW	IW	IW				
Material (2)	---	GPSS	GPSS	GPSS	GPSS				
DIMENSIONS									
Height	mm	2540	2540	2540	2540				
Width	mm	2285	2285	2285	2285				
Length	mm	12525	12525	13425	14325				
WEIGHT									
Unit Weight	kg	10530	12150	12990	13740				
Operating Weight	kg	10910	13000	13840	14610				
WATER HEAT EXCHANGER									
Type (3)	---	S&	S&	S&T	S&T				
Water Volume	l	T	T	850	871				
Nominal water flow rate - Cooling	l/s	374	850	77.	81.				
Nominal Water pressure drop - Cooling	kPa	68.	73.	8	7				
Insulation material (4)		8	7	63	60				
AIR HEAT EXCHANGER									
Type (5)	---	HFP	HFP	HFP	HFP				
FAN									
Type (6)	---	DPT	DPT	DPT	DPT				
Drive (7)	---	DOL	DOL	DOL	DOL				
Diameter	mm	800	800	800	800				
Nominal air flow	l/s	9968	9968	107994	11630				
Quantity	No.	724	724	26	1 28				
Speed	rpm	700	700	700	700				
Motor input	kW	18.8	18.8	20.4	22.0				
COMPRESSOR									
Type	---	Asymm Single Screw	Asymm Single Screw	Asymm Single Screw	Asymm Single Screw				
Oil charge	l	50	57	63	69				
Quantity	No.	2	3	3	3				
SOUND LEVEL									
Sound Power - Cooling	dB(A)	97	99	99	99				
Sound Pressure - Cooling (8)	dB(A)	74	76	76	76				
REFRIGERANT CIRCUIT									
Refrigerant type	---	R134a	R134a	R134a	R134a				
Refrigerant charge	kg	280	320	340	350				
N. of circuits	No.	2	3	3	3				
PIPING CONNECTIONS									
Evaporator water inlet/outlet		219.1 mm	273 mm	273 mm	273 mm				

Fluid: Water
(1) Cooling capacity, unit power input in cooling and EER are based on the following conditions: evaporator 12.0/7.0°C; ambient 35.0°C, unit at full load operation;
(2) IW: Ivory White; GPSS: Galvanized and Painted Steel Sheet; (3) PHE: Plate Heat Exchanger --- S&T: Single Pass Shell & Tube
(4) CC: Closed Cell; (5) HFP: High efficiency fin and tube type with integral subcooler
(6) DPT: Direct Propeller Type; (7) DOL: Direct On Line - VFD: Inverter - BRS: Brushless
(8) The values are according to ISO 9614 and Eurovent 8/1 for Eurovent certified units

EWAD CZXS

MODEL		740	830	900	C10	C11	C12	C13	C14
POWER SUPPLY									
Phases	Nr	3	3	3	3	3	3	3	3
Frequency	Hz	50	50	50	50	50	50	50	50
Voltage	V	400	400	400	400	400	400	400	400
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%	-10%	-10%
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%	+10%	+10%
UNIT									
Maximum starting current	A	377	420	451	501	540	590	626	709
Nominal running current cooling	A	406	442	485	537	591	636	698	769
Maximum running current	A	529	584	632	697	755	824	877	979
Maximum current for wires sizing	A	535	588	633	728	816	825	877	1000
FANS									
Nominal running current cooling	A	48	56	56	64	64	80	80	88
COMPRESSORS									
Phases	Nr	3	3	3	3	3	3	3	3
Voltage	V	400	400	400	400	400	400	400	400
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%	-10%	-10%
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%	+10%	+10%
Maximum running current	A	240 240	240 288	288 288	288 345	345 345	345 399	399 399	399 493
Starting method	---	INV	INV	INV	INV	INV	INV	INV	INV

EWAD CZXS

MODEL		C15	C16	C17	C18				
POWER SUPPLY									
Phases	Nr	3	3	3	3				
Frequency	Hz	50	50	50	50				
Voltage	V	400	400	400	400				
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%				
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%				
UNIT									
Maximum starting current	A	772	848	899	949				
Nominal running current cooling	A	837	881	931	970				
Maximum running current	A	1081	1132	1193	1255				
Maximum current for wires sizing	A	1125	1224	1253	1283				
FANS									
Nominal running current cooling	A	96	96	104	112				
COMPRESSORS									
Phases	Nr	3	3	3	3				
Voltage	V	400	400	400	400				
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%				
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%				
Maximum running current	A	493 493	345 345 345	345 345 399	399 399 345				
Starting method	---	INV	INV	INV	INV				

Fluid: Water
Allowed voltage tolerance ± 10%. Voltage unbalance between phases must be within ± 3%.
Maximum starting current: Unit is inverter driven. No inrush current at start up. Declared value refers to the stand-by current.
Nominal current in cooling mode is referred to the following conditions: evaporator 12/7°C; ambient 35°C; compressors + fans current.
Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current
Maximum unit current for wires sizing is based on minimum allowed voltage

EWAD CZXL

MODEL		740	830	900	C10	C11	C12	C13	C14
POWER SUPPLY									
Phases	Nr	3	3	3	3	3	3	3	3
Frequency	Hz	50	50	50	50	50	50	50	50
Voltage	V	400	400	400	400	400	400	400	400
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%	-10%	-10%
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%	+10%	+10%
UNIT									
Maximum starting current	A	377	420	451	501	540	590	626	709
Nominal running current cooling	A	406	442	485	537	591	636	698	769
Maximum running current	A	529	584	632	697	755	824	877	979
Maximum current for wires sizing	A	535	588	633	728	816	825	877	1000
FANS									
Nominal running current cooling	A	48	56	56	64	64	80	80	88
COMPRESSORS									
Phases	Nr	3	3	3	3	3	3	3	3
Voltage	V	400	400	400	400	400	400	400	400
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%	-10%	-10%
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%	+10%	+10%
Maximum running current	A	240 240	240 288	288 288	288 345	345 345	345 399	399 399	399 493
Starting method	---	INV	INV	INV	INV	INV	INV	INV	INV

EWAD CZXL

MODEL		C15	C16	C17	C18				
POWER SUPPLY									
Phases	Nr	3	3	3	3				
Frequency	Hz	50	50	50	50				
Voltage	V	400	400	400	400				
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%				
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%				
UNIT									
Maximum starting current	A	772	848	899	949				
Nominal running current cooling	A	837	881	931	970				
Maximum running current	A	1081	1132	1193	1255				
Maximum current for wires sizing	A	1125	1224	1253	1283				
FANS									
Nominal running current cooling	A	96	96	104	112				
COMPRESSORS									
Phases	Nr	3	3	3	3				
Voltage	V	400	400	400	400				
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%				
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%				
Maximum running current	A	493 493	345 345 345	345 345 399	399 399 345				
Starting method	---	INV	INV	INV	INV				

Fluid: Water
Allowed voltage tolerance ± 10%. Voltage unbalance between phases must be within ± 3%.
Maximum starting current: Unit is inverter driven. No inrush current at start up. Declared value refers to the stand-by current.
Nominal current in cooling mode is referred to the following conditions: evaporator 12/7°C; ambient 35°C; compressors + fans current.
Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current
Maximum unit current for wires sizing is based on minimum allowed voltage

EWAD CZXR

MODEL		700	790	850	980	C10	C11	C12	C13
POWER SUPPLY									
Phases	Nr	3	3	3	3	3	3	3	3
Frequency	Hz	50	50	50	50	50	50	50	50
Voltage	V	400	400	400	400	400	400	400	400
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%	-10%	-10%
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%	+10%	+10%
UNIT									
Maximum starting current	A	369	410	442	490	528	576	612	693
Nominal running current cooling	A	416	449	498	549	610	647	715	789
Maximum running current	A	512	565	612	675	732	796	849	949
Maximum current for wires sizing	A	519	569	613	706	793	825	849	969
FANS									
Nominal running current cooling	A	31	36	36	42	42	52	52	57
COMPRESSORS									
Phases	Nr	3	3	3	3	3	3	3	3
Voltage	V	400	400	400	400	400	400	400	400
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%	-10%	-10%	-10%
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%	+10%	+10%	+10%	+10%
Maximum running current	A	240 240	240 288	288 288	288 345	345 345	345 399	399 399	399 493
Starting method	---	INV	INV	INV	INV	INV	INV	INV	INV

EWAD CZXR

MODEL		C14	C15	C16	C17				
POWER SUPPLY									
Phases	Nr	3	3	3	3				
Frequency	Hz	50	50	50	50				
Voltage	V	400	400	400	400				
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%				
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%				
UNIT									
Maximum starting current	A	756	825	873	921				
Nominal running current cooling	A	859	912	960	998				
Maximum running current	A	1048	1098	1157	1215				
Maximum current for wires sizing	A	1091	1190	1217	1244				
FANS									
Nominal running current cooling	A	62	62	68	73				
COMPRESSORS									
Phases	Nr	3	3	3	3				
Voltage	V	400	400	400	400				
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%				
Voltage tolerance Maximum	%	+10%	+10%	+10%	+10%				
Maximum running current	A	493 493	345 345 345	345 345 399	399 399 345				
Starting method	---	INV	INV	INV	INV				

Fluid: Water
Allowed voltage tolerance ± 10%. Voltage unbalance between phases must be within ± 3%.
Maximum starting current: Unit is inverter driven. No inrush current at start up. Declared value refers to the stand-by current.
Nominal current in cooling mode is referred to the following conditions: evaporator 12/7°C; ambient 35°C; compressors + fans current.
Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current
Maximum unit current for wires sizing is based on minimum allowed voltage

EWAD CZXL

	Sound pressure level at 1 m from the unit (rif. 2 x 10-5 Pa)									Power
MODEL	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	dB(A)	dB(A)
740	61.2	62.5	69.2	73.8	75.5	69.4	65.2	56.0	78.1	99.2
830	61.2	62.5	69.2	73.8	75.5	69.4	65.2	56.1	78.1	99.5
900	61.2	62.5	69.2	73.8	75.5	69.4	65.2	56.1	78.1	99.5
C10	61.2	62.5	69.3	73.9	75.6	69.4	65.2	56.1	78.1	99.9
C11	61.2	62.5	69.3	73.9	75.6	69.4	65.2	56.1	78.1	99.9
C12	61.3	62.6	69.3	73.9	75.6	69.5	65.3	56.2	78.2	100.5
C13	61.3	62.6	69.3	73.9	75.6	69.5	65.3	56.2	78.2	100.5
C14	61.3	62.6	69.3	73.9	75.6	69.5	65.3	56.2	78.2	101.1
C15	61.3	62.7	69.4	74.0	75.7	69.5	65.3	56.2	78.2	101.1
C16	63.0	64.3	71.0	75.6	77.3	71.2	67.0	57.8	79.8	102.8
C17	63.0	64.3	71.0	75.6	77.3	71.2	67.0	57.9	79.9	103.0
C18	63.0	64.3	71.0	75.6	77.3	71.2	67.0	57.9	79.9	103.2

EWAD CZXS

	Sound pressure level at 1 m from the unit (rif. 2 x 10-5 Pa)									Power
MODEL	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	dB(A)	dB(A)
740	64.2	65.5	72.2	76.8	78.5	72.4	68.2	59.0	81.1	102.2
830	64.2	65.5	72.2	76.8	78.5	72.4	68.2	59.1	81.1	102.5
900	64.2	65.5	72.2	76.8	78.5	72.4	68.2	59.1	81.1	102.5
C10	64.2	65.5	72.3	76.9	78.6	72.4	68.2	59.1	81.1	102.9
C11	64.2	65.5	72.3	76.9	78.6	72.4	68.2	59.1	81.1	102.9
C12	64.3	65.6	72.3	76.9	78.6	72.5	68.3	59.2	81.2	103.5
C13	64.3	65.6	72.3	76.9	78.6	72.5	68.3	59.2	81.2	103.5
C14	64.3	65.6	72.3	76.9	78.6	72.5	68.3	59.2	81.2	104.1
C15	64.3	65.7	72.4	77.0	78.7	72.5	68.3	59.2	81.2	104.1
C16	66.0	67.3	74.0	78.6	80.3	74.2	70.0	60.8	82.8	105.8
C17	66.0	67.3	74.0	78.6	80.3	74.2	70.0	60.9	82.9	106.0
C18	66.0	67.3	74.0	78.6	80.3	74.2	70.0	60.9	82.9	106.2

EWAD CZXR

	Sound pressure level at 1 m from the unit (rif. 2 x 10-5 Pa)									Power
MODEL	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	dB(A)	dB(A)
700	57.2	58.5	65.2	69.8	71.5	65.4	61.2	52.0	74.1	95.2
790	57.2	58.5	65.2	69.8	71.5	65.4	61.2	52.1	74.1	95.5
850	57.2	58.5	65.2	69.8	71.5	65.4	61.2	52.1	74.1	95.5
980	57.2	58.5	65.3	69.9	71.6	65.4	61.2	52.1	74.1	95.9
C10	57.2	58.5	65.3	69.9	71.6	65.4	61.2	52.1	74.1	95.9
C11	57.3	58.6	65.3	69.9	71.6	65.5	61.3	52.2	74.2	96.5
C12	57.3	58.6	65.3	69.9	71.6	65.5	61.3	52.2	74.2	96.5
C13	57.3	58.6	65.3	69.9	71.6	65.5	61.3	52.2	74.2	97.1
C14	57.3	58.7	65.4	70.0	71.7	65.5	61.3	52.2	74.2	97.1
C15	59.0	60.3	67.0	71.6	73.3	67.2	63.0	53.8	75.8	98.8
C16	59.0	60.3	67.0	71.6	73.3	67.2	63.0	53.9	75.9	99.0
C17	59.0	60.3	67.0	71.6	73.3	67.2	63.0	53.9	75.9	99.2

EWAD CZXL

SOUND PRESSURE LEVEL FOR DIFFERENT DISTANCES (dB(A))							
MODEL	1 m	5 m	10 m	15 m	20 m	25 m	50 m
740	78.0	71.1	66.6	63.6	61.4	59.6	54.0
830	78.1	71.3	66.8	63.9	61.7	60.0	54.3
900	78.1	71.3	66.8	63.9	61.7	60.0	54.3
C10	78.1	71.5	67.1	64.2	62.0	60.3	54.7
C11	78.1	71.5	67.1	64.2	62.0	60.3	54.7
C12	78.2	71.8	67.5	64.6	62.5	60.8	55.2
C13	78.2	71.8	67.5	64.6	62.5	60.8	55.2
C14	78.2	72.0	67.7	64.9	62.8	61.1	55.6
C15	78.2	72.1	67.9	65.1	63.0	61.3	55.8
C16	79.8	73.7	69.5	66.7	64.6	62.9	57.4
C17	79.9	73.8	69.7	66.9	64.8	63.1	57.7
C18	79.9	73.9	69.8	67.1	65.0	63.3	57.9

EWAD CZXS

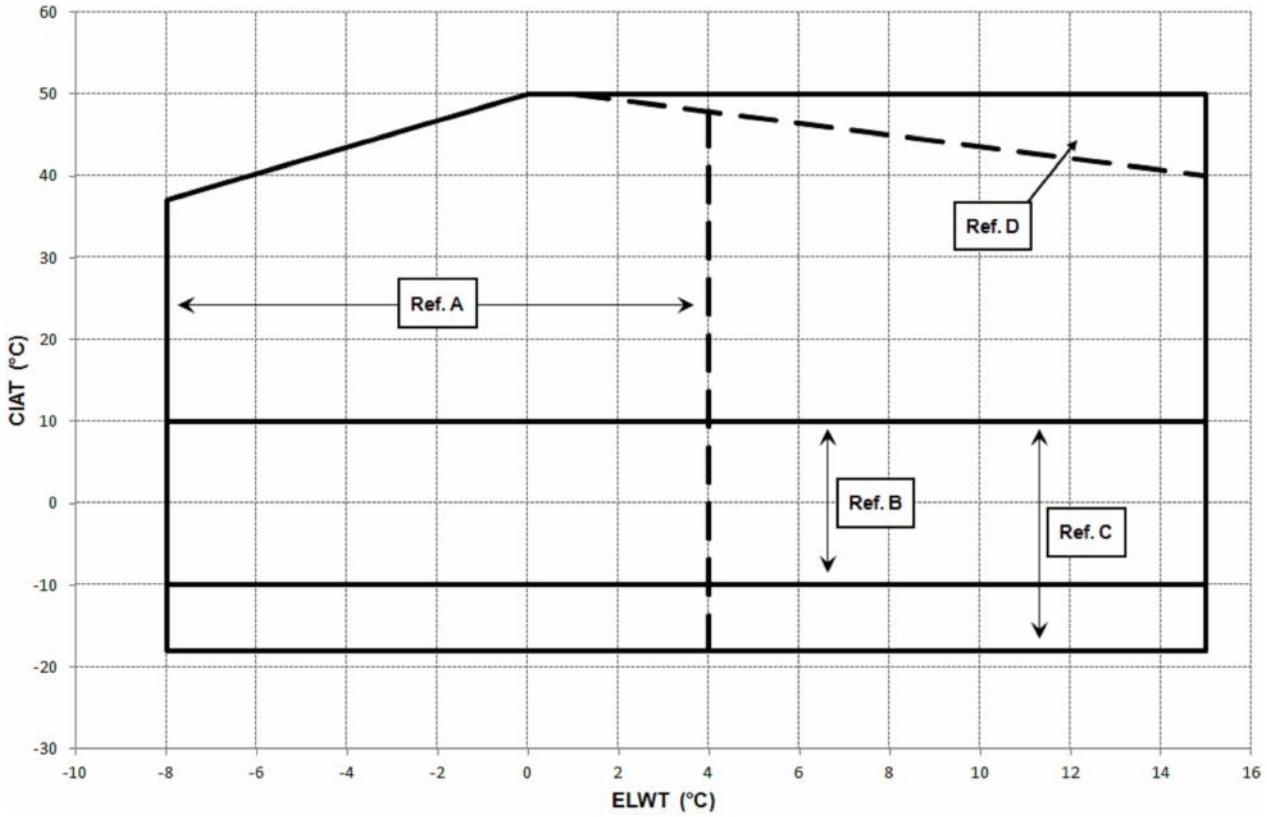
SOUND PRESSURE LEVEL FOR DIFFERENT DISTANCES (dB(A))							
MODEL	1 m	5 m	10 m	15 m	20 m	25 m	50 m
740	81.0	74.1	69.6	66.6	64.4	62.6	57.0
830	81.1	74.3	69.8	66.9	64.7	63.0	57.3
900	81.1	74.3	69.8	66.9	64.7	63.0	57.3
C10	81.1	74.5	70.1	67.2	65.0	63.3	57.7
C11	81.1	74.5	70.1	67.2	65.0	63.3	57.7
C12	81.2	74.8	70.5	67.6	65.5	63.8	58.2
C13	81.2	74.8	70.5	67.6	65.5	63.8	58.2
C14	81.2	75.0	70.7	67.9	65.8	64.1	58.6
C15	81.2	75.1	70.9	68.1	66.0	64.3	58.8
C16	82.8	76.7	72.5	69.7	67.6	65.9	60.4
C17	82.9	76.8	72.7	69.9	67.8	66.1	60.7
C18	82.9	76.9	72.8	70.1	68.0	66.3	60.9

EWAD CZXR

SOUND PRESSURE LEVEL FOR DIFFERENT DISTANCES (dB(A))							
MODEL	1 m	5 m	10 m	15 m	20 m	25 m	50 m
700	74.0	67.1	62.6	59.6	57.4	55.6	50.0
790	74.1	67.3	62.8	59.9	57.7	56.0	50.3
850	74.1	67.3	62.8	59.9	57.7	56.0	50.3
980	74.1	67.5	63.1	60.2	58.0	56.3	50.7
C10	74.1	67.5	63.1	60.2	58.0	56.3	50.7
C11	74.2	67.8	63.5	60.6	58.5	56.8	51.2
C12	74.2	67.8	63.5	60.6	58.5	56.8	51.2
C13	74.2	68.0	63.7	60.9	58.8	57.1	51.6
C14	74.2	68.1	63.9	61.1	59.0	57.3	51.8
C15	75.8	69.7	65.5	62.7	60.6	58.9	53.4
C16	75.9	69.8	65.7	62.9	60.8	59.1	53.7
C17	75.9	69.9	65.8	63.1	61.0	59.3	53.9

Fluid: Water
Sound power level (referred to evaporator 12/7°C, ambient 35°C full load operation) are mesuared in accordance with ISO 9614 and Eurovent 8/1 for Eurovent certified units.
The certification refers only to the overall sound power level, the sound pressure is calculated from the sound power level and are
for information only and not cosidered bounding

Operating Limits



Note

The above graphic represents a guideline about the operating limits of the range. Please refer to Chiller Selection Software (CSS) for real operating limits working conditions for each size.

Legend:

ELWT = Evaporator Leaving Water Temperature (°C)
CIAT = Condenser Inlet Air Temperature (°C)

Ref.:

A = Operation with Glycol (below 4°C Evap LWT)
B = Fan speed modulation required (below 10°C Condens. Air Temp.)
C = Speedtroll required (below -10°C Condens. Air Temp.)
D = In this area chiller may operate at partial load

Table 1 - Water heat exchanger - Minimum and maximum water Δt

A - Δt	°C	8
B - Δt	°C	4

Legend:

A = Max evaporator water Δt
B = Min evaporator water Δt

Table 2 - Water heat exchanger - Fouling factors

A	B	C	D
0.0176	1.000	1.000	1.000
0.0440	0.978	0.986	0.992
0.0880	0.957	0.974	0.983
0.1320	0.938	0.962	0.975

Legend:
A = Fouling factors (m2 °C / kW)
B = Cooling capacity correction factor
C = Power input correction factor
D = EER correction factor

Table 3 - Air heat exchanger - Altitude correction factors

A	0	300	600	900	1200	1500	1800
B	1013	977	942	908	875	843	812
C	1.000	0.993	0.986	0.979	0.973	0.967	0.960
D	1.000	1.005	1.009	1.015	1.021	1.026	1.031

Legend:
A = Elevation above sea level (m)
B = Barometric pressure (mbar)
C = Cooling capacity correction factor
D = Power input correction factor

- Maximum operating altitude is 2000 m above sea level
- Contact factory in case the unit has to be installed at altitudes between 1000 and 2000 m above sea level

Table 4 - Minimum glycol percentage for low air ambient temperature

AAT (2)	-3	-8	-15	-20
A (1)	10%	20%	30%	40%
AAT (2)	-3	-7	-12	-20
B (1)	10%	20%	30%	40%

Legend:

AAT = Air Ambient Temperature (°C) (2)
A = Ethylene glycol (%) (1)
B = Propylene glycol (%) (1)

(1) Minimum glycol percentage to prevent freezing of water circuit at indicated air ambient temperature

(2) Air ambient temperature do exceed the operating limits of the unit, a protection of water circuit may be needed in winter season at non-working conditions.

Table 5.1 - Available fan static pressure correction factors

A	0	10	20	30	40	50	60	70	80	90	100
B	1.000	0.998	0.996	0.995	0.993	0.992	0.991	0.989	0.986	0.985	0.982
C	1.000	1.004	1.009	1.012	1.018	1.021	1.024	1.027	1.034	1.039	1.045
D	1.0	-0.3	-0.5	-0.7	-1.0	-1.1	-1.3	-1.6	-1.8	2.1	-2.4

The above data are referred to:
- Fan 800 mm diameter
- Fan speed 890 rpm or 900 rpm

Legend:
A = External Static Pressure (Pa)
B = Cooling Capacity (kW) Correction factor
C = Compressor Power Input (kW) Correction factor
D = Reduction of Maximum Condenser Inlet Air Temperature (°C)

Table 5.2 - Available fan static pressure correction factors

A	0	10	20	30	40	50	60	70
B	1.000	0.996	0.991	0.985	0.978	0.970	0.954	0.927
C	1.000	1.005	1.012	1.020	1.028	1.039	1.058	1.092
D	1.0	-0.3	-0.7	-1.1	-1.6	-2.2	-3.3	-5.1

The above data are referred to:
- Fan 800 mm diameter
- Fan speed 700 rpm or 705 rpm

Legend:
A = External Static Pressure (Pa)
B = Cooling Capacity (kW) Correction factor
C = Compressor Power Input (kW) Correction factor
D = Reduction of Maximum Condenser Inlet Air Temperature (°C)

Water content in cooling circuits The cooled water distribution circuits should have minimum water content to avoid excessive compressors start and stop. In fact, each time the compressor starts up, an excessive quantity of oil goes from the compressor sump and simultaneously there is a rise in the temperature of the compressor motor's stator due to the inrush current during the start-up. To prevent damage to the compressors, have been envisaged the application of a device to limit frequent stops and restarts.
During the span of one hour there will be no more than 6 starts of the compressor. The plant side should therefore ensure that the overall water content allows a more constant functioning of the unit and consequently greater environmental comfort. The minimum water content per unit should be calculated with a certain approximation using this simplified formula:

For 2 compressors unit
M (liters) = (0.1595 x NT(°C) + 3.0825) x P(kW)

For 3 compressors unit
M (liters) = (0.0443 x ΔT(°C) + 1.6202) x P(kW)

where:
M = minimum water content per unit expressed in litres
P = cooling capacity of the unit expressed in kW
ΔT = evaporator entering / leaving water temperature difference expressed in °C

This formula is valid for standard microprocessor parameters. For more accurate determination of quantity of water, it is advisable to contact the designer of the plant.

Water charge, flow and quality

Water charge, 10w and quality

Item S (1) (6)			Circulating System		Once Flow	Cooled Water		Heated water(2)				Tendency iO out of criteria
								Low temperature		High temperature		
			Circulating water	Supply water (4)	Flowing water	Circulating *water* [Below 20C	Supply water(4)	Circulating water [20C - 60C]	Supply water (4)	Circulating water [60C - 80c]	Supply water (4)	
	pH	at25'C										Corrosiori + Scale
	Electrical conductiity									below 30	Below 30	Corrosion + Scale
		(pS/cm) at 2SC		(Below 300)		(Below 800)			(Below 300)		(Below 300)	Corroson + Scale
			Be)ow 200		Below 50				Below 50	Below 30		
			Below 200							Below 30		
	M.alkalinity (pH4.8)					Selow 100		Below 60			Selow 50	Scale
	Total hardness		Below 200		Bolow 70				Below 70			Scale
	Calcium harneas			Below 50			elow 50					
										Below 30		
	Oxygen		Below 1.0									
	Particole size	(ww)					Below 0.6	Below 0.5		Below 0.5	Below 0.6	
			Below 1000			Below 1000			Below 1001	Below 1000		
	Ethykene, Propylene Glycol (weight cone.)								Below 60%	Below 60%		
						Oelow 100	Below 101		Below 101		Below 101	
	TOC Total organic carbor											
	ılOO						Below 0.3	Below 1.0	Below 0.3		Below0.3	Corrosion + Scale
	Copper										Below 0.1	Corrosion
			Not detectable	Not detectable	Not detectable	Not detectable	Not detectable	Not detectable	Not detectable	Not detectable	Not detectable	
	uoı wfilluOWWıg						Below 0.1					
	Remaining chioride			Below 0.3	Below 0.3		Below 0.3	Below 0.25				
	Free carbide		Below 4.0									
	Stability mdcx											Corrosion + Scale

Especially when the iron materials is in direct contact with water without any protection shields, it is desireable to give the valid measure for corrosion. E.g. chemical measure

5 The above mentioned items are repesentable items in corrosion and scale case s.

6 The limits above have to be considered as a general prescription and con not totallu assure the absence of corrossion and erosion.

Some particular combinations of elemento or the presence of components not listed in the table or factors net considered may trigger corrosion phenomen a.

EWAD CZXS

			740						830					
Twout		**Ta**	**30**	**35**	**40**	**46**	**48**	**50**	**30**	**35**	**40**	**46**	**48**	**50**
5	CC	kW	727	690	647	588	567	523	818	778	733	669	641	596
	PI	kW	213	233	255	285	295	275	240	263	289	323	330	314
	qw	l/s	34.8	33.0	31.0	28.2	27.1	25.0	39.1	37.2	35.1	32.0	30.7	28.5
	dpw	kPa	81	74	66	55	52	45	57	52	47	40	37	32
7	CC	kW	774	734	688	624	601	561	872	828	778	711	685	645
	PI	kW	219	239	261	290	300	287	246	269	295	329	341	333
	qw	l/s	37.2	35.2	33.0	29.9	28.8	26.9	41.8	39.7	37.3	34.0	32.8	30.9
	dpw	kPa	91	83	74	62	58	51	64	58	52	44	41	37
9	CC	kW	825	781	732	664	639	580	933	882	828	755	728	677
	PI	kW	225	246	268	297	307	270	253	276	302	336	348	326
	qw	l/s	39.7	37.5	35.1	31.9	30.6	27.8	44.8	42.3	39.7	36.2	34.9	32.4
	dpw	kPa	102	93	82	69	64	54	72	65	58	49	46	40
11	CC	kW	871	830	778	706	668	600	998	943	881	802	765	708
	PI	kW	232	253	275	304	298	255	262	285	310	344	341	315
	qw	l/s	42.0	40.0	37.4	33.9	32.1	28.8	48.0	45.3	42.3	38.5	36.7	34.0
	dpw	kPa	113	104	92	77	70	58	82	74	65	55	51	44
13	CC	kW	921	876	827	750	687	614	1066	1007	941	852	803	731
	PI	kW	239	261	284	313	276	234	272	295	320	353	335	295
	qw	l/s	44.4	42.2	39.8	36.1	33.1	29.5	51.3	48.4	45.2	40.9	38.6	35.1
	dpw	kPa	125	115	103	86	74	60	92	83	74	62	55	47
15	CC	kW	972	925	872	779	706	626	1136	1073	1003	896	839	743
	PI	kW	248	269	293	299	255	233	283	306	331	349	327	279
	qw	l/s	46.9	44.6	42.0	37.5	34.0	30.1	54.8	51.7	48.3	43.1	40.3	35.7
	dpw	kPa	139	127	114	93	77	62	104	94	83	67	60	48

			900						C10					
Twout		**Ta**	**30**	**35**	**40**	**46**	**48**	**50**	**30**	**35**	**40**	**46**	**48**	**50**
5	CC	kW	890	846	796	725	691	627	1022	968	905	820	781	725
	PI	kW	275	302	332	371	375	335	305	335	367	409	412	391
	qw	l/s	42.6	40.5	38.1	34.7	33.1	30.0	48.9	46.3	43.3	39.2	37.3	34.6
	dpw	kPa	63	58	52	44	40	34	62	56	50	42	38	33
7	CC	kW	945	898	843	768	740	684	1091	1033	965	873	839	776
	PI	kW	282	309	339	378	392	365	314	343	375	417	432	404
	qw	l/s	45.3	43.0	40.4	36.8	35.4	32.7	52.3	49.5	46.2	41.8	40.2	37.1
	dpw	kPa	71	65	58	49	46	39	70	63	56	47	43	38
9	CC	kW	1008	953	894	814	784	706	1164	1101	1029	930	882	811
	PI	kW	290	317	347	386	400	342	323	353	385	427	422	390
	qw	l/s	48.4	45.7	42.9	39.0	37.6	33.8	55.9	52.8	49.4	44.6	42.3	38.9
	dpw	kPa	80	72	64	54	51	42	79	71	63	52	48	41
11	CC	kW	1074	1015	948	861	812	730	1239	1173	1097	992	929	841
	PI	kW	300	327	356	395	378	322	334	364	397	438	415	368
	qw	l/s	51.6	48.8	45.5	41.4	39.0	35.0	59.6	56.3	52.7	47.6	44.5	40.3
	dpw	kPa	90	81	71	60	54	45	88	80	71	59	52	44
13	CC	kW	1144	1080	1008	913	836	755	1317	1247	1167	1040	968	861
	PI	kW	310	338	367	405	352	303	346	377	409	426	399	352
	qw	l/s	55.1	52.0	48.5	43.9	40.2	36.2	63.4	60.0	56.1	50.0	46.5	41.3
	dpw	kPa	101	91	80	67	57	47	99	89	79	64	57	46
15	CC	kW	1217	1148	1072	948	864	760	1397	1323	1240	1089	995	882
	PI	kW	323	350	380	386	334	294	360	391	424	416	369	324
	qw	l/s	58.7	55.3	51.6	45.6	41.6	36.5	67.3	63.8	59.7	52.4	47.8	42.4
	dpw	kPa	113	101	90	72	61	48	110	100	89	70	59	48

EWAD CZXS

			C11						C12					
Twout		**Ta**	**30**	**35**	**40**	**46**	**48**	**50**	**30**	**35**	**40**	**46**	**48**	**50**
5	CC	kW	1083	1024	957	865	815	733	1221	1156	1084	986	950	885
	PI	kW	338	371	406	453	445	390	360	395	433	482	499	475
	qw	l/s	51.9	49.0	45.8	41.4	39.0	35.0	58.4	55.3	51.8	47.1	45.4	42.3
	dpw	kPa	69	63	56	46	42	34	46	42	37	31	29	26
7	CC	kW	1153	1090	1018	918	881	789	1301	1232	1154	1049	1011	952
	PI	kW	347	380	415	462	478	408	369	404	442	491	508	496
	qw	l/s	55.3	52.3	48.8	44.0	42.2	37.7	62.3	59.0	55.2	50.2	48.4	45.5
	dpw	kPa	78	70	62	52	48	39	52	47	42	35	33	30
9	CC	kW	1226	1159	1082	975	913	814	1385	1313	1231	1119	1074	1002
	PI	kW	358	391	426	473	451	383	380	415	453	502	511	486
	qw	l/s	58.9	55.6	51.9	46.8	43.7	39.0	66.4	62.9	59.0	53.6	51.4	47.9
	dpw	kPa	87	79	70	58	51	42	58	53	47	40	37	32
11	CC	kW	1301	1231	1150	1037	946	841	1475	1398	1312	1194	1132	1045
	PI	kW	369	403	439	485	426	359	391	427	465	514	502	465
	qw	l/s	62.6	59.2	55.2	49.8	45.4	40.3	70.8	67.1	62.9	57.3	54.3	50.1
	dpw	kPa	97	88	78	64	55	44	65	59	53	45	40	35
13	CC	kW	1379	1304	1219	1068	971	856	1567	1488	1398	1272	1189	1082
	PI	kW	382	416	453	449	391	357	404	440	479	521	488	434
	qw	l/s	66.4	62.8	58.7	51.3	46.6	41.1	75.3	71.5	67.2	61.0	57.0	51.9
	dpw	kPa	108	98	87	68	57	46	73	66	59	50	44	37
15	CC	kW	1460	1381	1291	1098	994	876	1664	1581	1489	1336	1236	1106
	PI	kW	397	432	469	415	360	328	418	455	495	508	463	410
	qw	l/s	70.4	66.5	62.2	52.8	47.8	42.1	80.1	76.1	71.6	64.2	59.3	53.1
	dpw	kPa	120	109	96	72	60	48	81	74	67	55	48	39

			C13						C14					
Twout		**Ta**	**30**	**35**	**40**	**46**	**48**	**50**	**30**	**35**	**40**	**46**	**48**	**50**
5	CC	kW	1300	1227	1149	1041	1003	906	1439	1359	1267	1141	1090	982
	PI	kW	398	436	477	530	548	483	439	482	527	585	596	526
	qw	l/s	62.2	58.7	54.9	49.8	47.9	43.3	68.8	65.0	60.6	54.5	52.1	46.9
	dpw	kPa	52	47	41	35	32	27	61	55	49	40	37	31
7	CC	kW	1382	1303	1218	1106	1065	985	1527	1444	1350	1217	1169	1080
	PI	kW	408	447	488	540	559	519	451	494	539	597	617	574
	qw	l/s	66.2	62.4	58.3	52.9	51.0	47.1	73.2	69.2	64.6	58.3	55.9	51.7
	dpw	kPa	58	52	46	39	36	31	69	62	55	45	42	37
9	CC	kW	1465	1387	1296	1178	1126	1022	1622	1535	1437	1301	1246	1128
	PI	kW	419	459	500	552	556	489	464	507	553	612	624	541
	qw	l/s	70.3	66.5	62.1	56.4	53.9	48.9	77.9	73.6	68.9	62.4	59.7	54.0
	dpw	kPa	65	58	52	44	40	34	77	69	61	51	47	40
11	CC	kW	1554	1472	1382	1256	1173	1050	1722	1632	1530	1392	1300	1168
	PI	kW	432	472	514	566	526	447	478	522	568	628	583	496
	qw	l/s	74.6	70.7	66.3	60.2	56.2	50.3	82.7	78.4	73.5	66.8	62.3	56.0
	dpw	kPa	72	65	58	49	43	35	85	78	69	58	51	42
13	CC	kW	1649	1563	1470	1334	1210	1093	1826	1734	1630	1472	1348	1205
	PI	kW	446	486	528	567	484	421	494	538	585	621	538	454
	qw	l/s	79.3	75.1	70.6	64.1	58.1	52.4	87.9	83.4	78.3	70.7	64.7	57.8
	dpw	kPa	80	73	65	55	46	38	95	87	77	64	55	45
15	CC	kW	1749	1660	1563	1382	1247	1110	1937	1840	1733	1520	1387	1221
	PI	kW	461	502	545	526	445	407	511	556	604	567	487	433
	qw	l/s	84.2	79.9	75.2	66.4	59.9	53.3	93.3	88.6	83.4	73.1	66.7	58.6
	dpw	kPa	89	81	73	58	48	39	106	97	87	68	58	46

EWAD CZXS

			C15						C16					
Twout		**Ta**	**30**	**35**	**40**	**46**	**48**	**50**	**30**	**35**	**40**	**46**	**48**	**50**
5	CC	kW	1530	1448	1349	1210	1148	1035	1605	1523	1427	1294	1227	1105
	PI	kW	478	525	575	638	643	567	502	552	605	676	671	589
	qw	l/s	73.3	69.3	64.5	57.9	54.9	49.4	76.8	72.9	68.2	61.9	58.6	52.8
	dpw	kPa	71	64	57	47	42	35	62	56	50	42	38	32
7	CC	kW	1624	1538	1438	1294	1241	1147	1703	1616	1514	1370	1318	1192
	PI	kW	491	538	589	653	675	628	514	564	618	689	714	622
	qw	l/s	77.8	73.7	68.9	62.0	59.4	54.9	81.6	77.4	72.5	65.6	63.1	57.0
	dpw	kPa	79	72	64	53	49	42	69	63	56	47	44	36
9	CC	kW	1723	1633	1530	1384	1330	1205	1803	1712	1605	1454	1371	1239
	PI	kW	506	553	604	668	691	592	528	579	633	704	684	594
	qw	l/s	82.7	78.4	73.4	66.4	63.7	57.7	86.5	82.1	77.0	69.7	65.7	59.3
	dpw	kPa	89	80	71	60	55	46	77	70	62	52	47	39
11	CC	kW	1828	1735	1628	1481	1386	1252	1908	1811	1700	1543	1415	1264
	PI	kW	521	569	620	686	638	544	544	595	650	722	640	542
	qw	l/s	87.9	83.4	78.2	71.1	66.5	60.0	91.7	87.0	81.6	74.0	67.9	60.6
	dpw	kPa	99	90	80	67	60	50	85	78	69	58	50	40
13	CC	kW	1939	1842	1731	1571	1441	1296	2018	1914	1797	1603	1466	1292
	PI	kW	538	587	638	687	589	498	561	613	669	691	605	528
	qw	l/s	93.3	88.6	83.3	75.5	69.2	62.2	97.1	92.0	86.4	77.0	70.4	62.0
	dpw	kPa	110	100	90	75	64	53	94	86	77	62	53	42
15	CC	kW	2054	1954	1840	1619	1478	1309	2131	2022	1898	1651	1501	1314
	PI	kW	557	606	658	619	526	469	581	633	690	645	556	494
	qw	l/s	99.1	94.2	88.6	77.9	71.1	62.9	102.7	97.3	91.3	79.4	72.1	63.1
	dpw	kPa	122	112	100	79	67	54	104	95	85	66	55	43

			C17						C18					
Twout		**Ta**	**30**	**35**	**40**	**46**	**48**	**50**	**30**	**35**	**40**	**46**	**48**	**50**
5	CC	kW	1693	1608	1509	1373	1303	1174	1790	1705	1608	1473	1373	1248
	PI	kW	530	583	640	714	708	623	551	607	667	746	701	629
	qw	l/s	81.0	76.9	72.2	65.6	62.3	56.1	85.7	81.6	76.9	70.4	65.6	59.6
	dpw	kPa	68	62	56	47	43	35	65	59	53	45	40	34
7	CC	kW	1792	1701	1597	1452	1399	1282	1884	1795	1692	1552	1500	1390
	PI	kW	543	596	653	727	753	679	562	619	679	758	785	726
	qw	l/s	85.9	81.5	76.5	69.5	67.0	61.3	90.3	86.0	81.0	74.3	71.8	66.5
	dpw	kPa	76	69	62	52	49	41	71	65	59	50	47	41
9	CC	kW	1895	1800	1690	1538	1459	1332	1983	1889	1783	1636	1583	1451
	PI	kW	557	611	668	742	730	648	575	632	693	771	799	707
	qw	l/s	91.0	86.4	81.1	73.7	69.9	63.8	95.2	90.6	85.5	78.4	75.9	69.5
	dpw	kPa	84	77	68	58	52	44	78	72	64	55	52	44
11	CC	kW	2003	1902	1789	1631	1520	1367	2088	1990	1879	1727	1648	1498
	PI	kW	573	627	685	760	703	599	589	646	708	787	775	665
	qw	l/s	96.3	91.4	85.9	78.3	72.9	65.6	100.3	95.6	90.2	82.9	79.1	71.9
	dpw	kPa	93	85	76	64	57	47	86	79	71	61	56	47
13	CC	kW	2116	2010	1891	1705	1576	1395	2199	2096	1981	1824	1714	1549
	PI	kW	590	645	704	741	665	575	604	662	724	804	746	625
	qw	l/s	101.9	96.7	90.9	81.9	75.7	66.9	105.8	100.8	95.2	87.6	82.3	74.3
	dpw	kPa	103	94	84	70	60	48	94	87	78	67	60	50
15	CC	kW	2235	2123	1998	1768	1616	1434	2315	2208	2088	1907	1763	1576
	PI	kW	610	665	725	707	612	533	621	680	742	790	691	580
	qw	l/s	107.7	102.3	96.2	85.0	77.7	68.9	111.5	106.3	100.5	91.7	84.8	75.7
	dpw	kPa	114	104	93	74	63	51	104	95	86	73	63	52

Fluid: Water
Ta: Condenser inlet air temperature; Twout: Evaporator leaving water temperature (Δt 5°C)
CC: Cooling capacity; PI: Power input; qw: Fluid flow rate; dpw: Fluid pressure drop
** For working condition where dpw value is "Italic-Red Color" please contac factory*

EWAD CZXL

			740						830					
Twout		**Ta**	**30**	**35**	**40**	**46**	**48**	**50**	**30**	**35**	**40**	**46**	**48**	**50**
5	CC	kW	727	690	647	588	567	523	818	778	733	669	641	596
	PI	kW	213	233	255	285	295	275	240	263	289	323	330	314
	qw	l/s	34.8	33.0	31.0	28.2	27.1	25.0	39.1	37.2	35.1	32.0	30.7	28.5
	dpw	kPa	81	74	66	55	52	45	57	52	47	40	37	32
7	CC	kW	774	734	688	624	601	561	872	828	778	711	685	645
	PI	kW	219	239	261	290	300	287	246	269	295	329	341	333
	qw	l/s	37.2	35.2	33.0	29.9	28.8	26.9	41.8	39.7	37.3	34.0	32.8	30.9
	dpw	kPa	91	83	74	62	58	51	64	58	52	44	41	37
9	CC	kW	825	781	732	664	639	580	933	882	828	755	728	677
	PI	kW	225	246	268	297	307	270	253	276	302	336	348	326
	qw	l/s	39.7	37.5	35.1	31.9	30.6	27.8	44.8	42.3	39.7	36.2	34.9	32.4
	dpw	kPa	102	93	82	69	64	54	72	65	58	49	46	40
11	CC	kW	871	830	778	706	668	600	998	943	881	802	765	708
	PI	kW	232	253	275	304	298	255	262	285	310	344	341	315
	qw	l/s	42.0	40.0	37.4	33.9	32.1	28.8	48.0	45.3	42.3	38.5	36.7	34.0
	dpw	kPa	113	104	92	77	70	58	82	74	65	55	51	44
13	CC	kW	921	876	827	750	687	614	1066	1007	941	852	803	731
	PI	kW	239	261	284	313	276	234	272	295	320	353	335	295
	qw	l/s	44.4	42.2	39.8	36.1	33.1	29.5	51.3	48.4	45.2	40.9	38.6	35.1
	dpw	kPa	125	115	103	86	74	60	92	83	74	62	55	47
15	CC	kW	972	925	872	779	706	626	1136	1073	1003	896	839	743
	PI	kW	248	269	293	299	255	233	283	306	331	349	327	279
	qw	l/s	46.9	44.6	42.0	37.5	34.0	30.1	54.8	51.7	48.3	43.1	40.3	35.7
	dpw	kPa	139	127	114	93	77	62	104	94	83	67	60	48

			900						C10					
Twout		**Ta**	**30**	**35**	**40**	**46**	**48**	**50**	**30**	**35**	**40**	**46**	**48**	**50**
5	CC	kW	890	846	796	725	691	627	1022	968	905	820	781	725
	PI	kW	275	302	332	371	375	335	305	335	367	409	412	391
	qw	l/s	42.6	40.5	38.1	34.7	33.1	30.0	48.9	46.3	43.3	39.2	37.3	34.6
	dpw	kPa	63	58	52	44	40	34	62	56	50	42	38	33
7	CC	kW	945	898	843	768	740	684	1091	1033	965	873	839	776
	PI	kW	282	309	339	378	392	365	314	343	375	417	432	404
	qw	l/s	45.3	43.0	40.4	36.8	35.4	32.7	52.3	49.5	46.2	41.8	40.2	37.1
	dpw	kPa	71	65	58	49	46	39	70	63	56	47	43	38
9	CC	kW	1008	953	894	814	784	706	1164	1101	1029	930	882	811
	PI	kW	290	317	347	386	400	342	323	353	385	427	422	390
	qw	l/s	48.4	45.7	42.9	39.0	37.6	33.8	55.9	52.8	49.4	44.6	42.3	38.9
	dpw	kPa	80	72	64	54	51	42	79	71	63	52	48	41
11	CC	kW	1074	1015	948	861	812	730	1239	1173	1097	992	929	841
	PI	kW	300	327	356	395	378	322	334	364	397	438	415	368
	qw	l/s	51.6	48.8	45.5	41.4	39.0	35.0	59.6	56.3	52.7	47.6	44.5	40.3
	dpw	kPa	90	81	71	60	54	45	88	80	71	59	52	44
13	CC	kW	1144	1080	1008	913	836	755	1317	1247	1167	1040	968	861
	PI	kW	310	338	367	405	352	303	346	377	409	426	399	352
	qw	l/s	55.1	52.0	48.5	43.9	40.2	36.2	63.4	60.0	56.1	50.0	46.5	41.3
	dpw	kPa	101	91	80	67	57	47	99	89	79	64	57	46
15	CC	kW	1217	1148	1072	948	864	760	1397	1323	1240	1089	995	882
	PI	kW	323	350	380	386	334	294	360	391	424	416	369	324
	qw	l/s	58.7	55.3	51.6	45.6	41.6	36.5	67.3	63.8	59.7	52.4	47.8	42.4
	dpw	kPa	113	101	90	72	61	48	110	100	89	70	59	48

EWAD CZXL

			C11						C12					
Twout		**Ta**	**30**	**35**	**40**	**46**	**48**	**50**	**30**	**35**	**40**	**46**	**48**	**50**
5	CC	kW	1083	1024	957	865	815	733	1221	1156	1084	986	950	885
	PI	kW	338	371	406	453	445	390	360	395	433	482	499	475
	qw	l/s	51.9	49.0	45.8	41.4	39.0	35.0	58.4	55.3	51.8	47.1	45.4	42.3
	dpw	kPa	69	63	56	46	42	34	46	42	37	31	29	26
7	CC	kW	1153	1090	1018	918	881	789	1301	1232	1154	1049	1011	952
	PI	kW	347	380	415	462	478	408	369	404	442	491	508	496
	qw	l/s	55.3	52.3	48.8	44.0	42.2	37.7	62.3	59.0	55.2	50.2	48.4	45.5
	dpw	kPa	78	70	62	52	48	39	52	47	42	35	33	30
9	CC	kW	1226	1159	1082	975	913	814	1385	1313	1231	1119	1074	1002
	PI	kW	358	391	426	473	451	383	380	415	453	502	511	486
	qw	l/s	58.9	55.6	51.9	46.8	43.7	39.0	66.4	62.9	59.0	53.6	51.4	47.9
	dpw	kPa	87	79	70	58	51	42	58	53	47	40	37	32
11	CC	kW	1301	1231	1150	1037	946	841	1475	1398	1312	1194	1132	1045
	PI	kW	369	403	439	485	426	359	391	427	465	514	502	465
	qw	l/s	62.6	59.2	55.2	49.8	45.4	40.3	70.8	67.1	62.9	57.3	54.3	50.1
	dpw	kPa	97	88	78	64	55	44	65	59	53	45	40	35
13	CC	kW	1379	1304	1219	1068	971	856	1567	1488	1398	1272	1189	1082
	PI	kW	382	416	453	449	391	357	404	440	479	521	488	434
	qw	l/s	66.4	62.8	58.7	51.3	46.6	41.1	75.3	71.5	67.2	61.0	57.0	51.9
	dpw	kPa	108	98	87	68	57	46	73	66	59	50	44	37
15	CC	kW	1460	1381	1291	1098	994	876	1664	1581	1489	1336	1236	1106
	PI	kW	397	432	469	415	360	328	418	455	495	508	463	410
	qw	l/s	70.4	66.5	62.2	52.8	47.8	42.1	80.1	76.1	71.6	64.2	59.3	53.1
	dpw	kPa	120	109	96	72	60	48	81	74	67	55	48	39

			C13						C14					
Twout		**Ta**	**30**	**35**	**40**	**46**	**48**	**50**	**30**	**35**	**40**	**46**	**48**	**50**
5	CC	kW	1300	1227	1149	1041	1003	906	1439	1359	1267	1141	1090	982
	PI	kW	398	436	477	530	548	483	439	482	527	585	596	526
	qw	l/s	62.2	58.7	54.9	49.8	47.9	43.3	68.8	65.0	60.6	54.5	52.1	46.9
	dpw	kPa	52	47	41	35	32	27	61	55	49	40	37	31
7	CC	kW	1382	1303	1218	1106	1065	985	1527	1444	1350	1217	1169	1080
	PI	kW	408	447	488	540	559	519	451	494	539	597	617	574
	qw	l/s	66.2	62.4	58.3	52.9	51.0	47.1	73.2	69.2	64.6	58.3	55.9	51.7
	dpw	kPa	58	52	46	39	36	31	69	62	55	45	42	37
9	CC	kW	1465	1387	1296	1178	1126	1022	1622	1535	1437	1301	1246	1128
	PI	kW	419	459	500	552	556	489	464	507	553	612	624	541
	qw	l/s	70.3	66.5	62.1	56.4	53.9	48.9	77.9	73.6	68.9	62.4	59.7	54.0
	dpw	kPa	65	58	52	44	40	34	77	69	61	51	47	40
11	CC	kW	1554	1472	1382	1256	1173	1050	1722	1632	1530	1392	1300	1168
	PI	kW	432	472	514	566	526	447	478	522	568	628	583	496
	qw	l/s	74.6	70.7	66.3	60.2	56.2	50.3	82.7	78.4	73.5	66.8	62.3	56.0
	dpw	kPa	72	65	58	49	43	35	85	78	69	58	51	42
13	CC	kW	1649	1563	1470	1334	1210	1093	1826	1734	1630	1472	1348	1205
	PI	kW	446	486	528	567	484	421	494	538	585	621	538	454
	qw	l/s	79.3	75.1	70.6	64.1	58.1	52.4	87.9	83.4	78.3	70.7	64.7	57.8
	dpw	kPa	80	73	65	55	46	38	95	87	77	64	55	45
15	CC	kW	1749	1660	1563	1382	1247	1110	1937	1840	1733	1520	1387	1221
	PI	kW	461	502	545	526	445	407	511	556	604	567	487	433
	qw	l/s	84.2	79.9	75.2	66.4	59.9	53.3	93.3	88.6	83.4	73.1	66.7	58.6
	dpw	kPa	89	81	73	58	48	39	106	97	87	68	58	46

EWAD CZXL

			C15						C16					
Twout		**Ta**	**30**	**35**	**40**	**46**	**48**	**50**	**30**	**35**	**40**	**46**	**48**	**50**
5	CC	kW	1530	1448	1349	1210	1148	1035	1605	1523	1427	1294	1227	1105
	PI	kW	478	525	575	638	643	567	502	552	605	676	671	589
	qw	l/s	73.3	69.3	64.5	57.9	54.9	49.4	76.8	72.9	68.2	61.9	58.6	52.8
	dpw	kPa	71	64	57	47	42	35	62	56	50	42	38	32
7	CC	kW	1624	1538	1438	1294	1241	1147	1703	1616	1514	1370	1318	1192
	PI	kW	491	538	589	653	675	628	514	564	618	689	714	622
	qw	l/s	77.8	73.7	68.9	62.0	59.4	54.9	81.6	77.4	72.5	65.6	63.1	57.0
	dpw	kPa	79	72	64	53	49	42	69	63	56	47	44	36
9	CC	kW	1723	1633	1530	1384	1330	1205	1803	1712	1605	1454	1371	1239
	PI	kW	506	553	604	668	691	592	528	579	633	704	684	594
	qw	l/s	82.7	78.4	73.4	66.4	63.7	57.7	86.5	82.1	77.0	69.7	65.7	59.3
	dpw	kPa	89	80	71	60	55	46	77	70	62	52	47	39
11	CC	kW	1828	1735	1628	1481	1386	1252	1908	1811	1700	1543	1415	1264
	PI	kW	521	569	620	686	638	544	544	595	650	722	640	542
	qw	l/s	87.9	83.4	78.2	71.1	66.5	60.0	91.7	87.0	81.6	74.0	67.9	60.6
	dpw	kPa	99	90	80	67	60	50	85	78	69	58	50	40
13	CC	kW	1939	1842	1731	1571	1441	1296	2018	1914	1797	1603	1466	1292
	PI	kW	538	587	638	687	589	498	561	613	669	691	605	528
	qw	l/s	93.3	88.6	83.3	75.5	69.2	62.2	97.1	92.0	86.4	77.0	70.4	62.0
	dpw	kPa	110	100	90	75	64	53	94	86	77	62	53	42
15	CC	kW	2054	1954	1840	1619	1478	1309	2131	2022	1898	1651	1501	1314
	PI	kW	557	606	658	619	526	469	581	633	690	645	556	494
	qw	l/s	99.1	94.2	88.6	77.9	71.1	62.9	102.7	97.3	91.3	79.4	72.1	63.1
	dpw	kPa	122	112	100	79	67	54	104	95	85	66	55	43

			C17						C18					
Twout		**Ta**	**30**	**35**	**40**	**46**	**48**	**50**	**30**	**35**	**40**	**46**	**48**	**50**
5	CC	kW	1693	1608	1509	1373	1303	1174	1790	1705	1608	1473	1373	1248
	PI	kW	530	583	640	714	708	623	551	607	667	746	701	629
	qw	l/s	81.0	76.9	72.2	65.6	62.3	56.1	85.7	81.6	76.9	70.4	65.6	59.6
	dpw	kPa	68	62	56	47	43	35	65	59	53	45	40	34
7	CC	kW	1792	1701	1597	1452	1399	1282	1884	1795	1692	1552	1500	1390
	PI	kW	543	596	653	727	753	679	562	619	679	758	785	726
	qw	l/s	85.9	81.5	76.5	69.5	67.0	61.3	90.3	86.0	81.0	74.3	71.8	66.5
	dpw	kPa	76	69	62	52	49	41	71	65	59	50	47	41
9	CC	kW	1895	1800	1690	1538	1459	1332	1983	1889	1783	1636	1583	1451
	PI	kW	557	611	668	742	730	648	575	632	693	771	799	707
	qw	l/s	91.0	86.4	81.1	73.7	69.9	63.8	95.2	90.6	85.5	78.4	75.9	69.5
	dpw	kPa	84	77	68	58	52	44	78	72	64	55	52	44
11	CC	kW	2003	1902	1789	1631	1520	1367	2088	1990	1879	1727	1648	1498
	PI	kW	573	627	685	760	703	599	589	646	708	787	775	665
	qw	l/s	96.3	91.4	85.9	78.3	72.9	65.6	100.3	95.6	90.2	82.9	79.1	71.9
	dpw	kPa	93	85	76	64	57	47	86	79	71	61	56	47
13	CC	kW	2116	2010	1891	1705	1576	1395	2199	2096	1981	1824	1714	1549
	PI	kW	590	645	704	741	665	575	604	662	724	804	746	625
	qw	l/s	101.9	96.7	90.9	81.9	75.7	66.9	105.8	100.8	95.2	87.6	82.3	74.3
	dpw	kPa	103	94	84	70	60	48	94	87	78	67	60	50
15	CC	kW	2235	2123	1998	1768	1616	1434	2315	2208	2088	1907	1763	1576
	PI	kW	610	665	725	707	612	533	621	680	742	790	691	580
	qw	l/s	107.7	102.3	96.2	85.0	77.7	68.9	111.5	106.3	100.5	91.7	84.8	75.7
	dpw	kPa	114	104	93	74	63	51	104	95	86	73	63	52

Fluid: Water
Ta: Condenser inlet air temperature; Twout: Evaporator leaving water temperature (Δt 5°C)
CC: Cooling capacity; PI: Power input; qw: Fluid flow rate; dpw: Fluid pressure drop
** For working condition where dpw value is "Italic-Red Color" please contac factory*

EWAD CZXR

			700						790					
Twout		**Ta**	**30**	**35**	**40**	**46**	**48**	**50**	**30**	**35**	**40**	**46**	**48**	**50**
5	CC	kW	696	656	610	539	494	448	783	741	693	612	570	514
	PI	kW	218	239	262	277	248	221	243	268	295	310	293	259
	qw	l/s	33.4	31.4	29.2	25.8	23.6	21.4	37.5	35.5	33.1	29.3	27.2	24.5
	dpw	kPa	76	68	60	48	41	34	54	48	43	34	30	25
7	CC	kW	739	696	647	575	524	470	833	786	734	655	611	550
	PI	kW	224	246	269	291	253	219	250	274	301	326	308	267
	qw	l/s	35.5	33.4	31.0	27.6	25.1	22.5	39.9	37.6	35.1	31.4	29.3	26.3
	dpw	kPa	85	76	66	54	45	37	60	54	48	39	34	28
9	CC	kW	786	738	685	595	540	476	886	834	777	687	638	562
	PI	kW	232	253	276	273	237	215	258	282	309	318	297	257
	qw	l/s	37.8	35.5	32.9	28.5	25.9	22.8	42.5	40.0	37.3	32.9	30.6	26.9
	dpw	kPa	95	85	74	57	48	38	67	60	53	42	37	30
11	CC	kW	832	783	726	616	558	491	945	886	824	721	656	581
	PI	kW	240	262	285	258	222	202	267	292	318	313	275	240
	qw	l/s	40.0	37.7	34.9	29.6	26.8	23.6	45.4	42.5	39.6	34.6	31.5	27.8
	dpw	kPa	105	94	82	61	51	41	75	67	59	46	39	31
13	CC	kW	876	828	769	631	561	500	1006	943	873	746	671	600
	PI	kW	249	272	295	236	214	183	278	303	329	296	263	225
	qw	l/s	42.2	39.9	37.0	30.3	26.9	24.0	48.4	45.3	42.0	35.8	32.2	28.8
	dpw	kPa	116	105	91	64	52	42	85	75	65	49	41	33
15	CC	kW	923	871	815	653	580	515	1069	1002	928	765	687	611
	PI	kW	258	282	307	223	202	172	291	315	342	272	240	215
	qw	l/s	44.5	42.0	39.3	31.4	27.9	24.7	51.5	48.2	44.7	36.8	33.0	29.3
	dpw	kPa	127	115	102	68	55	44	95	84	73	52	42	34

			850						980					
Twout		**Ta**	**30**	**35**	**40**	**46**	**48**	**50**	**30**	**35**	**40**	**46**	**48**	**50**
5	CC	kW	850	803	749	649	588	531	973	914	849	739	683	608
	PI	kW	281	310	341	340	299	266	311	342	375	381	356	321
	qw	l/s	40.7	38.4	35.8	31.0	28.1	25.3	46.5	43.7	40.6	35.3	32.6	29.1
	dpw	kPa	59	54	47	36	31	25	58	52	45	35	31	25
7	CC	kW	900	849	791	699	635	568	1036	972	901	788	730	644
	PI	kW	289	318	349	368	319	275	321	351	385	395	368	322
	qw	l/s	43.2	40.7	37.9	33.4	30.4	27.2	49.6	46.6	43.2	37.7	34.9	30.8
	dpw	kPa	66	59	52	42	35	29	65	58	50	40	34	28
9	CC	kW	955	898	835	722	657	575	1102	1034	957	826	754	669
	PI	kW	298	327	358	345	303	270	332	363	396	387	345	305
	qw	l/s	45.8	43.1	40.1	34.6	31.5	27.5	52.9	49.6	45.9	39.6	36.1	32.0
	dpw	kPa	74	66	58	44	37	29	73	65	56	43	37	29
11	CC	kW	1014	951	883	747	674	593	1170	1098	1017	861	769	690
	PI	kW	309	337	368	324	279	253	344	375	409	370	328	285
	qw	l/s	48.7	45.7	42.4	35.8	32.3	28.4	56.2	52.8	48.8	41.3	36.9	33.1
	dpw	kPa	82	73	64	47	39	31	81	72	63	47	38	31
13	CC	kW	1076	1008	932	772	686	611	1241	1165	1079	888	793	703
	PI	kW	321	350	380	305	276	236	358	390	424	344	304	271
	qw	l/s	51.8	48.5	44.8	37.1	32.9	29.3	59.7	56.0	51.9	42.6	38.0	33.7
	dpw	kPa	92	81	71	50	41	33	90	81	70	49	40	32
15	CC	kW	1140	1068	988	788	701	629	1313	1233	1133	904	820	719
	PI	kW	335	364	395	279	252	221	374	406	420	325	286	250
	qw	l/s	55.0	51.4	47.5	37.9	33.6	30.2	63.2	59.4	54.5	43.4	39.4	34.5
	dpw	kPa	102	91	79	52	42	35	100	89	77	51	43	34

EWAD CZXR

			C10						C11					
Twout		**Ta**	**30**	**35**	**40**	**46**	**48**	**50**	**30**	**35**	**40**	**46**	**48**	**50**
5	CC	kW	1032	968	896	757	688	608	1166	1098	1022	903	846	763
	PI	kW	348	382	419	392	348	326	365	401	440	461	444	392
	qw	l/s	49.4	46.3	42.9	36.2	32.9	29.0	55.7	52.5	48.8	43.1	40.4	36.4
	dpw	kPa	64	57	50	37	31	25	43	39	34	27	24	20
7	CC	kW	1095	1027	949	810	739	640	1240	1166	1085	968	903	813
	PI	kW	359	393	430	412	367	322	376	412	451	485	459	399
	qw	l/s	52.5	49.2	45.4	38.8	35.4	30.6	59.4	55.8	51.9	46.3	43.2	38.9
	dpw	kPa	72	64	55	42	35	27	48	43	38	31	27	23
9	CC	kW	1162	1088	1005	838	762	667	1318	1240	1153	1016	939	833
	PI	kW	371	405	442	386	342	309	388	424	463	475	437	383
	qw	l/s	55.8	52.2	48.2	40.1	36.5	31.9	63.2	59.4	55.2	48.6	45.0	39.9
	dpw	kPa	80	71	62	44	37	29	54	48	43	34	29	24
11	CC	kW	1230	1152	1064	866	764	688	1400	1319	1227	1064	970	858
	PI	kW	385	419	456	363	327	289	401	438	477	460	405	353
	qw	l/s	59.1	55.4	51.1	41.5	36.6	32.9	67.2	63.3	58.9	51.0	46.5	41.1
	dpw	kPa	89	79	68	47	38	31	60	54	48	37	31	25
13	CC	kW	1299	1218	1126	895	790	708	1486	1401	1306	1101	994	876
	PI	kW	400	435	473	341	308	270	416	454	494	429	386	335
	qw	l/s	62.5	58.6	54.1	43.0	37.9	34.0	71.4	67.3	62.7	52.8	47.7	42.0
	dpw	kPa	98	87	76	50	40	33	67	61	53	39	33	26
15	CC	kW	1371	1285	1168	902	817	715	1575	1486	1384	1126	1021	901
	PI	kW	417	453	451	330	289	243	433	471	504	405	353	310
	qw	l/s	66.1	61.9	56.2	43.4	39.2	34.3	75.7	71.5	66.5	54.1	49.0	43.2
	dpw	kPa	109	96	81	51	42	33	75	67	59	41	34	27

			C12						C13					
Twout		**Ta**	**30**	**35**	**40**	**46**	**48**	**50**	**30**	**35**	**40**	**46**	**48**	**50**
5	CC	kW	1238	1164	1080	935	853	771	1334	1250	1155	993	900	811
	PI	kW	407	447	489	485	433	385	437	479	524	519	456	405
	qw	l/s	59.2	55.6	51.6	44.7	40.7	36.8	63.8	59.8	55.2	47.4	43.0	38.7
	dpw	kPa	48	43	38	29	25	20	57	51	44	33	28	23
7	CC	kW	1313	1231	1144	1009	917	822	1414	1327	1227	1076	978	877
	PI	kW	419	459	502	524	456	392	450	493	538	562	489	421
	qw	l/s	62.9	58.9	54.7	48.3	43.9	39.3	67.7	63.6	58.7	51.5	46.8	41.9
	dpw	kPa	54	48	42	33	28	23	63	57	49	39	33	27
9	CC	kW	1393	1307	1212	1047	949	835	1499	1408	1306	1119	1020	887
	PI	kW	433	473	515	493	426	387	465	508	554	523	458	403
	qw	l/s	66.8	62.6	58.1	50.1	45.4	40.0	71.9	67.5	62.6	53.6	48.8	42.5
	dpw	kPa	60	53	46	36	30	24	71	63	55	42	35	27
11	CC	kW	1474	1388	1289	1079	984	856	1589	1494	1389	1159	1052	920
	PI	kW	448	489	531	451	399	351	481	525	571	477	416	371
	qw	l/s	70.7	66.6	61.8	51.7	47.2	41.0	76.3	71.7	66.7	55.6	50.4	44.1
	dpw	kPa	66	59	52	38	32	25	79	70	62	44	37	29
13	CC	kW	1561	1471	1373	1111	997	889	1683	1586	1477	1198	1065	959
	PI	kW	464	505	549	411	384	328	499	543	590	436	395	347
	qw	l/s	75.0	70.7	66.0	53.3	47.8	42.6	80.9	76.2	71.0	57.5	51.1	46.0
	dpw	kPa	73	66	58	40	33	27	87	78	69	47	38	32
15	CC	kW	1653	1559	1449	1128	1026	906	1781	1681	1560	1220	1104	982
	PI	kW	482	524	552	397	350	296	518	564	596	421	365	313
	qw	l/s	79.5	75.0	69.7	54.1	49.3	43.5	85.8	80.9	75.1	58.6	53.0	47.1
	dpw	kPa	82	73	64	41	34	28	97	87	76	49	41	33

EWAD CZXR

			C14						C15					
Twout		**Ta**	**30**	**35**	**40**	**46**	**48**	**50**	**30**	**35**	**40**	**46**	**48**	**50**
5	CC	kW	1444	1353	1248	1068	964	868	1546	1453	1349	1145	1041	920
	PI	kW	463	508	556	551	478	424	518	570	627	587	522	489
	qw	l/s	69.1	64.7	59.7	51.0	46.1	41.5	73.9	69.5	64.5	54.7	49.7	43.9
	dpw	kPa	66	59	51	38	32	26	58	52	45	34	28	23
7	CC	kW	1529	1437	1327	1161	1056	948	1636	1539	1425	1224	1118	969
	PI	kW	477	523	571	598	520	448	533	585	641	617	549	483
	qw	l/s	73.3	68.8	63.6	55.6	50.5	45.3	78.4	73.7	68.2	58.6	53.5	46.3
	dpw	kPa	74	66	57	45	38	31	64	57	50	38	32	25
9	CC	kW	1620	1523	1413	1218	1108	966	1729	1626	1507	1263	1152	1010
	PI	kW	493	539	588	564	488	430	549	602	659	578	512	464
	qw	l/s	77.8	73.1	67.8	58.4	53.1	46.3	82.9	78.0	72.3	60.5	55.1	48.3
	dpw	kPa	82	73	64	49	41	32	71	63	55	40	34	27
11	CC	kW	1716	1615	1502	1256	1149	1001	1824	1717	1592	1304	1155	1041
	PI	kW	510	557	607	502	444	390	568	622	679	542	490	433
	qw	l/s	82.5	77.6	72.1	60.3	55.1	48.0	87.6	82.4	76.4	62.5	55.4	49.8
	dpw	kPa	91	82	72	52	44	34	78	70	61	43	34	28
13	CC	kW	1817	1712	1595	1300	1161	1046	1923	1809	1680	1346	1195	1071
	PI	kW	529	576	626	459	416	365	588	643	701	509	460	404
	qw	l/s	87.4	82.4	76.7	62.4	55.7	50.2	92.5	86.9	80.7	64.6	57.3	51.4
	dpw	kPa	101	91	80	55	45	37	86	77	67	45	36	30
15	CC	kW	1922	1814	1693	1327	1198	1073	2026	1904	1750	1356	1232	1101
	PI	kW	549	597	648	443	379	330	611	667	686	492	433	377
	qw	l/s	92.6	87.4	81.5	63.8	57.6	51.5	97.5	91.7	84.2	65.1	59.2	52.8
	dpw	kPa	112	101	89	57	48	39	95	85	73	46	39	31

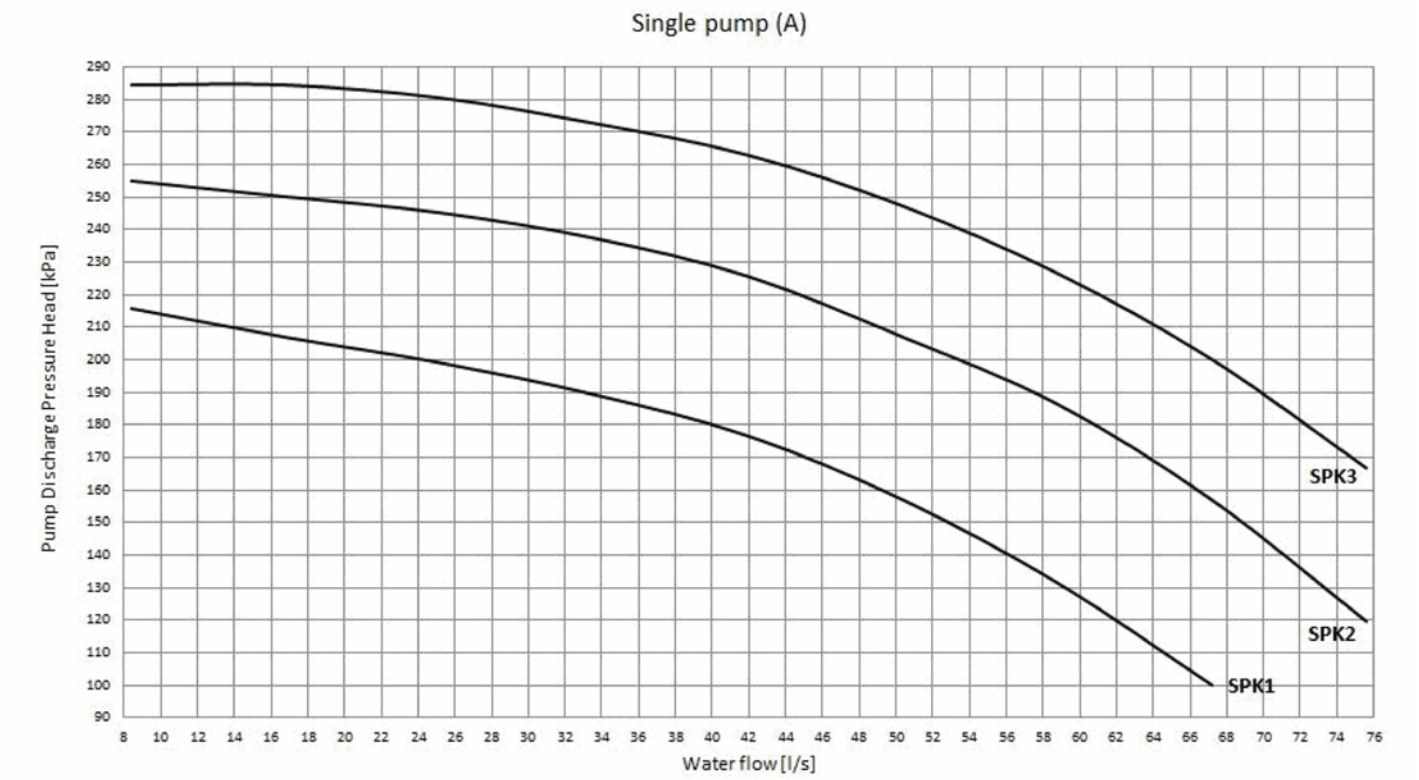
			C16						C17					
Twout		**Ta**	**30**	**35**	**40**	**46**	**48**	**50**	**30**	**35**	**40**	**46**	**48**	**50**
5	CC	kW	1633	1538	1430	1222	1113	992	1716	1624	1520	1291	1185	1041
	PI	kW	546	601	660	626	558	512	565	624	687	628	572	525
	qw	l/s	78.1	73.6	68.4	58.4	53.2	47.4	82.1	77.7	72.7	61.7	56.6	49.7
	dpw	kPa	64	57	50	38	32	26	61	55	49	36	31	25
7	CC	kW	1724	1624	1510	1318	1204	1054	1803	1706	1596	1409	1302	1165
	PI	kW	561	617	676	680	600	517	579	638	701	712	645	565
	qw	l/s	82.6	77.8	72.3	63.1	57.6	50.4	86.4	81.7	76.4	67.4	62.3	55.7
	dpw	kPa	70	63	55	43	37	29	67	60	53	43	37	30
9	CC	kW	1819	1714	1594	1361	1241	1087	1895	1793	1678	1476	1349	1185
	PI	kW	578	634	693	637	560	502	594	654	717	709	615	547
	qw	l/s	87.3	82.2	76.4	65.2	59.4	52.0	90.9	86.0	80.5	70.7	64.6	56.7
	dpw	kPa	78	70	61	46	39	31	73	66	59	46	39	31
11	CC	kW	1919	1809	1684	1407	1260	1123	1992	1885	1766	1525	1395	1225
	PI	kW	596	653	713	598	531	468	611	671	734	665	579	511
	qw	l/s	92.2	86.9	80.8	67.5	60.4	53.8	95.7	90.5	84.8	73.1	66.9	58.7
	dpw	kPa	86	77	68	49	40	33	80	72	64	49	42	33
13	CC	kW	2023	1906	1777	1450	1292	1159	2094	1983	1859	1575	1430	1266
	PI	kW	617	674	736	555	503	437	629	689	754	624	546	477
	qw	l/s	97.3	91.7	85.4	69.6	62.0	55.6	100.7	95.3	89.3	75.6	68.6	60.7
	dpw	kPa	95	85	75	52	42	35	88	79	71	52	44	35
15	CC	kW	2131	2009	1861	1477	1331	1188	2201	2085	1957	1616	1456	1294
	PI	kW	640	698	734	531	467	404	649	710	776	591	522	435
	qw	l/s	102.6	96.7	89.5	71.0	63.9	57.0	106.0	100.3	94.1	77.6	69.9	62.1
	dpw	kPa	104	93	81	54	44	36	96	87	78	55	45	37

Fluid: Water
Ta: Condenser inlet air temperature; Twout: Evaporator leaving water temperature (Δt 5°C)
CC: Cooling capacity; PI: Power input; qw: Fluid flow rate; dpw: Fluid pressure drop
** For working condition where dpw value is "Italic-Red Color" please contac factory*

Water Pump Kit

Single Pump (2 poles)

Discharge Head



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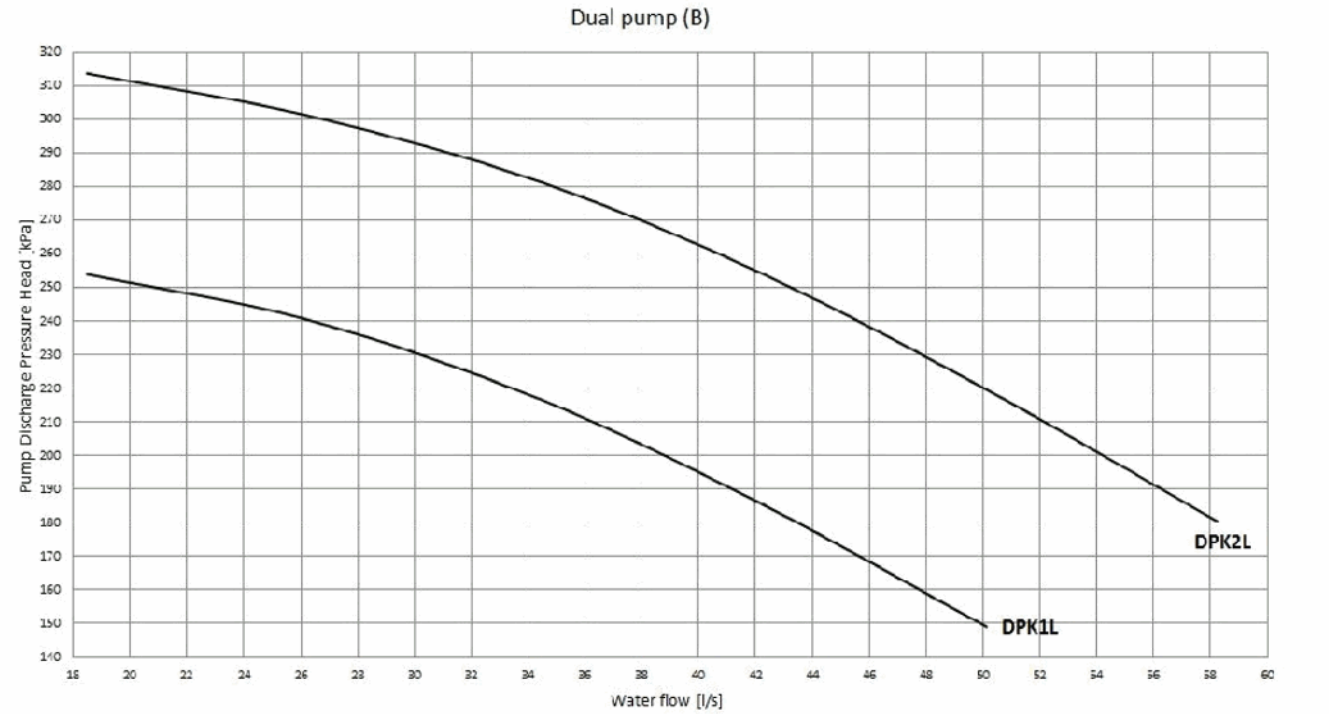
Twin Pump (2 poles)

Discharge Head



Note

- **the above curves are referred to the discharge head of the pump only, not including pressure drops in the unit**
- when using mixture of water and glycol please contact the factory as above specification **can change**

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Water Pump Kit - Combination Matrix

EWAD-C			Single pump					Dual pump					
			SPK1L	SPK2L	SPK1	SPK2	SPK3	DPK1L	DPK2L	DPK1	DPK2	DPK3	DPK4
EWAD650C-SS	EWAD650C-SL	EWAD620C-SR	x	x				x	x				
EWAD740C-SS	EWAD740C-SL	EWAD720C-SR	x	x				x	x				
EWAD830C-SS	EWAD830C-SL	EWAD790C-SR	x	x				x	x				
EWAD910C-SS	EWAD910C-SL	EWAD880C-SR	x	x				x	x				
EWAD970C-SS	EWAD970C-SL	EWAD920C-SR	x	x				x	x				
EWADC11C-SS	EWADC11C-SL	EWADC10C-SR	x	x				x	x				
EWADC12C-SS	EWADC12C-SL	EWADC11C-SR			x	x	x				x	x	x
EWADC13C-SS	EWADC13C-SL	EWADC12C-SR			x	x	x				x	x	x
EWADH14C-SS	EWADH14C-SL	EWADH14C-SR				x	x				x	x	x
EWAD760C-XS	EWAD760C-XL	EWAD740C-XR	x	x				x	x				
EWAD830C-XS	EWAD830C-XL	EWAD810C-XR	x	x				x	x				
EWAD890C-XS	EWAD890C-XL	EWAD870C-XR	x	x				x	x				
EWAD990C-XS	EWAD990C-XL	EWAD970C-XR			x	x	x			x	x	x	x
EWADC10C-XS	EWADC10C-XL	EWADC10C-XR			x	x	x			x	x	x	x
EWADC11C-XS	EWADC11C-XL	EWADC11C-XR			x	x	x			x	x	x	x
EWADC12C-XS	EWADC12C-XL	EWADC12C-XR			x	x	x			x	x	x	x
EWADC13C-XS	EWADC13C-XL	EWADC13C-XR				x	x				x	x	x
EWADH14C-XS	EWADH14C-XL	EWADH14C-XR				x	x				x	x	x
EWADH15C-XS	EWADH15C-XL	EWADH15C-XR				x	x					x	x
EWAD820C-PS	EWAD820C-PL	EWAD810C-PR			x	x	x			x	x	x	x
EWAD890C-PS	EWAD890C-PL	EWAD880C-PR			x	x	x			x	x	x	x
EWAD980C-PS	EWAD980C-PL	EWAD960C-PR			x	x	x			x	x	x	x
EWADC11C-PS	EWADC11C-PL	EWADC10C-PR			x	x	x			x	x	x	x
EWADC12C-PS	EWADC12C-PL	EWADC11C-PR			x	x	x				x	x	x
EWADC13C-PS	EWADC13C-PL	EWADC13C-PR			x	x	x				x	x	x
EWADC14C-PS	EWADC14C-PL	EWADC14C-PR				x	x				x	x	x
EWADC15C-PS	EWADC15C-PL	EWADC15C-PR				x	x					x	x
EWADC16C-PS	EWADC16C-PL	EWADC16C-PR			n.a	n.a	n.a			n.a	n.a	n.a	n.a
NOTE: Pumps not available for 3 circuits units. Contact factory for evaluating special solution.													

EWAD-CZ			Single pump					Dual pump					
			SPK1L	SPK2L	SPK1	SPK2	SPK3	DPK1L	DPK2L	DPK1	DPK2	DPK3	DPK4
EWAD740CZXS	EWAD740CZXL	EWAD700CZXR	x	x				x	x				
EWAD830CZXS	EWAD830CZXL	EWAD790CZXR	x	x				x	x				
EWAD900CZXS	EWAD900CZXL	EWAD850CZXR	x	x				x	x				
EWADC10CZXS	EWADC10CZXL	EWAD980CZXR			x	x	x			x	x	x	x
EWADC11CZXS	EWADC11CZXL	EWADC10CZXR			x	x	x			x	x	x	x
EWADC12CZXS	EWADC12CZXL	EWADC11CZXR			x	x	x				x	x	x
EWADC13CZXS	EWADC13CZXL	EWADC12CZXR			x	x	x				x	x	x
EWADC14CZXS	EWADC14CZXL	EWADC13CZXR				x	x				x	x	x
EWADC15CZXS	EWADC15CZXL	EWADC14CZXR					x					x	x
NOTE: Pumps not available for 3 circuits units. Contact factory for evaluating special solution.													

Legend:
SP = Single Pump; DP = Double Pump

Water Pump Kit - Technical Information

		Pump Motor Power[kW]	Pumo Motor Current[A]	Power Supply[V-ph-Hz]	PN	Motor Protection	Insulation[Class]	Working Temperature[°C]
single pump	SPK1L	11,0	20,2	400V-3ph-50hz	16	IP55	class F	-20 +140
	SPK2L	15,0	26,2	400V-3ph-50hz	16	IP55	class F	-20 +140
	SPK1	11,0	20,5	400V-3ph-50hz	16	IP55	class F	-20 +140
	SPK2	15,0	26,8	400V-3ph-50hz	16	IP55	class F	-20 +140
	SPK3	18,5	31,8	400V-3ph-50hz	16	IP55	class F	-20 +140
dual pump	DPK1L	11,0	20,2	400V-3ph-50hz	16	IP55	class F	-20 +140
	DPK2L	15,0	26,2	400V-3ph-50hz	16	IP55	class F	-20 +140
	DPK1	11,0	20,5	400V-3ph-50hz	16	IP55	class F	-20 +140
	DPK2	15,0	26,8	400V-3ph-50hz	16	IP55	class F	-20 +140
	DPK3	18,,5	31,8	400V-3ph-50hz	16	IP55	class F	-20 +140
	DPK4	22,0	38,0	400V-3ph-50hz	16	IP55	class F	-20 +140

Legend:
SP = Single Pump; DP = Double Pump
A = Pump Motor Power; B = Pump Motor Current; C = Power Supply; D = PN; E = Motor Protection; F = Insulation (Class); G = Working temperature

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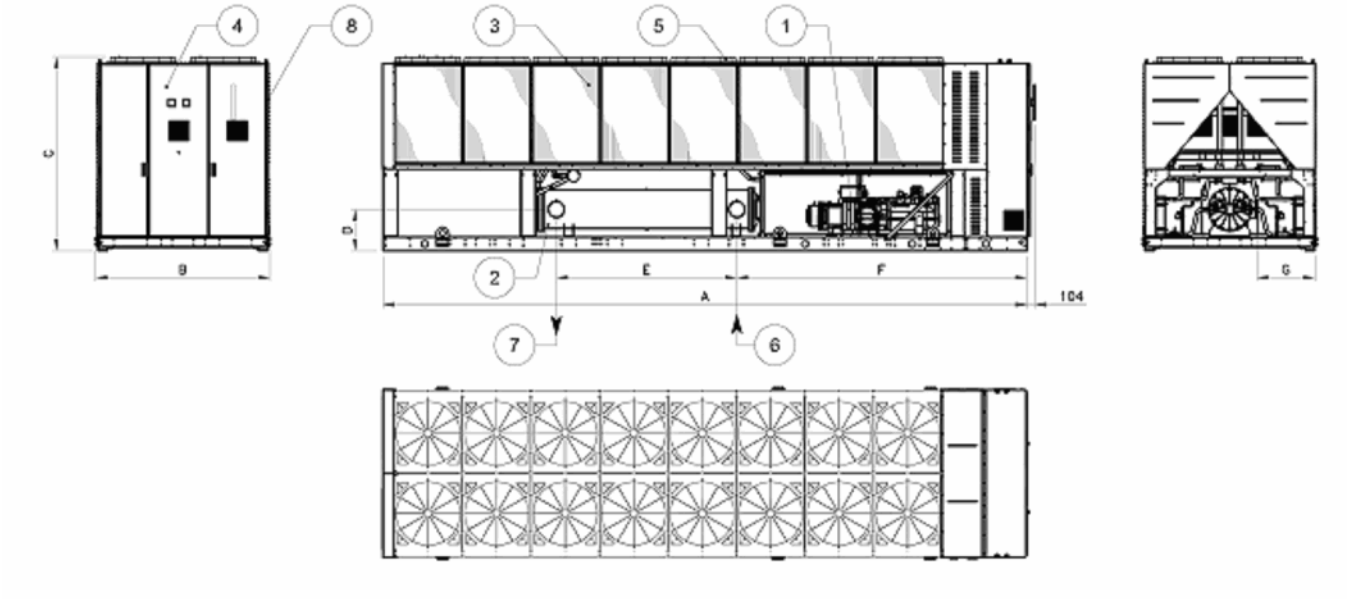
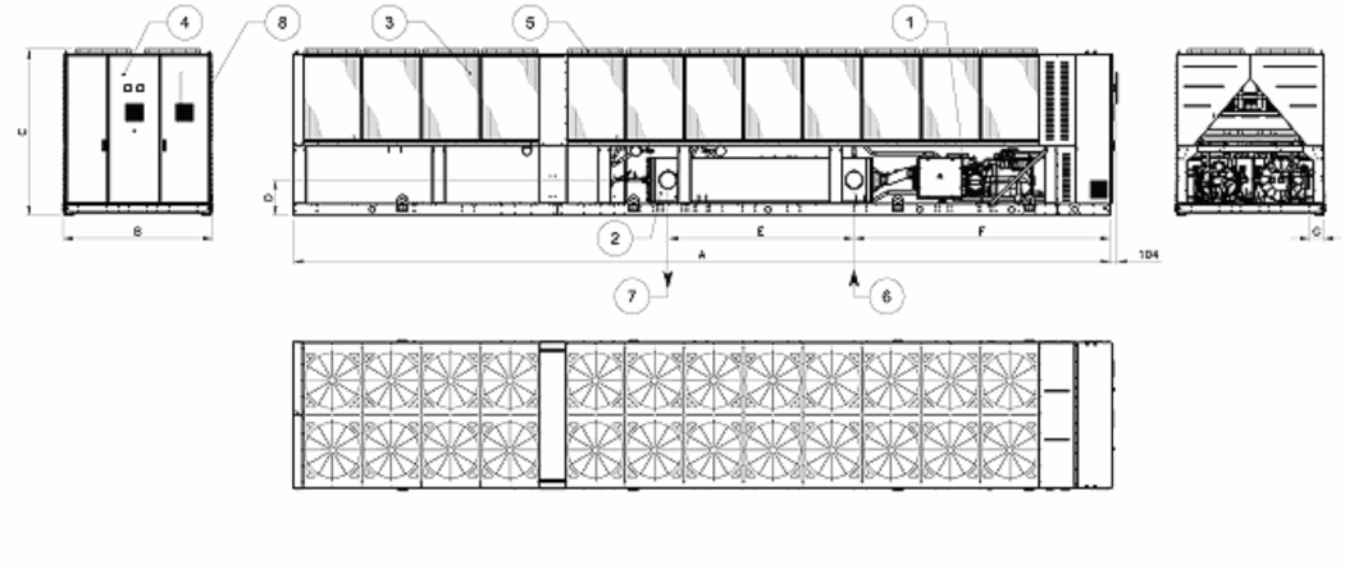


LEGEND

1: Compressor
2: Evaporator
3: Condenser coil
4: Electrical panel
5: Fan
6: Evaporator water inlet
7: Evaporator water outlet
8: Slot for power and control panel connection

	A	B	C	D	E	F	G	H	I	L	M
EWAD740CZXS	6621	2285	2540	434	2412	3757	810				
EWAD830CZXS	7521	2285	2540	434	2412	3757	810				
EWAD900CZXS	7521	2285	2540	434	2412	3757	810				
EWADC10CZXS	8421	2285	2540	542	2360	3794	758				
EWADC11CZXS	8421	2285	2540	542	2360	3794	758				
EWADC12CZXS	9321	2285	2540	542	2360	3794	758				
EWADC13CZXS	9321	2285	2540	542	2360	3794	758				
EWAD740CZXL	6621	2285	2540	434	2412	3757	810				
EWAD830CZXL	7521	2285	2540	434	2412	3757	810				
EWAD900CZXL	7521	2285	2540	434	2412	3757	810				
EWADC10CZXL	8421	2285	2540	542	2360	3794	758				
EWADC11CZXL	8421	2285	2540	542	2360	3794	758				
EWADC12CZXL	9321	2285	2540	542	2360	3794	758				
EWADC13CZXL	9321	2285	2540	542	2360	3794	758				
EWAD700CZXR	6621	2285	2540	434	2412	3757	810				
EWAD790CZXR	7521	2285	2540	434	2412	3757	810				
EWAD850CZXR	7521	2285	2540	434	2412	3757	810				
EWAD980CZXR	8421	2285	2540	542	2360	3794	758				
EWADC10CZXR	8421	2285	2540	542	2360	3794	758				
EWADC11CZXR	9321	2285	2540	542	2360	3794	758				
EWADC12CZXR	9321	2285	2540	542	2360	3794	758				



LEGEND

1: Compressor
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8: Slot for power and control panel connection

	A	B	C	D	E	F	G	H	I	L	M
EWADC14CZXS	11521	2285	2540	542	2360	3794	758				
EWADC15CZXS	12421	2285	2540	542	2360	3794	758				
EWADC16CZXS	12421	2285	2540	542	2830	3896	208				
EWADC17CZXS	13321	2285	2540	542	2830	3896	208				
EWADC18CZXS	14221	2285	2540	542	2830	3896	208				
EWADC14CZXL	11521	2285	2540	542	2360	3794	758				
EWADC15CZXL	12421	2285	2540	542	2360	3794	758				
EWADC16CZXL	12421	2285	2540	542	2830	3896	208				
EWADC17CZXL	13321	2285	2540	542	2830	3896	208				
EWADC18CZXL	14221	2285	2540	542	2830	3896	208				
EWADC13CZXR	11521	2285	2540	542	2360	3794	758				
EWADC14CZXR	12421	2285	2540	542	2360	3794	758				
EWADC15CZXR	12421	2285	2540	542	2830	3896	208				
EWADC16CZXR	13321	2285	2540	542	2830	3896	208				
EWADC17CZXR	14221	2285	2540	542	2830	3896	208				

Warning Installation and maintenance of the unit must to be performed only by qualified personnel who have knowledge with local codes and regulations, and experience with this type of equipment. Must be avoided the unit installation in places that could be considered dangerous for all the maintenance operations.

Handling Care should be taken to avoid rough handling or shock due to dropping the unit. Do not push or pull the unit from anything other than the base frame. Never allow the unit to fall during unloading or moving as this may result in serious damage. To lift the unit, rings are provided in the base frame of the unit. Spreader bar and cables should be arranged to prevent damage to the condenser coil or unit cabinet.

Location The units are produced for outside installation on roofs, floors or below ground level on condition that the area is free from obstacles for the passage of the condenser air. The unit should be positioned on solid foundations and perfectly level; in the case of installation on roofs or floors, it may be advisable to arrange the use of suitable weight distribution beams. When the units are installed on the ground, a concrete base at least 250 mm wider and longer than the unit's footprint should be laid. Furthermore, this base should withstand the unit weight mentioned in the technical data table.

Space requirements The units are air-cooled, then it is important to respect the minimum distances which guarantee the best ventilation of the condenser coils. Limitations of space reducing the air flow could cause significant reductions in cooling capacity and an increase in electricity consumption.
To determinate unit placement, careful consideration must be given to assure a sufficient air flow across the condenser heat transfer surface. Two conditions must be avoided to achieve the best performance: warm air recirculation and coil starvation.
Both these conditions cause an increase of condensing pressures that results in reductions in unit efficiency and capacity.
Moreover the unique microprocessor has the ability to calculate the operating environment of the air cooled chiller and the capacity to optimize its performance staying on-line during abnormal conditions.
Each side of the unit must be accessible after installation for periodic service. 'Fig.1' shows you minimum recommended clearance requirements.
Vertical condenser air discharge must be unobstructed because the unit would have its capacity and efficiency significantly reduced.
If the units are positioned in places surrounded by walls or obstacles of the same height as the units, the units should follow the minimum recommended clearance requirements shown in 'Fig.2'. In the event the obstacles are higher than the units, the minimum recommended clearance requirements are shown in 'Fig.3'. Units installed closer than the minimum recommended distance to a wall or other vertical riser may experience a combination of coil starvation and warm air recirculation, thus causing reduction in unit capacity and efficiency reductions. The microprocessor control is proactive in response "of design condition". In the case of single or compounded influences restricting airflow to the unit, the microprocessor will act to keep the compressor(s) running (at reduced capacity) rather than allowing a shut-off on high discharge pressure.
When two or more units are positioned side by side it is recommended that the condenser coils are at a minimum distance from one another as shown in 'Fig.4'; strong wind could be the cause of air warm recirculation.
For other installation solutions, consult our technicians.

The above recommended information are representative of general installation. A specific evaluation should be done by contractor depending on the case.

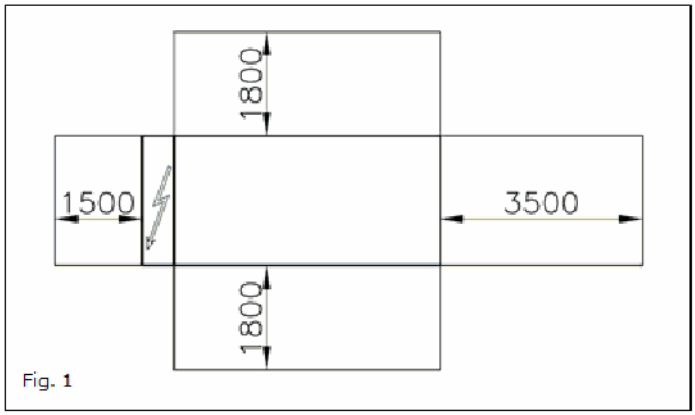

Fig. 1

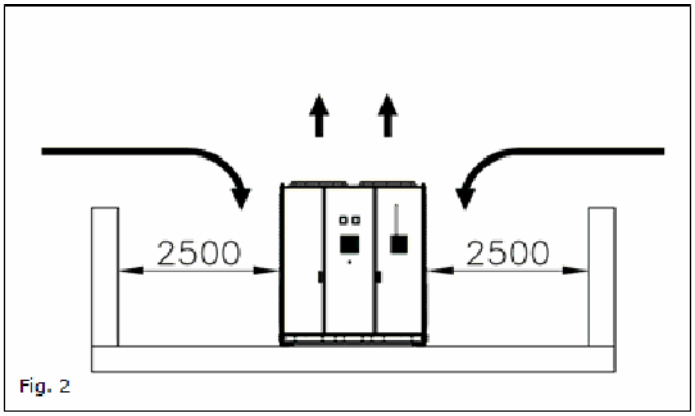

Fig. 2

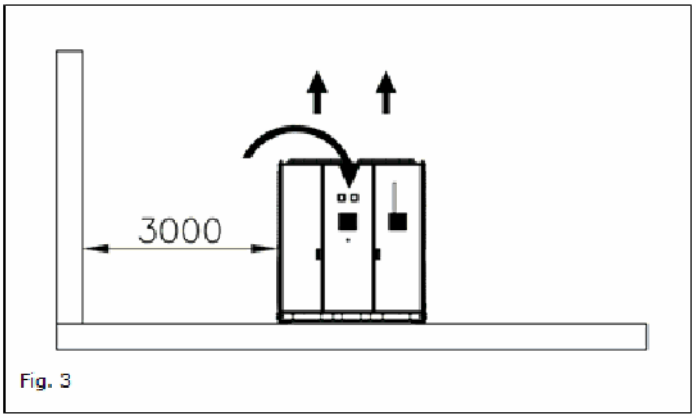

Fig. 3

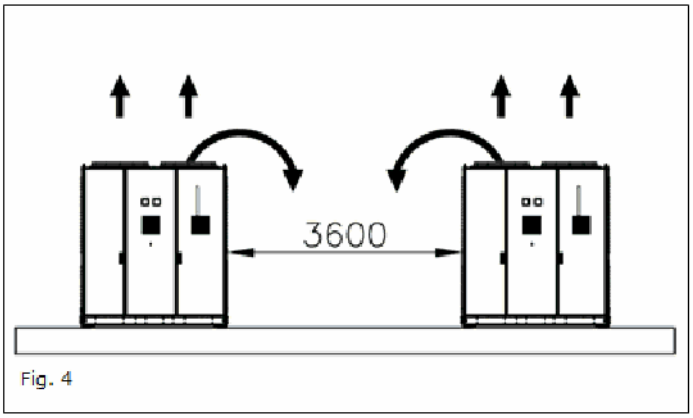

Fig. 4

Acoustic protection When noise level must meet special requirements, it is necessary to pay the maximum attention to ensure the perfect insulation of the unit from the support base by applying appropriate vibration-dampening devices on the unit, on the water pipes and on the electrical connections.

Storage The environment conditions have to be in the following limits:

Minimum ambient temperature:	-20°C
Maximum ambient temperature:	+57°C
Maximum R.H.:	95% not condensing

General The chiller will be designed and manufactured in accordance with the following European directives:

- Construction of pressure vessel 97/23/EC (PED)
- Machinery Directive 2006/42/EC
- Low Voltage 2006/95/EC
- Electromagnetic Compatibility 2004/108/EC
- Electrical & Safety codes EN 60204–1 / EN 60335-2-40
- Manufacturing Quality Standards UNI – EN ISO 9001:2004

To avoid any losses, the unit will be tested at full load in the factory (at the nominal working conditions and water temperatures). The chiller will be delivered to the job site completely assembled and charged with refrigerant and oil. The installation of the chiller must comply with the manufacturer's instructions for rigging and handling equipment.

The unit will be able to start up and operate (as standard) at full load with:
- outside air temperature from ..... °C to ..... °C
- evaporator leaving fluid temperature between ..... °C and ..... °C

Refrigerant Only HFC 134a can be used.

Performance Chiller shall supply the following performances:

- ..... Number of chiller(s) : unit(s)
- ..... Cooling capacity for single chiller : kW
- ..... Power input for single chiller in cooling mode : kW
- ..... Heat exchanger entering water temperature in cooling mode : °C
- ..... Heat exchanger leaving water temperature in cooling mode : °C
- ..... Heat exchanger water flow : l/s
- ..... Nominal outside working ambient temperature in cooling mode : °C

Operating voltage range should be 400V ±10%, 3ph, 50Hz, voltage unbalance maximum 3%, without neutral conductor and shall only have one power connection point.

Unit description Chiller shall includes as standard not less than: two or three independent refrigerant circuits (depending on the size), semi-hermetic asymmetric type rotary single screw compressors, air cooled variable electrical frequency driver for each compressor (VFD), electronic expansion device (EEXV), refrigerant direct expansion 'shell&tube' heat exchanger, air-cooled condenser section, R-134a refrigerant, lubrication system, motor starting components, discharge line shut-off valve, control system and all components necessary for a safe and stable unit operation.
The chiller will be factory assembled on a robust base frame made of galvanized steel, protected by an epoxy paint.

Sound level and vibrations Sound pressure level at 1 meter distance in free field, semispheric conditions, shall not exceed .....dB(A). The sound pressure levels must be rated in accordance to ISO 3744 (other types of rating can not be used).
Vibration on the base frame should not exceed 2 mm/s.

Dimensions Unit dimensions shall not exceed following indications:
- Unit length ..... mm
- Unit width ..... mm
- Unit height ..... mm

CHILLER COMPONENTS

Compressors (Asymmetric) The unit shall be equipped with:

- Semi-hermetic, single-screw asymmetric type with one main helical rotor meshing with two diametrical opposed gaterotors. The gaterotors' contact elements shall be constructed of composite material designed for extended life. Electrical motor shall be 2-pole, semi-hermetic, squirrel-cage induction type and cooled by suction gas.
- The oil injection shall be used in order to get high EER (Energy Efficiency Ratio) also at high condensing pressure and low sound pressure levels in each load condition.
- The compressor shall be provided with a built in, high efficiency, mesh type oil separator and oil filter.
- Refrigerant system differential pressure shall provide oil injection on all moving compressor parts to correctly lubricate them. Electrical oil pump lubricating system is not allowed.
- Compressor cooling must be done by refrigerant liquid injection. An external dedicated heat exchanger and additional piping to carry the oil from compressor to heat exchanger and viceversa is not allowed.
- The compressor shall be direct electrical driven, without gear transmission between the screw and the electrical motor.
- The compressor casing shall be provided with ports to realize economized refrigerant cycles.
- The compressor must be protected by a temperature sensor for high discharge temperature and an electrical motor thermistor for high winding temperature.
- The compressor shall be equipped with an electric oil heater.
- The compressor shall be fully field serviceable. Compressor that must be removed and returned to the factory for service shall be unacceptable.

Cooling capacity control system The chiller will have a microprocessor for the control of the compressor capacity through inverter and the instantaneous RPM value of the motor.

- The unit capacity control shall be infinitely modulating, from 100% down to 30% for each circuit. The chiller shall be capable of stable operation to a minimum of 13.5% of full load without hot gas bypass.
- The system shall control the unit based on the leaving evaporator water temperature that shall be controlled by PID (Proportional Integral Derivative) logic.
- Unit control logic shall to manage frequency level of the compressor electric motor to exactly match plant load request in order to keep constant the set point for delivered chilled or hot water temperature. In this operating condition unit control logic shall modulate electrical frequency level in a range lower and upper the nominal electrical network value fixed at 50 Hz.
- The microprocessor unit control shall detect conditions that approach protective limits and take self-corrective action prior to an alarm occurring. The system shall automatically reduce the chiller capacity when any of the following parameters are outside their normal operating range:

- High condenser pressure
- Low evaporating refrigerant temperature

Unit-mounted Variable Frequency Driver (VFD) and Electrical Requirement **All interconnecting** wiring between the VFD and the chiller shall be factory-installed. Customer electrical connection for compressor motor power shall be limited to main power leads to the single point power connection located into electrical panel.

- The VFD shall be air cooled type. Water cooled design or refrigerant cooled design are not acceptable.
- The VFD full load efficiency shall meet or exceed 97% at 100% VFD rated capacity.
- Base motor frequency shall permit motor to be utilized at nameplate voltage. Adjustable frequency range, monitored by unit's microprocessor control, shall permit a stable unit capacity control down to 13.5% without hot-gas bypass.
- Starting current for the compressor shall not exceed nominal compressor load amps.
- Unit power factor shall be not less than 0.95 on entire unit capacity range, from 100% down to 13.5%.

Evaporator The units shall be equipped with a direct expansion shell&tube evaporator with copper tubes rolled into steel tubesheets. The evaporator shall be single-pass on both the refrigerant and water sides for pure counter-flow heat exchange and low refrigerant pressure drops.

- The external shell shall be linked with an electrical heater to prevent freezing down to -28°C ambient temperature, controlled by a thermostat and shall be insulated with flexible, closed cell polyurethane insulation material (20-mm thick).
- The evaporator will have 2 or 3 circuits, one for each compressor and shall be single refrigerant pass.
- The water connections shall be VICTAULIC type connections as standard to ensure quick mechanical disconnection between the unit and the hydronic network.
- The evaporator will be manufactured in accordance to PED approval.
- Water filter not available.

Condenser coil The unit shall be equipped with condenser coils constructed with internally finned seamless copper tubes and arranged in a staggered row pattern and mechanically expanded into lanced and rippled aluminum fins with full fin collars for higher efficiencies. The space between the fins is given by a collar that will increase the surface area in connection with the tubes, protecting them from ambient corrosion.

- The condenser coils will have an integral subcooler circuit that provides sufficient subcooling to effectively eliminate the possibility of liquid flashing and increase the unit's efficiency with 5% to 7% without increasing in energy consumption.
- The condenser coils shall be leak-tested and submitted to a pressure test with dry air.

Condenser fans The condenser fans used in conjunction with the condenser coils, shall be propeller type with glass reinforced resin blades for higher efficiencies and lower sound. Each fan shall be protected by a fan guard.

- The air discharge shall be vertical and each fan must be coupled to the electrical motor, supplied as standard to IP54 and capable to work to ambient temperatures of - 20°C to + 65°C.
- The condenser fans shall have as a standard a thermally protection by internal thermal motor protection and protected by circuit braker installed inside the electrical panel as a standard.

Refrigerant circuit The unit shall have two or three independent refrigerant circuits (depending on the size) and one variable electrical frequency driver per compressor (VFD).

- Each circuit shall include as standard: electronic expansion device piloted by unit's microprocessor control, compressor discharge shut-off valve, liquid line shut-off valve, sight glass with moisture indicator, replaceable filter drier, charging valves, high pressure switch, high and low pressure transducers, oil pressure transducer and insulated suction line.

Condensation control The units will be provided with an automatic control for condensing pressure which ensures the working at low external temperatures down to - ..... °C, to maintain condensing pressure.

- The compressor automatically unloads when abnormal high condensing pressure is detected. This to prevent the shutdown of the refrigerant circuit (shutdown of the unit) due to a high-pressure fault.

Low sound unit configurations (on request) The unit compressor shall be connected with unit's metal base frame by rubber antivibration supports to prevent the transmission of vibrations to all metal unit structure, in order to control the unit sound.

- The chiller shall be provided with an acoustical compressor enclosure. This enclosure shall be realized with a light, corrosion resisting aluminum structure and metal panels. The compressor sound-proof enclosure shall be internally fitted with flexible, multi-layer, high density materials.

Hydronic kit options (on request) The hydronic module shall be integrated in the chiller chassis without increasing its dimensions and includes the following elements: centrifugal pump with motor protected by a circuit breaker installed in control panel, water filling system with pressure gauge, safety valve, drain valve.

- The hydronic module shall be assembled and wired to the control panel.
- The water piping shall be protected against corrosion and freezing and insulated to prevent condensation.
- A choice of two pump types shall be available:

- in-line single pump
- in-line twin pumps.

Electrical control panel Power and control shall be located in the main panel that will be manufactured to ensure protection against all weather conditions.

- The electrical panel shall be IP54 and (when opening the doors) internally protected against possible accidental contact with live parts.
- The main panel shall be fitted with a main switch interlocked door that shuts off power supply when opening.
- The power section will include compressors and funs protection devices, compressors and fans starters and control circuit power supply.

Controller The controller will be installed as standard and it will be used to modify unit set-points and check control parameters.

- A built-in display will shows chiller operating status plus temperatures and pressures of water, refrigerant and air, programmable values, set-points.
- A sophisticated software with predictive logic, will select the most energy efficient combination of compressors, EEXV and condenser fans to keep stable operating conditions to maximize chiller energy efficiency and reliability.
- The controller will be able to protect critical components based on external signals from its system (such as motor temperatures, refrigerant gas and oil pressures, correct phase sequence, pressure switches and evaporator). The input coming from the high pressure switch cuts all digital output from the controller in less than 50ms, this will be an additional security for the equipment.
- Fast program cycle (200ms) for a precise monitoring of the system.
- Floating point calculations supported for increased accuracy in P/T conversions.

Controller main features Controller shall be garantee following minimu functions:

- Management of the compressor stepless capacity and fans modulation.
- Chiller enabled to work in partial failure condition.
- Full routine operation at condition of:
  - high ambient temperature value
  - high thermal load
  - high evaporator entering water temperature (start-up)
- Display of evaporator entering/leaving water temperature.
- Display of Outdoor Ambient Temperature.
- Display of condensing-evaporating temperature and pressure, suction and discharge superheat for each circuit.
- Leaving water evaporator temperature regulation (temperature tolerance = 0,1°C).
- Compressor and evaporator pumps hours counter.
- Display of Status Safety Devices.
- Number of starts and compressor working hours.
- Optimized management of compressor load.
- Fan management according to condensing pressure.
- Re-start in case of power failure (automatic / manual).
- Soft Load (optimized management of the compressor load during the start-up).
- Start at high evaporator water temperature.
- Return Reset (Set Point Reset based on return water temperature).
- OAT (Outside Ambient temperature) Reset.
- Set point Reset (optional).
- Application and system upgrade with commercial SD cards.
- Ethernet port for remote or local servicing using standard web browsers.
- Two different sets of default parameters could be stored for easy restore.

High Level Communications Interface (on request) The chiller shall be able to communicate to BMS (Building Management System) based on the most common protocols as:

- ModbusRTU
- LonWorks, now also based on the international 8040 Standard Chiller Profile and LonMark Technology
- BacNet BTP certifief over IP and MS/TP (class 4) (Native)
- Ethernet TCP/IP.

For more information email **info@daikinapplied.uk** or visit **www.daikinapplied.uk**

For all Daikin Applied UK,

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Daikin Europe N.V. participates in the Eurovent Certified Performance programme for Liquid Chilling Packages and Hydronic Heat Pumps, Fan Coil Units and Variable Refrigerant Flow systems. Check ongoing validity of certificate: www.eurovent-certification.com