Databook

Code: CSS-Rev.10.43
Printing Date: 31/07/2023
EWAD R3.7.2

Air Cooled chiller with screw compressor optimized for operation in High Temperature environments

HFC 134a REFRIGERANT

EWAD~M C

- **Nominal capacity range 290 - 1800 kW (at 46°C ambient)**
- **Design for commercial and industrial applications**
- **Operation up to 55°C**

AHRI CERTIFIED® www.ahridirectory.org
Air-Cooled Water Chilling Packages
AHRI Standards 550/590 and 551/591

http://www.ahrinet.org

DAIKIN

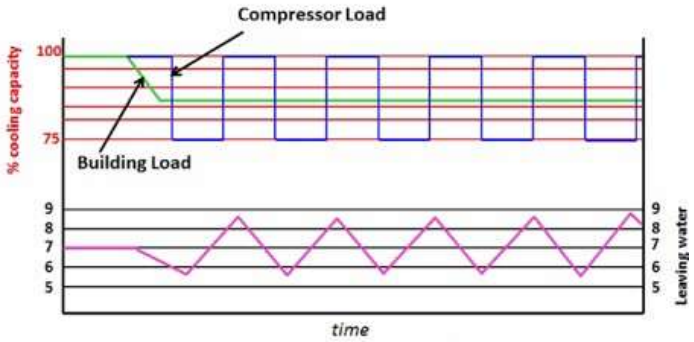
A series optimized for Middle East climate conditions. EWAD~M C chiller range is the result of careful design, aimed to optimize the operation and the performance of the chiller in typical Middle East climate conditions, with the objective of bringing down operating costs and improving installation profitability, effectiveness and economical management.
The chillers feature a high efficiency single screw compressor design, large condenser coil surface area for maximum heat transfer and low discharge pressure, high performance condenser fans and a direct expansion 'shell&tube' evaporator with low refrigerant pressure drops.

The EWAD~M C range is available with 2 efficiency levels both with an extensive option list.

Outstanding reliability the chillers have two 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 gate rotors material, a proactive control logic and are full factory-run-tested to optimized trouble-free operation.

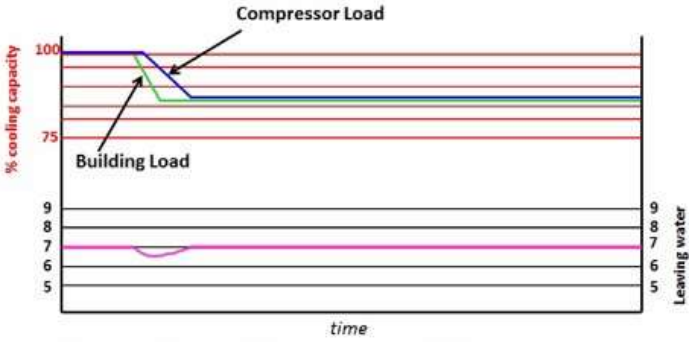
Infinite capacity control Cooling capacity control is infinitely variable by means of a single screw compressor controlled by microprocessor system. Each unit has infinitely variable capacity control from 100% down to 12,5%. This modulation allows the compressor capacity to exactly match the building cooling load without any leaving evaporator water temperature fluctuation:

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

Compliancy with Dubai Electricity & Water Authority (DEWA) EWAD~M- C series provides models compliant with the requirements in order to be connected to DEWA transformers up to ~1.8 MW (~510 tons)
Note: see Specification chapter for details

Compliancy with Kuwait Ministry of Electricity and Water (MEW) EWAD~M- C series is complaint with MEW requirements on maximum power rating for chilled water systems, air cooled
Note: see Specification chapter for details

Superior control logic The 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. Master/Slave operation is provided as standard allowing to connect up to 4 units working as a single bigger chiller

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	2014/68/EU
Machinery Directive	2006/42/EU
Low Voltage	2014/35/EU
Electromagnetic Compatibility	2014/30/EU
Electrical & Safety codes	EN 60204-1 / EN 60335-2-40
Manufacturing & Quality Standards	UNI EN ISO 1400

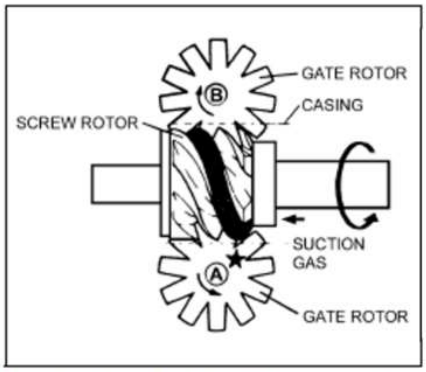
Certifications Units are complying with European directives in force, concerning manufacturing and safety. On request units can be produced complying with laws in force in non European countries (ASME, GOST, etc.), and with other applications, such as naval (RINA, etc.).

Cabinet and structure The cabinet is painted to provide a high resistance to corrosion. Color 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.

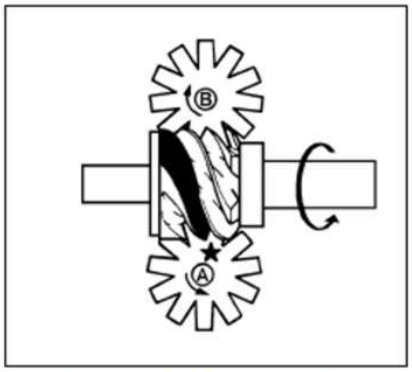
Compressor The compressor is semi-hermetic, single-screw type

the metal screw, made of cast iron, matches with two gate rotors which are made of a composite material featuring very high mechanical resistance. Each flutes on the screw acts as compression chamber, the teeth of gate rotors match with flutes on main screw closing the gate and trapping the gas in the flutes. The absence of "metal to metal" contact allows minimize the tolerances between screw and gate rotors leading to smaller clearances and so high volumetric efficiency.
The surface of the screw is covered with a layer of aluminum resulting in a scratched surface further reducing the leakage of refrigerant from high pressure to low pressure.

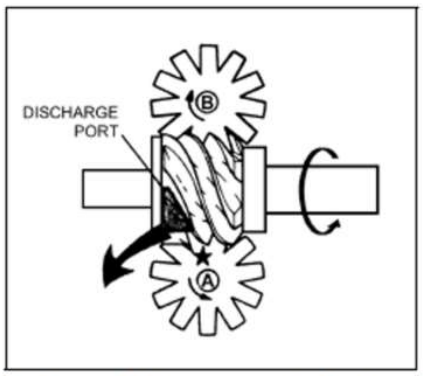
The gate rotors are mounted on a metal support designed to carry the differential pressure between discharge and suction pressure. The gate rotor function is equivalent to that of a piston in that it sweeps the groove and causes compression to occur.



Suction. During rotation of the main rotor, a typical groove in open communication with the suction chamber gradually fills with suction gas. The tooth of the gate rotor in mesh with the groove acts as an aspirating piston.

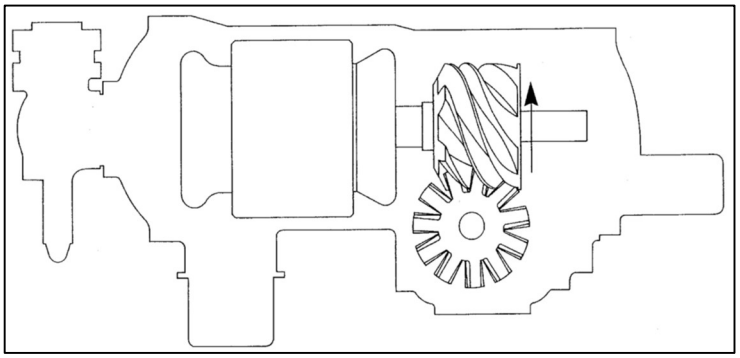


Compression. As the main rotor turns, the groove engages a tooth on the gate rotor and is covered simultaneously by the cylindrical main rotor casing. The gas is trapped in the space formed by the three sides of the groove, the casing, and the gate rotor tooth. As rotation continues, the groove volume decreases and compression occurs.



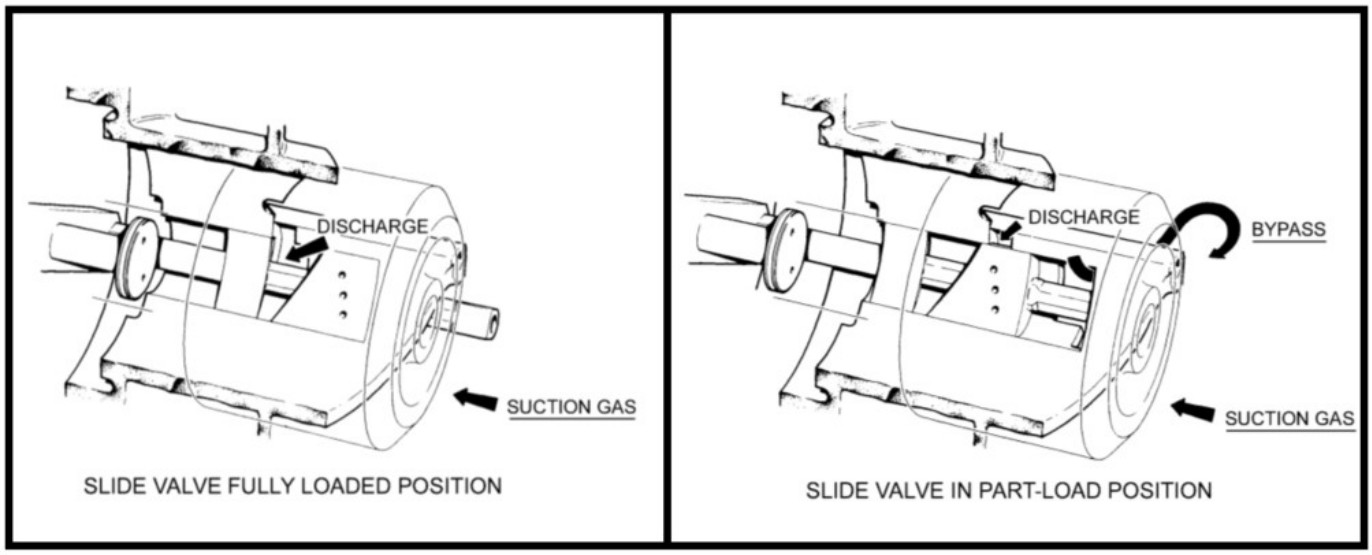
Discharge. At the geometrically fixed point where the leading edge of the groove and the edge of the discharge port coincide, compression ceases, and the gas discharges into the delivery line until the groove volume has been reduced to zero.

The compression process takes place simultaneously on each side of the main rotor. This leads to balances forces acting on the compressor in both radial and axial direction. Since the single-screw compressor's physical geometry places no constraints on bearing size, those are oversized leading to an operating life of more than 200 000 h. Smaller capacity chillers are provided with a single screw compressor using only one gate rotor. The single gate rotor compressor exhibits high efficiency and has been designed for long bearing life, which compensates for the unbalanced load on the screw rotor shaft with increasing bearing size. There are no difference on operating life or maintenance prescription for single screw compressor with one gate rotor.

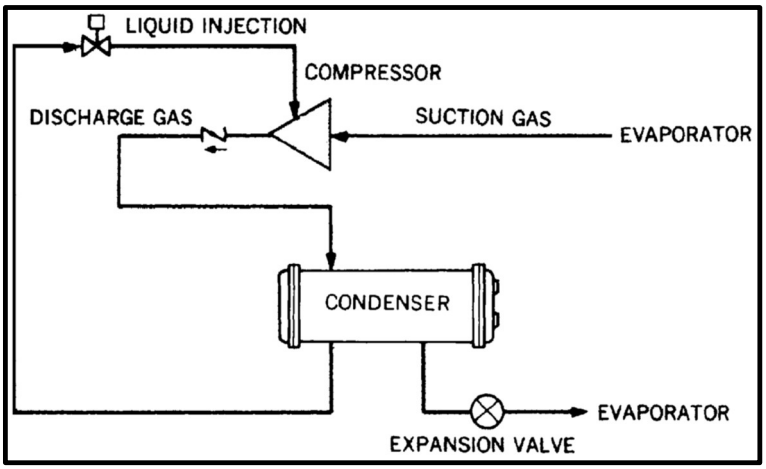


schematic of single screw compressor with single gate rotor

There are one or two movable slide valves in the compressor casing. At part load, each slide valve produces a slot that delays the point at which compression begins. This causes a reduction in groove volume, and hence in compressor throughput. As the suction volume is displaced before compression takes place, little or no thermodynamic loss occurs. The capacity modulation valve reduces also the discharge port area at the same time as the bypass slot is created; this to avoid reduction of the volume ratio of the compressor and so efficiency losses.
The capacity of the compressor is controlled thanks to a capacity slide valve that can be operated independently, on each compression chamber permits one slide valve to be unloaded to 0% capacity (50% compressor capacity) while the other slide valve remains at full capacity. Operation in this manner (asymmetrical) realizes an improvement in part-load efficiency below the 50% capacity point. The asymmetrical control of the slide valve is possible for the compressors provide with two gates rotor.

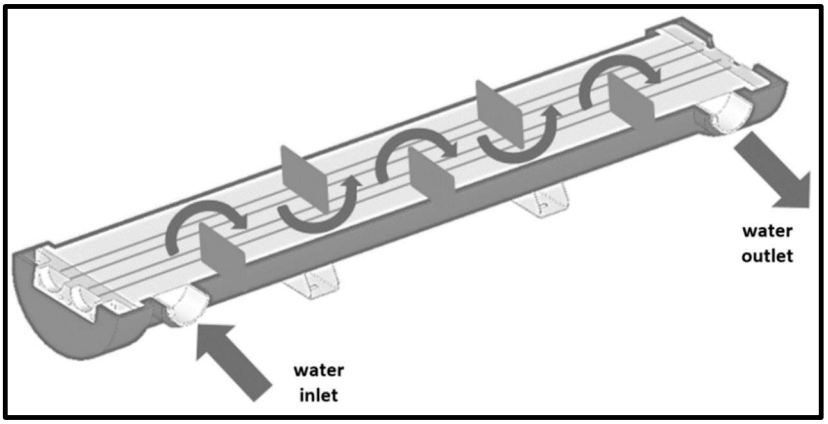


DAIKIN single screw compressor operates the oil cooling, when necessary, though the injection of liquid refrigerant. Injection is controlled directly from the compressor discharge temperature, and loss of compressor capacity is minimized as injection takes place in a closed flute just before discharge occurs. This method requires very little power so the impact on compressor's efficiency of the unit is negligible. The fluid injected into the compression chamber is the condensate of the refrigerant being compressed. In the compressor liquid refrigerant cool and seal the compressor.



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).

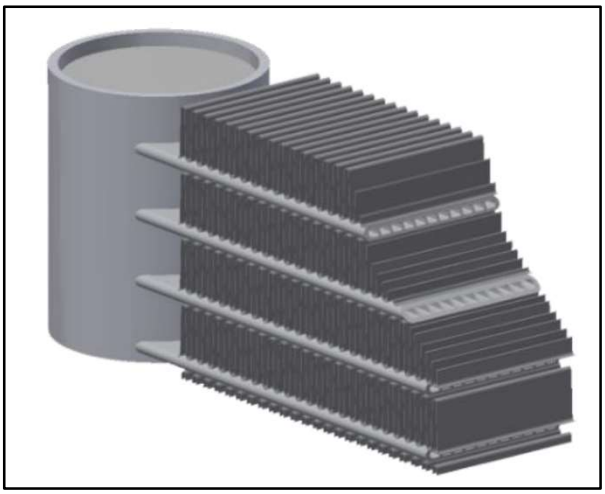
Evaporator (Shell & Tube) The units are equipped with a direct expansion shell & tube evaporator with refrigerant evaporating inside the tubes and water flowing outside. The tubes are enhanced for maximum heat transfer and rolled into steel tube sheet and sealed. The low refrigerant charge volume of direct expansion evaporator makes possible for the unit to perform the pump down storing all the refrigerant charge into the condenser section.
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 circuits, one for each compressor and is manufactured in accordance to 97/23/EC directive (PED). Flow switch on evaporator available as option (shipped loose). Water filter is not available as option from the factory. Note: the installation of the filter is mandatory.

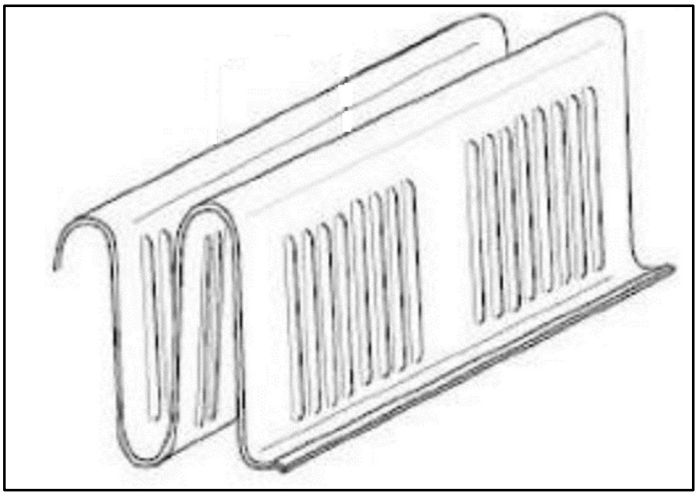


The evaporators are selected in order to ensure operation with 9K deltaT and variable flow rates down to 40% of the water flow rate at nominal conditions (rated at OAT 46°C).
Check the selection software for maximum and minimum allowed delta T on standard unit.
Note: check Operating limit chapter for minimum flow rate allowed in variable flow application for specific model.

The reduced quantity of refrigerant allowed by using direct expansion type evaporator makes possible for the unit to perform the pump down when stopped storing the refrigerant inside the condensing section. The same is not possible with flooded evaporator due to the much higher quantity of refrigerant inside the unit.

Condenser The condenser is made entirely of aluminum, this reduces the risk of galvanic corrosion due to the absence of a bi-metallic couplings with flat tubes containing small channels. Full-depth louvered aluminum fins are inserted between the tubes maximizing the heat exchange.
The Microchannel technology ensures the highest performance with the minimum surface for the exchanger. The quantity of refrigerant is also reduced compared to Cu/Al condenser.

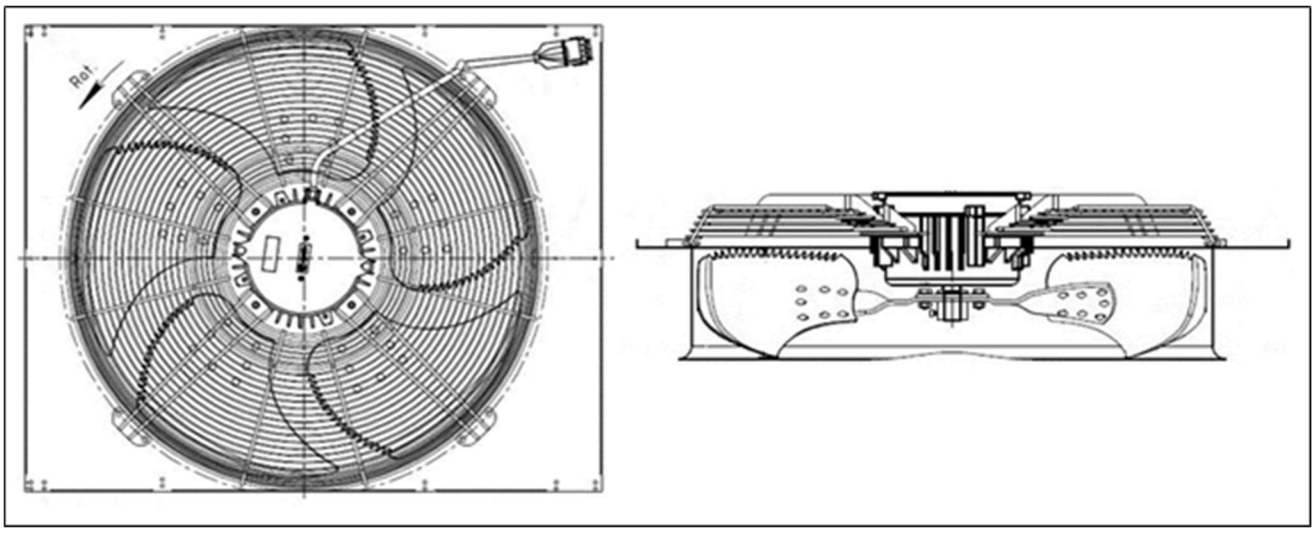




Special treatment ensure resistance to the corrosion by atmospheric agents extending the life time.
Note: for application in industrial, costal high polluted urban environment or combinations of the above a proper evaluation is needed to understand if, according to the specific environment, additional protections measures are needed.

The single microchannel coils are arranged in V shape assembly together with the condenser fans.
The angle between the coils allows to exploit most of the heat exchangers surface.
The connections between the aluminum coil and the unit's copper pipes are protected with plastic heat shrink tube (to prevent moisture from entering the area and enabling corrosion by completing galvanic circuit)

Condenser fans (Ø 850) The ON/OFF condenser fans are propeller type with high efficiency design blades to maximize performances. The material of the blades is aluminum-magnesium alloy featuring high resistance to corrosion. Metallic frame of the fan is made of galvanized sheet and powder painted. Each fan is protected by a black powder painted grid. Fan motors are protected by circuit breakers installed inside the electrical panel as a standard. The motors are IP55 and insulation class F.



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 independent refrigerant circuits and each one includes:
- Compressor 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, 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 maximize 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
- Management of the compressor step-less 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.

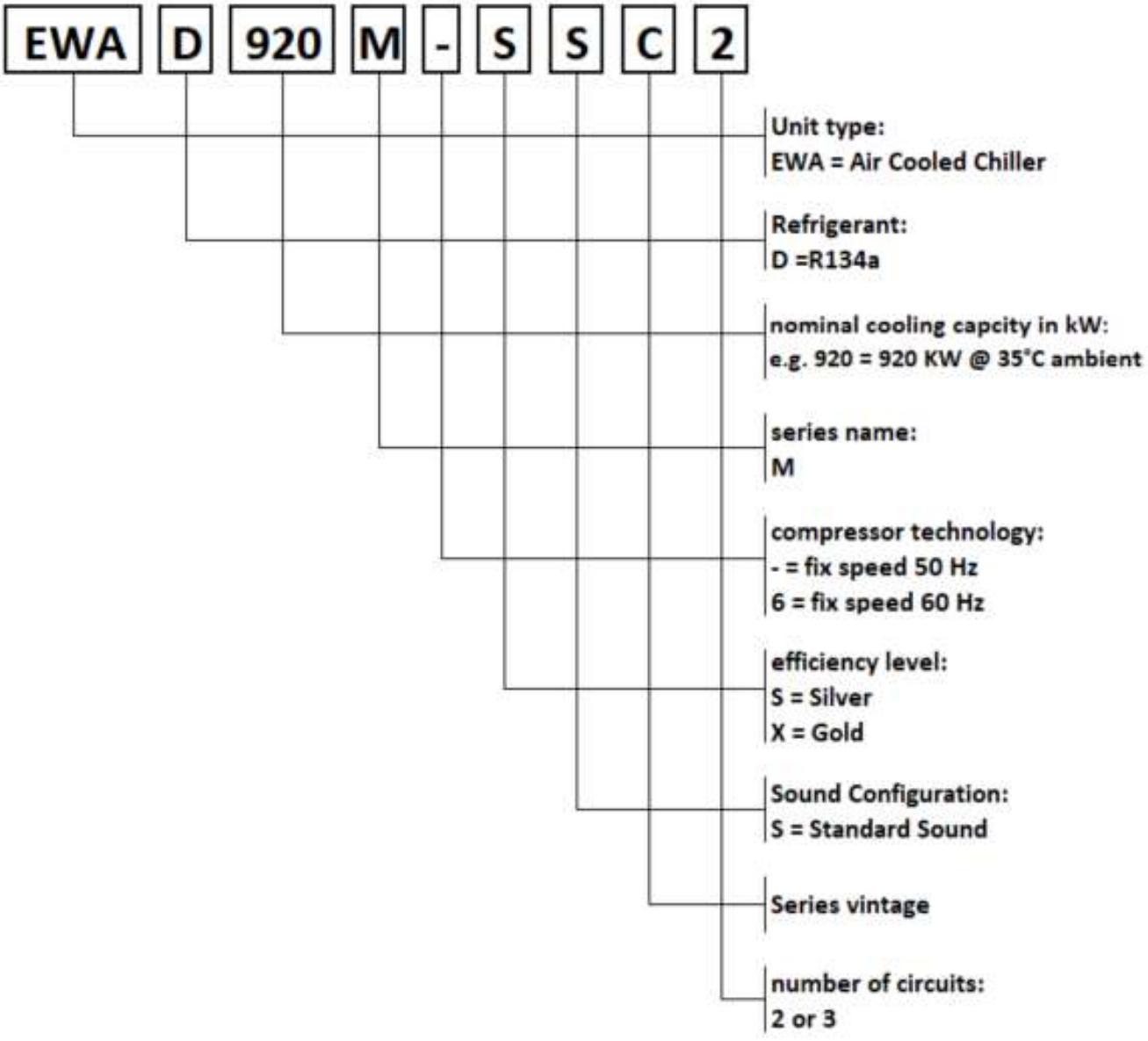
System security_ The following securities are available.
- Phase monitor.
- Low Ambient temperature lock-out.
- Freeze protection.

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 (Native)
- 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 (Native).

Nomenclature



Standard features (options supplied as standard on basic unit)

Wye-Delta compressor starter [Y-D] (opt. code 05 – provided as standard) For **low inrush current** and **reduced starting torque**.

Double set point (opt. code 10 – provided as standard) Dual leaving water temperature set points.

Phase monitor (opt. code 13 – provided as standard) Device that monitors input voltage and stops the chiller in case of phase loss or wrong phase sequence.

20mm evaporator insulation (opt. code 29 – provided as standard) The external shell is covered with a 20mm closed cell insulation material.

Electronic expansion valve (opt. code 60 – provided as standard)

Discharge line shut-off valve (opt. code 61 – provided as standard) Installed on the discharge port of the compressor to facilitate maintenance operation.

Set point reset, demand limit and alarm from external device (opt. code 90 – provided as standard) 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.

Hour run meter (opt. code 68 – provided as standard)

General fault contactor (opt. code 69 – provided as standard)

Fans circuit breakers (opt. code 96 – provided as standard) Safety devices that, added to the standard protection devices, protect fan motors against overload and overcurrent.

Main switch interlock door (opt. code 97 – provided as standard)

Master / Slave (opt. code 128 – provided as standard) The EWAD~M-C features the DAIKIN Master/ Slave (M/S) control.

This functionality allows to manage up to 4 chillers installed in parallel on the same water loop.

M/S can:

- Rotate the chiller operation balancing the running hour.
- Avoid simultaneous starts of the chillers installed.
- Share the load among the chillers connected to enhance system efficiency setting a threshold for the chiller capacity.
- Control systems combining EWAD~M C (Daikin fix speed screw Air Cooled chiller) with EWAD~MZ (Daikin Inverter Screw Air Cooled chiller).

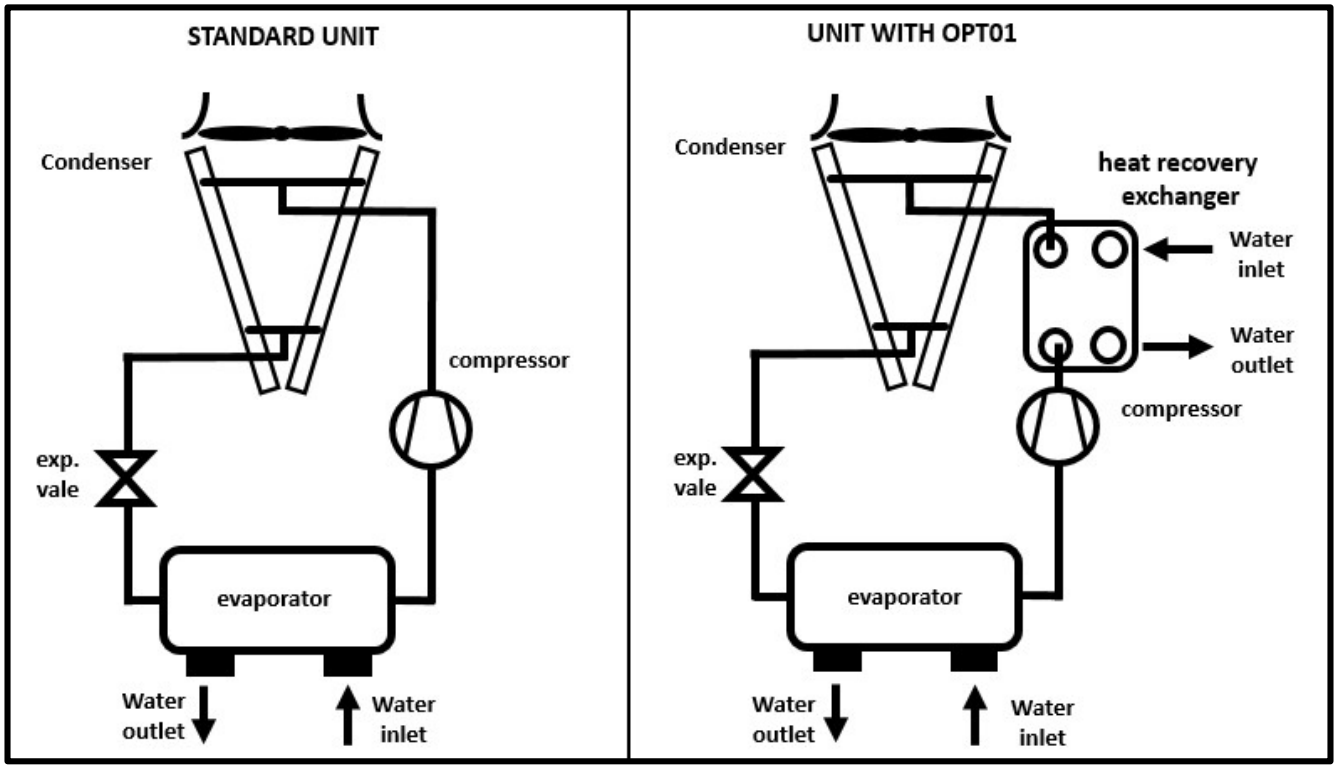
Once set which unit has the role of master, the other(s) will operate as slave(s) based on the inputs provided by the master.

Standard chiller capacity control is based on the evaporating leaving water temperature. To keep the same control in case of units connected in M/S an additional probe must be installed on the common line of the hydraulic circuit and connected to the Master unit. The probe can be an NTC10K or PT1000. The probe is not provided by the factory).

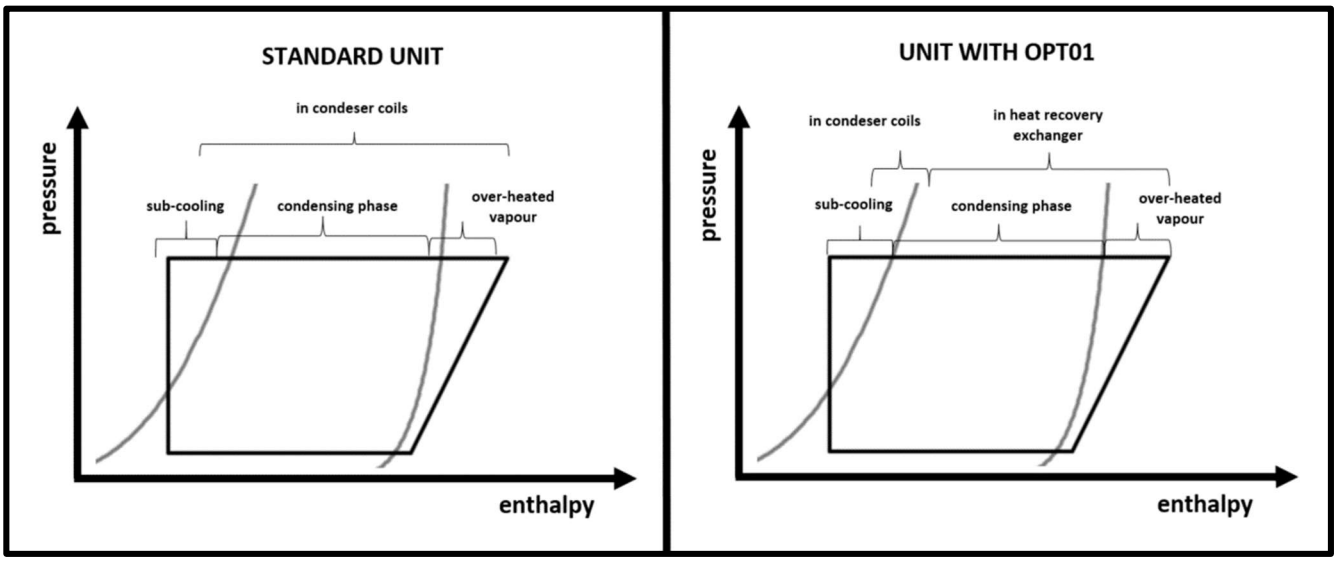
In case no additional probe is installed is possible to activate the control based on the entering water temperature.

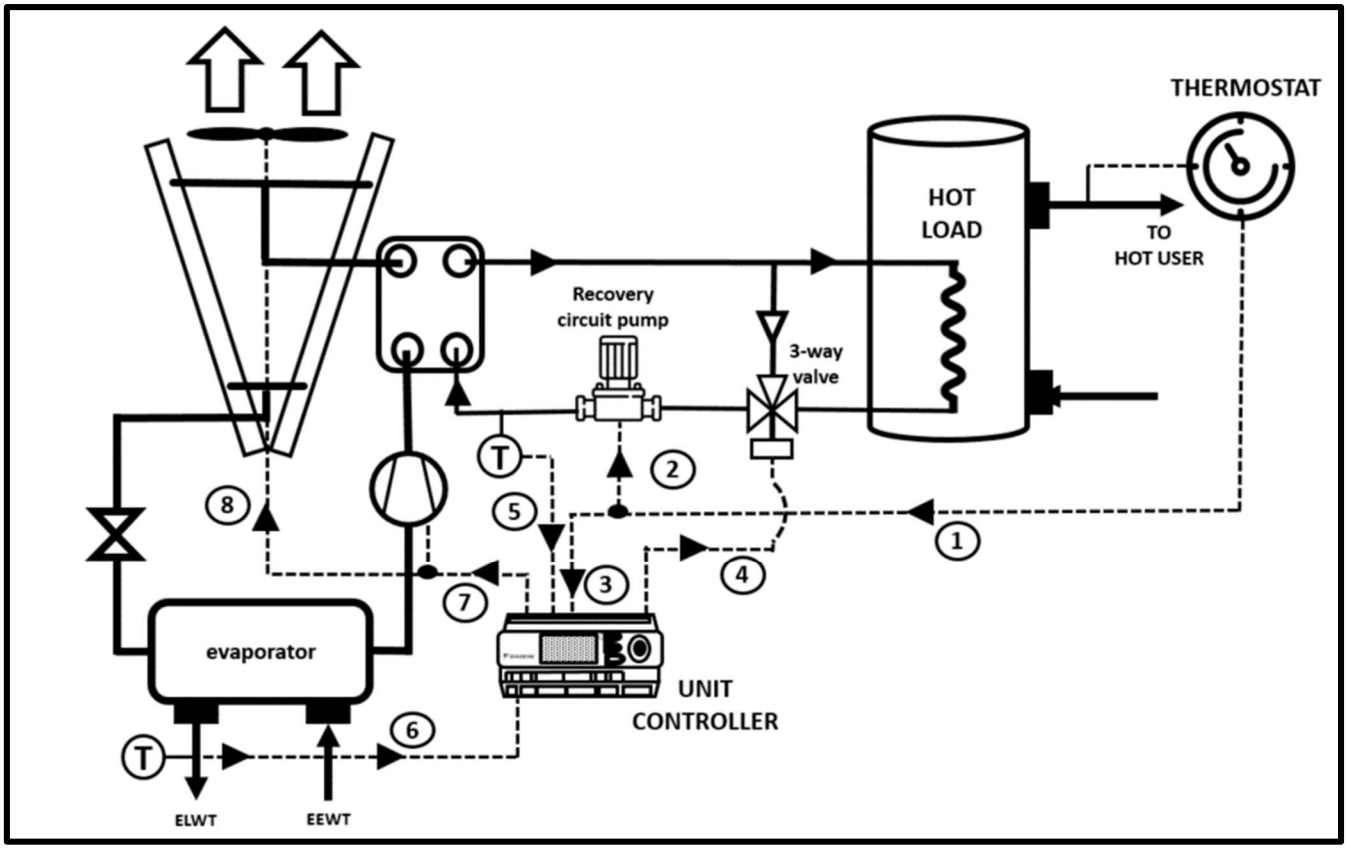
Options on request

Total Heat Recovery (opt. code 01) A plate to plate heat exchanger for each refrigerant circuit is installed directly in series to the air condenser coil, thus, compressor discharged refrigerant is always flowing through the heat recovery exchanger and warm water production is always available while the chiller is providing cooling.



A plate to plate heat exchanger for each refrigerant circuit is installed in series to the air condenser coil. There is no switch nor solenoid valve in the circuit, thus compressor discharged refrigerant is always flowing through the heat recovery exchanger and warm water production is always available while the chiller is providing cooling. The amount of heat recovered is about the 80/85% of the total heat rejection of the chiller (the actual amount of the available heat rejection recovered depends on the operating conditions). When heating capacity is required the unit 's controller starts to manage the condensing pressure, according to the required set point for the hot water, acting on the airflow for the condensing section. The heating available for heat recovery is a result of the cooling operation. No heating is available when cooling is not requested.





The Total heat recovery function operate according the following scheme:

The thermostat (filed supply) detects when heating energy is required from the user. Once the water temperature to the HOT USER goes below the set-point, a signal (1) is sent to activate the heat recovery pump (2) and to the unit controller (3) enabling the HEAT RECOVERY MODE. The unit controller modulates the valve according the to the temperature entering the heat recovery exchanger. The valve must be positioned as mixing valve. Once the controller switch to HEAT RECOVERY MODE it starts to compare the inlet temperature to the plate heat exchanger with the set-point given to the unit controller; if the temperature goes below that setpoint unit starts to manage the condensing pressure (8). The capacity of the unit is anyway managed by the controller (7) based on the outlet temperature from the evaporator (6). The heating capacity is a percentage of the whole heat rejection resulting from the chiller operation and is available only when cooling capacity is requested at the same time.

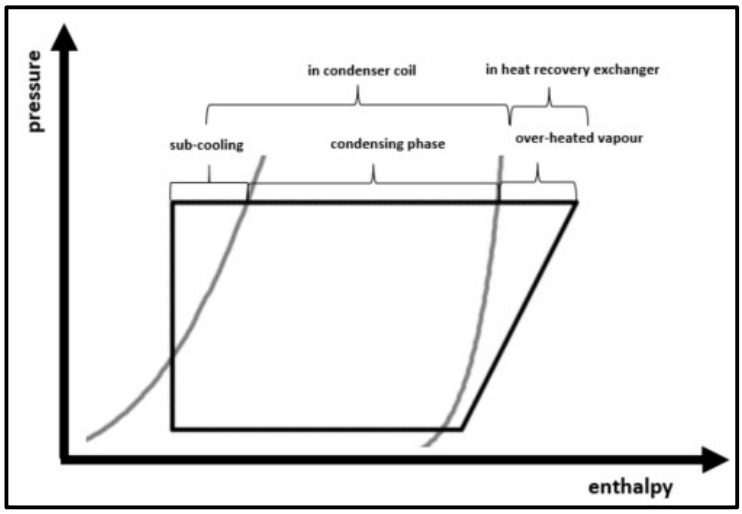
When heat recovery is ON the unit efficiency to consider is not the EER (Energy Efficiency Ratio) which refers only to the cooling effect of the unit. With heat recovery the unit is also providing heating energy that otherwise should still be provided by another source.

The Total Efficiency Ratio is defined as:

$$\mathbf{TER} = \frac{\mathbf{Cooling\ capacity} + \mathbf{Heating\ capacity}}{\mathbf{power\ input}}$$

Total heat Recovery option affects the cooling performances of the unit according the ambient temperature and the hot water temperature requested. Check for the unit performances in the Chiller Selection Software.

Partial Heat Recovery (opt. code 03)
A plate to plate heat exchanger for each refrigerant circuit is installed in series to the air condenser coil. There is no switch nor solenoid valve in the circuit, thus compressor discharged refrigerant is always flowing through the heat recovery exchanger and warm water production is always available while the chiller is providing cooling. The unit layout is similar to the one with OPT01; the plate heat exchanger placed at the compressor discharge is smaller compare to the one used for total heat recovery and the heating capacity available is only the one related to the over-heated vapor.



The amount of heat recovered is about the 15/20% (according to the operating conditions) of the total heat rejection of the chiller. Heat recovery capability is subject to cooling load demand (if no cooling demand is present then no heat recovery is available) and strongly affected by the ambient temperature and requested hot water temperature. Differently from option Total Heat Recovery, the unit controller does not manage the condensing temperature in partial heat recover operation. The heat recovery operation must be managed from the plant manager that controls the pump on the recovery circuit. Also, when Partial Heat Recovery is ON the efficiency of the chiller is represented by TER and not simply by EER.

Brine Version (opt. code 08) For operation with temperature at the outlet of the evaporator below 4°C, the unit must operate with glycol mixture (with ethylene or propylene glycol) and the Brine Version option must be selected. The option provides dedicated control function, optimized evaporator and additional insulation on heat exchanger and piping.

Compressor suction insulation (opt. code 176) to improve aesthetics avoiding moisture on compressor's suction (coldest part).

Evaporator Victaulic KIT (opt. code 20) Victaulic kit includes the Victaulic joint and the counter pipe fitted with Victaulic groove to be welded with the plant pipes.

Evaporator flange KIT (opt. code 21) The flange kit includes flange, counter-flange and gaskets, bolted together with fasteners and nuts.

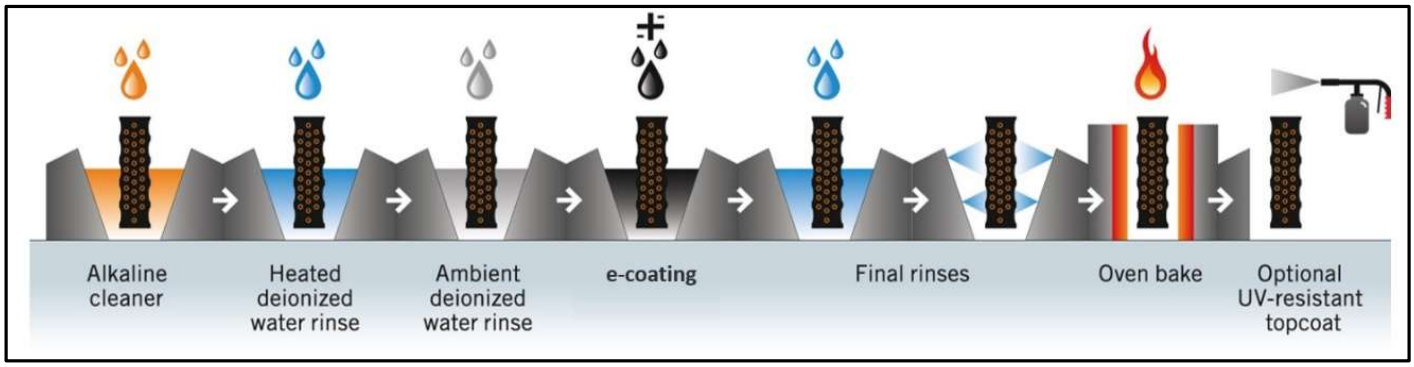
Suction line shut-off valve (opt. code 62) Installed on the suction port of the compressor to facilitate maintenance operation.

High pressure side manometers (opt. code 63)

Low pressure side manometers (opt. code 64)

Double pressure relief valve with diverter (opt. code 91)

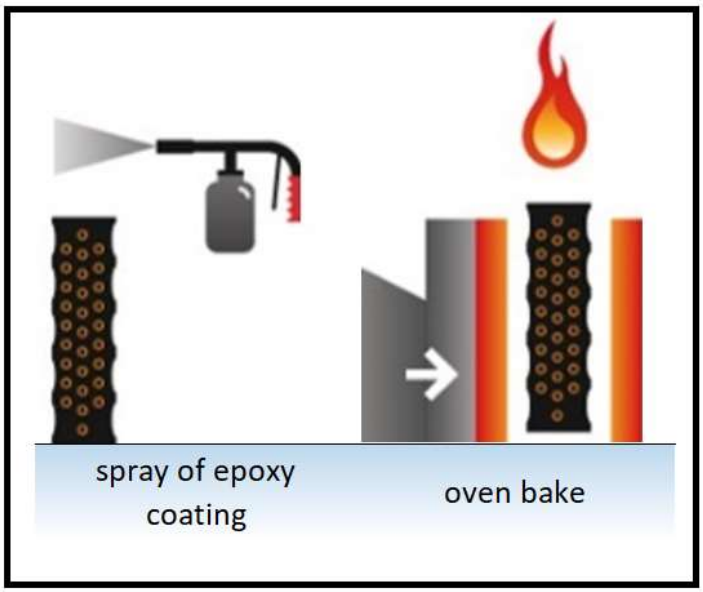
E-coating microchannel coils (opt. code 139) As protection, a layer of an epoxy polymer is added on the surface of the exchanger. The process consists in the complete immersion of the exchanger in the epoxy polymer solution. An electric voltage applied to the exchanger causes a difference with the electrical charge of the polymer molecules that, as result, are drawn to the metal. The thickness of the coating is controlled by the applied voltage. The result is a uniform layer of epoxy polymers applied all over the exchanger surface. A final UV top-coat treatment is applied on the coil surf



The treatment is recommended in all application where high risk of corrosion exist (e.g.: high polluted urban, costal, industrial environments and their combinations).
In the table below, technical properties of the treatment are described:

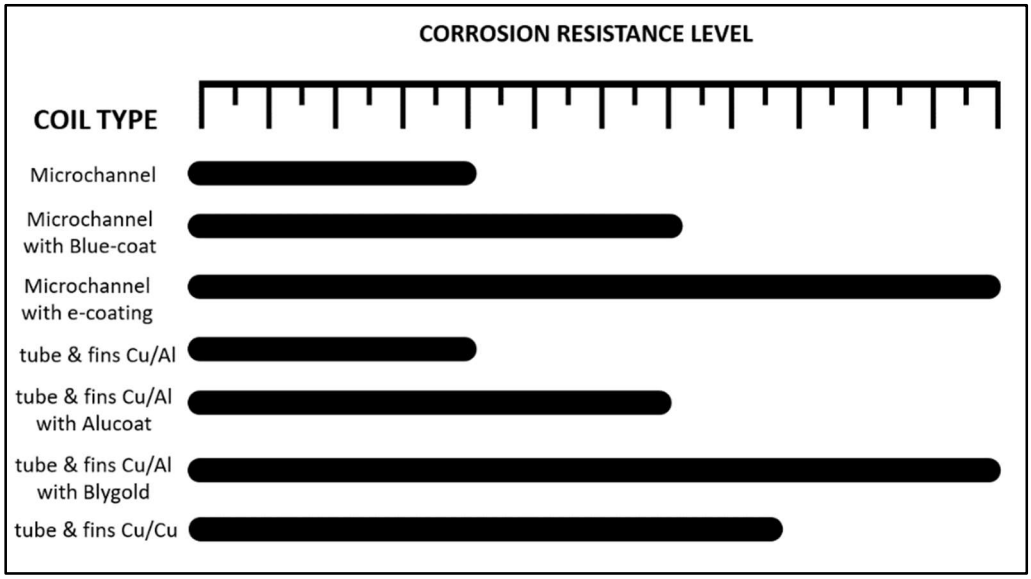
PROPERTY	TEST METHOD	PERFORMANCE
Salt Spray Corrosion	ASTM B117 / DIN 53167	6,000+ hours
SWAAT Corrosion	ASTM G85-A3	2,500 hours
Cross Hatch Adhesion	ASTM D3359	4B-5B
Pencil Hardness	ASTM D3363	2H minimum
Dry Film Thickness	ASTM D7091	0.6-1.2 mils / 15-30 µm
Direct Impact	ASTM D2794	160 in-lb
Water Immersion	ASTM D870	1,000 hours
Humidity	ASTM D2247-99	1,000 hours minimum
Heat Transfer Reduction	--	less than 1%
Bridging	--	No bridging including ehnanced & micro-channel fin designs
Coating of Enhanced fins	--	Up to 30 fins per inch
pH Range	--	3-12
Temperature Limits	--	-40°F to 325°F / -40°C to 163°C (dry load)
Gloss - 60 Degree	ASTM D523	55-75

Blue coat (opt. code 153)



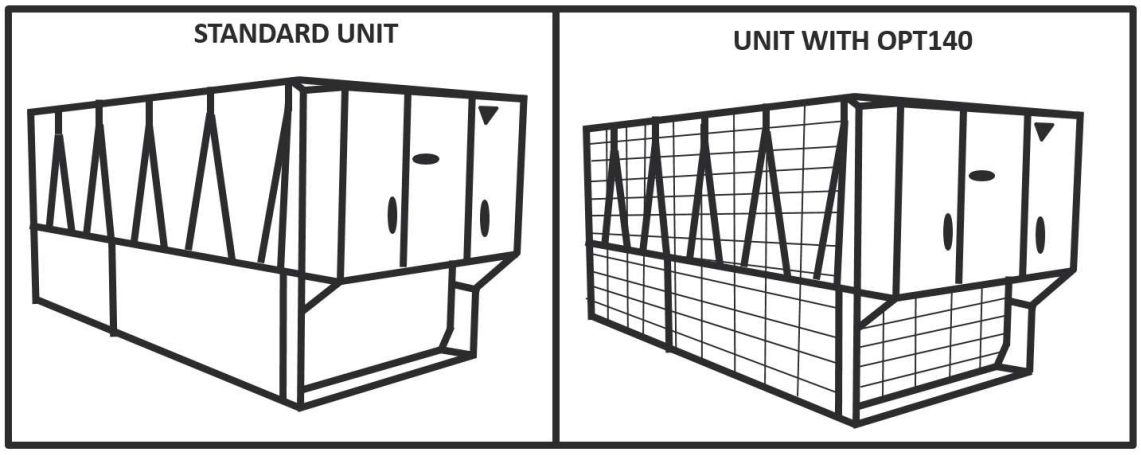
An epoxy powder is sprayed and electrostatically fixed to the coil. Once the external surface is completely covered by the epoxy material, the coil is sent in to a furnace for the drying and curing phase. The result is a uniform and durable coating on the external surface of the coil that enhance the resistance to the corrosion.
The treatment is recommended in all application where moderate risk of corrosion exist (e.g.: light polluted urban and industrial environments).

In the table below a qualitative indication of the corrosion resistance for the different types of coils:

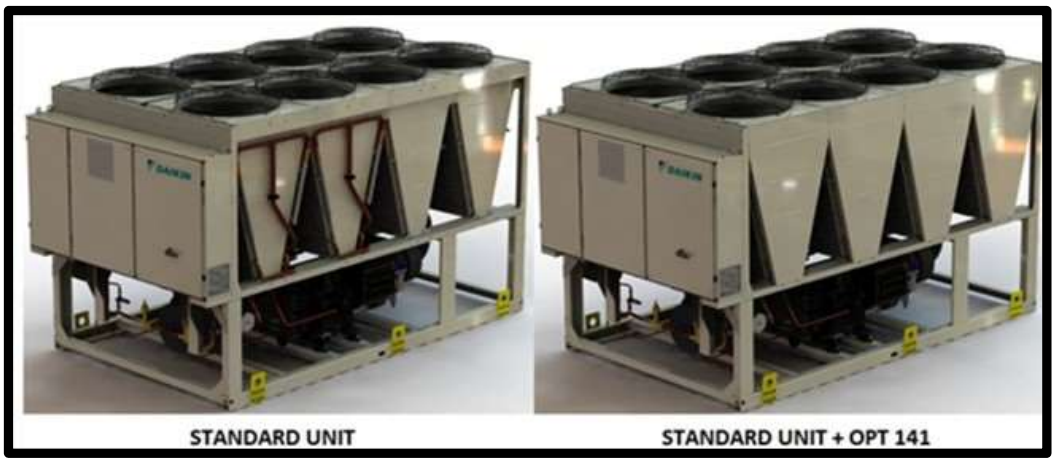


NOTE: for installations in industrial environment the resistance to specific pollutant of the specific type of coil should be verified.

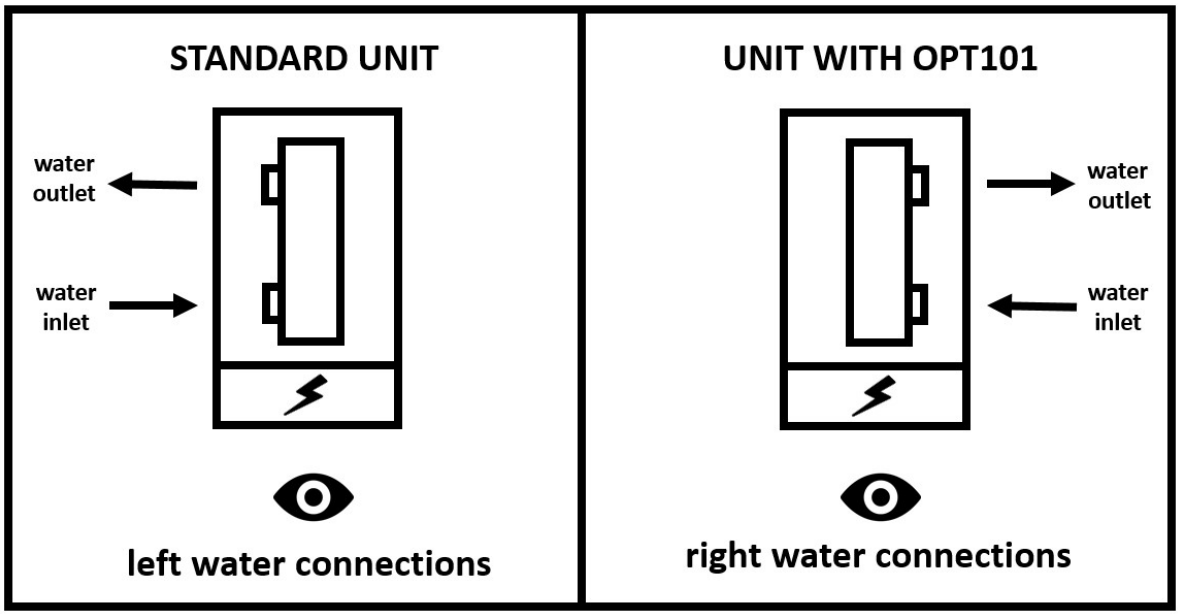
Unit guards (to cover unit access) (opt. code 140) Wire mesh that covers the access all around the unit



Side panels on coil ends (opt. code 141) Protection carter on both side of each condensing module.



Unit right water connection (opt. code 101) Provides water connection on the right side.



Water filter (opt. code 153) to prevent damages to the water heat exchanger due to the presence of particles in the water a filter must be installed.
With option 153 a water filter is shipped loose with the unit. Is customer responsibility to properly install and maintain the water filter.
To be affective the filter must be installed at the entering of the unit (see Installation notes for more details).
The filter supplied with option 153 features a wire mesh able to block 0.87 mm particles (MESH 22,86).
The wire dimeter is 0.24 mm with pitch 1.11 mm distances wires and 61,3% clear surface.
NOTE: the installation of the filter is mandatory either if supplied by DAIKIN or from third part supplier.
Proper filter cleaning and maintenance is key to ensure chiller operation.

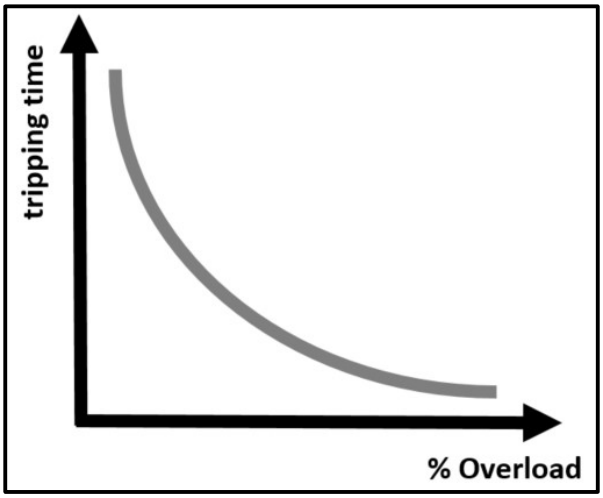
The pressure drop across the water filter provided by DAIKIN are given by the following formula:

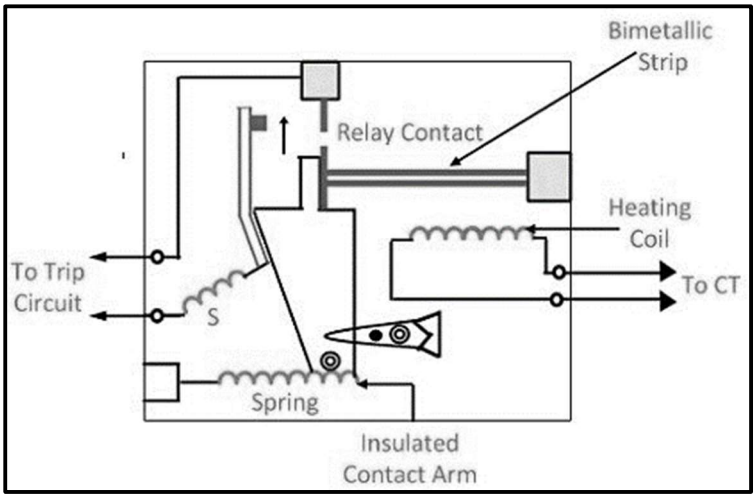
$$\textbf{Pressure drop} = a*(\textbf{water flow in } m^3/h)^b$$

Connection diameter [mm]	a	b
114	0.00417	1.954
140	0.00128	2.0016
168	0.00065	1.928
219	0.00026	2.011
273	0.00009	1.974

Electrical options (on request)

Compressor thermal overloads relays (opt. code 11) Safety electronic devices that, added to the standard protection devices, protect compressor motors against overload and current unbalance.
Overload protection is a protection against a running overcurrent that would cause overheating of the protected equipment. Hence, an overload is also type of overcurrent.
The overload protection operates on an inverse time curve where the tripping time becomes less as the current increases.





Compressors circuit breakers (opt. code 95) A safety device which ensures thermal and electrical protection against motor overcurrent (overtemperature) and overload protection. Overcurrent protection is protection against excessive currents or current beyond the acceptable current rating of equipment. It operates instantly when the current exceeds the overcurrent imposed the overcurrent threshold. Short circuit is a type of overcurrent. The breaker acts practically instantly when the current reaches the threshold value, while the thermal relay reacts with a timing related to the percentage of over-load.

Soft Starter (opt. code 06) Alternatively to Wye-Delta starter provided as standard, Solid State Starters are based on semiconductors, which, via a power circuit and a control circuit, initially reduces the motor voltage, resulting in lower motor torque. The soft starter is equipped with microprocessor controlling the starting sequence and keeping the motor's start up current (and torque) within the programmed value. EWAD~M compressor's motors are selected to ensure that the compressor is able to start with wye-delta starter in all possible condition of suction and discharge pressure (even in heavy-duty conditions occurring in "Rapid Restart" situations). Except for Rapid restart situations, the compressor start is regulated by unit controller according to "STOP TO START" and "START TO START" timers ensuring that when the compressor starts suction and discharge pressures are equalized; for this reason the starting torque required in actual chiller operation is lower than the one needed in heavy duty start (allowed only with Rapid restart). With Soft Starter option the starting current is limited by microprocessor to the same value of the starting current of wye-delta starter. The resulting torque is sufficient for the compressor to start in all situation. In case of manual intervention on the chiller, during service activities, the timers could be bypassed by technicians acting on unit controller, in that situation the starting of the compressor is anyway ensured by microprocessor who momentarily raise the maximum starting current threshold up to the double of standard value.

The starting current for unit with soft starter is the same of the unit with wye-delta starter (provided as standard).

NOTE: Soft Starter option is not compatible with Rapid restart

Under over voltage control (opt. code 15) 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 (including current limit) (opt. code 16a) 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, including current limit option. An integrated RS485 module

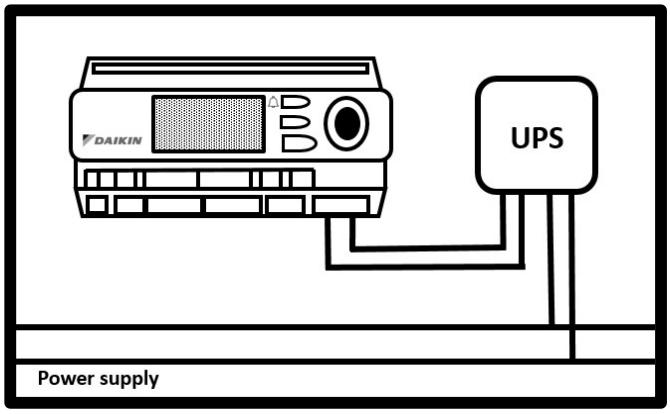
allows a Modbus communication to an external BMS.

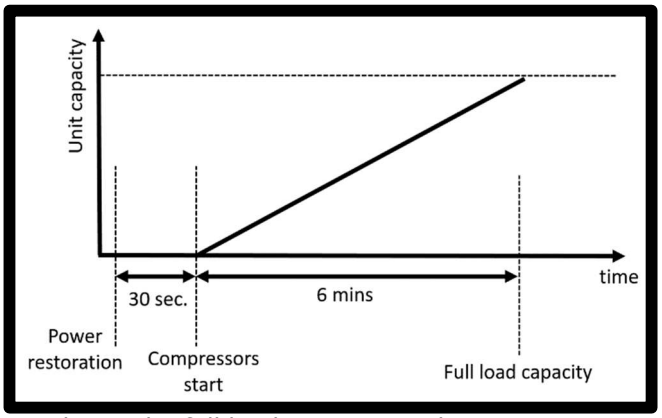
Evaporator electric heater (opt. code 57) 125W electric heater, controlled by a thermostat (heater is activated if water temperature is <5°C) and installed in the evaporator.

Evaporator flow switch (opt. code 58) Supplied separately to be wired and installed on the evaporator water piping (by the customer). The installation of the flow switch is mandatory.

Ground fault relay (opt. code 102) To shut down the entire unit if a ground fault condition is detected.

Rapid restart (opt. code 110) Rapid Restart is the ideal solution for those application where we cannot afford the loose of cooling such as data centers, health care facilities, process cooling …etc. For this kind of applications, in case of a power failure, chiller equipment is required to restore the cooling supply to the system as fast as possible. Standard unit (without the Rapid Restart option) will be starting within 310 seconds after the power is restored and it will be reaching full load cooling capacity within 20 ÷ 25 minutes (obviously depending on the load demand). Rapid Restart is allowing the chiller to start as fast as 30 seconds after power is restored and to reach full load cooling capacity in less than 6 minutes from the unit restart.
For more details about this option please refer to the Control Manual.
With Rapid Restart option the unit controller is always powered by UPS unit and dedicated control logic allows





to achieve the full load capacity in short time.

High ambient kit (opt. code 142) The high ambient kit must be selected in case of installations where design condition is at 46°C ambient temperature and above.
Since mechanical switches are derated based on their load and the operational temperature, in case of operation at high ambient temperature, the unit is provided with oversized electrical equipment (e.g. main switch, fuses, cables) with the aim to increase reliability and components operating life. In addition to oversized electrical equipment other measures are taken to maximize the reliability and operating life of the components in the electrical box, such as: enhanced ventilation (depending on the model), and sunshield on electrical panel.

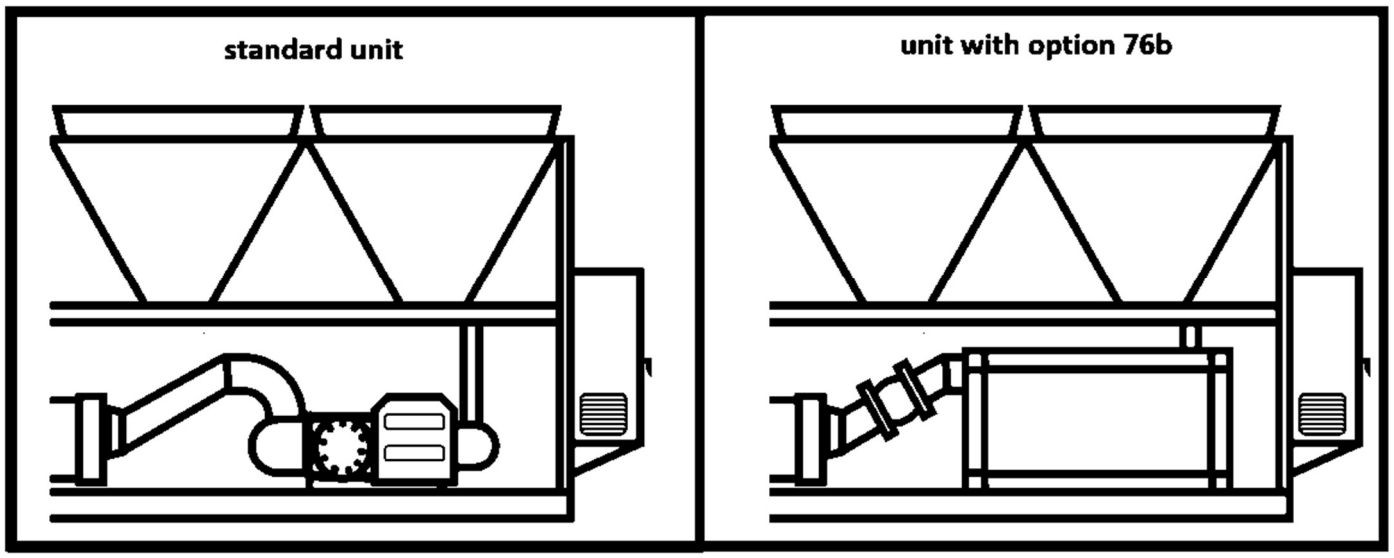
Capacitors for power factor correction (opt. code 17)

100 Pa ESP fans (opt. code 160 – provided a standard) All data for standard units are referred to the unit operating with free condenser discharge, so the performances are declared with NO external static pressure.
There are installations which requires to duct the exhaust fans or place the chiller behind the louvres. In such situations additional pressure drops are added on the ones of the condenser. The increased pressure drops lead to a sensible reduction of the airflow through the condenser affecting the unit's performances and the full load operating envelope. Standard unit can operate with maximum external static pressure (ESP) of 100 Pa. The ESP is referred to the nominal air-flow of the standard unit (see Technical Specification).
For performances of the unit operating with ESP = 100 Pa refer to Chiller Selection Software.

200 Pa ESP fans (opt. code 161) When more than 100 Pa ESP is required, the option 161 is advised.
With this option the unit is provided with "brushless" (EC) type fans and with synchronous motors excited by permanent magnets and with phase currents controlled by a PWM inverter integrated in the fan motor housing, that allows operation at different speeds. The fan reaches higher rotational speed (up to 1430 RPM) delivering up to 200 Pa external static pressure referred to standard unit's air-flow (as indicated in the Specification table). The fan's motors are IP54.

Hydronic kits (available on request) consisting of single or double pump fitted on board the unit. This option is available on request based on the specific project needs. Possible combination of chillers models with pumps must be verified on project bases. Contact factory for selection and quotation.
Standard units are equipped with dedicated digital output to enable and disable external pumps. Once the unit is switched in Thermostat OFF mode (meaning that compressor is ready to start) pumps are enabled.
In Stand-by mode the pumps are disabled.

SOUND PROOF SYSTEM (COMPRESSOR) (opt. code 76b) Selecting this option the unit is provided with compressors enclosure for enhanced protection of the compressors, acoustic attenuation and improve aesthetics of the unit. In addition to the compressor enclosure, a flexible joint is inserted on compressor suction line significantly reduces the transmission of the vibration from the compressor to the chiller structure.



For information on sound performances for the unit with option 76b refer to Specification table or to Chiller Selection Software

Dual incomer (opt. code 178) with this option the unit is provided with separate power supply per circuit.
NOTE: the option is available for dual circuit units only, not available on 3 circuit models

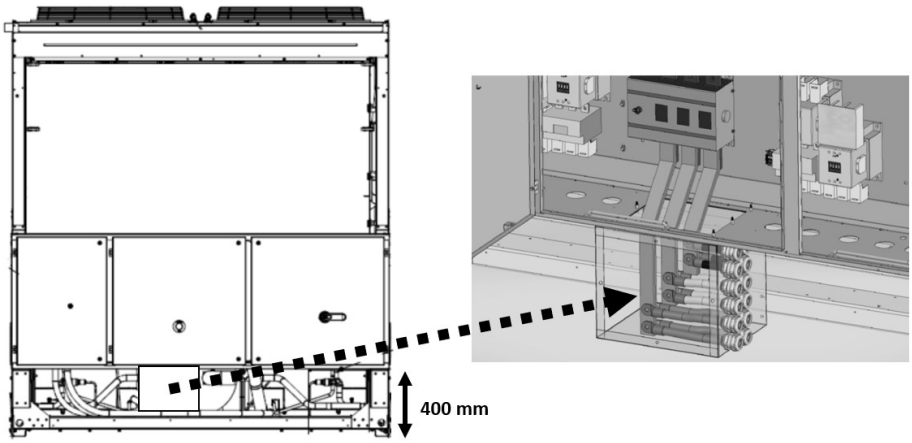
EC motors fans (opt. code 145) with this option the standard AC fans are replaced with "brushless" (EC) type fans and with synchronous motors excited by permanent magnets and with phase currents controlled by a PWM inverter integrated in the fan motor housing, that allows operation at different speeds. This fans are 800 mm diameter and run up to 1090 RPM. The resulting benefit is higher efficiency at part load thanks to continuous modulation of the fans speed according the ambient temperature and the chiller load.

Installation options (on request)

Rubber anti vibration mounts (opt. code 75) 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 (opt. code 77) Supplied separately, these are positioned under the base of the unit during installation. Ideal for dampening vibrations for installation on roofs and metallic structures.

Connection box (opt. code 176) the connection box provides extended busbars to ease electrical connection of the unit.



Other options (on request)

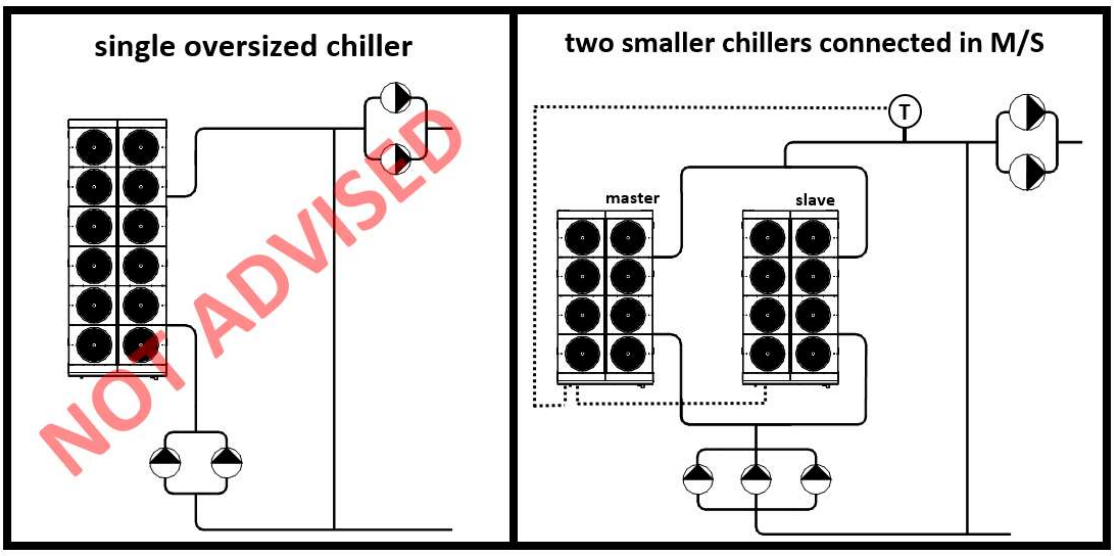
Transport kit (opt. code 71)

Container kit (opt. code 112)

Witness test & acoustic test

Applications

EWAD~M C range is designed for commercial and industrial application. It can be applied to supply chilled water or brine mixture in a wide range of temperatures at different ambient conditions. A proper chiller selection is key to achieve effective and reliable system operation. The unit must be selected according to the specific requirements for the project. Do not intentionally oversize the unit at design condition to ensure cooling capacity. An oversized chiller will be subject to frequent compressors cycling leading to inefficient operation.
In case an oversized system is required for the project, propose two smaller chillers connected in Master/Slave control.

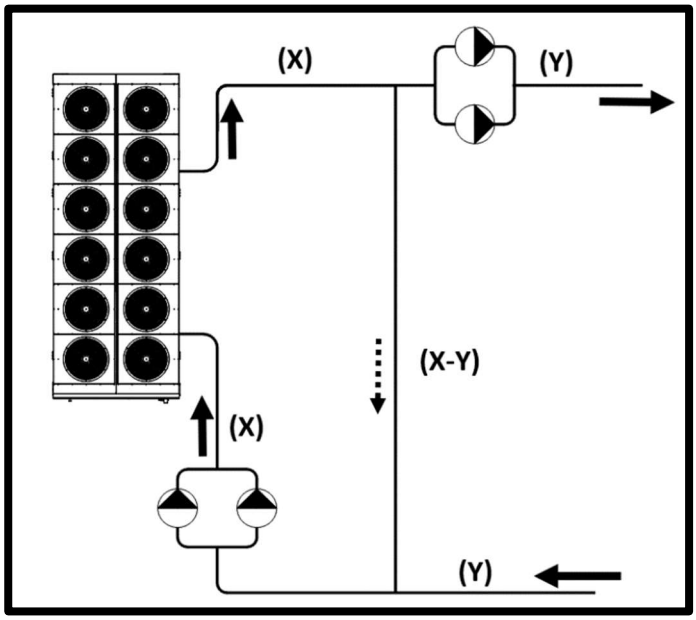


Some application could require water flow rate through the exchanger out of the allowed limits.

The limits for the water flow rate are defined as follow:

Maximum water flow rate → corresponding to water velocity equal to 1,5 m/s
Minimum water flow rate → corresponding to water velocity equal to 0,8 m/s

In case of selections with water flow rate below the minimum allowed a decupled system is required.



Where:

- X is the minimum water flow rate allowed for the chiller.

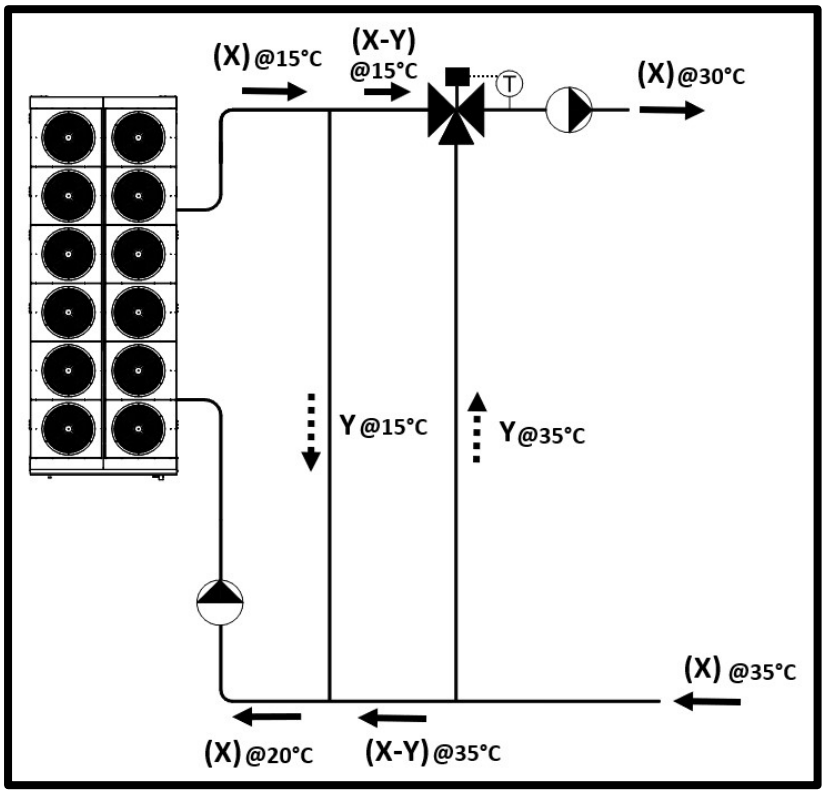
- Y is the water flow rate required for the application

In this case Y < X, the required flow rate is lower than the minimum allowed for the chiller.

The decoupled system allows to operate with different water flow rate in primary and secondary circuit.
The decoupler must be sized to allow a water flow rate equal to (X-Y) with negligible pressure drop (~5 kPa).

NOTE: the direction of the flow must be always from supply to return. With the flow in the opposite direction, the chilled water supply temperature in the secondary loop will rise to unacceptable levels.

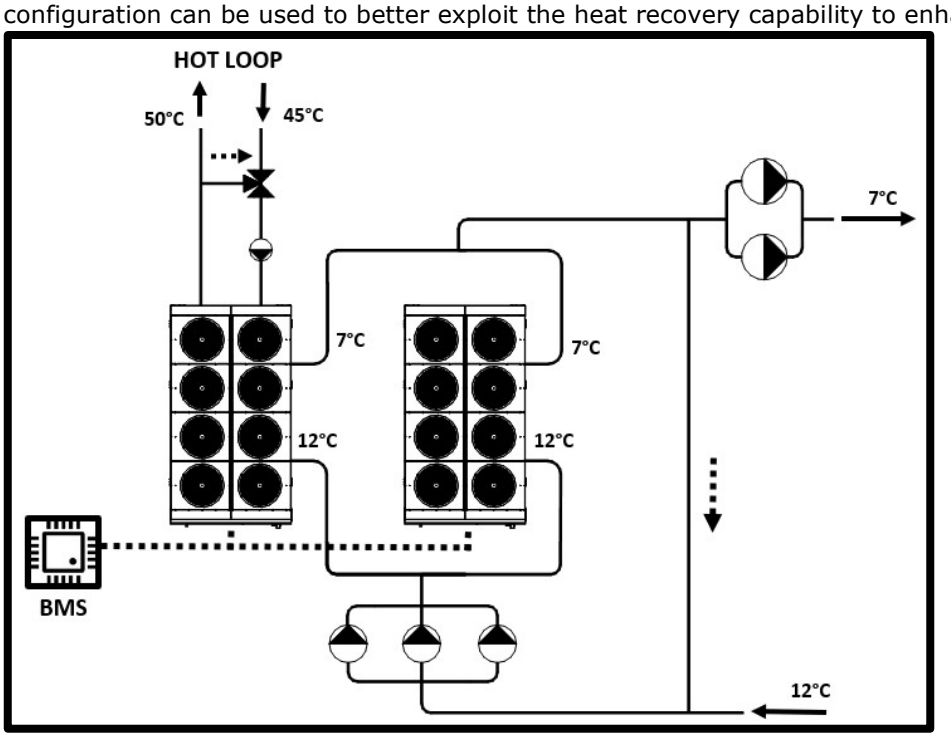
There are also limits on the water temperature (inlet and outlet) that must be respected. Refer to Operating limits chapter of this data book and to IOM specific values. When operation outside the allowed temperature is needed a proper arrangement of the hydronic circuit is needed.



As example we can consider a process requiring water supply (X) at 30°C and returning water at 35°C. Those temperatures are outside the operating envelope for the chiller. Since both entering and leaving water temperatures are outside the operating limit, in addition to the standard decoupled system, another branch is needed. This additional branch must be provided with a 3-ways valve acting as mixing valve in the direction of the supply water to the plant. We can select the chiller running at the 15°C outlet temperature with an entering of 20°C with same water flow rate required for the process (X). The return water from the secondary circuit at 30°C is divided is cooled by the cold water at 15°C from the open decoupler while the supply water is heated up by the return water coming from the additional branch controlled by the mixing valve. The set point for the mixing valve is fixed on the delivery water temperature (30°C). This system is required when both entering and leaving water temperature are outside the operating envelope of the chiller.

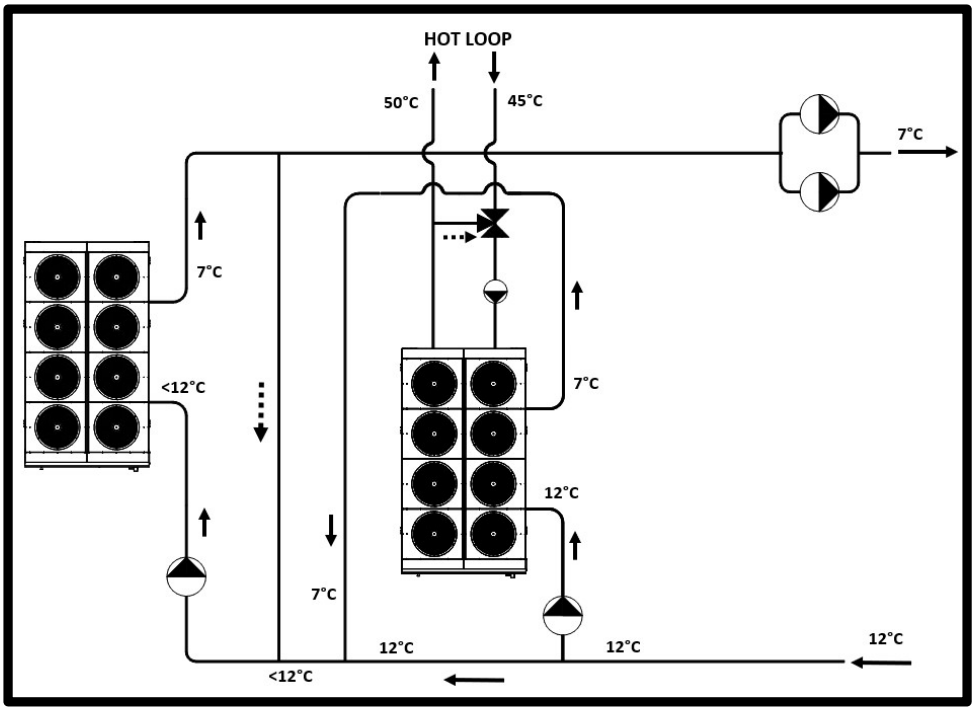
If only the entering water temperature is outside the limit the previous scheme can be applied (single decoupler) paying attention to fix the proper water flow rate on primary circuit and dimensioning the decoupler accordingly.

Most of the chiller installation requires, in addition to chilled water, also heated water. The hot water can be used to post eat air in AHU's, for preparation of Sanitary Hot Water, and many other applications.
As explained in the option description, the heating is available only when the chiller is providing chilled water; for this reason, the evaluation of the actual heating capacity available requires also the information on the cooling load. In case of multiple chillers plant involving heat recovery chillers and standard chillers a proper plant configuration can be used to better exploit the heat recovery capability to enhance the system efficiency.



In typical decoupled systems with chillers installed in parallel is possible to manage the chiller operation through a BMS which gives priority to the chiller with heat recover capability.
All the chillers in operation (as enabled by the BMS system to match the load) see the same entering water temperature.
If BMS is not available to give priority on Heat recovery chiller is possible to use the set-point reset command to the chiller. When heating is required the set point on the heat recovery chiller is set to a lower value through a 0-10V signal; as result the chiller with heat recovery will charge more while the other will unload.

A way to assign a preferential load to the heat recovery chiller is by moving it to the secondary plant (on the other side of the decoupler). In with this layout the heat recovery chiller is loaded preferentially because it always receives the warmest return-water temperature (12°C). The chiller is fully loaded as it has to deliver the desired chilled water temperature (7°C set point). As consequence, the heat recovery is the maximum possible and may eventually exceed the heating load.

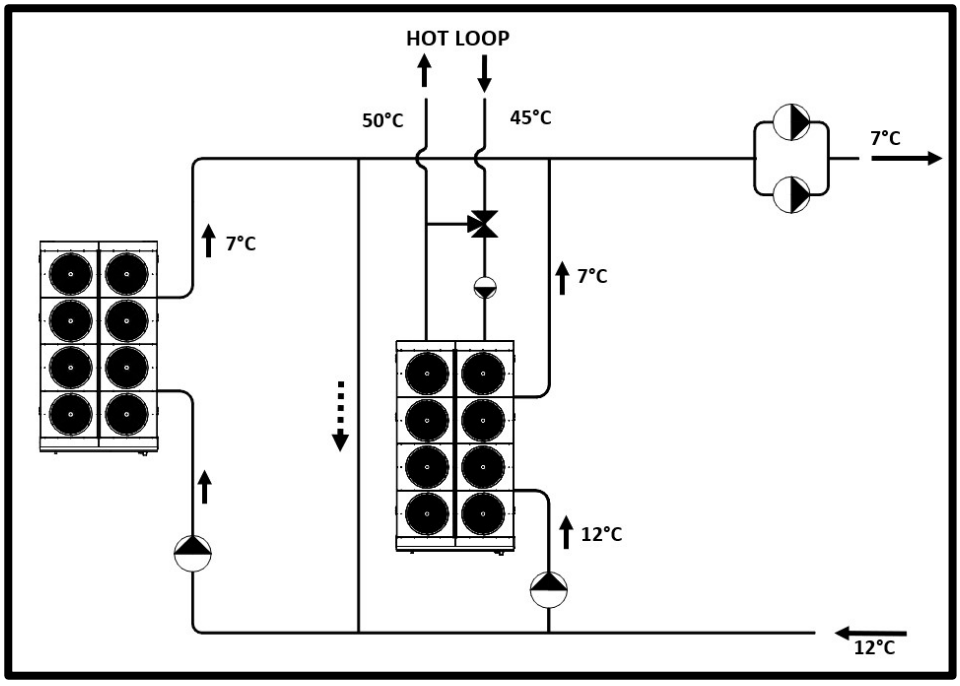


In case of an air-cooled heat recovery chiller, without external control, the unit will cycle between heat recovery ON and OFF operation, rejecting the exceeding heat rejection through the air-cooled condenser.

With external BMS or using the set-point reset function is possible to modulate the cooling capacity to the one corresponding to the actual heating need. The extra cooling capacity which cannot be delivered by the heat recovery chiller, will be transferred to the standard chillers in the production loop. This will optimize the energy
y usage of the entire chiller plant and the heat recovery operation will be limited to exactly the heating need.

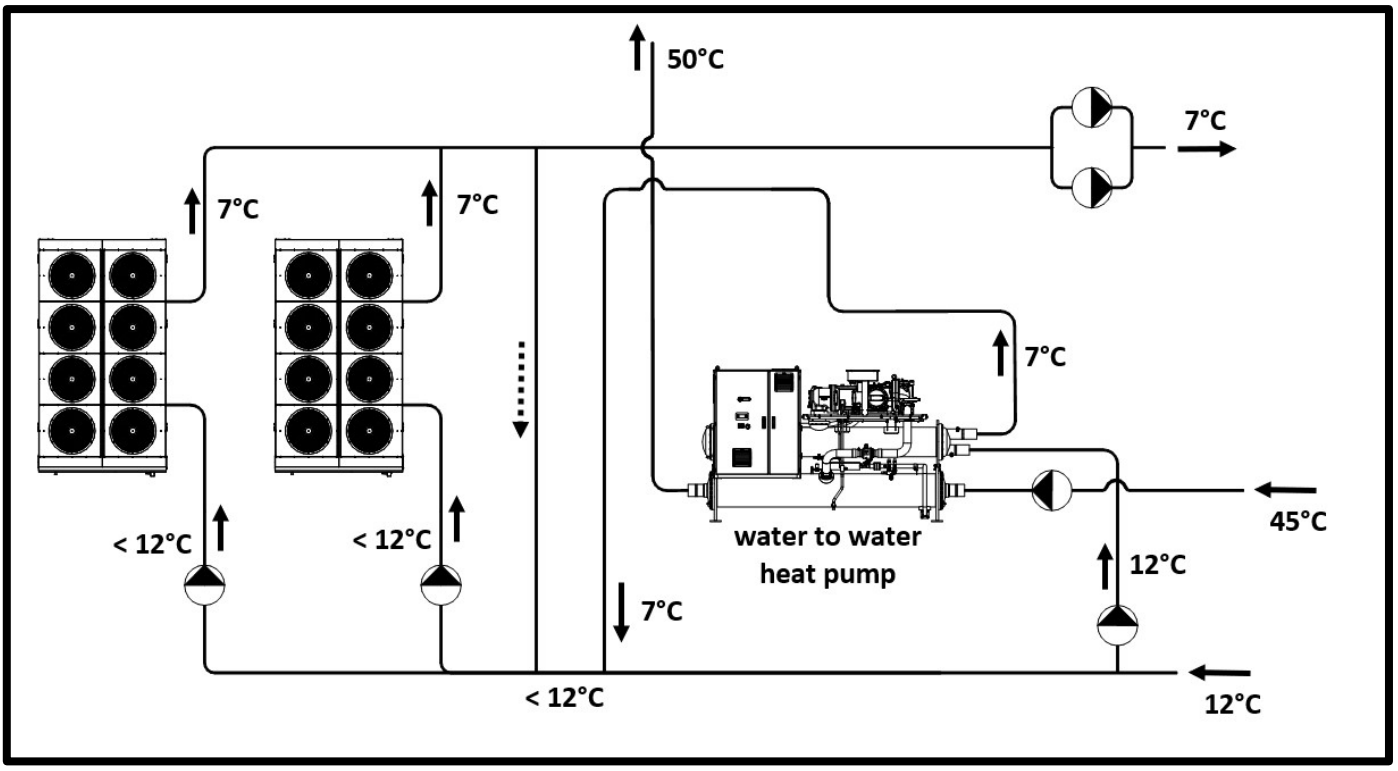
In addition to the previous layout, another solution is to install the heat recovery chiller in side stream position.

In this configuration the chiller located in a side-stream position, takes the supply water from the main return pipe, cools this water as much as desired to make the heat recovery matching the heating requirement (controlling the chiller capacity with BMS or through the set point reset command). This is usually obtained through a Building Management System that will reset accordingly the chilled water leaving water temperature set point. The cooled water will return to the main return water pipe and mix with the main return water flow, cooling the return water entering the remaining chillers.



Compare to previous layout (heat recovery chiller in parallel positioned on distribution side) the Sidestream configuration allows to control the heat recovery chiller on the hot energy needed, without effect on the supply water temperature. To optimized system operation the heat recovery chiller should be selected based on the heating capacity at full load. For the heat recovery chiller in this application the cooling capacity represents the side effect of the heating operation. The cooling only chiller in the production line must be able to provide the extra cooling capacity needed when minimum heating capacity is required.

In case cooling load required is much higher than the heating load a cheaper and affective solution could be to use of a water to water heat pump installed Sidestream on the cooling loop.
The heat pump, selected based on the heating capacity will modulate the capacity according the heating load.



EWAD~M- SS C – standard unit								
MODEL	notes		**300**	**340**	**400**	**420**	**450**	**520**
Cooling Capacity	(1)	kW	296	343	401	419	446	514
Power Input	(1)	kW	96,4	115	128	137	147	169
EER	(1)	kW/kW	3,07	2,98	3,13	3,07	3,04	3,04
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	4,01	4,04	4,13	4,05	4,05	4,28
Cooling Capacity	(2)	kW	275	316	374	383	398	462
EER	(2)	kW/kW	2,36	2,28	2,42	2,31	2,22	2,19
Cooling Capacity	(3)	kW	271	302	367	374	385	449
EER	(3)	kW/kW	2,25	2,18	2,30	2,17	2,06	2,03
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	12,8	14,9	17,4	18,2	19,3	22,2
Evaporator pressure drop	(1)	kPa	90,1	101	73,3	79,4	99,7	109
Water flow rate	(2)	l/s	11,9	13,7	16,2	16,6	17,2	20,0
Evaporator pressure drop	(2) (5)	kPa	79,0	87,6	64,6	67,5	81,4	90,0
Evaporator water volume		lt	89	89	181	175	164	164
Minimum water rate	(4)	l/s	3,3	3,8	5,0	5,0	4,9	5,6
Sound Power	(1) (6)	dB(A)	99	99	100	100	100	102
Sound Pressure @ 1 meter	(1) (7)	dB(A)	80	80	80	80	80	82
Fan type		-	Direct Propeller					
Fan diameter		mm	850					
Fan rotational speed		RPM	900					
Fan motor / control		-	AC – On/Off					
Number of fans		n	6	6	8	8	8	8
Power input fans		kW	15,6	15,6	20,8	20,8	20,8	20,8
Air flow	(8)	l/s	34167	34167	45556	45556	45556	45556
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	3118 / 3121	3120 / 3122	3122 / 3122	3122 / 3123	3123 / 3123	F3AS / F3AS
Oil charge		lt	26	26	26	26	26	34
Refrigerant Charge		kg	42	42	56	56	56	56
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	3300	3300	4200	4200	4200	4200
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	3061	3061	4104	4114	4124	4724
Unit weight - operation		kg	3161	3161	4274	4284	4294	4894
Water connection size		mm	114,3	114,3	139,7	139,7	139,7	139,7
Water connection type			Victaulic					

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
(5) - not including filter pressure drop. The installation of the filter is mandatory.
(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
(8) – referred to unit with free discharge on condenser fans.
(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.
The above data are referred the unit installed in compliancy with installation prescription.
All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

EWAD~M- SS C – standard unit								
MODEL	notes		**550**	**590**	**680**	**740**	**830**	**920**
Cooling Capacity	(1)	kW	550	588	680	740	826	917
Power Input	(1)	kW	177	186	215	242	270	309
EER	(1)	kW/kW	3,10	3,16	3,16	3,06	3,06	2,97
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	4,28	4,29	4,25	4,24	4,21	4,17
Cooling Capacity	(2)	kW	500	541	617	664	736	819
EER	(2)	kW/kW	2,28	2,37	2,39	2,28	2,29	2,18
Cooling Capacity	(3)	kW	488	529	602	625	693	757
EER	(3)	kW/kW	2,12	2,22	2,25	2,15	2,17	2,05
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	23,8	25,5	29,4	32,1	35,8	39,7
Evaporator pressure drop	(1)	kPa	87,3	98,6	87,2	102	93,2	82,6
Water flow rate	(2)	l/s	21,7	23,4	26,7	28,8	31,9	35,5
Evaporator pressure drop	(2) (5)	kPa	73,8	84,9	73,3	83,7	75,7	67,3
Evaporator water volume		lt	170	170	298	298	300	330
Minimum water rate	(4)	l/s	6,6	6,6	8,2	8,2	9,7	11,9
Sound Power	(1) (6)	dB(A)	102	103	102	102	101	103
Sound Pressure @ 1 meter	(1) (7)	dB(A)	82	82	81	81	80	81
Fan type		-	Direct Propeller					
Fan diameter		mm	850					
Fan rotational speed		RPM	900					
Fan motor / control		-	AC – On/Off					
Number of fans		n	10	12	12	12	12	14
Power input fans		kW	26	31,2	31,2	31,2	31,2	36,4
Air flow	(8)	l/s	56944	68333	68333	68333	68333	79722
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	F3AS / F3AL	F3AL / F3AL	F3BS / F3AL	F3BL / F3AL	F3BL / F3BS	F4AL / F3AL
Oil charge		lt	34	34	36	36	38	42
Refrigerant Charge		kg	70	70	84	84	84	98
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	5100	6000	6000	6000	6000	6900
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	4860	5387	5527	5527	5525	5858
Unit weight - operation		kg	5030	5557	5825	5825	5825	6188
Water connection size		mm	139,7	139,7	168,0	168,0	168,0	168,0
Water connection type			Victaulic					

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.

(5) - not including filter pressure drop. The installation of the filter is mandatory.

(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614

(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744

(8) – referred to unit with free discharge on condenser fans.

(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.

The above data are referred to the unit installed in compliancy with installation prescription.

All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

EWAD~M- SS C – standard unit

MODEL	notes		970	H10	H11	H13	C13	C14
Cooling Capacity	(1)	kW	997	1086	1183	1265	1350	1402
Power Input	(1)	kW	323	363	390	422	456	488
EER	(1)	kW/kW	3,09	2,99	3,03	3,00	2,96	2,88
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	4,24	4,18	4,13	3,86	4,15	4,14
Cooling Capacity	(2)	kW	895	964	1054	1132	1170	1181
EER	(2)	kW/kW	2,33	2,23	2,27	2,25	2,21	2,12
Cooling Capacity	(3)	kW	854	872	973	1047	1059	1055
EER	(3)	kW/kW	2,20	2,11	2,14	2,13	2,09	2,02
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	43,2	47,0	51,2	54,8	58,5	60,7
Evaporator pressure drop	(1)	kPa	106	108	79,0	83,6	100	107
Water flow rate	(2)	l/s	38,8	41,8	45,7	49,0	50,7	51,2
Evaporator pressure drop	(2) (5)	kPa	87,2	87,1	64,2	68,5	77,5	78,9
Evaporator water volume		lt	283	461	485	492	492	492
Minimum water rate	(4)	l/s	11,7	11,5	14,1	14,1	14,1	14,1
Sound Power	(1) (6)	dB(A)	102	102	103	103	103	103
Sound Pressure @ 1 meter	(1) (7)	dB(A)	81	81	81	81	81	81
Fan type		-	Direct propeller					
Fan diameter		mm	850					
Fan rotational speed		RPM	900					
Fan motor / control		-	AC – On/Off					
Number of fans		n	16	16	18	20	20	20
Power input fans		kW	41,6	41,6	46,8	52	52	52
Air flow	(8)	l/s	91111	91111	102500	113889	113889	113889
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	F4AS / F3BL	F4AL / F3BL	F4AL / F4AS	F4AL / F4AL	F4AXL/F4AL	F4AXL/4AXL
Oil charge		lt	44	44	50	50	50	50
Refrigerant Charge		kg	98	98	126	112	126	140
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	7800	7800	8700	9600	9600	9600
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	6936	6520	7669	8386	8386	8386
Unit weight - operation		kg	7219	6981	8154	8878	8878	8878
Water connection size		mm	168,0	219,1	219,1	219,1	219,1	219,1
Water connection type			Victaulic					

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.

(5) - not including filter pressure drop. The installation of the filter is mandatory.

(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614

(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744

(8) – referred to unit with free discharge on condenser fans.

(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.

The above data are referred the unit installed in compliancy with installation prescription.

All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

EWAD~M- SS C – standard unit

MODEL	notes		H17	C19	H19	C21	C22
Cooling Capacity	(1)	kW	1806	1910	1973	2112	2198
Power Input	(1)	kW	570	673	665	712	745
EER	(1)	kW/kW	3,17	2,84	2,97	2,97	2,95
Minimum capacity		%	9	9	9	9	9
IPLV	(1)	kW/kW	4,23	4,21	4,08	4,14	3,98
Cooling Capacity	(2)	kW	1621	1452	1734	1783	1812
EER	(2)	kW/kW	2,41	2,13	2,22	2,20	2,18
Cooling Capacity	(3)	kW	1536	1280	1587	1600	1622
EER	(3)	kW/kW	2,27	2,02	2,10	2,09	2,08
Evaporator type		-	Direct Expansion – Shell & Tubes				
Water flow rate	(1)	l/s	78,3	82,8	85,5	91,5	95,2
Evaporator pressure drop	(1)	kPa	74,9	82,8	111	99,2	107
Water flow rate	(2)	l/s	70,2	62,9	75,1	77,3	78,5
Evaporator pressure drop	(2) (5)	kPa	61,7	50,5	88,1	73,2	75,3
Evaporator water volume		lt	522	522	522	522	522
Minimum water rate	(4)	l/s	24,2	19,9	26,3	26,3	26,3
Sound Power	(1) (6)	dB(A)	105	104	105	105	105
Sound Pressure @ 1 meter	(1) (7)	dB(A)	81	81	81	82	82
Fan type		-	Direct propeller				
Fan diameter		mm	850				
Fan rotational speed		RPM	900				
Fan motor / control		-	AC – On/Off				
Number of fans		n	30	24	30	30	30
Power input fans		kW	78	62,4	78	78	78
Air flow	(8)	l/s	170833	136667	170833	170833	170833
Refrigerant circuits		n	3	3	3	3	3
Compressor type		-	Single Screw				
Capacity control		-	Stepless				
Comp model per circuit		-	F4AL/F4AS/ F4AS	F4AL/F4AL/ F4AL	F4AXL/F4AL /F4AL	F4AXL/F4AXL /F4AL	F4AXL/F4AXL /F4AXL
Oil charge		lt	75	75	75	75	75
Refrigerant Charge		kg	210	168	182	196	210
Casing material		-	Galvanized Steel Sheet				
Color		-	Ivory White				
Unit length		mm	14100	11400	14100	14100	14100
Unit width		mm	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540
Unit weight - shipping		kg	10931	10331	10931	10931	10931
Unit weight - operation		kg	11453	10853	11453	11453	11453
Water connection size		mm	273,0	273,0	273,0	273,0	273,0
Water connection type			Victaulic				

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
(5) - not including filter pressure drop. The installation of the filter is mandatory.
(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
(8) – referred to unit with free discharge on condenser fans.
(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.
The above data are referred the unit installed in compliancy with installation prescription.
All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

AHRI CERTIFIED™ www.ahridirectory.org

EWAD~M- SS C + OPT76b - SOUND PROOF SYSTEM (COMPRESSOR)								
MODEL	notes		**300**	**340**	**400**	**420**	**450**	**520**
Cooling Capacity	(1)	kW	296	343	401	419	446	514
Power Input	(1)	kW	96,4	115	128	137	147	169
EER	(1)	kW/kW	3,07	2,98	3,13	3,07	3,04	3,04
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	4,01	4,04	4,13	4,05	4,05	4,28
Cooling Capacity	(2)	kW	275	316	374	383	398	462
EER	(2)	kW/kW	2,36	2,28	2,42	2,31	2,22	2,19
Cooling Capacity	(3)	kW	271	302	367	374	385	449
EER	(3)	kW/kW	2,25	2,18	2,30	2,17	2,06	2,03
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	12,8	14,9	17,4	18,2	19,3	22,2
Evaporator pressure drop	(1)	kPa	90,1	101	73,3	79,4	99,7	109
Water flow rate	(2)	l/s	11,9	13,7	16,2	16,6	17,2	20,0
Evaporator pressure drop	(2) (5)	kPa	79,0	87,6	64,6	67,5	81,4	90,0
Evaporator water volume		lt	89	89	181	175	164	164
Minimum water rate	(4)	l/s	3,3	3,8	5,0	5,0	4,9	5,6
Sound Power	(1) (6)	dB(A)	97	97	98	98	98	98
Sound Pressure @ 1 meter	(1) (7)	dB(A)	77	77	78	78	78	78
Fan type		-	Direct Propeller					
Fan diameter		mm	850					
Fan rotational speed		RPM	900					
Fan motor / control		-	AC – On/Off					
Number of fans		n	6	6	8	8	8	8
Power input fans		kW	15,6	15,6	20,8	20,8	20,8	20,8
Air flow	(8)	l/s	34167	34167	45556	45556	45556	45556
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	3118 / 3121	3120 / 3122	3122 / 3122	3122 / 3123	3123 / 3123	F3AS / F3AS
Oil charge		lt	26	26	26	26	26	34
Refrigerant Charge		kg	42	42	56	56	56	56
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	3300	3300	4200	4200	4200	4200
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	3061	3061	4104	4114	4124	4724
Unit weight - operation		kg	3161	3161	4274	4284	4294	4894
Water connection size		mm	114,3	114,3	139,7	139,7	139,7	139,7
Water connection type			Victaulic					

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
(5) - not including filter pressure drop. The installation of the filter is mandatory.
(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
(8) – referred to unit with free discharge on condenser fans.
(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.
The above data are referred the unit installed in compliancy with installation prescription.
All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

EWAD~M- SS C + OPT76b - SOUND PROOF SYSTEM (COMPRESSOR)

MODEL	notes		550	590	680	740	830	920
Cooling Capacity	(1)	kW	550	588	680	740	826	917
Power Input	(1)	kW	177	186	215	242	270	309
EER	(1)	kW/kW	3,1	3,16	3,16	3,06	3,06	2,97
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	4,28	4,29	4,25	4,24	4,21	4,17
Cooling Capacity	(2)	kW	500	541	617	664	736	819
EER	(2)	kW/kW	2,28	2,37	2,39	2,28	2,29	2,18
Cooling Capacity	(3)	kW	488	529	602	625	693	757
EER	(3)	kW/kW	2,12	2,22	2,25	2,15	2,17	2,05
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	23,8	25,5	29,4	32,1	35,8	39,7
Evaporator pressure drop	(1)	kPa	87,3	98,6	87,2	102	93,2	82,6
Water flow rate	(2)	l/s	21,7	23,4	26,7	28,8	31,9	35,5
Evaporator pressure drop	(2) (5)	kPa	73,8	84,9	73,3	83,7	75,7	67,3
Evaporator water volume		lt	170	170	298	298	300	330
Minimum water rate	(4)	l/s	6,6	6,6	8,2	8,2	9,7	11,9
Sound Power	(1) (6)	dB(A)	99	100	100	100	100	101
Sound Pressure @ 1 meter	(1) (7)	dB(A)	79	79	79	79	79	79
Fan type		-	Direct Propeller					
Fan diameter		mm	850					
Fan rotational speed		RPM	900					
Fan motor / control		-	AC – On/Off					
Number of fans		n	10	12	12	12	12	14
Power input fans		kW	26	31,2	31,2	31,2	31,2	36,4
Air flow	(8)	l/s	56944	68333	68333	68333	68333	79722
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	F3AS / F3AL	F3AL / F3AL	F3BS / F3AL	F3BL / F3AL	F3BL / F3BS	F4AL / F3AL
Oil charge		lt	34	34	36	36	38	42
Refrigerant Charge		kg	70	70	84	84	84	98
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	5100	6000	6000	6000	6000	6900
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	4860	5387	5527	5527	5525	5858
Unit weight - operation		kg	5030	5557	5825	5825	5825	6188
Water connection size		mm	139,7	139,7	168,0	168,0	168,0	168,0
Water connection type			Victaulic					

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
(5) - not including filter pressure drop. The installation of the filter is mandatory.
(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
(8) – referred to unit with free discharge on condenser fans.
(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.
The above data are referred to the unit without additional optional.
The above data are referred the unit installed in compliancy with installation prescription.
All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

EWAD~M- SS C + OPT76b - SOUND PROOF SYSTEM (COMPRESSOR)								
MODEL	notes		**970**	**H10**	**H11**	**C13**	**H13**	**C14**
Cooling Capacity	(1)	kW	997	1086	1183	1265	1350	1402
Power Input	(1)	kW	323	363	390	422	456	488
EER	(1)	kW/kW	3,09	2,99	3,03	3	2,96	2,88
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	4,24	4,18	4,13	3,86	4,15	4,14
Cooling Capacity	(2)	kW	895	964	1054	1132	1170	1181
EER	(2)	kW/kW	2,33	2,23	2,27	2,25	2,21	2,12
Cooling Capacity	(3)	kW	854	872	973	1047	1059	1055
EER	(3)	kW/kW	2,20	2,11	2,14	2,13	2,09	2,02
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	43,2	47	51,2	54,8	58,5	60,7
Evaporator pressure drop	(1)	kPa	106	108	79,0	83,6	100	107
Water flow rate	(2)	l/s	38,8	41,8	45,7	49,0	50,7	51,2
Evaporator pressure drop	(2) (5)	kPa	87,2	87,1	64,2	68,5	77,5	78,9
Evaporator water volume		lt	283	461	485	492	492	492
Minimum water rate	(4)	l/s	11,7	11,5	14,1	14,1	14,1	14,1
Sound Power	(1) (6)	dB(A)	101	104	104	104	101	102
Sound Pressure @ 1 meter	(1) (7)	dB(A)	80	81	81	81	80	80
Fan type		-	Direct propeller					
Fan diameter		mm	850					
Fan rotational speed		RPM	900					
Fan motor / control		-	AC – On/Off					
Number of fans		n	16	16	18	20	20	20
Power input fans		kW	41,6	41,6	46,8	52	52	52
Air flow	(8)	l/s	91111	91111	102500	113889	113889	113889
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	F4AS / F3BL	F4AL / F3BL	F4AL / F4AS	F4AL / F4AL	F4AXL/F4AL	F4AXL/F4AXL
Oil charge		lt	44	44	50	50	50	50
Refrigerant Charge		kg	98	98	126	112	126	140
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	7800	7800	8700	9600	9600	9600
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	6936	6520	7669	8386	8386	8386
Unit weight - operation		kg	7219	6981	8154	8878	8878	8878
Water connection size		mm	168,0	219,1	219,1	219,1	219,1	219,1
Water connection type			Victaulic					

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.

(5) - not including filter pressure drop. The installation of the filter is mandatory.

(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614

(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744

(8) – referred to unit with free discharge on condenser fans.

(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value

The above data are referred to the unit without additional optional.

The above data are referred the unit installed in compliancy with installation prescription.

All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

EWAD~M- SS C + OPT76b - SOUND PROOF SYSTEM (COMPRESSOR)

MODEL	notes		H17	C19	H19	C21	C22
Cooling Capacity	(1)	kW	1806	1910	1973	2112	2198
Power Input	(1)	kW	570	673	665	712	745
EER	(1)	kW/kW	3,17	2,84	2,97	2,97	2,95
Minimum capacity		%	9	9	9	9	9
IPLV	(1)	kW/kW	4,23	4,21	4,08	4,14	3,98
Cooling Capacity	(2)	kW	1621	1452	1734	1783	1812
EER	(2)	kW/kW	2,41	2,13	2,22	2,20	2,18
Cooling Capacity	(3)	kW	1536	1280	1587	1600	1622
EER	(3)	kW/kW	2,27	2,02	2,10	2,09	2,08
Evaporator type		-	Direct Expansion – Shell & Tubes				
Water flow rate	(1)	l/s	78,3	82,8	85,5	91,5	95,2
Evaporator pressure drop	(1)	kPa	74,9	82,8	111	99,2	107
Water flow rate	(2)	l/s	70,2	62,9	75,1	77,3	78,5
Evaporator pressure drop	(2) (5)	kPa	61,7	50,5	88,1	73,2	75,3
Evaporator water volume		lt	522	522	522	522	522
Minimum water rate	(4)	l/s	24,2	32,4	18,9	32,4	19,3
Sound Power	(1) (6)	dB(A)	104	103	104	104	104
Sound Pressure @ 1 meter	(1) (7)	dB(A)	81	80	81	81	81
Fan type		-	Direct propeller				
Fan diameter		mm	850				
Fan rotational speed		RPM	900				
Fan motor / control		-	AC – On/Off				
Number of fans		n	30	24	30	30	30
Power input fans		kW	78	62,4	78	78	78
Air flow	(8)	l/s	170833	136667	170833	170833	170833
Refrigerant circuits		n	3	3	3	3	3
Compressor type		-	Single Screw				
Capacity control		-	Stepless				
Comp model per circuit		-	F4AL / F4AS / F4AS	F4AL / F4AL / F4AL	F4AXL/F4AL /F4AL	F4AXL/F4AXL /F4AL	F4AXL/F4AXL /F4AXL
Oil charge		lt	75	75	75	75	75
Refrigerant Charge		kg	210	168	182	196	210
Casing material		-	Galvanized Steel Sheet				
Color		-	Ivory White				
Unit length		mm	14100	11400	14100	14100	14100
Unit width		mm	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540
Unit weight - shipping		kg	10931	10931	10931	10931	10931
Unit weight - operation		kg	11453	11453	11453	11453	11453
Water connection size		mm	273,0	273,0	273,0	273,0	273,0
Water connection type			Victaulic				

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
(5) - not including filter pressure drop. The installation of the filter is mandatory.
(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
(8) – referred to unit with free discharge on condenser fans.
(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value

The above data are referred to the unit without additional optional.
The above data are referred the unit installed in compliancy with installation prescription.
All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

AHRI CERTIFIED™ www.ahridirectory.org

EWAD~M- SS C + OPT160a - 100 Pa ESP FANS

MODEL	notes		300	340	400	420	450	520
Cooling Capacity	(1)	kW	294	340	398	416	441	507
Power Input	(1)	kW	98,8	118	131	140	151	174
EER	(1)	kW/kW	2,98	2,87	3,04	2,97	2,93	2,91
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	3,92	3,93	4,03	3,94	3,95	4,16
Cooling Capacity	(2)	kW	272	304	370	377	389	451
EER	(2)	kW/kW	2,29	2,21	2,34	2,21	2,11	2,06
Cooling Capacity	(3)	kW	266	286	363	367	375	421
EER	(3)	kW/kW	2,17	2,11	2,23	2,08	1,96	1,92
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	12,7	14,7	17,2	18,0	19,1	22,0
Evaporator pressure drop	(1)	kPa	88,9	99,6	72,3	78,2	98,0	107
Water flow rate	(2)	l/s	11,8	13,2	16,0	16,3	16,9	19,5
Evaporator pressure drop	(2) (5)	kPa	77,3	81,5	63,3	65,5	78,1	86,1
Evaporator water volume		lt	89	89	181	175	164	164
Minimum water rate	(4)	l/s	3,3	3,8	5,0	5,0	4,9	5,6
Sound Power	(1) (6)	dB(A)	99	99	100	100	100	102
Sound Pressure @ 1 meter	(1) (7)	dB(A)	80	80	80	80	80	82
Fan type		-	Direct Propeller					
Fan diameter		mm	850					
Fan rotational speed		RPM	900					
Fan motor / control		-	AC – On/Off					
Number of fans		n	6	6	8	8	8	8
Power input fans		kW	15,6	15,6	20,8	20,8	20,8	20,8
Air flow	(8)	l/s	30000	30000	40000	40000	40000	40000
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	3118 / 3121	3120 / 3122	3122 / 3122	3122 / 3123	3123 / 3123	F3AS / F3AS
Oil charge		lt	26	26	26	26	26	34
Refrigerant Charge		kg	42	42	56	56	56	56
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	3300	3300	4200	4200	4200	4200
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	3061	3061	4104	4114	4124	4724
Unit weight - operation		kg	3161	3161	4274	4284	4294	4894
Water connection size		mm	114,3	114,3	139,7	139,7	139,7	139,7
Water connection type			Victaulic					

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.

(5) - not including filter pressure drop. The installation of the filter is mandatory.

(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614

(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744

(8) - Referred to unit with to unit operation with 100 Pa External Static Pressure (ESP) on the condenser fans.

(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.

The above data are referred the unit installed in compliancy with installation prescription.

All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

AHRI CERTIFIED™ www.ahridirectory.org

EWAD~M- SS C + OPT160a - 100 Pa ESP FANS								
MODEL	notes		**550**	**590**	**680**	**740**	**830**	**920**
Cooling Capacity	(1)	kW	544	583	673	730	814	906
Power Input	(1)	kW	182	190	220	249	278	318
EER	(1)	kW/kW	2,99	3,07	3,06	2,93	2,93	2,85
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	4,16	4,26	4,17	4,12	4,07	4,07
Cooling Capacity	(2)	kW	491	534	606	631	699	779
EER	(2)	kW/kW	2,16	2,27	2,28	2,18	2,18	2,08
Cooling Capacity	(3)	kW	467	520	585	586,5	649	695
EER	(3)	kW/kW	2,03	2,12	2,06	2,14	2,07	1,98
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	23,6	25,3	29,2	31,6	35,3	39,2
Evaporator pressure drop	(1)	kPa	85,8	97,2	85,6	99,2	90,8	80,8
Water flow rate	(2)	l/s	21,3	23,1	26,2	27,4	30,3	33,8
Evaporator pressure drop	(2) (5)	kPa	71,3	82,8	70,8	76,3	69,0	61,6
Evaporator water volume		lt	170	170	298	298	300	330
Minimum water rate	(4)	l/s	6,6	6,6	8,2	8,2	9,7	11,9
Sound Power	(1) (6)	dB(A)	102	103	102	102	101	103
Sound Pressure @ 1 meter	(1) (7)	dB(A)	82	82	81	81	80	81
Fan type		-	Direct Propeller					
Fan diameter		mm	850					
Fan rotational speed		RPM	900					
Fan motor / control		-	AC – On/Off					
Number of fans		n	10	12	12	12	12	14
Power input fans		kW	26	31,2	31,2	31,2	31,2	36,4
Air flow	(8)	l/s	50000	60000	60000	60000	60000	70000
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	F3AS / F3AL	F3AL / F3AL	F3BS / F3AL	F3BL / F3AL	F3BL / F3BS	F4AL / F3AL
Oil charge		lt	34	34	36	36	38	42
Refrigerant Charge		kg	70	70	84	84	84	98
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	5100	6000	6000	6000	6000	6900
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	4860	5387	5527	5527	5525	5858
Unit weight - operation		kg	5030	5557	5825	5825	5825	6188
Water connection size		mm	139,7	139,7	168,0	168,0	168,0	168,0
Water connection type			Victaulic					

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.

(5) - not including filter pressure drop. The installation of the filter is mandatory.

(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614

(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744

(8) - Referred to unit with to unit operation with 100 Pa External Static Pressure (ESP) on the condenser fans.

(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.

The above data are referred the unit installed in compliancy with installation prescription.

All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

EWAD~M- SS C + OPT160a - 100 Pa ESP FANS

MODEL	notes		970	H10	H11	C13	H13	C14
Cooling Capacity	(1)	kW	986	1072	1168	1251	1333	1382
Power Input	(1)	kW	331	373	400	432	468	502
EER	(1)	kW/kW	2,98	2,88	2,92	2,90	2,85	2,75
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	4,13	4,07	4,02	3,77	4,07	4,06
Cooling Capacity	(2)	kW	870	899	1006	1079	1097	1089
EER	(2)	kW/kW	2,24	2,14	2,17	2,16	2,12	2,05
Cooling Capacity	(3)	kW	811	805	899	965,9	983,9	980,7
EER	(3)	kW/kW	2,12	2,03	2,06	2,05	2,02	1,95
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	42,7	46,4	50,6	54,2	57,7	59,9
Evaporator pressure drop	(1)	kPa	104	105	77,3	81,9	98,0	105
Water flow rate	(2)	l/s	37,7	39,0	43,6	46,8	47,5	47,2
Evaporator pressure drop	(2) (5)	kPa	83,0	76,8	59,1	62,8	69,0	68,2
Evaporator water volume		lt	283	461	485	492	492	492
Minimum water rate	(4)	l/s	11,7	11,5	14,1	14,1	14,1	14,1
Sound Power	(1) (6)	dB(A)	102	102	103	103	103	103
Sound Pressure @ 1 meter	(1) (7)	dB(A)	81	81	81	81	81	81
Fan type		-	Direct propeller					
Fan diameter		mm	850					
Fan rotational speed		RPM	900					
Fan motor / control		-	AC – On/Off					
Number of fans		n	16	16	18	20	20	20
Power input fans		kW	41,6	41,6	46,8	52	52	52
Air flow	(8)	l/s	80000	80000	90000	100000	100000	100000
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	F4AS / F3BL	F4AL / F3BL	F4AL / F4AS	F4AL / F4AL	F4AXL/F4AL	F4AXL/F4AXL
Oil charge		lt	44	44	50	50	50	50
Refrigerant Charge		kg	98	98	126	112	126	140
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	7800	7800	8700	9600	9600	9600
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	6936	6520	7669	8386	8386	8386
Unit weight - operation		kg	7219	6981	8154	8878	8878	8878
Water connection size		mm	168,0	219,1	219,1	219,1	219,1	219,1
Water connection type			Victaulic					

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.

(5) - not including filter pressure drop. The installation of the filter is mandatory.

(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614

(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744

(8) – Referred to unit with to unit operation with 100 Pa External Static Pressure (ESP) on the condenser fans.

(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.

The above data are referred the unit installed in compliancy with installation prescription.

All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

AHRI CERTIFIED™ www.ahridirectory.org

EWAD~M- SS C + OPT160a - 100 Pa ESP FANS							
MODEL	notes		**H17**	**C19**	**H19**	**C21**	**C22**
Cooling Capacity	(1)	kW	1793	1886	1956	2089	2176
Power Input	(1)	kW	579	687	677	726	759
EER	(1)	kW/kW	3,10	2,74	2,89	2,88	2,87
Minimum capacity		%	9	9	9	9	9
IPLV	(1)	kW/kW	4,15	4,13	4,03	4,21	3,90
Cooling Capacity	(2)	kW	1572	1381	1662	1685	1713
EER	(2)	kW/kW	2,34	2,08	2,16	2,15	2,13
Cooling Capacity	(3)	kW	1470	1211	1505	1513	1534
EER	(3)	kW/kW	2,21	1,98	2,05	2,05	2,03
Evaporator type		-	Direct Expansion – Shell & Tubes				
Water flow rate	(1)	l/s	77,7	81,7	84,8	90,5	94,3
Evaporator pressure drop	(1)	kPa	73,9	80,9	109	97,3	105
Water flow rate	(2)	l/s	68,1	59,8	72,0	73,0	74,2
Evaporator pressure drop	(2) (5)	kPa	58,3	46,2	81,6	66,1	68,1
Evaporator water volume		lt	522	522	522	522	522
Minimum water rate	(4)	l/s	24,2	32,4	18,9	32,4	19,3
Sound Power	(1) (6)	dB(A)	105	104	105	105	105
Sound Pressure @ 1 meter	(1) (7)	dB(A)	81	81	81	82	82
Fan type		-	Direct propeller				
Fan diameter		mm	850				
Fan rotational speed		RPM	900				
Fan motor / control		-	AC – On/Off				
Number of fans		n	30	24	30	30	30
Power input fans		kW	78	62,4	78	78	78
Air flow	(8)	l/s	150000	120000	150000	150000	150000
Refrigerant circuits		n	3	3	3	3	3
Compressor type		-	Single Screw				
Capacity control		-	Stepless				
Comp model per circuit		-	F4AL/F4AS /F4AS	F4AL/F4AL /F4AL	F4AXL/F4AL /F4AL	F4AXL/F4AXL /F4AL	F4AXL/ F4AXL /F4AXL
Oil charge		lt	75	75	75	75	75
Refrigerant Charge		kg	210	168	182	196	210
Casing material		-	Galvanized Steel Sheet				
Color		-	Ivory White				
Unit length		mm	14100	11400	14100	14100	14100
Unit width		mm	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540
Unit weight - shipping		kg	10931	10931	10931	10931	10931
Unit weight - operation		kg	11453	11453	11453	11453	11453
Water connection size		mm	273,0	273,0	273,0	273,0	273,0
Water connection type			Victaulic				

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
(5) - not including filter pressure drop. The installation of the filter is mandatory.
(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
(8) – referred to unit with to unit operation with 100 Pa External Static Pressure (ESP) on the condenser fans.
(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.
The above data are referred the unit installed in compliancy with installation prescription.
All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

AHRI CERTIFIED™ www.ahridirectory.org

EWAD~M- SS C + OPT145 - EC MOTORS FANS								
MODEL	notes		**300**	**340**	**400**	**420**	**450**	**520**
Cooling Capacity	(1)	kW	297	344	402	420	447	516
Power Input	(1)	kW	98,4	117	131	139	149	171
EER	(1)	kW/kW	3,02	2,95	3,08	3,02	3,00	3,02
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	4,51	4,42	4,50	4,34	4,34	4,71
Cooling Capacity	(2)	kW	277	318	375	385	401	466
EER	(2)	kW/kW	2,34	2,27	2,39	2,29	2,21	2,20
Cooling Capacity	(3)	kW	272	307	369	376	389	453
EER	(3)	kW/kW	2,23	2,17	2,28	2,16	2,06	2,05
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	12,9	14,9	17,4	18,2	19,4	22,3
Evaporator pressure drop	(1)	kPa	90,6	102	73,7	79,8	100	110
Water flow rate	(2)	l/s	12,0	13,8	16,2	16,7	17,4	20,2
Evaporator pressure drop	(2) (5)	kPa	79,6	88,5	64,9	68,1	82,6	91,4
Evaporator water volume		lt	89	89	181	175	164	164
Minimum water rate	(4)	l/s	3,3	3,8	5,0	5,0	4,9	5,6
Sound Power	(1) (6)	dB(A)	99	99	100	100	100	102
Sound Pressure @ 1 meter	(1) (7)	dB(A)	80	80	80	80	80	82
Fan type		-	Direct Propeller					
Fan diameter		mm	800					
Fan rotational speed		RPM	1090					
Fan motor / control		-	EC – Variable Speed					
Number of fans		n	6	6	8	8	8	8
Power input fans		kW	17,9	17,9	23,8	23,8	23,8	23,8
Air flow	(8)	l/s	36167	36167	48222	48222	48222	48222
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	3118 / 3121	3120 / 3122	3122 / 3122	3122 / 3123	3123 / 3123	F3AS / F3AS
Oil charge		lt	26	26	26	26	26	34
Refrigerant Charge		kg	42	42	56	56	56	56
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	3300	3300	4200	4200	4200	4200
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	3061	3061	4104	4114	4124	4724
Unit weight - operation		kg	3161	3161	4274	4284	4294	4894
Water connection size		mm	114,3	114,3	139,7	139,7	139,7	139,7
Water connection type			Victaulic					

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.

(5) - not including filter pressure drop. The installation of the filter is mandatory.

(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614

(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744

(8) – referred to unit with free discharge on condenser fans.

(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.

The above data are referred to the unit installed in compliancy with installation prescription.

All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

EWAD~M- SS C + OPT145 - EC MOTORS FANS								
MODEL	notes		**550**	**590**	**680**	**740**	**830**	**920**
Cooling Capacity	(1)	kW	552	590	682	743	830	921
Power Input	(1)	kW	180	190	218	245	273	313
EER	(1)	kW/kW	3,06	3,11	3,12	3,03	3,04	2,95
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	4,61	4,78	4,61	4,50	4,42	4,56
Cooling Capacity	(2)	kW	504	544	621	670	743	826
EER	(2)	kW/kW	2,27	2,35	2,38	2,28	2,30	2,19
Cooling Capacity	(3)	kW	491	532	606	641,4	711	782
EER	(3)	kW/kW	2,12	2,20	2,24	2,14	2,17	2,05
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	23,9	25,5	29,6	32,2	36,0	39,9
Evaporator pressure drop	(1)	kPa	87,9	99,1	87,8	102	94,0	83,3
Water flow rate	(2)	l/s	21,8	23,6	26,9	29,0	32,2	35,8
Evaporator pressure drop	(2) (5)	kPa	74,7	85,7	74,2	84,9	77,0	68,3
Evaporator water volume		lt	170	170	298	298	300	330
Minimum water rate	(4)	l/s	6,6	6,6	8,2	8,2	9,7	11,9
Sound Power	(1) (6)	dB(A)	102	103	102	102	101	103
Sound Pressure @ 1 meter	(1) (7)	dB(A)	82	82	81	81	80	81
Fan type		-	Direct Propeller					
Fan diameter		mm	800					
Fan rotational speed		RPM	1090					
Fan motor / control		-	EC – Variable Speed					
Number of fans		n	10	12	12	12	12	14
Power input fans		kW	29,8	35,8	35,8	35,8	35,8	41,7
Air flow	(8)	l/s	60278	72333	72333	72333	72333	84389
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	F3AS / F3AL	F3AL / F3AL	F3BS / F3AL	F3BL / F3AL	F3BL / F3BS	F4AL / F3AL
Oil charge		lt	34	34	36	36	38	42
Refrigerant Charge		kg	70	70	84	84	84	98
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	5100	6000	6000	6000	6000	6900
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	4860	5387	5527	5527	5525	5858
Unit weight - operation		kg	5030	5557	5825	5825	5825	6188
Water connection size		mm	139,7	139,7	168,0	168,0	168,0	168,0
Water connection type			Victaulic					

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.

(5) - not including filter pressure drop. The installation of the filter is mandatory.

(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614

(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744

(8) – referred to unit with free discharge on condenser fans.

(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.

The above data are referred to the unit installed in compliancy with installation prescription.

All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

EWAD~M- SS C + OPT145 - EC MOTORS FANS

MODEL	notes		970	H10	H11	C13	H13	C14
Cooling Capacity	(1)	kW	1000	1091	1188	1270	1356	1409
Power Input	(1)	kW	328	367	395	428	461	492
EER	(1)	kW/kW	3,05	2,97	3,00	2,97	2,94	2,86
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	4,52	4,45	4,41	4,14	4,42	4,37
Cooling Capacity	(2)	kW	901	972	1062	1140	1192	1216
EER	(2)	kW/kW	2,32	2,23	2,27	2,25	2,20	2,12
Cooling Capacity	(3)	kW	873	899	1006	1078	1092	1089
EER	(3)	kW/kW	2,19	2,10	2,13	2,12	2,08	2,01
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	43,3	47,2	51,5	55,0	58,8	61,0
Evaporator pressure drop	(1)	kPa	107	109	79,6	84,2	101	108
Water flow rate	(2)	l/s	39,0	42,1	46,0	49,4	51,6	52,7
Evaporator pressure drop	(2) (5)	kPa	88,3	88,4	65,1	69,3	80,1	83,1
Evaporator water volume		lt	283	461	485	492	492	492
Minimum water rate	(4)	l/s	11,7	11,5	14,1	14,1	14,1	14,1
Sound Power	(1) (6)	dB(A)	102	102	103	103	103	103
Sound Pressure @ 1 meter	(1) (7)	dB(A)	81	81	81	81	81	81
Fan type		-	Direct Propeller					
Fan diameter		mm	800					
Fan rotational speed		RPM	1090					
Fan motor / control		-	EC – Variable Speed					
Number of fans		n	16	16	18	20	20	20
Power input fans		kW	47,7	47,7	53,6	59,6	59,6	59,6
Air flow	(8)	l/s	96444	96444	108500	120556	120556	120556
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	F4AS / F3BL	F4AL / F3BL	F4AL / F4AS	F4AL / F4AL	F4AXL/F4AL	F4AXL/F4AXL
Oil charge		lt	44	44	50	50	50	50
Refrigerant Charge		kg	98	98	126	112	126	140
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	7800	7800	8700	9600	9600	9600
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	6936	6520	7669	8386	8386	8386
Unit weight - operation		kg	7219	6981	8154	8878	8878	8878
Water connection size		mm	168,0	219,1	219,1	219,1	219,1	219,1
Water connection type			Victaulic					

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.

(5) - not including filter pressure drop. The installation of the filter is mandatory.

(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614

(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744

(8) – referred to unit with free discharge on condenser fans.

(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.

The above data are referred to the unit installed in compliancy with installation prescription.

All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

AHRI CERTIFIED™ www.ahridirectory.org

EWAD~M- SS C + OPT145 - EC MOTORS FANS							
MODEL	notes		**H17**	**C19**	**H19**	**C21**	**C22**
Cooling Capacity	(1)	kW	1813	1923	1981	2122	2210
Power Input	(1)	kW	580	677	673	719	751
EER	(1)	kW/kW	3,13	2,84	2,94	2,95	2,94
Minimum capacity		%	9	9	9	9	9
IPLV	(1)	kW/kW	4,71	4,46	4,49	4,51	4,23
Cooling Capacity	(2)	kW	1632	1501	1760	1825	1868
EER	(2)	kW/kW	2,39	2,12	2,21	2,20	2,18
Cooling Capacity	(3)	kW	1559	1329	1635	1644	1663
EER	(3)	kW/kW	2,26	2,01	2,09	2,08	2,07
Evaporator type		-	Direct Expansion – Shell & Tubes				
Water flow rate	(1)	l/s	78,5	83,3	85,8	91,9	95,7
Evaporator pressure drop	(1)	kPa	75,4	83,8	112	100	108
Water flow rate	(2)	l/s	70,7	65,0	76,2	79,0	80,9
Evaporator pressure drop	(2) (5)	kPa	62,4	53,7	90,4	76,3	79,5
Evaporator water volume		lt	522	522	522	522	522
Minimum water rate	(4)	l/s	24,2	32,4	18,9	32,4	19,3
Sound Power	(1) (6)	dB(A)	105	104	105	105	105
Sound Pressure @ 1 meter	(1) (7)	dB(A)	81	81	81	82	82
Fan type		-	Direct Propeller				
Fan diameter		mm	800				
Fan rotational speed		RPM	1090				
Fan motor / control		-	EC – Variable Speed				
Number of fans		n	30	24	30	30	30
Power input fans		kW	89,4	71,5	89,4	89,4	89,4
Air flow	(8)	l/s	180833	144667	180833	180833	180833
Refrigerant circuits		n	3	3	3	3	3
Compressor type		-	Single Screw				
Capacity control		-	Stepless				
Comp model per circuit		-	F4AL/F4AS /F4AS	F4AL/F4AL /F4AL	F4AXL/F4AL /F4AL	F4AXL/F4AXL /F4AL	F4AXL/ F4AXL /F4AXL
Oil charge		lt	75	75	75	75	75
Refrigerant Charge		kg	210	168	182	196	210
Casing material		-	Galvanized Steel Sheet				
Color		-	Ivory White				
Unit length		mm	14100	11400	14100	14100	14100
Unit width		mm	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540
Unit weight - shipping		kg	10931	10931	10931	10931	10931
Unit weight - operation		kg	11453	11453	11453	11453	11453
Water connection size		mm	273,0	273,0	273,0	273,0	273,0
Water connection type			Victaulic				

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
(5) - not including filter pressure drop. The installation of the filter is mandatory.
(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
(8) – referred to unit with free discharge on condenser fans.
(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.
The above data are referred to the unit installed in compliancy with installation prescription.
All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

EWAD~M- SS C + OPT161 - 200 Pa ESP FANS								
MODEL	notes		**300**	**340**	**400**	**420**	**450**	**520**
Cooling Capacity	(1)	kW	296	342	400	419	445	512
Power Input	(1)	kW	106	125	141	149	160	182
EER	(1)	kW/kW	2,79	2,74	2,85	2,8	2,79	2,81
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	4,36	4,28	4,32	4,17	4,22	4,47
Cooling Capacity	(2)	kW	275	315	373	382	396	460
EER	(2)	kW/kW	2,18	2,12	2,23	2,13	2,06	2,05
Cooling Capacity	(3)	kW	270	299	367	372	383	446
EER	(3)	kW/kW	2,08	2,04	2,13	2,01	1,92	1,90
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	12,8	14,8	17,4	18,1	19,3	22,2
Evaporator pressure drop	(1)	kPa	89,9	101	73,1	79,2	99,4	108
Water flow rate	(2)	l/s	11,9	13,7	16,2	16,5	17,2	19,9
Evaporator pressure drop	(2) (5)	kPa	78,7	87,1	64,3	67,1	80,8	89,3
Evaporator water volume		lt	89	89	181	175	164	164
Minimum water rate	(4)	l/s	3,3	3,8	5,0	5,0	4,9	5,6
Sound Power	(1) (6)	dB(A)	99	99	100	100	100	102
Sound Pressure @ 1 meter	(1) (7)	dB(A)	80	80	80	80	80	82
Fan type		-	Direct Propeller					
Fan diameter		mm	800					
Fan rotational speed		RPM	1430					
Fan motor / control		-	EC – Variable Speed					
Number of fans		n	6	6	8	8	8	8
Power input fans		kW	24,0	24,0	32,0	32,0	32,0	32,0
Air flow	(8)	l/s	35383	35383	47178	47178	47178	47178
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	3118 / 3121	3120 / 3122	3122 / 3122	3122 / 3123	3123 / 3123	F3AS / F3AS
Oil charge		lt	26	26	26	26	26	34
Refrigerant Charge		kg	42	42	56	56	56	56
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	3300	3300	4200	4200	4200	4200
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	3061	3061	4104	4114	4124	4724
Unit weight - operation		kg	3161	3161	4274	4284	4294	4894
Water connection size		mm	114,3	114,3	139,7	139,7	139,7	139,7
Water connection type			Victaulic					

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
(5) - not including filter pressure drop. The installation of the filter is mandatory.
(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
(8) – referred unit with to unit operation with 200 Pa External Static Pressure (ESP) on the condenser fans.
(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value

The above data are referred to the unit without additional optional.
The above data are referred the unit installed in compliancy with installation prescription.
All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

EWAD~M- SS C + OPT161 - 200 Pa ESP FANS								
MODEL	notes		**550**	**590**	**680**	**740**	**830**	**920**
Cooling Capacity	(1)	kW	549	587	679	738	824	918
Power Input	(1)	kW	194	205	234	261	290	330
EER	(1)	kW/kW	2,84	2,86	2,9	2,82	2,84	2,78
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	4,39	4,64	4,43	4,31	4,29	4,42
Cooling Capacity	(2)	kW	499	540	615	661	732	820
EER	(2)	kW/kW	2,11	2,18	2,21	2,12	2,15	2,07
Cooling Capacity	(3)	kW	486	528	599	617	684	763
EER	(3)	kW/kW	1,97	2,05	2,08	2,00	2,03	1,95
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	23,8	25,4	29,4	32,0	35,7	39,8
Evaporator pressure drop	(1)	kPa	87,1	98,3	86,9	101	92,8	82,7
Water flow rate	(2)	l/s	21,6	23,4	26,6	28,7	31,7	35,5
Evaporator pressure drop	(2) (5)	kPa	73,3	84,5	72,8	83,0	75,0	67,5
Evaporator water volume		lt	170	170	298	298	300	330
Minimum water rate	(4)	l/s	6,6	6,6	8,2	8,2	9,7	11,9
Sound Power	(1) (6)	dB(A)	102	103	102	102	101	103
Sound Pressure @ 1 meter	(1) (7)	dB(A)	82	82	81	81	80	81
Fan type		-	Direct Propeller					
Fan diameter		mm	800					
Fan rotational speed		RPM	1430					
Fan motor / control		-	EC – Variable Speed					
Number of fans		n	10	12	12	12	12	14
Power input fans		kW	40,0	48,0	48,0	48,0	48,0	56,0
Air flow	(8)	l/s	58972	70767	70767	70767	70767	82561
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	F3AS / F3AL	F3AL / F3AL	F3BS / F3AL	F3BL / F3AL	F3BL / F3BS	F4AL / F3AL
Oil charge		lt	34	34	36	36	38	42
Refrigerant Charge		kg	70	70	84	84	84	98
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	5100	6000	6000	6000	6000	6900
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	4860	5387	5527	5527	5525	5858
Unit weight - operation		kg	5030	5557	5825	5825	5825	6188
Water connection size		mm	139,7	139,7	168,0	168,0	168,0	168,0
Water connection type			Victaulic					

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.

(5) - not including filter pressure drop. The installation of the filter is mandatory.

(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614

(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744

(8) – referred to unit with to unit operation with 200 Pa External Static Pressure (ESP) on the condenser fans.

(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.

The above data are referred the unit installed in compliancy with installation prescription.

All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

AHRI CERTIFIED™ www.ahridirectory.org

EWAD~M- SS C + OPT161 - 200 Pa ESP FANS								
MODEL	notes		**970**	**H10**	**H11**	**C13**	**H13**	**C14**
Cooling Capacity	(1)	kW	999	1089	1186	1268	1354	1406
Power Input	(1)	kW	346	385	416	450	484	515
EER	(1)	kW/kW	2,89	2,83	2,85	2,82	2,80	2,73
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	4,42	4,31	4,29	4,03	4,29	4,26
Cooling Capacity	(2)	kW	898	969	1059	1137	1184	1204
EER	(2)	kW/kW	2,21	2,13	2,17	2,15	2,11	2,03
Cooling Capacity	(3)	kW	864	890	992	1067	1081	1077
EER	(3)	kW/kW	2,09	2,01	2,04	2,02	1,99	1,93
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	43,3	47,2	51,4	54,9	58,7	60,9
Evaporator pressure drop	(1)	kPa	106	108	79,4	84,0	101	108
Water flow rate	(2)	l/s	38,9	42,0	45,9	49,3	51,3	52,2
Evaporator pressure drop	(2) (5)	kPa	87,9	87,9	64,8	69,0	79,2	81,6
Evaporator water volume		lt	283	461	485	492	492	492
Minimum water rate	(4)	l/s	11,7	11,5	14,1	14,1	14,1	14,1
Sound Power	(1) (6)	dB(A)	102	102	103	103	103	103
Sound Pressure @ 1 meter	(1) (7)	dB(A)	81	81	81	81	81	81
Fan type		-	Direct Propeller					
Fan diameter		mm	800					
Fan rotational speed		RPM	1430					
Fan motor / control		-	EC – Variable Speed					
Number of fans		n	16	16	18	20	20	20
Power input fans		kW	64,0	64,0	72,0	80,0	80,0	80,0
Air flow	(8)	l/s	94356	94356	106150	117944	117944	117944
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	F4AS / F3BL	F4AL / F3BL	F4AL / F4AS	F4AL / F4AL	F4AXL/F4AL	F4AXL/F4AXL
Oil charge		lt	44	44	50	50	50	50
Refrigerant Charge		kg	98	98	126	112	126	140
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	7800	7800	8700	9600	9600	9600
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	6936	6520	7669	8386	8386	8386
Unit weight - operation		kg	7219	6981	8154	8878	8878	8878
Water connection size		mm	168,0	219,1	219,1	219,1	219,1	219,1
Water connection type			Victaulic					

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
(5) - not including filter pressure drop. The installation of the filter is mandatory.
(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
(8) – referred to unit operation with 200 Pa External Static Pressure (ESP) on the condenser fans.
(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.
The above data are referred the unit installed in compliancy with installation prescription.
All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

EWAD~M- SS C + OPT161 - 200 Pa ESP FANS							
MODEL	notes		**H17**	**C19**	**H19**	**C21**	**C22**
Cooling Capacity	(1)	kW	1810	1918	1978	2118	2206
Power Input	(1)	kW	613	705	707	753	786
EER	(1)	kW/kW	2,95	2,72	2,80	2,81	2,81
Minimum capacity		%	9	9	9	9	9
IPLV	(1)	kW/kW	4,60	4,23	4,37	4,41	4,09
Cooling Capacity	(2)	kW	1628	1484	1751	1810	1849
EER	(2)	kW/kW	2,27	2,04	2,11	2,10	2,09
Cooling Capacity	(3)	kW	1551	1312	1618	1625	1644
EER	(3)	kW/kW	2,15	1,93	2,00	1,99	1,98
Evaporator type		-	Direct Expansion – Shell & Tubes				
Water flow rate	(1)	l/s	78,4	83,1	85,7	91,8	95,6
Evaporator pressure drop	(1)	kPa	75,2	83,4	112	99,7	107
Water flow rate	(2)	l/s	70,5	64,3	75,8	78,4	80,1
Evaporator pressure drop	(2) (5)	kPa	62,1	52,6	89,6	75,2	78,1
Evaporator water volume		lt	522	522	522	522	522
Minimum water rate	(4)	l/s	24,2	32,4	18,9	32,4	19,3
Sound Power	(1) (6)	dB(A)	105	104	105	105	105
Sound Pressure @ 1 meter	(1) (7)	dB(A)	81	81	81	82	82
Fan type		-	Direct Propeller				
Fan diameter		mm	800				
Fan rotational speed		RPM	1430				
Fan motor / control		-	EC – Variable Speed				
Number of fans		n	30	24	30	30	30
Power input fans		kW	120,0	96,0	120,0	120,0	120,0
Air flow	(8)	l/s	176917	141533	176917	176917	176917
Refrigerant circuits		n	3	3	3	3	3
Compressor type		-	Single Screw				
Capacity control		-	Stepless				
Comp model per circuit		-	F4AL/F4AS /F4AS	F4AL/F4AL /F4AL	F4AXL/F4AL /F4AL	F4AXL/ F4AXL /F4AL	F4AXL/ F4AXL /F4AXL
Oil charge		lt	75	75	75	75	75
Refrigerant Charge		kg	210	168	182	196	210
Casing material		-	Galvanized Steel Sheet				
Color		-	Ivory White				
Unit length		mm	14100	11400	14100	14100	14100
Unit width		mm	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540
Unit weight - shipping		kg	10931	10931	10931	10931	10931
Unit weight - operation		kg	11453	11453	11453	11453	11453
Water connection size		mm	273,0	273,0	273,0	273,0	273,0
Water connection type			Victaulic				

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
(5) - not including filter pressure drop. The installation of the filter is mandatory.
(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
(8) – Referred to unit operation with 200 Pa External Static Pressure (ESP) on the condenser fans.
(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value

The above data are referred to the unit without additional optional.
The above data are referred the unit installed in compliancy with installation prescription.
All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

AHRI CERTIFIED™ www.ahridirectory.org

EWAD~M- XS C – standard unit								
MODEL	notes		**320**	**360**	**415**	**430**	**460**	**540**
Cooling Capacity	(1)	kW	313	360	414	433	462	536
Power Input	(1)	kW	97,6	113	129	138	147	164
EER	(1)	kW/kW	3,21	3,18	3,20	3,13	3,13	3,26
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	4,07	4,12	4,20	4,10	4,13	4,33
Cooling Capacity	(2)	kW	294	337	385	394	418	495
EER	(2)	kW/kW	2,52	2,48	2,47	2,34	2,34	2,47
Cooling Capacity	(3)	kW	290	331	378	384	406	484
EER	(3)	kW/kW	2,40	2,36	2,35	2,20	2,19	2,33
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	13,6	15,6	17,9	18,8	20,0	23,2
Evaporator pressure drop	(1)	kPa	80,2	80,3	98,7	107	102	95,3
Water flow rate	(2)	l/s	12,7	14,6	16,7	17,1	18,1	21,4
Evaporator pressure drop	(2) (5)	kPa	71,6	71,1	86,6	90,3	85,1	82,6
Evaporator water volume		lt	181	181	181	175	170	164
Minimum water rate	(4)	l/s	3,9	4,4	4,9	4,9	5,5	6,5
Sound Power	(1) (6)	dB(A)	100	100	100	100	101	103
Sound Pressure @ 1 meter	(1) (7)	dB(A)	80	80	80	80	80	82
Fan type		-	Direct Propeller					
Fan diameter		mm	850					
Fan rotational speed		RPM	900					
Fan motor / control		-	AC – On/Off					
Number of fans		n	8	8	8	8	10	12
Power input fans		kW	20,8	20,8	20,8	20,8	26	31,2
Air flow	(8)	l/s	45556	45556	45556	45556	56944	68333
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	3118 / 3121	3120 / 3122	3122 / 3122	3122 / 3123	3123 / 3123	F3AS / F3AS
Oil charge		lt	26	26	26	26	26	34
Refrigerant Charge		kg	56	56	56	56	70	84
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	4200	4200	4200	4200	5100	6000
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	4104	4104	4104	4114	4360	5397
Unit weight - operation		kg	4274	4274	4274	4284	4530	5567
Water connection size		mm	139,7	139,7	139,7	139,7	139,7	139,7
Water connection type			Victaulic					

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.

(5) - not including filter pressure drop. The installation of the filter is mandatory.

(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614

(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744

(8) – referred to unit with free discharge on condenser fans.

(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.

The above data are referred the unit installed in compliancy with installation prescription.

All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

EWAD~M- XS C – standard unit								
MODEL	notes		**570**	**620**	**710**	**780**	**850**	**940**
Cooling Capacity	(1)	kW	567	615	710	778	849	936
Power Input	(1)	kW	176	189	216	240	264	291
EER	(1)	kW/kW	3,22	3,25	3,30	3,24	3,22	3,22
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	4,28	4,38	4,38	4,37	4,31	4,16
Cooling Capacity	(2)	kW	522	562	651	708	775	848
EER	(2)	kW/kW	2,42	2,43	2,52	2,46	2,49	2,47
Cooling Capacity	(3)	kW	510	549	636	691	756	827
EER	(3)	kW/kW	2,28	2,28	2,38	2,32	2,35	2,33
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	24,5	26,7	30,8	33,7	36,8	40,6
Evaporator pressure drop	(1)	kPa	105	90,1	88,3	104	98,0	76,0
Water flow rate	(2)	l/s	22,6	24,4	28,2	30,7	33,6	36,8
Evaporator pressure drop	(2) (5)	kPa	90,8	76,7	75,4	87,9	83,0	63,7
Evaporator water volume		lt	164	200	290	290	250	501
Minimum water rate	(4)	l/s	6,5	6,9	9,8	9,8	9,7	11,5
Sound Power	(1) (6)	dB(A)	103	103	103	103	102	102
Sound Pressure @ 1 meter	(1) (7)	dB(A)	82	82	81	81	81	81
Fan type		-	Direct Propeller					
Fan diameter		mm	850					
Fan rotational speed		RPM	900					
Fan motor / control		-	AC – On/Off					
Number of fans		n	12	12	14	14	16	16
Power input fans		kW	31,2	31,2	36,4	36,4	41,6	41,6
Air flow	(8)	l/s	68333	68333	79722	79722	91111	91111
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	F3AS / F3AL	F3AL / F3AL	F3BS / F3AL	F3BL / F3AL	F3BL / F3BS	F3BL / F3BL
Oil charge		lt	34	34	36	36	38	38
Refrigerant Charge		kg	84	84	98	98	112	112
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	6000	6000	6900	6900	7800	7800
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	5397	5316	5950	5950	6208	6468
Unit weight - operation		kg	5567	5516	6240	6240	6458	6969
Water connection size		mm	139,7	168,3	168,3	168,3	168,3	219,1
Water connection type			Victaulic					

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.

(5) - not including filter pressure drop. The installation of the filter is mandatory.

(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614

(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744

(8) – referred to unit with free discharge on condenser fans.

(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.

The above data are referred the unit installed in compliancy with installation prescription.

All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

EWAD~M- XS C – standard unit								
MODEL	notes		**C10**	**C11**	**C12**	**B13**	**H13**	**A13**
Cooling Capacity	(1)	kW	1018	1130	1218	1359	1374	1392
Power Input	(1)	kW	321	357	386	422	423	441
EER	(1)	kW/kW	3,18	3,16	3,16	3,22	3,25	3,15
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	4,30	4,27	4,29	4,36	4,37	4,46
Cooling Capacity	(2)	kW	923	1022	1103	1240	1258	1247
EER	(2)	kW/kW	2,44	2,42	2,42	2,50	2,53	2,39
Cooling Capacity	(3)	kW	899	995	1074	1210	1229	1174
EER	(3)	kW/kW	2,30	2,28	2,28	2,37	2,40	2,25
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	44,1	49,0	52,8	58,9	59,5	60,3
Evaporator pressure drop	(1)	kPa	88,5	79,0	90,3	81,9	76,1	85,5
Water flow rate	(2)	l/s	40,0	44,3	47,8	53,7	54,5	54,0
Evaporator pressure drop	(2) (5)	kPa	74,1	65,9	75,6	69,4	64,9	70,2
Evaporator water volume		lt	501	481	481	451	492	451
Minimum water rate	(4)	l/s	11,5	13,7	13,7	17,1	18,8	17,1
Sound Power	(1) (6)	dB(A)	103	103	104	104	105	104
Sound Pressure @ 1 meter	(1) (7)	dB(A)	81	81	81	81	81	81
Fan type		-	Direct propeller					
Fan diameter		mm	850					
Fan rotational speed		RPM	900					
Fan motor / control		-	AC – On/Off					
Number of fans		n	18	20	22	28	30	22
Power input fans		kW	46,8	52	57,2	72,8	78	57,2
Air flow	(8)	l/s	102500	113889	125278	159444	170833	125278
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	F4AS / F3BL	F4AL / F3BL	F4AL / F4AS	F4AL / F4AL	F4AL / F4AL	F4AL / F4AL
Oil charge		lt	44	44	50	50	50	50
Refrigerant Charge		kg	126	140	154	196	210	173
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	8700	9600	10500	13200	14100	10500
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	7362	7592	8751	9984	10370	8821
Unit weight - operation		kg	7863	8073	9232	10435	10862	9272
Water connection size		mm	219,1	219,1	219,1	219,1	219,1	219,1
Water connection type			Victaulic					

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
(5) - not including filter pressure drop. The installation of the filter is mandatory.
(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
(8) – referred to unit with free discharge on condenser fans.
(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.
The above data are referred the unit installed in compliancy with installation prescription.
All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

AHRI CERTIFIED™ www.ahridirectory.org

EWAD~M- XS C – standard unit							
MODEL	notes		**C14**	**H14**	**C15**	**C17**	**H18**
Cooling Capacity	(1)	kW	1449	1492	1521	1705	1857
Power Input	(1)	kW	461	469	479	575	621
EER	(1)	kW/kW	3,15	3,18	3,18	2,96	2,99
Minimum capacity		%	13	13	13	8	8
IPLV	(1)	kW/kW	4,31	4,19	4,23	4,08	3,99
Cooling Capacity	(2)	kW	1292	1336	1378	1449	1566
EER	(2)	kW/kW	2,35	2,38	2,42	2,23	2,25
Cooling Capacity	(3)	kW	1189	1252	1342	1333	1413
EER	(3)	kW/kW	2,22	2,24	2,28	2,10	2,13
Evaporator type		-	Direct Expansion – Shell & Tubes				
Water flow rate	(1)	l/s	62,8	64,6	65,9	73,8	80,5
Evaporator pressure drop	(1)	kPa	91,8	96,9	70,9	85,4	128
Water flow rate	(2)	l/s	56,0	57,9	59,7	62,8	67,8
Evaporator pressure drop	(2) (5)	kPa	74,8	79,5	59,3	63,8	93,9
Evaporator water volume		lt	451	451	946	522	522
Minimum water rate	(4)	l/s	17,1	17,1	19,1	18,9	19,3
Sound Power	(1) (6)	dB(A)	104	104	105	105	105
Sound Pressure @ 1 meter	(1) (7)	dB(A)	81	81	81	81	81
Fan type		-	Direct propeller				
Fan diameter		mm	850				
Fan rotational speed		RPM	900				
Fan motor / control		-	AC – On/Off				
Number of fans		n	22	24	28	24	26
Power input fans		kW	57,2	62,4	72,8	62,4	67,6
Air flow	(8)	l/s	125278	136667	159444	136667	148056
Refrigerant circuits		n	2	2	2	3	3
Compressor type		-	Single Screw				
Capacity control		-	Stepless				
Comp model per circuit		-	F4AXL / F4AL	4AXL / 4AXL	4AXL / 4AXL	F4AL / F4AS / F4AS	F4AL / F4AL / F4AS
Oil charge		lt	50	50	50	75	75
Refrigerant Charge		kg	173	189	196	210	210
Casing material		-	Galvanized Steel Sheet				
Color		-	Ivory White				
Unit length		mm	10500	11400	13200	11400	12300
Unit width		mm	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540
Unit weight - shipping		kg	8861	9179	10327	10931	11231
Unit weight - operation		kg	9312	9630	11273	11453	11753
Water connection size		mm	219,1	219,1	273,0	273,0	273,0

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
(5) - not including filter pressure drop. The installation of the filter is mandatory.
(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
(8) – referred to unit with free discharge on condenser fans.
(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.
The above data are referred to the unit without additional optional.
The above data are referred the unit installed in compliancy with installation prescription.
All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

EWAD~M- XS C + OPT76b - SOUND PROOF SYSTEM (COMPRESSOR)								
MODEL	notes		**320**	**360**	**415**	**430**	**460**	**540**
Cooling Capacity	(1)	kW	313	360	414	433	462	536
Power Input	(1)	kW	97,6	113	129	138	147	164
EER	(1)	kW/kW	3,21	3,18	3,20	3,13	3,13	3,26
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	4,07	4,12	4,20	4,10	4,13	4,33
Cooling Capacity	(2)	kW	294	337	385	394	418	495
EER	(2)	kW/kW	2,52	2,48	2,47	2,34	2,34	2,47
Cooling Capacity	(3)	kW	290	331	378	384	406	484
EER	(3)	kW/kW	2,4	2,36	2,35	2,20	2,19	2,33
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	13,6	15,6	17,9	18,8	20	23,2
Evaporator pressure drop	(1)	kPa	80,2	80,3	98,7	107	102	95,3
Water flow rate	(2)	l/s	12,7	14,6	16,7	17,1	18,1	21,4
Evaporator pressure drop	(2) (5)	kPa	71,6	71,1	86,6	90,3	85,1	82,6
Evaporator water volume		lt	181	181	181	175	170	164
Minimum water rate	(4)	l/s	3,9	4,4	4,9	4,9	5,5	6,5
Sound Power	(1) (6)	dB(A)	98	98	98	98	99	100
Sound Pressure @ 1 meter	(1) (7)	dB(A)	78	78	78	78	79	79
Fan type		-	Direct Propeller					
Fan diameter		mm	850					
Fan rotational speed		RPM	900					
Fan motor / control		-	AC – On/Off					
Number of fans		n	8	8	8	8	10	12
Power input fans		kW	20,8	20,8	20,8	20,8	26	31,2
Air flow	(8)	l/s	45556	45556	45556	45556	56944	68333
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	3118 / 3121	3120 / 3122	3122 / 3122	3122 / 3123	3123 / 3123	F3AS / F3AS
Oil charge		lt	26	26	26	26	26	34
Refrigerant Charge		kg	56	56	56	56	70	84
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	4200	4200	4200	4200	5100	6000
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	4104	4104	4104	4114	4360	5397
Unit weight - operation		kg	4274	4274	4274	4284	4530	5567
Water connection size		mm	139,7	139,7	139,7	139,7	139,7	139,7
Water connection type			Victaulic					

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.

(5) - not including filter pressure drop. The installation of the filter is mandatory.

(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614

(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744

(8) – referred to unit with free discharge on condenser fans.

(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.

The above data are referred the unit installed in compliancy with installation prescription.

All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

EWAD~M- XS C + OPT76b - SOUND PROOF SYSTEM (COMPRESSOR)								
MODEL	notes		**570**	**620**	**710**	**780**	**850**	**940**
Cooling Capacity	(1)	kW	567	615	710	778	849	936
Power Input	(1)	kW	176	189	216	240	264	291
EER	(1)	kW/kW	3,22	3,25	3,30	3,24	3,22	3,22
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	4,28	4,38	4,38	4,37	4,31	4,16
Cooling Capacity	(2)	kW	522	562	651	708	775	848
EER	(2)	kW/kW	2,42	2,43	2,52	2,46	2,49	2,47
Cooling Capacity	(3)	kW	510	549	636	691	756	827
EER	(3)	kW/kW	2,28	2,28	2,38	2,32	2,35	2,33
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	24,5	26,7	30,8	33,7	36,8	40,6
Evaporator pressure drop	(1)	kPa	105	90,1	88,3	104	98,0	76
Water flow rate	(2)	l/s	22,6	24,4	28,2	30,7	33,6	36,8
Evaporator pressure drop	(2) (5)	kPa	90,8	76,7	75,4	87,9	83	63,7
Evaporator water volume		lt	164	200	290	290	250	501
Minimum water rate	(4)	l/s	6,5	6,9	9,8	9,8	9,7	11,5
Sound Power	(1) (6)	dB(A)	100	100	101	101	101	101
Sound Pressure @ 1 meter	(1) (7)	dB(A)	79	79	79	79	80	80
Fan type		-	Direct Propeller					
Fan diameter		mm	850					
Fan rotational speed		RPM	900					
Fan motor / control		-	AC – On/Off					
Number of fans		n	12	12	14	14	16	16
Power input fans		kW	31,2	31,2	36,4	36,4	41,6	41,6
Air flow	(8)	l/s	68333	68333	79722	79722	91111	91111
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	F3AS / F3AL	F3AL / F3AL	F3BS / F3AL	F3BL / F3AL	F3BL / F3BS	F3BL / F3BL
Oil charge		lt	34	34	36	36	38	38
Refrigerant Charge		kg	84	84	98	98	112	112
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	6000	6000	6900	6900	7800	7800
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	5397	5316	5950	5950	6208	6468
Unit weight - operation		kg	5567	5516	6240	6240	6458	6969
Water connection size		mm	139,7	168,3	168,3	168,3	168,3	219,1
Water connection type			Victaulic					

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.

(5) - not including filter pressure drop. The installation of the filter is mandatory.

(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614

(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744

(8) – referred to unit with free discharge on condenser fans.

(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.

The above data are referred the unit installed in compliancy with installation prescription.

All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

EWAD~M- XS C + OPT76b - SOUND PROOF SYSTEM (COMPRESSOR)								
MODEL	notes		**C10**	**C11**	**C12**	**B13**	**H13**	**A13**
Cooling Capacity	(1)	kW	1018	1130	1218	1359	1374	1392
Power Input	(1)	kW	321	357	386	422	423	441
EER	(1)	kW/kW	3,18	3,16	3,16	3,22	3,25	3,15
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	4,30	4,27	4,29	4,36	4,37	4,46
Cooling Capacity	(2)	kW	923	1022	1103	1240	1258	1247
EER	(2)	kW/kW	2,44	2,42	2,42	2,5	2,53	2,39
Cooling Capacity	(3)	kW	899	995	1074	1210	1229	1174
EER	(3)	kW/kW	2,3	2,28	2,28	2,37	2,4	2,25
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	44,1	49	52,8	58,9	59,5	60,3
Evaporator pressure drop	(1)	kPa	88,5	79	90,3	81,9	76,1	85,5
Water flow rate	(2)	l/s	40	44,3	47,8	53,7	54,5	54
Evaporator pressure drop	(2) (5)	kPa	74,1	65,9	75,6	69,4	64,9	70,2
Evaporator water volume		lt	501	481	481	451	492	451
Minimum water rate	(4)	l/s	11,5	13,7	13,7	17,1	18,8	17,1
Sound Power	(1) (6)	dB(A)	102	102	103	101	104	101
Sound Pressure @ 1 meter	(1) (7)	dB(A)	80	80	80	80	81	80
Fan type		-	Direct propeller					
Fan diameter		mm	850					
Fan rotational speed		RPM	900					
Fan motor / control		-	AC – On/Off					
Number of fans		n	18	20	22	28	30	22
Power input fans		kW	46,8	52	57,2	72,8	78	57,2
Air flow	(8)	l/s	102500	113889	125278	159444	170833	125278
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	F4AS / F3BL	F4AL / F3BL	F4AL / F4AS	F4AL / F4AL	F4AL / F4AL	F4AL / F4AL
Oil charge		lt	44	44	50	50	50	50
Refrigerant Charge		kg	126	140	154	196	210	173
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	8700	9600	10500	13200	14100	10500
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	7362	7592	8751	9984	10370	8821
Unit weight - operation		kg	7863	8073	9232	10435	10862	9272
Water connection size		mm	219,1	219,1	219,1	219,1	219,1	219,1
Water connection type			Victaulic					

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
(5) - not including filter pressure drop. The installation of the filter is mandatory.
(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
(8) – referred to unit with free discharge on condenser fans.
(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.
The above data are referred the unit installed in compliancy with installation prescription.
All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

AHRI CERTIFIED™ www.ahridirectory.org

EWAD~M- XS C + OPT76b - SOUND PROOF SYSTEM (COMPRESSOR)							
MODEL	notes		**C14**	**H14**	**C15**	**C17**	**H18**
Cooling Capacity	(1)	kW	1449	1492	1521	1705	1857
Power Input	(1)	kW	461	469	479	575	621
EER	(1)	kW/kW	3,15	3,18	3,18	2,96	2,99
Minimum capacity		%	13	13	13	8	8
IPLV	(1)	kW/kW	4,31	4,19	4,23	4,08	3,99
Cooling Capacity	(2)	kW	1292	1336	1378	1449	1566
EER	(2)	kW/kW	2,35	2,38	2,42	2,23	2,25
Cooling Capacity	(3)	kW	1189	1252	1342	1333	1413
EER	(3)	kW/kW	2,22	2,24	2,28	2,1	2,13
Evaporator type		-	Direct Expansion – Shell & Tubes				
Water flow rate	(1)	l/s	62,8	64,6	65,9	73,8	80,5
Evaporator pressure drop	(1)	kPa	91,8	96,9	70,9	85,4	128
Water flow rate	(2)	l/s	56	57,9	59,7	62,8	67,8
Evaporator pressure drop	(2) (5)	kPa	74,8	79,5	59,3	63,8	93,9
Evaporator water volume		lt	451	451	946	522	522
Minimum water rate	(4)	l/s	17,1	17,1	19,1	18,9	19,3
Sound Power	(1) (6)	dB(A)	104	103	104	104	103
Sound Pressure @ 1 meter	(1) (7)	dB(A)	80	80	80	80	80
Fan type		-	Direct propeller				
Fan diameter		mm	850				
Fan rotational speed		RPM	900				
Fan motor / control		-	AC – On/Off				
Number of fans		n	22	24	28	24	26
Power input fans		kW	57,2	62,4	72,8	62,4	67,6
Air flow	(8)	l/s	125278	136667	159444	136667	148056
Refrigerant circuits		n	2	2	2	3	3
Compressor type		-	Single Screw				
Capacity control		-	Stepless				
Comp model per circuit		-	4AXL / F4AL	4AXL / 4AXL	4AXL / 4AXL	F4AL / F4AS / F4AS	F4AL / F4AL / F4AS
Oil charge		lt	50	50	50	75	75
Refrigerant Charge		kg	173	189	196	210	210
Casing material		-	Galvanized Steel Sheet				
Color		-	Ivory White				
Unit length		mm	10500	11400	13200	11400	12300
Unit width		mm	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540
Unit weight - shipping		kg	8861	9179	10327	10931	10931
Unit weight - operation		kg	9312	9630	11273	11453	11453
Water connection size		mm	219,1	219,1	273,0	273,0	273,0

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
(5) - not including filter pressure drop. The installation of the filter is mandatory.
(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
(8) – referred to unit with free discharge on condenser fans.
(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.
The above data are referred to the unit without additional optional.
The above data are referred the unit installed in compliancy with installation prescription.
All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

EWAD~M- XS C + OPT160a - 100 Pa ESP FANS								
MODEL	notes		**320**	**360**	**415**	**430**	**460**	**540**
Cooling Capacity	(1)	kW	312	358	411	429	458	532
Power Input	(1)	kW	99,3	116	132	142	151	168
EER	(1)	kW/kW	3,14	3,10	3,10	3,02	3,04	3,17
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	4,03	4,02	4,11	3,99	4,04	4,26
Cooling Capacity	(2)	kW	292	333	380	387	411	489
EER	(2)	kW/kW	2,46	2,40	2,39	2,25	2,25	2,39
Cooling Capacity	(3)	kW	287	328	373	376	398	478
EER	(3)	kW/kW	2,34	2,29	2,27	2,11	2,10	2,24
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	13,5	15,5	17,8	18,6	19,9	23,1
Evaporator pressure drop	(1)	kPa	79,5	79,4	97,4	105	100	94,2
Water flow rate	(2)	l/s	12,6	14,4	16,5	16,8	17,8	21,2
Evaporator pressure drop	(2) (5)	kPa	70,6	69,9	84,8	87,5	82,4	80,8
Evaporator water volume		lt	181	181	181	175	170	164
Minimum water rate	(4)	l/s	3,9	4,4	4,9	4,9	5,5	6,5
Sound Power	(1) (6)	dB(A)	100	100	100	100	101	103
Sound Pressure @ 1 meter	(1) (7)	dB(A)	80	80	80	80	80	82
Fan type		-	Direct Propeller					
Fan diameter		mm	850					
Fan rotational speed		RPM	900					
Fan motor / control		-	AC – On/Off					
Number of fans		n	8	8	8	8	10	12
Power input fans		kW	20,8	20,8	20,8	20,8	26	31,2
Air flow	(8)	l/s	40000	40000	40000	40000	50000	60000
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	3118 / 3121	3120 / 3122	3122 / 3122	3122 / 3123	3123 / 3123	F3AS / F3AS
Oil charge		lt	26	26	26	26	26	34
Refrigerant Charge		kg	56	56	56	56	70	84
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	4200	4200	4200	4200	5100	6000
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	4104	4104	4104	4114	4360	5397
Unit weight - operation		kg	4274	4274	4274	4284	4530	5567
Water connection size		mm	139,7	139,7	139,7	139,7	139,7	139,7
Water connection type			Victaulic					

(1) (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.

(5) - not including filter pressure drop. The installation of the filter is mandatory.

(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614

(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744

(8) – Referred to unit operation with 100 Pa External Static Pressure (ESP) on the condenser fans.

(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value

The above data are referred to the unit without additional optional.

The above data are referred the unit installed in compliancy with installation prescription.

All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

EWAD~M- XS C + OPT160a - 100 Pa ESP FANS								
MODEL	notes		**570**	**620**	**710**	**780**	**850**	**940**
Cooling Capacity	(1)	kW	563	610	705	771	842	927
Power Input	(1)	kW	180	194	220	246	269	298
EER	(1)	kW/kW	3,13	3,15	3,20	3,14	3,12	3,11
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	4,25	4,32	4,26	4,22	4,19	4,03
Cooling Capacity	(2)	kW	515	554	641	696	762	832
EER	(2)	kW/kW	2,33	2,33	2,43	2,36	2,40	2,37
Cooling Capacity	(3)	kW	503	540	625	678	742	809
EER	(3)	kW/kW	2,19	2,18	2,29	2,22	2,26	2,23
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	24,4	26,4	30,5	33,4	36,5	40,1
Evaporator pressure drop	(1)	kPa	104	88,8	87,0	102,0	96,4	74,6
Water flow rate	(2)	l/s	22,3	24,0	27,8	30,2	33,0	36,1
Evaporator pressure drop	(2) (5)	kPa	88,6	74,6	73,4	85,2	80,6	61,6
Evaporator water volume		lt	164	200	290	290	250	501
Minimum water rate	(4)	l/s	6,5	6,9	9,8	9,8	9,7	11,5
Sound Power	(1) (6)	dB(A)	103	103	103	103	102	102
Sound Pressure @ 1 meter	(1) (7)	dB(A)	82	82	81	81	81	81
Fan type		-	Direct Propeller					
Fan diameter		mm	850					
Fan rotational speed		RPM	900					
Fan motor / control		-	AC – On/Off					
Number of fans		n	12	12	14	14	16	16
Power input fans		kW	31,2	31,2	36,4	36,4	41,6	41,6
Air flow	(8)	l/s	60000	60000	70000	70000	80000	80000
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	F3AS / F3AL	F3AL / F3AL	F3BS / F3AL	F3BL / F3AL	F3BL / F3BS	F3BL / F3BL
Oil charge		lt	34	34	36	36	38	38
Refrigerant Charge		kg	84	84	98	98	112	112
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	6000	6000	6900	6900	7800	7800
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	5397	5316	5950	5950	6208	6468
Unit weight - operation		kg	5567	5516	6240	6240	6458	6969
Water connection size		mm	139,7	168,3	168,3	168,3	168,3	219,1
Water connection type			Victaulic					

– (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(1) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(2) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(3) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.

(4) - not including filter pressure drop. The installation of the filter is mandatory.

(5) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614

(6) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744

(7) – Referred to unit operation with 100 Pa External Static Pressure (ESP) on the condenser fans.

(8) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.

The above data are referred the unit installed in compliancy with installation prescription.

All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

AHRI CERTIFIED™ www.ahridirectory.org

EWAD~M- XS C + OPT160a - 100 Pa ESP FANS								
MODEL	notes		**C10**	**C11**	**C12**	**B13**	**H13**	**A13**
Cooling Capacity	(1)	kW	1009	1120	1207	1349	1365	1377
Power Input	(1)	kW	327	364	393	429	430	451
EER	(1)	kW/kW	3,08	3,07	3,07	3,15	3,18	3,05
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	4,19	4,17	4,18	4,26	4,28	4,34
Cooling Capacity	(2)	kW	907	1005	1085	1224	1243	1198
EER	(2)	kW/kW	2,34	2,33	2,33	2,43	2,46	2,30
Cooling Capacity	(3)	kW	875	968	1043	1193	1213	1103
EER	(3)	kW/kW	2,21	2,20	2,20	2,29	2,33	2,17
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	43,7	48,5	52,3	58,5	59,1	59,7
Evaporator pressure drop	(1)	kPa	87,0	77,7	88,9	80,8	75,2	83,8
Water flow rate	(2)	l/s	39,3	43,5	47,0	53,0	53,9	51,9
Evaporator pressure drop	(2) (5)	kPa	71,8	63,9	73,4	67,8	63,6	65,3
Evaporator water volume		lt	501	481	481	451	492	451
Minimum water rate	(4)	l/s	11,5	13,7	13,7	17,1	18,8	17,1
Sound Power	(1) (6)	dB(A)	103	103	104	104	105	104
Sound Pressure @ 1 meter	(1) (7)	dB(A)	81	81	81	81	81	81
Fan type		-	Direct propeller					
Fan diameter		mm	850					
Fan rotational speed		RPM	900					
Fan motor / control		-	AC – On/Off					
Number of fans		n	18	20	22	28	30	22
Power input fans		kW	46,8	52	57,2	72,8	78	57,2
Air flow	(8)	l/s	90000	100000	110000	140000	150000	110000
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	F4AS / F3BL	F4AL / F3BL	F4AL / F4AS	F4AL / F4AL	F4AL / F4AL	F4AL / F4AL
Oil charge		lt	44	44	50	50	50	50
Refrigerant Charge		kg	126	140	154	196	210	173
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	8700	9600	10500	13200	14100	10500
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	7362	7592	8751	9984	10370	8821
Unit weight - operation		kg	7863	8073	9232	10435	10862	9272
Water connection size		mm	219,1	219,1	219,1	219,1	219,1	219,1
Water connection type			Victaulic					

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.

(5) - not including filter pressure drop. The installation of the filter is mandatory.

(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614

(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744

(8) – Referred to unit operation with 100 Pa External Static Pressure (ESP) on the condenser fans.

(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.

The above data are referred the unit installed in compliancy with installation prescription.

All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

EWAD~M- XS C + OPT160a - 100 Pa ESP FANS							
MODEL	notes		**C14**	**H14**	**C15**	**C17**	**H18**
Cooling Capacity	(1)	kW	1432	1476	1508	1680	1829
Power Input	(1)	kW	472	481	488	591	638
EER	(1)	kW/kW	3,04	3,07	3,09	2,84	2,87
Minimum capacity		%	13	13	13	8	8
IPLV	(1)	kW/kW	4,20	4,08	4,13	4,00	3,90
Cooling Capacity	(2)	kW	1231	1296	1356	1377	1460
EER	(2)	kW/kW	2,26	2,28	2,33	2,13	2,16
Cooling Capacity	(3)	kW	1097	1158	1289	1222	1301
EER	(3)	kW/kW	2,14	2,15	2,19	2,03	2,05
Evaporator type		-	Direct Expansion – Shell & Tubes				
Water flow rate	(1)	l/s	62,0	63,9	65,3	72,8	79,2
Evaporator pressure drop	(1)	kPa	89,9	95,0	69,8	83,2	124
Water flow rate	(2)	l/s	53,3	56,1	58,7	59,6	63,3
Evaporator pressure drop	(2) (5)	kPa	68,5	75,2	57,6	58,1	82,9
Evaporator water volume		lt	451	451	946	522	522
Minimum water rate	(4)	l/s	17,1	17,1	19,1	18,9	19,3
Sound Power	(1) (6)	dB(A)	104	104	105	105	105
Sound Pressure @ 1 meter	(1) (7)	dB(A)	81	81	81	81	81
Fan type		-	Direct propeller				
Fan diameter		mm	850				
Fan rotational speed		RPM	900				
Fan motor / control		-	AC – On/Off				
Number of fans		n	22	24	28	24	26
Power input fans		kW	57,2	62,4	72,8	62,4	67,6
Air flow	(8)	l/s	110000	120000	140000	120000	130000
Refrigerant circuits		n	2	2	2	3	3
Compressor type		-	Single Screw				
Capacity control		-	Stepless				
Comp model per circuit		-	4AXL / F4AL	4AXL / 4AXL	4AXL / 4AXL	F4AL / F4AS / F4AS	F4AL / F4AL / F4AS
Oil charge		lt	50	50	50	75	75
Refrigerant Charge		kg	173	189	196	210	210
Casing material		-	Galvanized Steel Sheet				
Color		-	Ivory White				
Unit length		mm	10500	11400	13200	11400	12300
Unit width		mm	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540
Unit weight - shipping		kg	8861	9179	10327	10931	10931
Unit weight - operation		kg	9312	9630	11273	11453	11453
Water connection size		mm	219,1	219,1	273,0	273,0	273,0

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.

(5) - not including filter pressure drop. The installation of the filter is mandatory.

(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614

(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744

(8) – Referred to unit operation with 100 Pa External Static Pressure (ESP) on the condenser fans.

(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.

The above data are referred the unit installed in compliancy with installation prescription.

All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing

EWAD~M- XS C + OPT145 - EC MOTORS FANS								
MODEL	notes		**320**	**360**	**415**	**430**	**460**	**540**
Cooling Capacity	(1)	kW	314	361	415	434	463	537
Power Input	(1)	kW	101	116	132	141	151	169
EER	(1)	kW/kW	3,11	3,11	3,14	3,08	3,07	3,18
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	4,67	4,54	4,58	4,40	4,67	4,92
Cooling Capacity	(2)	kW	295	338	386	396	421	497
EER	(2)	kW/kW	2,46	2,43	2,44	2,33	2,31	2,43
Cooling Capacity	(3)	kW	291	333	380	387	409	487
EER	(3)	kW/kW	2,35	2,32	2,33	2,19	2,17	2,29
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	13,6	15,6	18,0	18,8	20,1	23,3
Evaporator pressure drop	(1)	kPa	80,4	80,6	99,1	108,0	102,0	95,7
Water flow rate	(2)	l/s	12,8	14,6	16,7	17,2	18,2	21,5
Evaporator pressure drop	(2) (5)	kPa	71,9	71,5	87,3	91,3	86,1	83,2
Evaporator water volume		lt	181	181	181	175	170	164
Minimum water rate	(4)	l/s	3,9	4,4	4,9	4,9	5,5	6,5
Sound Power	(1) (6)	dB(A)	100	100	100	100	101	103
Sound Pressure @ 1 meter	(1) (7)	dB(A)	80	80	80	80	80	82
Fan type		-	Direct Propeller					
Fan diameter		mm	800					
Fan rotational speed		RPM	1090					
Fan motor / control		-	EC – Variable Speed					
Number of fans		n	8	8	8	8	10	12
Power input fans		kW	23,8	23,8	23,8	23,8	29,8	35,8
Air flow	(8)	l/s	48222	48222	48222	48222	60278	72333
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	3118 / 3121	3120 / 3122	3122 / 3122	3122 / 3123	3123 / 3123	F3AS / F3AS
Oil charge		lt	26	26	26	26	26	34
Refrigerant Charge		kg	56	56	56	56	70	84
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	4200	4200	4200	4200	5100	6000
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	4104	4104	4104	4114	4360	5397
Unit weight - operation		kg	4274	4274	4274	4284	4530	5567
Water connection size		mm	139,7	139,7	139,7	139,7	139,7	139,7
Water connection type			Victaulic					

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.

(5) - not including filter pressure drop. The installation of the filter is mandatory.

(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614

(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744

(8) – referred to unit with free discharge on condenser fans.

(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.

The above data are referred the unit installed in compliancy with installation prescription.

All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing.

AHRI CERTIFIED™ www.ahridirectory.org

EWAD~M- XS C + OPT145 - EC MOTORS FANS								
MODEL	notes		**570**	**620**	**710**	**780**	**850**	**940**
Cooling Capacity	(1)	kW	568	617	712	781	852	940
Power Input	(1)	kW	180	193	220	245	269	296
EER	(1)	kW/kW	3,16	3,20	3,23	3,19	3,16	3,17
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	4,81	4,83	4,88	4,75	4,66	4,50
Cooling Capacity	(2)	kW	524	565	654	713	779	854
EER	(2)	kW/kW	2,39	2,41	2,49	2,44	2,46	2,45
Cooling Capacity	(3)	kW	513	553	639	696	761	833
EER	(3)	kW/kW	2,25	2,26	2,36	2,31	2,33	2,32
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	24,6	26,7	30,9	33,8	36,9	40,7
Evaporator pressure drop	(1)	kPa	106,0	90,6	88,8	105,0	98,5	76,5
Water flow rate	(2)	l/s	22,7	24,5	28,3	30,9	33,8	37,0
Evaporator pressure drop	(2) (5)	kPa	91,6	77,4	76,0	88,8	83,9	64,5
Evaporator water volume		lt	164	200	290	290	250	501
Minimum water rate	(4)	l/s	6,5	6,9	9,8	9,8	9,7	11,5
Sound Power	(1) (6)	dB(A)	103	103	103	103	102	102
Sound Pressure @ 1 meter	(1) (7)	dB(A)	82	82	81	81	81	81
Fan type		-	Direct Propeller					
Fan diameter		mm	800					
Fan rotational speed		RPM	1090					
Fan motor / control		-	EC – Variable Speed					
Number of fans		n	12	12	14	14	16	16
Power input fans		kW	35,8	35,8	41,7	41,7	47,7	47,7
Air flow	(8)	l/s	72333	72333	84389	84389	96444	96444
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	F3AS / F3AL	F3AL / F3AL	F3BS / F3AL	F3BL / F3AL	F3BL / F3BS	F3BL / F3BL
Oil charge		lt	34	34	36	36	38	38
Refrigerant Charge		kg	84	84	98	98	112	112
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	6000	6000	6900	6900	7800	7800
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	5397	5316	5950	5950	6208	6468
Unit weight - operation		kg	5567	5516	6240	6240	6458	6969
Water connection size		mm	139,7	168,3	168,3	168,3	168,3	219,1
Water connection type			Victaulic					

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.

(5) - not including filter pressure drop. The installation of the filter is mandatory.

(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614

(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744

(8) – referred to unit with free discharge on condenser fans.

(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.

The above data are referred the unit installed in compliancy with installation prescription.

All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing.

EWAD~M- XS C + OPT145 - EC MOTORS FANS								
MODEL	notes		**C10**	**C11**	**C12**	**B13**	**H13**	**A13**
Cooling Capacity	(1)	kW	1022	1134	1221	1362	1377	1397
Power Input	(1)	kW	327	364	393	432	435	449
EER	(1)	kW/kW	3,13	3,11	3,11	3,15	3,17	3,11
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	4,70	4,70	4,69	4,91	4,98	4,79
Cooling Capacity	(2)	kW	929	1028	1109	1246	1263	1256
EER	(2)	kW/kW	2,42	2,40	2,39	2,46	2,48	2,37
Cooling Capacity	(3)	kW	905	1001	1081	1216	1235	1191
EER	(3)	kW/kW	2,28	2,27	2,26	2,33	2,36	2,24
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	44,3	49,1	52,9	59,0	59,7	60,5
Evaporator pressure drop	(1)	kPa	89,0	79,4	90,8	82,2	76,4	86,0
Water flow rate	(2)	l/s	40,2	44,5	48,0	54,0	54,7	54,4
Evaporator pressure drop	(2) (5)	kPa	74,9	66,6	76,3	70,0	65,4	71,0
Evaporator water volume		lt	501	481	481	451	492	451
Minimum water rate	(4)	l/s	11,5	13,7	13,7	17,1	18,8	17,1
Sound Power	(1) (6)	dB(A)	103	103	104	104	105	104
Sound Pressure @ 1 meter	(1) (7)	dB(A)	81	81	81	81	81	81
Fan type		-	Direct Propeller					
Fan diameter		mm	800					
Fan rotational speed		RPM	1090					
Fan motor / control		-	EC – Variable Speed					
Number of fans		n	18	20	22	28	30	22
Power input fans		kW	53,6	59,6	65,6	83,4	89,4	65,6
Air flow	(8)	l/s	108500	120556	132611	168778	180833	132611
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	F4AS / F3BL	F4AL / F3BL	F4AL / F4AS	F4AL / F4AL	F4AL / F4AL	F4AL / F4AL
Oil charge		lt	44	44	50	50	50	50
Refrigerant Charge		kg	126	140	154	196	210	173
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	8700	9600	10500	13200	14100	10500
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	7362	7592	8751	9984	10370	8821
Unit weight - operation		kg	7863	8073	9232	10435	10862	9272
Water connection size		mm	219,1	219,1	219,1	219,1	219,1	219,1
Water connection type			Victaulic					

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
(5) - not including filter pressure drop. The installation of the filter is mandatory.
(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
(8) – referred to unit with free discharge on condenser fans.
(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.
The above data are referred the unit installed in compliancy with installation prescription.
All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing.

AHRI CERTIFIED™ www.ahridirectory.org

EWAD~M- XS C + OPT145 - EC MOTORS FANS							
MODEL	notes		**C14**	**H14**	**C15**	**C17**	**H18**
Cooling Capacity	(1)	kW	1454	1498	1526	1713	1867
Power Input	(1)	kW	467	477	488	581	627
EER	(1)	kW/kW	3,11	3,14	3,13	2,95	2,98
Minimum capacity		%	13	13	13	8	8
IPLV	(1)	kW/kW	4,64	4,58	4,69	4,54	4,30
Cooling Capacity	(2)	kW	1302	1346	1385	1473	1591
EER	(2)	kW/kW	2,35	2,37	2,39	2,22	2,24
Cooling Capacity	(3)	kW	1221	1289	1350	1372	1464
EER	(3)	kW/kW	2,21	2,23	2,26	2,10	2,12
Evaporator type		-	Direct Expansion – Shell & Tubes				
Water flow rate	(1)	l/s	63,0	64,9	66,1	74,2	80,9
Evaporator pressure drop	(1)	kPa	92,5	97,5	71,3	86,1	129
Water flow rate	(2)	l/s	56,4	58,3	60,0	63,8	68,9
Evaporator pressure drop	(2) (5)	kPa	75,8	80,4	59,9	65,6	96,7
Evaporator water volume		lt	451	451	946	522	522
Minimum water rate	(4)	l/s	17,1	17,1	19,1	18,9	19,3
Sound Power	(1) (6)	dB(A)	104	104	105	105	105
Sound Pressure @ 1 meter	(1) (7)	dB(A)	81	81	81	81	81
Fan type		-	Direct Propeller				
Fan diameter		mm	800				
Fan rotational speed		RPM	1090				
Fan motor / control		-	EC – Variable Speed				
Number of fans		n	22	24	28	24	26
Power input fans		kW	65,6	71,5	83,4	71,5	77,5
Air flow	(8)	l/s	132611	144667	168778	144667	156722
Refrigerant circuits		n	2	2	2	3	3
Compressor type		-	Single Screw				
Capacity control		-	Stepless				
Comp model per circuit		-	4AXL / F4AL	4AXL / 4AXL	4AXL / 4AXL	F4AL / F4AS / F4AS	F4AL / F4AL / F4AS
Oil charge		lt	50	50	50	75	75
Refrigerant Charge		kg	173	189	196	210	210
Casing material		-	Galvanized Steel Sheet				
Color		-	Ivory White				
Unit length		mm	10500	11400	13200	11400	12300
Unit width		mm	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540
Unit weight - shipping		kg	8861	9179	10327	10931	10931
Unit weight - operation		kg	9312	9630	11273	11453	11453
Water connection size		mm	219,1	219,1	273,0	273,0	273,0

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
(5) - not including filter pressure drop. The installation of the filter is mandatory.
(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
(8) – referred to unit with free discharge on condenser fans.
(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.
The above data are referred the unit installed in compliancy with installation prescription.
All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing.

AHRI CERTIFIED™ www.ahridirectory.org

EWAD~M- XS C + OPT161 - 200 Pa ESP FANS								
MODEL	notes		**320**	**360**	**415**	**430**	**460**	**540**
Cooling Capacity	(1)	kW	313	360	413	432	461	535
Power Input	(1)	kW	110	126	142	151	163	183
EER	(1)	kW/kW	2,84	2,86	2,91	2,86	2,82	2,92
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	4,55	4,40	4,40	4,24	4,52	4,79
Cooling Capacity	(2)	kW	294	336	384	393	417	494
EER	(2)	kW/kW	2,27	2,26	2,28	2,17	2,14	2,25
Cooling Capacity	(3)	kW	289	331	377	383	405	483
EER	(3)	kW/kW	2,17	2,16	2,17	2,04	2,01	2,12
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	13,6	15,6	17,9	18,7	20,0	23,2
Evaporator pressure drop	(1)	kPa	80,1	80,1	98,4	107	101	95,1
Water flow rate	(2)	l/s	12,7	14,6	16,6	17,0	18,1	21,4
Evaporator pressure drop	(2) (5)	kPa	71,4	70,9	86,3	89,8	84,6	82,2
Evaporator water volume		lt	181	181	181	175	170	164
Minimum water rate	(4)	l/s	3,9	4,4	4,9	4,9	5,5	6,5
Sound Power	(1) (6)	dB(A)	100	100	100	100	101	103
Sound Pressure @ 1 meter	(1) (7)	dB(A)	80	80	80	80	80	82
Fan type		-	Direct Propeller					
Fan diameter		mm	800					
Fan rotational speed		RPM	1430					
Fan motor / control		-	EC – Variable Speed					
Number of fans		n	8	8	8	8	10	12
Power input fans		kW	32,0	32,0	32,0	32,0	40,0	48,0
Air flow	(8)	l/s	47178	47178	47178	47178	58972	70767
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	3118 / 3121	3120 / 3122	3122 / 3122	3122 / 3123	3123 / 3123	F3AS / F3AS
Oil charge		lt	26	26	26	26	26	34
Refrigerant Charge		kg	56	56	56	56	70	84
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	4200	4200	4200	4200	5100	6000
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	4104	4104	4104	4114	4360	5397
Unit weight - operation		kg	4274	4274	4274	4284	4530	5567
Water connection size		mm	139,7	139,7	139,7	139,7	139,7	139,7
Water connection type			Victaulic					

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.

(5) - not including filter pressure drop. The installation of the filter is mandatory.

(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614

(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744

(8) –Referred to unit operation with 200 Pa External Static Pressure (ESP) on the condenser fans.

(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.

The above data are referred the unit installed in compliancy with installation prescription.

All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing.

EWAD~M- XS C + OPT161 - 200 Pa ESP FANS								
MODEL	notes		**570**	**620**	**710**	**780**	**850**	**940**
Cooling Capacity	(1)	kW	566	614	709	777	848	934
Power Input	(1)	kW	195	208	238	263	289	317
EER	(1)	kW/kW	2,90	2,95	2,98	2,96	2,93	2,95
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	4,62	4,68	4,75	4,62	4,55	4,36
Cooling Capacity	(2)	kW	520	561	649	706	772	846
EER	(2)	kW/kW	2,22	2,24	2,32	2,28	2,29	2,29
Cooling Capacity	(3)	kW	509	547	634	688	753	823
EER	(3)	kW/kW	2,09	2,10	2,19	2,15	2,17	2,16
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	24,5	26,6	30,7	33,7	36,7	40,5
Evaporator pressure drop	(1)	kPa	105	89,9	88,0	104	97,7	75,8
Water flow rate	(2)	l/s	22,5	24,3	28,1	30,6	33,5	36,6
Evaporator pressure drop	(2) (5)	kPa	90,4	76,3	75,0	87,4	82,6	63,3
Evaporator water volume		lt	164	200	290	290	250	501
Minimum water rate	(4)	l/s	6,5	6,9	9,8	9,8	9,7	11,5
Sound Power	(1) (6)	dB(A)	103	103	103	103	102	102
Sound Pressure @ 1 meter	(1) (7)	dB(A)	82	82	81	81	81	81
Fan type		-	Direct Propeller					
Fan diameter		mm	800					
Fan rotational speed		RPM	1430					
Fan motor / control		-	EC – Variable Speed					
Number of fans		n	12	12	14	14	16	16
Power input fans		kW	48,0	48,0	56,0	56,0	64,0	64,0
Air flow	(8)	l/s	70767	70767	82561	82561	94356	94356
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	F3AS / F3AL	F3AL / F3AL	F3BS / F3AL	F3BL / F3AL	F3BL / F3BS	F3BL / F3BL
Oil charge		lt	34	34	36	36	38	38
Refrigerant Charge		kg	84	84	98	98	112	112
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	6000	6000	6900	6900	7800	7800
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	5397	5316	5950	5950	6208	6468
Unit weight - operation		kg	5567	5516	6240	6240	6458	6969
Water connection size		mm	139,7	168,3	168,3	168,3	168,3	219,1
Water connection type			Victaulic					

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.

(5) - not including filter pressure drop. The installation of the filter is mandatory.

(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614

(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744

(8) – Referred to unit operation with 200 Pa External Static Pressure (ESP) on the condenser fans

(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.

The above data are referred the unit installed in compliancy with installation prescription.

All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing.

EWAD~M- XS C + OPT161 - 200 Pa ESP FANS								
MODEL	notes		**C10**	**C11**	**C12**	**B13**	**H13**	**A13**
Cooling Capacity	(1)	kW	1019	1132	1220	1361	1376	1395
Power Input	(1)	kW	348	386	418	463	467	474
EER	(1)	kW/kW	2,93	2,93	2,92	2,94	2,95	2,94
Minimum capacity		%	13	13	13	13	13	13
IPLV	(1)	kW/kW	4,56	4,56	4,58	4,79	4,84	4,65
Cooling Capacity	(2)	kW	923	1026	1107	1244	1261	1253
EER	(2)	kW/kW	2,27	2,28	2,27	2,32	2,33	2,26
Cooling Capacity	(3)	kW	899	999	1078	1214	1233	1184
EER	(3)	kW/kW	2,15	2,15	2,15	2,20	2,22	2,13
Evaporator type		-	Direct Expansion – Shell & Tubes					
Water flow rate	(1)	l/s	44,1	49,1	52,9	59,0	59,6	60,4
Evaporator pressure drop	(1)	kPa	88,5	79,2	90,6	82,1	76,3	85,8
Water flow rate	(2)	l/s	40,0	44,4	47,9	53,9	54,6	54,3
Evaporator pressure drop	(2) (5)	kPa	74,2	66,3	76,0	69,8	65,2	70,7
Evaporator water volume		lt	501	481	481	451	492	451
Minimum water rate	(4)	l/s	11,5	13,7	13,7	17,1	18,8	17,1
Sound Power	(1) (6)	dB(A)	103	103	104	104	105	104
Sound Pressure @ 1 meter	(1) (7)	dB(A)	81	81	81	81	81	81
Fan type		-	Direct Propeller					
Fan diameter		mm	800					
Fan rotational speed		RPM	1430					
Fan motor / control		-	EC – Variable Speed					
Number of fans		n	18	20	22	28	30	22
Power input fans		kW	72,0	80,0	88,0	112,0	120,0	88,0
Air flow	(8)	l/s	106150	117944	129739	165122	176917	129739
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-	Single Screw					
Capacity control		-	Stepless					
Comp model per circuit		-	F4AS / F3BL	F4AL / F3BL	F4AL / F4AS	F4AL / F4AL	F4AL / F4AL	F4AL / F4AL
Oil charge		lt	44	44	50	50	50	50
Refrigerant Charge		kg	126	140	154	196	210	173
Casing material		-	Galvanized Steel Sheet					
Color		-	Ivory White					
Unit length		mm	8700	9600	10500	13200	14100	10500
Unit width		mm	2280	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540	2540
Unit weight - shipping		kg	7362	7592	8751	9984	10370	8821
Unit weight - operation		kg	7863	8073	9232	10435	10862	9272
Water connection size		mm	219,1	219,1	219,1	219,1	219,1	219,1
Water connection type			Victaulic					

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.

(5) - not including filter pressure drop. The installation of the filter is mandatory.

(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614

(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744

(8) – referred to unit operation with 200 Pa External Static Pressure (ESP) on the condenser fans.

(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.

The above data are referred to the unit without additional optional.

The above data are referred the unit installed in compliancy with installation prescription.

All the data are subject to change without notice. For updated information on project base refer to Chiller Selection Software and unit's certified drawing.

AHRI CERTIFIED™ www.ahridirectory.org

EWAD~M- XS C + OPT161 - 200 Pa ESP FANS							
MODEL	notes		**C14**	**H14**	**C15**	**C17**	**H18**
Cooling Capacity	(1)	kW	1452	1496	1524	1710	1863
Power Input	(1)	kW	492	503	519	608	657
EER	(1)	kW/kW	2,95	2,98	2,94	2,81	2,84
Minimum capacity		%	13	13	13	8	8
IPLV	(1)	kW/kW	4,52	4,44	4,57	4,35	4,20
Cooling Capacity	(2)	kW	1298	1342	1382	1465	1582
EER	(2)	kW/kW	2,24	2,26	2,27	2,13	2,15
Cooling Capacity	(3)	kW	1208	1277	1347	1358	1444
EER	(3)	kW/kW	2,11	2,12	2,14	2,01	2,03
Evaporator type		-	Direct Expansion – Shell & Tubes				
Water flow rate	(1)	l/s	62,9	64,8	66,0	74,1	80,7
Evaporator pressure drop	(1)	kPa	92,3	97,3	71,1	85,9	129
Water flow rate	(2)	l/s	56,3	58,2	59,9	63,5	68,5
Evaporator pressure drop	(2) (5)	kPa	75,4	80,1	59,7	65,0	95,7
Evaporator water volume		lt	451	451	946	522	522
Minimum water rate	(4)	l/s	17,1	17,1	19,1	18,9	19,3
Sound Power	(1) (6)	dB(A)	104	104	105	105	105
Sound Pressure @ 1 meter	(1) (7)	dB(A)	81	81	81	81	81
Fan type		-	Direct Propeller				
Fan diameter		mm	800				
Fan rotational speed		RPM	1430				
Fan motor / control		-	EC – Variable Speed				
Number of fans		n	22	24	28	24	26
Power input fans		kW	88,0	96,0	112,0	96,0	104,0
Air flow	(8)	l/s	129739	141533	165122	141533	153328
Refrigerant circuits		n	2	2	2	3	3
Compressor type		-	Single Screw				
Capacity control		-	Stepless				
Comp model per circuit		-	4AXL / F4AL	4AXL / 4AXL	4AXL / 4AXL	F4AL / F4AS / F4AS	F4AL / F4AL / F4AS
Oil charge		lt	50	50	50	75	75
Refrigerant Charge	(9)	kg	173	189	196	210	210
Casing material		-	Galvanized Steel Sheet				
Color		-	Ivory White				
Unit length		mm	10500	11400	13200	11400	12300
Unit width		mm	2280	2280	2280	2280	2280
Unit height		mm	2540	2540	2540	2540	2540
Unit weight - shipping		kg	8861	9179	10327	10931	10931
Unit weight - operation		kg	9312	9630	11273	11453	11453
Water connection size		mm	219,1	219,1	273,0	273,0	273,0

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(4) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
(5) - not including filter pressure drop. The installation of the filter is mandatory.
(6) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
(7) - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
(8) – referred to unit operation with 200 Pa External Static Pressure (ESP) on the condenser fans.
(9) – data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value. The above data are referred to the unit without additional optional.

The above data are referred the unit installed in compliancy with installation prescription.
All the data are subject to change without notice.
For updated information on project base refer to Chiller Selection Software and unit's certified drawing.

AHRI CERTIFIED™ www.ahridirectory.org

This page is left intentionally blank

EWAD~M- SS C – standard unit								
MODEL	notes		**300**	**340**	**400**	**420**	**450**	**520**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	178	206	229	241	257	290
Nominal Running Current (@ OAT = 46°C)	(2)	A	209	241	266	284	304	351
Max. running current	(3)	A	236	266	304	328	352	378
Max. current for wire sizing	(4)	A	270	330	368	461	485	590
Maximum starting current	(5)	A	260	293	334	361	387	416
Fan starting method		-	D.O.L.					
Max running current per fan		A	5,3					
Total fans running current		A	31,8	31,8	42,4	42,4	42,4	42,4
Compressor starting method			Wye - Delta					
Max. running current Compressor #1		A	82	99	126	126	148	162
Max. running current Compressor #2		A	114	126	126	148	148	162
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	151	151	195	195	288	330
Starting current compressor #2	(7)	A	151	195	195	288	288	330
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	400	400	630	630	630	630
Terminal connection		-	Cables	Cables	Cables	Cables	Cables	Cables
Cable per phase		-	1x240mmq+PE 1x120mmq	1x240mmq+PE 1x120mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq
Short circuit current Icw 1 sec.		kA	15	15	20	20	20	20

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) - For less than 1 second.
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- SS C – standard unit								
MODEL	notes		**550**	**590**	**680**	**740**	**830**	**920**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	305	321	364	404	446	506
Nominal Running Current (@ OAT = 46°C)	(2)	A	367	382	426	475	519	602
Max. running current	(3)	A	412	446	498	542	594	681
Max. current for wire sizing	(4)	A	601	635	665	665	717	803
Maximum starting current	(5)	A	453	491	548	596	653	749
Fan starting method		-	D.O.L.					
Max running current per fan		A	5,3					
Total fans running current		A	53	63,6	63,6	63,6	63,6	74,2
Compressor starting method			Wye - Delta					
Max. running current Compressor #1		A	162	185	231	274	274	393
Max. running current Compressor #2		A	185	185	185	185	231	185
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	330	330	410	410	410	540
Starting current compressor #2	(7)	A	330	330	330	330	410	330
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	630	630	800	800	800	1000
Terminal connection		-	Cables	Cables	Cables	Cables	Cables	Bars
Cable per phase		-	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x240mmq+PE 1x240mmq	2x240mmq+PE 1x240mmq	2x240mmq+PE 1x240mmq	2x300mmq+PE 1x300mmq
Short circuit current Icw 1 sec.		kA	20	20	20	20	20	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) - For less than 1 second.
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- SS C – standard unit								
MODEL	notes		**970**	**H10**	**H11**	**H13**	**C13**	**C14**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	530	589	633	682	732	779
Nominal Running Current (@ OAT = 46°C)	(2)	A	616	689	738	797	839	878
Max. running current	(3)	A	719	788	858	938	996	1054
Max. current for wire sizing	(4)	A	910	910	980	1060	1206	1264
Maximum starting current	(5)	A	791	867	944	1032	1096	1159
Fan starting method		-	D.O.L.					
Max running current per fan		A	5,3					
Total fans running current		A	84,8	84,8	95,4	106	106	106
Compressor starting method			Wye - Delta					
Max. running current Compressor #1		A	329	393	393	393	451	451
Max. running current Compressor #2		A	274	274	329	393	393	451
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	410	540	540	540	684	684
Starting current compressor #2	(7)	A	538	410	538	540	540	684
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	1000	1250	1250	1250	1600	1600
Terminal connection		-	Bars	Bars	Bars	Bars	Bars	Bars
Cable per phase		-	2x300mmq+PE 1x300mmq	2x400mmq+PE 1 400mmq	2x400mmq+PE 1 400mmq	2x400mmq+PE 1 400mmq	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq
Short circuit current Icw 1 sec.		kA	25	25	25	25	25	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) - For less than 1 second.
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- SS C – standard unit								
MODEL	notes		**H17**	**C19**	**H19**	**H20**	**C21**	**C22**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	915	1058	1053	1079	1123	1171
Nominal Running Current (@ OAT = 46°C)	(2)	A	1110	1101	1153	1222	1262	1293
Max. running current	(3)	A	1269	1375	1465	1465	1523	1581
Max. current for wire sizing	(4)	A	1391	1497	1675	1675	1733	1791
Maximum starting current	(5)		1396	1513	1612	1612	1675	1739
Fan starting method		-	D.O.L.					
Max running current per fan		A	5,3					
Total fans running current		A	159	127,2	159	159	159	159
Compressor starting method			Wye - Delta					
Max. running current Compressor #1		A	393	393	451	451	451	451
Max. running current Compressor #2		A	329	393	393	393	451	451
Max. running current Compressor #2		A	329	393	393	393	393	451
Starting current compressor #1	(7)	A	540	540	684	684	684	684
Starting current compressor #2	(7)	A	538	540	540	540	684	684
Starting current compressor #2	(7)	A	538	540	540	540	540	684
Main switch size		A	2000	2000	2000	2000	2000	2000
Terminal connection		-	Bars	Bars	Bars	Bars	Bars	Bars
Cable per phase		-	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq
Short circuit current Icw 1 sec.		kA	25	25	25	25	25	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) - For less than 1 second.
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- SS C + OPT160a - 100 Pa ESP FANS								
MODEL	notes		**300**	**340**	**400**	**420**	**450**	**520**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	182	211	233	247	263	298
Nominal Running Current (@ OAT = 46°C)	(2)	A	213	240	274	292	314	366
Max. running current	(3)	A	236	266	304	328	352	378
Max. current for wire sizing	(4)	A	270	330	368	461	485	590
Maximum starting current	(5)	A	260	293	334	361	387	416
Fan starting method		-	D.O.L.					
Max running current per fan		A	5,3					
Total fans running current		A	31,8	31,8	42,4	42,4	42,4	42,4
Compressor starting method			Wye - Delta					
Max. running current Compressor #1		A	82	99	126	126	148	162
Max. running current Compressor #2		A	114	126	126	148	148	162
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	151	151	195	195	288	330
Starting current compressor #2	(7)	A	151	195	195	288	288	330
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	400	400	630	630	630	630
Terminal connection		-	Cables	Cables	Cables	Cables	Cables	Cables
Cable per phase		-	1x240mmq+PE 1x120mmq	1x240mmq+PE 1x120mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq
Short circuit current Icw 1 sec.		kA	15	15	20	20	20	20

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) - For less than 1 second.
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- SS C + OPT160a - 100 Pa ESP FANS								
MODEL	notes		**550**	**590**	**680**	**740**	**830**	**920**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	313	328	372	414	458	519
Nominal Running Current (@ OAT = 46°C)	(2)	A	380	394	440	476	523	604
Max. running current	(3)	A	412	446	498	542	594	681
Max. current for wire sizing	(4)	A	601	635	665	665	717	803
Maximum starting current	(5)	A	453	491	548	596	653	749
Fan starting method		-	D.O.L.					
Max running current per fan		A	5,3					
Total fans running current		A	53	63,6	63,6	63,6	63,6	74,2
Compressor starting method			Wye - Delta					
Max. running current Compressor #1		A	162	185	231	274	274	393
Max. running current Compressor #2		A	185	185	185	185	231	185
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	330	330	410	410	410	540
Starting current compressor #2	(7)	A	330	330	330	330	410	330
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	630	630	800	800	800	1000
Terminal connection		-	Cables	Cables	Cables	Cables	Cables	Bars
Cable per phase		-	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x240mmq+PE 1x240mmq	2x240mmq+PE 1x240mmq	2x240mmq+PE 1x240mmq	2x300mmq+PE 1x300mmq
Short circuit current Icw 1 sec.		kA	20	20	20	20	20	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) - For less than 1 second.
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- SS C + OPT160a - 100 Pa ESP FANS								
MODEL	notes		**970**	**H10**	**H11**	**H13**	**C13**	**C14**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	541	603	647	697	750	800
Nominal Running Current (@ OAT = 46°C)	(2)	A	631	675	743	803	827	853
Max. running current	(3)	A	719	788	858	938	996	1054
Max. current for wire sizing	(4)	A	910	910	980	1060	1206	1264
Maximum starting current	(5)	A	791	867	944	1032	1096	1159
Fan starting method		-	D.O.L.					
Max running current per fan		A	5,3					
Total fans running current		A	84,8	84,8	95,4	106	106	106
Compressor starting method			Wye - Delta					
Max. running current Compressor #1		A	329	393	393	451	393	451
Max. running current Compressor #2		A	274	274	329	393	393	451
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	410	540	540	540	684	684
Starting current compressor #2	(7)	A	538	410	538	540	540	684
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	1000	1250	1250	1250	1600	1600
Terminal connection		-	Bars	Bars	Bars	Bars	Bars	Bars
Cable per phase		-	2x300mmq+PE 1x300mmq	2x400mmq+PE 1 400mmq	2x400mmq+PE 1 400mmq	2x400mmq+PE 1 400mmq	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq
Short circuit current Icw 1 sec.		kA	25	25	25	25	25	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) - For less than 1 second.
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- SS C + OPT160a - 100 Pa ESP FANS								
MODEL	notes		**H17**	**C19**	**H19**	**H20**	**C21**	**C22**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	928	1078	1071	1098	1145	1193
Nominal Running Current (@ OAT = 46°C)	(2)	A	1067	1048	1211	1209	1237	1268
Max. running current	(3)	A	1269	1375	1465	1465	1523	1581
Max. current for wire sizing	(4)	A	1391	1497	1675	1675	1733	1791
Maximum starting current	(5)		1396	1513	1612	1612	1675	1739
Fan starting method		-	D.O.L.					
Max running current per fan		A	5,3					
Total fans running current		A	159	127,2	159	159	159	159
Compressor starting method			Wye - Delta					
Max. running current Compressor #1		A	393	393	451	451	451	451
Max. running current Compressor #2		A	329	393	393	393	451	451
Max. running current Compressor #2		A	329	393	393	393	393	451
Starting current compressor #1	(7)	A	540	540	684	684	684	684
Starting current compressor #2	(7)	A	538	540	540	540	684	684
Starting current compressor #2	(7)	A	538	540	540	540	540	684
Main switch size		A	2000	2000	2000	2000	2000	2000
Terminal connection		-	Bars	Bars	Bars	Bars	Bars	Bars
Cable per phase		-	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq
Short circuit current Icw 1 sec.		kA	25	25	25	25	25	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) - For less than 1 second.
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- SS C + OPT06 – Soft Starter								
MODEL	notes		**300**	**340**	**400**	**420**	**450**	**520**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	178	206	229	241	257	290
Nominal Running Current (@ OAT = 46°C)	(2)	A	209	241	266	284	304	351
Max. running current	(3)	A	236	266	304	328	352	378
Max. current for wire sizing	(4)	A	270	330	368	461	485	590
Maximum starting current	(5)	A	260	293	334	361	387	416
Fan starting method		-	D.O.L.					
Max running current per fan		A	5,3					
Total fans running current		A	31,8	31,8	42,4	42,4	42,4	42,4
Compressor starting method			Soft Starter (Solid State Starter)					
Max. running current Compressor #1		A	82	99	126	126	148	162
Max. running current Compressor #2		A	114	126	126	148	148	162
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	151	151	195	195	288	330
Starting current compressor #2	(7)	A	151	195	195	288	288	330
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	400	400	630	630	630	630
Terminal connection		-	Cables	Cables	Cables	Cables	Cables	Cables
Cable per phase		-	1x240mmq+PE 1x120mmq	1x240mmq+PE 1x120mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq
Short circuit current Icw 1 sec.		kA	15	15	20	20	20	20

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) - For less than 1 second.
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- SS C + OPT06 – Soft Starter								
MODEL	notes		**550**	**590**	**680**	**740**	**830**	**920**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	305	321	364	404	446	506
Nominal Running Current (@ OAT = 46°C)	(2)	A	367	382	426	475	519	602
Max. running current	(3)	A	412	446	498	542	594	681
Max. current for wire sizing	(4)	A	601	635	665	665	717	803
Maximum starting current	(5)	A	453	491	548	596	653	749
Fan starting method		-	D.O.L.					
Max running current per fan		A	5,3					
Total fans running current		A	53	63,6	63,6	63,6	63,6	74,2
Compressor starting method			Soft Starter (Solid State Starter)					
Max. running current Compressor #1		A	162	185	231	274	274	393
Max. running current Compressor #2		A	185	185	185	185	231	185
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	330	330	410	410	410	540
Starting current compressor #2	(7)	A	330	330	330	330	410	330
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	630	630	800	800	800	1000
Terminal connection		-	Cables	Cables	Cables	Cables	Cables	Bars
Cable per phase		-	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x240mmq+PE 1x240mmq	2x240mmq+PE 1x240mmq	2x240mmq+PE 1x240mmq	2x300mmq+PE 1x300mmq
Short circuit current Icw 1 sec.		kA	20	20	20	20	20	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) - For less than 1 second.
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- SS C + OPT06 – Soft Starter								
MODEL	notes		**970**	**H10**	**H11**	**H13**	**C13**	**C14**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	530	589	633	682	732	779
Nominal Running Current (@ OAT = 46°C)	(2)	A	616	689	738	797	839	878
Max. running current	(3)	A	719	788	858	938	996	1054
Max. current for wire sizing	(4)	A	910	910	980	1060	1206	1264
Maximum starting current	(5)	A	791	867	944	1032	1096	1159
Fan starting method		-	D.O.L.					
Max running current per fan		A	5,3					
Total fans running current		A	84,8	84,8	95,4	106	106	106
Compressor starting method			Soft Starter (Solid State Starter)					
Max. running current Compressor #1		A	329	393	393	393	451	451
Max. running current Compressor #2		A	274	274	329	393	393	451
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	410	540	540	540	684	684
Starting current compressor #2	(7)	A	538	410	538	540	540	684
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	1000	1250	1250	1250	1600	1600
Terminal connection		-	Bars	Bars	Bars	Bars	Bars	Bars
Cable per phase		-	2x300mmq+PE 1x300mmq	2x400mmq+PE 1 400mmq	2x400mmq+PE 1 400mmq	2x400mmq+PE 1 400mmq	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq
Short circuit current Icw 1 sec.		kA	25	25	25	25	25	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) - For less than 1 second.
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- SS C + OPT06 – Soft Starter								
MODEL	notes		**H17**	**C18**	**C19**	**H19**	**C21**	**C22**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	915	1058	1053	1079	1123	1171
Nominal Running Current (@ OAT = 46°C)	(2)	A	1110	1101	1153	1222	1262	1293
Max. running current	(3)	A	1269	1375	1465	1465	1523	1581
Max. current for wire sizing	(4)	A	1391	1497	1675	1675	1733	1791
Maximum starting current	(5)		1396	1513	1612	1612	1675	1739
Fan starting method		-	D.O.L.					
Max running current per fan		A	5,3					
Total fans running current		A	159	127,2	159	159	159	159
Compressor starting method			Soft Starter (Solid State Starter)					
Max. running current Compressor #1		A	393	393	451	451	451	451
Max. running current Compressor #2		A	329	393	393	393	451	451
Max. running current Compressor #2		A	329	393	393	393	393	451
Starting current compressor #1	(7)	A	540	540	684	684	684	684
Starting current compressor #2	(7)	A	538	540	540	540	684	684
Starting current compressor #2	(7)	A	538	540	540	540	540	684
Main switch size		A	2000	2000	2000	2000	2000	2000
Terminal connection		-	Bars	Bars	Bars	Bars	Bars	Bars
Cable per phase		-	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq
Short circuit current Icw 1 sec.		kA	25	25	25	25	25	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) - For less than 1 second.
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- SS C + OPT145 - EC MOTORS FANS								
MODEL	notes		**300**	**340**	**400**	**420**	**450**	**520**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	173	200	222	234	249	282
Nominal Running Current (@ OAT = 46°C)	(2)	A	203	236	261	278	298	343
Max. running current	(3)	A	231	261	298	322	346	372
Max. current for wire sizing	(4)	A	265	325	362	455	479	584
Maximum starting current	(5)	A	254	287	328	354	381	409
Fan starting method		-	EC motor					
Max running current per fan		A	4					
Total fans running current		A	24	24	32	32	32	32
Compressor starting method			Wye - Delta					
Max. running current Compressor #1		A	82	99	126	126	148	162
Max. running current Compressor #2		A	114	126	126	148	148	162
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	151	151	195	195	288	330
Starting current compressor #2	(7)	A	151	195	195	288	288	330
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	400	400	630	630	630	630
Terminal connection		-	Cables	Cables	Cables	Cables	Cables	Cables
Cable per phase		-	1x240mmq+PE 1x120mmq	1x240mmq+PE 1x120mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq
Short circuit current Icw 1 sec.		kA	15	15	20	20	20	20

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) - For less than 1 second.
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- SS C + OPT145 - EC MOTORS FANS								
MODEL	notes		**550**	**590**	**680**	**740**	**830**	**920**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	296	310	353	392	434	492
Nominal Running Current (@ OAT = 46°C)	(2)	A	359	373	418	466	509	589
Max. running current	(3)	A	404	436	488	532	584	670
Max. current for wire sizing	(4)	A	593	625	655	655	707	792
Maximum starting current	(5)	A	444	480	537	585	642	737
Fan starting method		-	EC motor					
Max running current per fan		A	4					
Total fans running current		A	40	48	48	48	48	56
Compressor starting method			Wye - Delta					
Max. running current Compressor #1		A	162	185	231	274	274	393
Max. running current Compressor #2		A	185	185	185	185	231	185
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	330	330	410	410	410	540
Starting current compressor #2	(7)	A	330	330	330	330	410	330
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	630	630	800	800	800	1000
Terminal connection		-	Cables	Cables	Cables	Cables	Cables	Bars
Cable per phase		-	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x240mmq+PE 1x240mmq	2x240mmq+PE 1x240mmq	2x240mmq+PE 1x240mmq	2x300mmq+PE 1x300mmq
Short circuit current Icw 1 sec.		kA	20	20	20	20	20	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) - For less than 1 second.
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- SS C + OPT145 - EC MOTORS FANS								
MODEL	notes		**970**	**H10**	**H11**	**H13**	**C13**	**C14**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	516	574	616	663	713	758
Nominal Running Current (@ OAT = 46°C)	(2)	A	605	676	724	781	836	887
Max. running current	(3)	A	706	775	844	922	980	1038
Max. current for wire sizing	(4)	A	897	897	966	1044	1190	1248
Maximum starting current	(5)	A	777	853	928	1014	1078	1142
Fan starting method		-	EC motor					
Max running current per fan		A	4					
Total fans running current		A	64	64	72	80	80	80
Compressor starting method			Wye - Delta					
Max. running current Compressor #1		A	329	393	393	393	451	451
Max. running current Compressor #2		A	274	274	329	393	393	451
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	410	540	540	540	684	684
Starting current compressor #2	(7)	A	538	410	538	540	540	684
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	1000	1250	1250	1250	1600	1600
Terminal connection		-	Bars	Bars	Bars	Bars	Bars	Bars
Cable per phase		-	2x300mmq+PE 1x300mmq	2x400mmq+PE 1 400mmq	2x400mmq+PE 1 400mmq	2x400mmq+PE 1 400mmq	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq
Short circuit current Icw 1 sec.		kA	25	25	25	25	25	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.

(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1

(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load

(6) - Voltage unbalance between phases must be within ± 3%.

(7) - For less than 1 second.

The data are referred to the unit without additional options.

All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- SS C + OPT145 - EC MOTORS FANS								
MODEL	notes		**H17**	**C19**	**H19**	**H20**	**C21**	**C22**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	888	1031	1024	1050	1093	1140
Nominal Running Current (@ OAT = 46°C)	(2)	A	1041	1076	1210	1221	1259	1300
Max. running current	(3)	A	1245	1356	1441	1441	1499	1557
Max. current for wire sizing	(4)	A	1367	1478	1651	1651	1709	1767
Maximum starting current	(5)		1370	1492	1585	1585	1649	1713
Fan starting method		-	EC motor					
Max running current per fan		A	4					
Total fans running current		A	120	96	120	120	120	120
Compressor starting method			Wye - Delta					
Max. running current Compressor #1		A	393	393	451	451	451	451
Max. running current Compressor #2		A	329	393	393	393	451	451
Max. running current Compressor #2		A	329	393	393	393	393	451
Starting current compressor #1	(7)	A	540	540	684	684	684	684
Starting current compressor #2	(7)	A	538	540	540	540	684	684
Starting current compressor #2	(7)	A	538	540	540	540	540	684
Main switch size		A	2000	2000	2000	2000	2000	2000
Terminal connection		-	Bars	Bars	Bars	Bars	Bars	Bars
Cable per phase		-	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq
Short circuit current Icw 1 sec.		kA	25	25	25	25	25	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) - For less than 1 second.
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- SS C + OPT161 - 200 Pa ESP FANS								
MODEL	notes		**300**	**340**	**400**	**420**	**450**	**520**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	185	214	238	251	266	300
Nominal Running Current (@ OAT = 46°C)	(2)	A	216	250	278	296	316	364
Max. running current	(3)	A	241	271	312	336	360	386
Max. current for wire sizing	(4)	A	275	335	376	469	493	598
Maximum starting current	(5)	A	265	298	343	370	396	425
Fan starting method		-	EC motor					
Max running current per fan		A	6.2					
Total fans running current		A	37	37	50	50	50	50
Compressor starting method			Wye - Delta					
Max. running current Compressor #1		A	82	99	126	126	148	162
Max. running current Compressor #2		A	114	126	126	148	148	162
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	151	151	195	195	288	330
Starting current compressor #2	(7)	A	151	195	195	288	288	330
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	400	400	630	630	630	630
Terminal connection		-	Cables	Cables	Cables	Cables	Cables	Cables
Cable per phase		-	1x240mmq+PE 1x120mmq	1x240mmq+PE 1x120mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq
Short circuit current Icw 1 sec.		kA	15	15	20	20	20	20

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.

(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1

(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load

(6) - Voltage unbalance between phases must be within ± 3%.

(7) - For less than 1 second.

The data are referred to the unit without additional options.

All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- SS C + OPT161 - 200 Pa ESP FANS								
MODEL	notes		**550**	**590**	**680**	**740**	**830**	**920**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	318	335	379	419	461	521
Nominal Running Current (@ OAT = 46°C)	(2)	A	382	399	444	494	537	620
Max. running current	(3)	A	421	456	508	552	604	694
Max. current for wire sizing	(4)	A	610	645	675	675	727	816
Maximum starting current	(5)	A	463	502	559	607	664	763
Fan starting method		-	EC motor					
Max running current per fan		A	6.2					
Total fans running current		A	62	74	74	74	74	87
Compressor starting method			Wye - Delta					
Max. running current Compressor #1		A	162	185	231	274	274	393
Max. running current Compressor #2		A	185	185	185	185	231	185
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	330	330	410	410	410	540
Starting current compressor #2	(7)	A	330	330	330	330	410	330
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	630	630	800	800	800	1000
Terminal connection		-	Cables	Cables	Cables	Cables	Cables	Bars
Cable per phase		-	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x240mmq+PE 1x240mmq	2x240mmq+PE 1x240mmq	2x240mmq+PE 1x240mmq	2x300mmq+PE 1x300mmq
Short circuit current Icw 1 sec.		kA	20	20	20	20	20	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) - For less than 1 second
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- SS C + OPT161 - 200 Pa ESP FANS								
MODEL	notes		**970**	**H10**	**H11**	**H13**	**C13**	**C14**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	545	604	649	700	750	796
Nominal Running Current (@ OAT = 46°C)	(2)	A	634	706	758	819	870	918
Max. running current	(3)	A	733	802	875	956	1014	1072
Max. current for wire sizing	(4)	A	924	924	997	1078	1224	1282
Maximum starting current	(5)	A	806	882	963	1052	1115	1179
Fan starting method		-	EC motor					
Max running current per fan		A	6.2					
Total fans running current		A	99	99	112	124	124	124
Compressor starting method			Wye - Delta					
Max. running current Compressor #1		A	329	393	393	393	451	451
Max. running current Compressor #2		A	274	274	329	393	393	451
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	410	540	540	540	684	684
Starting current compressor #2	(7)	A	538	410	538	540	540	684
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	1000	1250	1250	1250	1600	1600
Terminal connection		-	Bars	Bars	Bars	Bars	Bars	Bars
Cable per phase		-	2x300mmq+PE 1x300mmq	2x400mmq+PE 1 400mmq	2x400mmq+PE 1 400mmq	2x400mmq+PE 1 400mmq	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq
Short circuit current Icw 1 sec.		kA	25	25	25	25	25	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%
(7) - For less than 1 second
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- SS C + OPT161 - 200 Pa ESP FANS								
MODEL	notes		**H17**	**C19**	**H19**	**H20**	**C21**	**C22**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	943	1077	1080	1106	1149	1197
Nominal Running Current (@ OAT = 46°C)	(2)	A	1097	1111	1260	1270	1308	1347
Max. running current	(3)	A	1296	1397	1492	1492	1550	1608
Max. current for wire sizing	(4)	A	1418	1519	1702	1702	1760	1818
Maximum starting current	(5)		1426	1537	1641	1641	1705	1769
Fan starting method		-	EC motor					
Max running current per fan		A	6.2					
Total fans running current		A	186	149	186	186	186	186
Compressor starting method			Wye - Delta					
Max. running current Compressor #1		A	393	393	451	451	451	451
Max. running current Compressor #2		A	329	393	393	393	451	451
Max. running current Compressor #2		A	329	393	393	393	393	451
Starting current compressor #1	(7)	A	540	540	684	684	684	684
Starting current compressor #2	(7)	A	538	540	540	540	684	684
Starting current compressor #2	(7)	A	538	540	540	540	540	684
Main switch size		A	2000	2000	2000	2000	2000	2000
Terminal connection		-	Bars	Bars	Bars	Bars	Bars	Bars
Cable per phase		-	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq
Short circuit current Icw 1 sec.		kA	25	25	25	25	25	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) - For less than 1 second
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- XS C – standard unit								
MODEL	notes		**320**	**360**	**415**	**430**	**460**	**540**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	184	206	231	244	261	289
Nominal Running Current (@ OAT = 46°C)	(2)	A	212	241	271	289	308	343
Max. running current	(3)	A	246	276	304	328	363	400
Max. current for wire sizing	(4)	A	280	340	368	461	496	612
Maximum starting current	(5)	A	271	304	334	361	399	440
Fan starting method		-	D.O.L.					
Max running current per fan		A	5,3					
Total fans running current		A	42,4	42,4	42,4	42,4	53	63,6
Compressor starting method			Wye - Delta					
Max. running current Compressor #1		A	82	99	126	126	148	162
Max. running current Compressor #2		A	114	126	126	148	148	162
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	151	151	195	195	288	330
Starting current compressor #2	(7)	A	151	195	195	288	288	330
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	400	630	630	630	630	630
Terminal connection		-	Cables	Cables	Cables	Cables	Cables	Cables
Cable per phase		-	1x240mmq+PE 1x120mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq
Short circuit current Icw 1 sec.		kA	15	20	20	20	20	20

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) - For less than 1 second
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- XS C – standard unit								
MODEL	notes		**570**	**620**	**710**	**780**	**850**	**940**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	306	326	368	405	443	483
Nominal Running Current (@ OAT = 46°C)	(2)	A	365	389	431	476	514	562
Max. running current	(3)	A	423	446	508	552	615	659
Max. current for wire sizing	(4)	A	612	635	675	675	738	782
Maximum starting current	(5)	A	465	491	559	607	677	725
Fan starting method		-	D.O.L.					
Max running current per fan		A	5,3					
Total fans running current		A	63,6	63,6	74,2	74,2	84,8	84,8
Compressor starting method			Wye - Delta					
Max. running current Compressor #1		A	162	185	231	274	274	274
Max. running current Compressor #2		A	185	185	185	185	231	274
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	330	330	410	410	410	410
Starting current compressor #2	(7)	A	330	330	330	330	410	410
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	630	800	800	1000	1000	1000
Terminal connection		-	Cables	Cables	Cables	Bars	Bars	Bars
Cable per phase		-	2x185mmq+PE 1x185mmq	2x240mmq+PE 1x240mmq	2x240mmq+PE 1x240mmq	2x300mmq+PE 1x300mmq	2x300mmq+PE 1x300mmq	2x300mmq+PE 1x300mmq
Short circuit current Icw 1 sec.		kA	20	20	20	25	25	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) - For less than 1 second
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- XS C – standard unit								
MODEL	notes		**C10**	**C11**	**C12**	**B13**	**H13**	**A13**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	530	587	632	694	699	693
Nominal Running Current (@ OAT = 46°C)	(2)	A	616	684	736	805	809	809
Max. running current	(3)	A	729	809	880	980	991	949
Max. current for wire sizing	(4)	A	920	931	1002	1102	1113	1071
Maximum starting current	(5)	A	802	890	968	1078	1090	1044
Fan starting method		-	D.O.L.					
Max running current per fan		A	5,3					
Total fans running current		A	95,4	106	116,6	148,4	159	116,6
Compressor starting method			Wye - Delta					
Max. running current Compressor #1		A	329	393	393	393	393	393
Max. running current Compressor #2		A	274	274	329	393	393	393
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	538	540	540	540	540	540
Starting current compressor #2	(7)	A	410	410	538	540	540	538
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	1250	1250	1600	1600	1600	1600
Terminal connection		-	Bars	Bars	Bars	Bars	Bars	Bars
Cable per phase		-	2x400mmq+PE 1 400mmq	2x400mmq+PE 1 400mmq	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq
Short circuit current Icw 1 sec.		kA	25	25	25	25	25	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) - For less than 1 second.
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- XS C – standard unit							
MODEL	notes		**C14**	**H14**	**C15**	**C17**	**H18**
Phases		n	3				
Frequency		Hz	50				
Voltage	(6)	V	400				
Tolerances - min/max		%	-10 / +10				
Nominal Running Current (@ OAT = 35°C)	(1)	A	736	776	778	912	984
Nominal Running Current (@ OAT = 46°C)	(2)	A	866	917	914	1029	1097
Max. running current	(3)	A	1007	1075	1096	1237	1317
Max. current for wire sizing	(4)	A	1217	1285	1306	1359	1439
Maximum starting current	(5)	A	1108	1183	1206	1361	1449
Fan starting method		-	D.O.L.				
Max running current per fan		A	5,3				
Total fans running current		A	116,6	127,2	148,4	127,2	137,8
Compressor starting method			Wye - Delta				
Max. running current Compressor #1		A	451	451	451	393	393
Max. running current Compressor #2		A	393	451	451	329	393
Max. running current Compressor #2		A	-	-	-	329	329
Starting current compressor #1	(7)	A	684	684	684	540	540
Starting current compressor #2	(7)	A	540	684	684	538	540
Starting current compressor #2	(7)	A	-	-	-	538	538
Main switch size		A	1600	1600	1600	2000	2000
Terminal connection		-	Bars	Bars	Bars	Bars	Bars
Cable per phase		-	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq
Short circuit current Icw 1 sec.		kA	25	25	25	25	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) - For less than 1 second.
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- XS C + OPT160a - 100 Pa ESP FANS								
MODEL	notes		**320**	**360**	**415**	**430**	**460**	**540**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	186	210	235	250	266	294
Nominal Running Current (@ OAT = 46°C)	(2)	A	215	245	276	295	314	350
Max. running current	(3)	A	246	276	304	328	363	400
Max. current for wire sizing	(4)	A	280	340	368	461	496	612
Maximum starting current	(5)	A	271	304	334	361	399	440
Fan starting method		-	D.O.L.					
Max running current per fan		A	5,3					
Total fans running current		A	42,4	42,4	42,4	42,4	53	63,6
Compressor starting method			Wye - Delta					
Max. running current Compressor #1		A	82	99	126	126	148	162
Max. running current Compressor #2		A	114	126	126	148	148	162
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	151	151	195	195	288	330
Starting current compressor #2	(7)	A	151	195	195	288	288	330
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	400	630	630	630	630	630
Terminal connection		-	Cables	Cables	Cables	Cables	Cables	Cables
Cable per phase		-	1x240mmq+PE 1x120mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq
Short circuit current Icw 1 sec.		kA	15	20	20	20	20	20

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) - For less than 1 second
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- XS C + OPT160a - 100 Pa ESP FANS								
MODEL	notes		**570**	**620**	**710**	**780**	**850**	**940**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	312	333	375	413	451	493
Nominal Running Current (@ OAT = 46°C)	(2)	A	373	398	440	486	523	574
Max. running current	(3)	A	423	446	508	552	615	659
Max. current for wire sizing	(4)	A	612	635	675	675	738	782
Maximum starting current	(5)	A	465	491	559	607	677	725
Fan starting method		-	D.O.L.					
Max running current per fan		A	5,3					
Total fans running current		A	63,6	63,6	74,2	74,2	84,8	84,8
Compressor starting method			Wye - Delta					
Max. running current Compressor #1		A	162	185	231	274	274	274
Max. running current Compressor #2		A	185	185	185	185	231	274
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	330	330	410	410	410	410
Starting current compressor #2	(7)	A	330	330	330	330	410	410
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	630	800	800	1000	1000	1000
Terminal connection		-	Cables	Cables	Cables	Bars	Bars	Bars
Cable per phase		-	2x185mmq+PE 1x185mmq	2x240mmq+PE 1x240mmq	2x240mmq+PE 1x240mmq	2x300mmq+PE 1x300mmq	2x300mmq+PE 1x300mmq	2x300mmq+PE 1x300mmq
Short circuit current Icw 1 sec.		kA	20	20	20	25	25	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) - For less than 1 second
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- SS C + OPT160a - 100 Pa ESP FANS								
MODEL	notes		**C10**	**C11**	**C12**	**B13**	**H13**	**A13**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	540	598	643	705	709	707
Nominal Running Current (@ OAT = 46°C)	(2)	A	629	696	750	817	821	808
Max. running current	(3)	A	729	809	880	980	991	949
Max. current for wire sizing	(4)	A	920	931	1002	1102	1113	1071
Maximum starting current	(5)	A	802	890	968	1078	1090	1044
Fan starting method		-	D.O.L.					
Max running current per fan		A	5,3					
Total fans running current		A	95,4	106	116,6	148,4	159	116,6
Compressor starting method			Wye - Delta					
Max. running current Compressor #1		A	329	393	393	393	393	393
Max. running current Compressor #2		A	274	274	329	393	393	393
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	538	540	540	540	540	540
Starting current compressor #2	(7)	A	410	410	538	540	540	538
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	1250	1250	1600	1600	1600	1600
Terminal connection		-	Bars	Bars	Bars	Bars	Bars	Bars
Cable per phase		-	2x400mmq+PE 1 400mmq	2x400mmq+PE 1 400mmq	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq
Short circuit current Icw 1 sec.		kA	25	25	25	25	25	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) - For less than 1 second
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- XS C + OPT160a - 100 Pa ESP FANS							
MODEL	notes		**C14**	**H14**	**C15**	**C17**	**H18**
Phases		n	3				
Frequency		Hz	50				
Voltage	(6)	V	400				
Tolerances - min/max		%	-10 / +10				
Nominal Running Current (@ OAT = 35°C)	(1)	A	752	793	792	936	1009
Nominal Running Current (@ OAT = 46°C)	(2)	A	862	932	931	1017	1071
Max. running current	(3)	A	1007	1075	1096	1237	1317
Max. current for wire sizing	(4)	A	1217	1285	1306	1359	1439
Maximum starting current	(5)	A	1108	1183	1206	1361	1449
Fan starting method		-	D.O.L.				
Max running current per fan		A	5,3				
Total fans running current		A	116,6	127,2	148,4	127,2	137,8
Compressor starting method			Wye - Delta				
Max. running current Compressor #1		A	451	451	451	393	393
Max. running current Compressor #2		A	393	451	451	329	393
Max. running current Compressor #2		A	-	-	-	329	329
Starting current compressor #1	(7)	A	540	540	684	540	540
Starting current compressor #2	(7)	A	538	538	684	538	540
Starting current compressor #2	(7)	A	-	-	-	538	538
Main switch size		A	1600	1600	1600	2000	2000
Terminal connection		-	Bars	Bars	Bars	Bars	Bars
Cable per phase		-	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq
Short circuit current Icw 1 sec.		kA	25	25	25	25	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%
(7) - For less than 1 second.
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- XS C + OPT06 – Soft Starter								
MODEL	notes		**320**	**360**	**415**	**430**	**460**	**540**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	184	206	231	244	261	289
Nominal Running Current (@ OAT = 46°C)	(2)	A	212	241	271	289	308	343
Max. running current	(3)	A	246	276	304	328	363	400
Max. current for wire sizing	(4)	A	280	340	368	461	496	612
Maximum starting current	(5)	A	271	304	334	361	399	440
Fan starting method		-	D.O.L.					
Max running current per fan		A	5,3					
Total fans running current		A	42,4	42,4	42,4	42,4	53	63,6
Compressor starting method			Soft Starter (Solid State Starter)					
Max. running current Compressor #1		A	82	99	126	126	148	162
Max. running current Compressor #2		A	114	126	126	148	148	162
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	151	151	195	195	288	330
Starting current compressor #2	(7)	A	151	195	195	288	288	330
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	400	630	630	630	630	630
Terminal connection		-	Cables	Cables	Cables	Cables	Cables	Cables
Cable per phase		-	1x240mmq+PE 1x120mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq
Short circuit current Icw 1 sec.		kA	15	20	20	20	20	20

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) - For less than 1 second
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- XS C + OPT06 – Soft Starter								
MODEL	notes		**570**	**620**	**710**	**780**	**850**	**940**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	306	326	368	405	443	483
Nominal Running Current (@ OAT = 46°C)	(2)	A	365	389	431	476	514	562
Max. running current	(3)	A	423	446	508	552	615	659
Max. current for wire sizing	(4)	A	612	635	675	675	738	782
Maximum starting current	(5)	A	465	491	559	607	677	725
Fan starting method		-	D.O.L.					
Max running current per fan		A	5,3					
Total fans running current		A	63,6	63,6	74,2	74,2	84,8	84,8
Compressor starting method			Soft Starter (Solid State Starter)					
Max. running current Compressor #1		A	162	185	231	274	274	274
Max. running current Compressor #2		A	185	185	185	185	231	274
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	330	330	410	410	410	410
Starting current compressor #2	(7)	A	330	330	330	330	410	410
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	630	800	800	1000	1000	1000
Terminal connection		-	Cables	Cables	Cables	Bars	Bars	Bars
Cable per phase		-	2x185mmq+PE 1x185mmq	2x240mmq+PE 1x240mmq	2x240mmq+PE 1x240mmq	2x300mmq+PE 1x300mmq	2x300mmq+PE 1x300mmq	2x300mmq+PE 1x300mmq
Short circuit current Icw 1 sec.		kA	20	20	20	25	25	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) - For less than 1 second
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- XS C + OPT06 – Soft Starter								
MODEL	notes		**C10**	**C11**	**C12**	**B13**	**H13**	**A13**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	530	587	632	694	699	693
Nominal Running Current (@ OAT = 46°C)	(2)	A	616	684	736	805	809	809
Max. running current	(3)	A	729	809	880	980	991	949
Max. current for wire sizing	(4)	A	920	931	1002	1102	1113	1071
Maximum starting current	(5)	A	802	890	968	1078	1090	1044
Fan starting method		-	D.O.L.					
Max running current per fan		A	5,3					
Total fans running current		A	95,4	106	116,6	148,4	159	116,6
Compressor starting method			Soft Starter (Solid State Starter)					
Max. running current Compressor #1		A	329	393	393	393	393	393
Max. running current Compressor #2		A	274	274	329	393	393	393
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	538	540	540	540	540	540
Starting current compressor #2	(7)	A	410	410	538	540	540	538
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	1250	1250	1600	1600	1600	1600
Terminal connection		-	Bars	Bars	Bars	Bars	Bars	Bars
Cable per phase		-	2x400mmq+PE 1 400mmq	2x400mmq+PE 1 400mmq	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq
Short circuit current Icw 1 sec.		kA	25	25	25	25	25	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) - For less than 1 second
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- XS C + OPT06 – Soft Starter							
MODEL	notes		**C14**	**H14**	**C15**	**C17**	**H18**
Phases		n	3				
Frequency		Hz	50				
Voltage	(6)	V	400				
Tolerances - min/max		%	-10 / +10				
Nominal Running Current (@ OAT = 35°C)	(1)	A	736	776	778	912	984
Nominal Running Current (@ OAT = 46°C)	(2)	A	866	917	914	1029	1097
Max. running current	(3)	A	1007	1075	1096	1237	1317
Max. current for wire sizing	(4)	A	1217	1285	1306	1359	1439
Maximum starting current	(5)	A	1108	1183	1206	1361	1449
Fan starting method		-	D.O.L.				
Max running current per fan		A	5,3				
Total fans running current		A	116,6	127,2	148,4	127,2	137,8
Compressor starting method			Soft Starter (Solid State Starter)				
Max. running current Compressor #1		A	451	451	451	393	393
Max. running current Compressor #2		A	393	451	451	329	393
Max. running current Compressor #2		A	-	-	-	329	329
Starting current compressor #1	(7)	A	540	540	684	540	540
Starting current compressor #2	(7)	A	538	538	684	538	540
Starting current compressor #2	(7)	A	-	-	-	538	538
Main switch size		A	1600	1600	1600	2000	2000
Terminal connection		-	Bars	Bars	Bars	Bars	Bars
Cable per phase		-	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq
Short circuit current Icw 1 sec.		kA	25	25	25	25	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.

(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1

(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load

(6) - Voltage unbalance between phases must be within ± 3%.

(7) – For less than 1 second.

The data are referred to the unit without additional options.

All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- XS C + OPT145 - EC MOTORS FANS								
MODEL	notes		**320**	**360**	**415**	**430**	**460**	**540**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	177	200	224	237	252	279
Nominal Running Current (@ OAT = 46°C)	(2)	A	205	234	263	281	299	332
Max. running current	(3)	A	240	270	298	322	355	390
Max. current for wire sizing	(4)	A	274	334	362	455	488	602
Maximum starting current	(5)	A	264	297	328	354	391	429
Fan starting method		-	EC motor					
Max running current per fan		A	4					
Total fans running current		A	32	32	32	32	40	48
Compressor starting method			Wye - Delta					
Max. running current Compressor #1		A	82	99	126	126	148	162
Max. running current Compressor #2		A	114	126	126	148	148	162
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	151	151	195	195	288	330
Starting current compressor #2	(7)	A	151	195	195	288	288	330
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	400	630	630	630	630	630
Terminal connection		-	Cables	Cables	Cables	Cables	Cables	Cables
Cable per phase		-	1x240mmq+PE 1x120mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq
Short circuit current Icw 1 sec.		kA	15	20	20	20	20	20

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W

(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.

(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1

(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load

(6) - Voltage unbalance between phases must be within ± 3%.

(7) – For less than 1 second.

The data are referred to the unit without additional options.

All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- XS C + OPT145 - EC MOTORS FANS								
MODEL	notes		**570**	**620**	**710**	**780**	**850**	**940**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	296	316	356	392	429	469
Nominal Running Current (@ OAT = 46°C)	(2)	A	354	378	419	462	499	547
Max. running current	(3)	A	413	436	497	541	602	646
Max. current for wire sizing	(4)	A	602	625	664	664	725	769
Maximum starting current	(5)	A	454	480	547	595	662	711
Fan starting method		-	EC motor					
Max running current per fan		A	4					
Total fans running current		A	48	48	56	56	64	64
Compressor starting method			Wye - Delta					
Max. running current Compressor #1		A	162	185	231	274	274	274
Max. running current Compressor #2		A	185	185	185	185	231	274
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	330	330	410	410	410	410
Starting current compressor #2	(7)	A	330	330	330	330	410	410
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	630	800	800	1000	1000	1000
Terminal connection		-	Cables	Cables	Cables	Bars	Bars	Bars
Cable per phase		-	2x185mmq+PE 1x185mmq	2x240mmq+PE 1x240mmq	2x240mmq+PE 1x240mmq	2x300mmq+PE 1x300mmq	2x300mmq+PE 1x300mmq	2x300mmq+PE 1x300mmq
Short circuit current Icw 1 sec.		kA	20	20	20	25	25	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) – For less than 1 second.
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- XS C + OPT145 - EC MOTORS FANS								
MODEL	notes		**C10**	**C11**	**C12**	**B13**	**H13**	**A13**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	514	570	613	672	676	673
Nominal Running Current (@ OAT = 46°C)	(2)	A	600	666	717	782	785	789
Max. running current	(3)	A	715	793	862	958	967	931
Max. current for wire sizing	(4)	A	906	915	984	1080	1089	1053
Maximum starting current	(5)	A	787	872	948	1054	1064	1024
Fan starting method		-	EC motor					
Max running current per fan		A	4					
Total fans running current		A	72	80	88	112	120	88
Compressor starting method			Wye - Delta					
Max. running current Compressor #1		A	329	393	393	393	393	393
Max. running current Compressor #2		A	274	274	329	393	393	393
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	538	540	540	540	540	540
Starting current compressor #2	(7)	A	410	410	538	540	540	538
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	1250	1250	1600	1600	1600	1600
Terminal connection		-	Bars	Bars	Bars	Bars	Bars	Bars
Cable per phase		-	2x400mmq+PE 1 400mmq	2x400mmq+PE 1 400mmq	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq
Short circuit current Icw 1 sec.		kA	25	25	25	25	25	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) – For less than 1 second.
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- XS C + OPT145 - EC MOTORS FANS							
MODEL	notes		**C14**	**H14**	**C15**	**C17**	**H18**
Phases		n	3				
Frequency		Hz	50				
Voltage	(6)	V	400				
Tolerances - min/max		%	-10 / +10				
Nominal Running Current (@ OAT = 35°C)	(1)	A	716	755	754	889	958
Nominal Running Current (@ OAT = 46°C)	(2)	A	845	894	889	1011	1081
Max. running current	(3)	A	989	1056	1074	1218	1296
Max. current for wire sizing	(4)	A	1199	1266	1284	1340	1418
Maximum starting current	(5)	A	1088	1162	1181	1340	1426
Fan starting method		-	EC motor				
Max running current per fan		A	4				
Total fans running current		A	88	96	112	96	104
Compressor starting method			Wye - Delta				
Max. running current Compressor #1		A	451	451	451	393	393
Max. running current Compressor #2		A	393	451	451	329	393
Max. running current Compressor #2		A	-	-	-	329	329
Starting current compressor #1	(7)	A	540	540	684	540	540
Starting current compressor #2	(7)	A	538	538	684	538	540
Starting current compressor #2	(7)	A	-	-	-	538	538
Main switch size		A	1600	1600	1600	2000	2000
Terminal connection		-	Bars	Bars	Bars	Bars	Bars
Cable per phase		-	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq
Short circuit current Icw 1 sec.		kA	25	25	25	25	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) – For less than 1 second.
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- XS C + OPT161 - 200 Pa ESP FANS								
MODEL	notes		**320**	**360**	**415**	**430**	**460**	**540**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	193	216	240	254	273	303
Nominal Running Current (@ OAT = 46°C)	(2)	A	221	250	280	299	320	357
Max. running current	(3)	A	254	284	312	336	372	410
Max. current for wire sizing	(4)	A	288	348	376	469	505	622
Maximum starting current	(5)	A	279	312	343	370	409	451
Fan starting method		-	EC motor					
Max running current per fan		A	6.2					
Total fans running current		A	50	50	50	50	62	74
Compressor starting method			Wye - Delta					
Max. running current Compressor #1		A	82	99	126	126	148	162
Max. running current Compressor #2		A	114	126	126	148	148	162
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	151	151	195	195	288	330
Starting current compressor #2	(7)	A	151	195	195	288	288	330
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	400	630	630	630	630	630
Terminal connection		-	Cables	Cables	Cables	Cables	Cables	Cables
Cable per phase		-	1x240mmq+PE 1x120mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq
Short circuit current Icw 1 sec.		kA	15	20	20	20	20	20

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) – For less than 1 second.
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- XS C + OPT161 - 200 Pa ESP FANS								
MODEL	notes		**570**	**620**	**710**	**780**	**850**	**940**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	320	341	385	422	462	503
Nominal Running Current (@ OAT = 46°C)	(2)	A	380	404	448	493	533	581
Max. running current	(3)	A	433	456	521	565	629	673
Max. current for wire sizing	(4)	A	622	645	688	688	752	796
Maximum starting current	(5)	A	476	502	573	622	692	740
Fan starting method		-	EC motor					
Max running current per fan		A	6.2					
Total fans running current		A	74	74	87	87	99	99
Compressor starting method			Wye - Delta					
Max. running current Compressor #1		A	162	185	231	274	274	274
Max. running current Compressor #2		A	185	185	185	185	231	274
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	330	330	410	410	410	410
Starting current compressor #2	(7)	A	330	330	330	330	410	410
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	630	800	800	1000	1000	1000
Terminal connection		-	Cables	Cables	Cables	Bars	Bars	Bars
Cable per phase		-	2x185mmq+PE 1x185mmq	2x240mmq+PE 1x240mmq	2x240mmq+PE 1x240mmq	2x300mmq+PE 1x300mmq	2x300mmq+PE 1x300mmq	2x300mmq+PE 1x300mmq
Short circuit current Icw 1 sec.		kA	20	20	20	25	25	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) – For less than 1 second.
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- XS C + OPT161 - 200 Pa ESP FANS								
MODEL	notes		**C10**	**C11**	**C12**	**B13**	**H13**	**A13**
Phases		n	3					
Frequency		Hz	50					
Voltage	(6)	V	400					
Tolerances - min/max		%	-10 / +10					
Nominal Running Current (@ OAT = 35°C)	(1)	A	549	607	653	722	730	713
Nominal Running Current (@ OAT = 46°C)	(2)	A	636	703	757	833	839	829
Max. running current	(3)	A	746	827	899	1006	1018	968
Max. current for wire sizing	(4)	A	937	949	1021	1128	1140	1090
Maximum starting current	(5)	A	821	910	989	1107	1120	1065
Fan starting method		-	EC motor					
Max running current per fan		A	6.2					
Total fans running current		A	112	124	136	174	186	136
Compressor starting method			Wye - Delta					
Max. running current Compressor #1		A	329	393	393	393	393	393
Max. running current Compressor #2		A	274	274	329	393	393	393
Max. running current Compressor #2		A	-	-	-	-	-	-
Starting current compressor #1	(7)	A	538	540	540	540	540	540
Starting current compressor #2	(7)	A	410	410	538	540	540	538
Starting current compressor #2	(7)	A	-	-	-	-	-	-
Main switch size		A	1250	1250	1600	1600	1600	1600
Terminal connection		-	Bars	Bars	Bars	Bars	Bars	Bars
Cable per phase		-	2x400mmq+PE 1 400mmq	2x400mmq+PE 1 400mmq	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq
Short circuit current Icw 1 sec.		kA	25	25	25	25	25	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) – For less than 1 second.
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

EWAD~M- XS C + OPT161 - 200 Pa ESP FANS							
MODEL	notes		**C14**	**H14**	**C15**	**C17**	**H18**
Phases		n	3				
Frequency		Hz	50				
Voltage	(6)	V	400				
Tolerances - min/max		%	-10 / +10				
Nominal Running Current (@ OAT = 35°C)	(1)	A	756	799	805	934	1007
Nominal Running Current (@ OAT = 46°C)	(2)	A	886	939	941	1053	1126
Max. running current	(3)	A	1026	1097	1122	1259	1340
Max. current for wire sizing	(4)	A	1236	1307	1332	1381	1462
Maximum starting current	(5)	A	1129	1207	1234	1385	1474
Fan starting method		-	EC motor				
Max running current per fan		A	6.2				
Total fans running current		A	136	149	174	149	161
Compressor starting method			Wye - Delta				
Max. running current Compressor #1		A	451	451	451	393	393
Max. running current Compressor #2		A	393	451	451	329	393
Max. running current Compressor #2		A	-	-	-	329	329
Starting current compressor #1	(7)	A	540	540	684	540	540
Starting current compressor #2	(7)	A	538	538	684	538	540
Starting current compressor #2	(7)	A	-	-	-	538	538
Main switch size		A	1600	1600	1600	2000	2000
Terminal connection		-	Bars	Bars	Bars	Bars	Bars
Cable per phase		-	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq	2x500mmq+PE 1x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq
Short circuit current Icw 1 sec.		kA	25	25	25	25	25

(1) – (ASHRAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(2) – (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
(3) – Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
(4) – Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
(5) - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
(6) - Voltage unbalance between phases must be within ± 3%.
(7) – For less than 1 second.
The data are referred to the unit without additional options.
All data are subject to change without notice. For updated information on project base refer to unit specific wiring diagram and nameplate data.

This page is left intentionally blank

EWAD~M- SS C – standard unit										
Model	Sound pressure level @ 1 m from the unit (rif. 2 x10^{-5} Pa)								Sound pressure Lp @ 1 m	Sound power Lw
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz		
	dB								dB(A)	dB(A)
300	62	81	82	79	73	69	60	53	80	99
340	62	81	82	79	73	69	60	53	80	99
400	62	81	82	79	73	69	60	53	80	100
420	62	81	82	79	73	69	60	53	80	100
450	62	81	82	79	73	69	60	53	80	100
520	64	83	84	81	75	71	62	55	82	102
550	64	83	84	81	75	71	62	55	82	102
590	64	83	84	81	75	71	62	55	82	103
680	64	83	84	81	75	71	62	55	81	102
740	64	83	84	81	75	71	62	55	81	102
830	63	82	83	80	74	70	61	54	80	101
920	64	83	84	81	75	71	62	55	81	103
970	63	82	83	80	74	70	61	54	81	102
H10	63	82	83	80	74	70	61	54	81	102
H11	64	83	84	81	75	71	62	55	81	103
H13	64	83	84	81	75	71	62	55	81	103
C13	64	83	84	81	75	71	62	55	81	103
C14	64	83	84	81	75	71	62	55	81	103
H17	64	83	84	81	75	71	62	55	81	105
H20	64	83	84	81	75	71	62	55	81	105
C19	64	83	84	81	75	71	62	55	81	104
H19	64	83	84	81	75	71	62	55	81	105
C21	64	83	84	81	75	71	62	55	82	105
C22	64	83	84	81	75	71	62	55	82	105

Sound Performance referred to ASHRAE standard conditions evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
Sound Power levels are measured in accordance with ISO 9614
Sound Pressure levels are measured in accordance with ISO 3744
The sound data in the Octave band spectrum is based on calculation, thus intended for reference only and not considering binding.
All data are subject to change without notice. For updated information on project base refer to specific selections.
NOTE: with exception of OPT76b Sound proof system (COMPRESSOR) the other options from Price List have no impact on sound performances
Customized selection made to meet specific project's requirements could lead to change in sound performances. Refer to the customized selection for specific data.

Despite "Sound power" and "Sound pressure" both share the same unit of measure, the decibel (dB), and the term "sound level" is commonly substituted for each they represent two distinct characteristics of sound.

Sound power is the acoustical energy emitted by the sound source. it is an absolute value and is not affected by the environment.

Sound pressure is a pressure disturbance in the atmosphere whose intensity is influenced not only by the strength of the source, but also by the surroundings and the distance from the source to the receiver.

Although dB is commonly used when referring to measuring sound, humans do not hear all frequencies equally. In order to account for this, corrections have been created to give a loudness measurement that takes into account how the human ear actually perceives sound. The most common of these corrections is the "A" weighting (different weights are applied at different frequencies). Values that have been corrected using the "A" weighting system are shown using units of dB(A). Values not corrected to account for human hearing are written using units of dB. The sound spectrum in octave band is reported in dB while the overall value of Sound power and pressure are in dB(A).

EWAD~M- SS C + OPT76b - SOUND PROOF SYSTEM (COMPRESSOR)										
Model	Sound pressure level @ 1 m from the unit (rif. 2 x10^{-5} Pa)								Sound pressure Lp @ 1 m	Sound power Lw
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz		
	dB								dB(A)	dB(A)
300	60	79	80	77	71	67	58	51	77	97
340	60	79	80	77	71	67	58	51	77	97
400	61	80	81	78	72	68	59	52	78	98
420	61	80	81	78	72	68	59	52	78	98
450	61	80	81	78	72	68	59	52	78	98
520	61	80	81	78	72	68	59	52	78	98
550	61	80	81	78	72	68	59	52	79	99
590	62	81	82	79	73	69	60	53	79	100
680	62	81	82	79	73	69	60	53	79	100
740	62	81	82	79	73	69	60	53	79	100
830	61	80	81	78	72	68	59	52	79	100
920	62	81	82	79	73	69	60	53	79	101
970	62	81	82	79	73	69	60	53	80	101
H10	63	82	83	80	74	70	61	54	81	104
H11	63	82	83	80	74	70	61	54	81	104
H13	63	82	83	80	74	70	61	54	81	104
C13	62	81	82	79	73	69	60	53	80	101
C14	62	81	82	79	73	69	60	53	80	102
H17	63	82	83	80	74	70	61	54	81	104
H18	62	81	82	79	73	69	60	53	80	102
C19	62	81	82	79	73	69	60	53	80	103
H19	63	82	83	80	74	70	61	54	81	104
C21	63	82	83	80	74	70	61	54	81	104
C22	63	82	83	80	74	70	61	54	81	104

Sound Performance referred to ASHRAE standard conditions evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
Sound Power levels are measured in accordance with ISO 9614
Sound Pressure levels are measured in accordance with ISO 3744
The sound data in the Octave band spectrum is based on calculation, thus intended for reference only and not considering binding.
All data are subject to change without notice. For updated information on project base refer to specific selections.
NOTE: with exception of OPT76b Sound proof system (COMPRESSOR) the other options from Price List have no impact on sound performances
Customized selection made to meet specific project's requirements could lead to change in sound performances. Refer to the customized selection for specific data.

Despite "Sound power" and "Sound pressure" both share the same unit of measure, the decibel (dB), and the term "sound level" is commonly substituted for each they represent two distinct characteristics of sound.

Sound power is the acoustical energy emitted by the sound source. it is an absolute value and is not affected by the environment.

Sound pressure is a pressure disturbance in the atmosphere whose intensity is influenced not only by the strength of the source, but also by the surroundings and the distance from the source to the receiver.

Although dB is commonly used when referring to measuring sound, humans do not hear all frequencies equally. In order to account for this, corrections have been created to give a loudness measurement that takes into account how the human ear actually perceives sound. The most common of these corrections is the "A" weighting (different weights are applied at different frequencies). Values that have been corrected using the "A" weighting system are shown using units of dB(A). Values not corrected to account for human hearing are written using units of dB. The sound spectrum in octave band is reported in dB while the overall value of Sound power and pressure are in dB(A).

EWAD~M- XS C – standard unit										
Model	Sound pressure level @ 1 m from the unit (rif. 2 x10^{-5} Pa)								Sound pressure Lp @ 1 m	Sound power Lw
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz		
	dB								dB(A)	dB(A)
320	62	81	82	79	73	69	60	53	80	100
360	62	81	82	79	73	69	60	53	80	100
415	62	81	82	79	73	69	60	53	80	100
430	62	81	82	79	73	69	60	53	80	100
460	63	82	83	80	74	70	61	54	80	101
540	64	83	84	81	75	71	62	55	82	103
570	64	83	84	81	75	71	62	55	82	103
620	64	83	84	81	75	71	62	55	82	103
710	64	83	84	81	75	71	62	55	81	103
780	64	83	84	81	75	71	62	55	81	103
850	63	82	83	80	74	70	61	54	81	102
940	63	82	83	80	74	70	61	54	81	102
C10	63	82	83	80	74	70	61	54	81	103
C11	63	82	83	80	74	70	61	54	81	103
C12	64	83	84	81	75	71	62	55	81	104
B13	64	83	84	81	75	71	62	55	81	104
H13	64	83	84	81	75	71	62	55	81	104
A13	64	83	84	81	75	71	62	55	81	105
C14	64	83	84	81	75	71	62	55	81	104
H14	64	83	84	81	75	71	62	55	81	104
C15	64	83	84	81	75	71	62	55	81	105
C17	64	83	84	81	75	71	62	55	81	105
H18	64	83	84	81	75	71	62	55	81	105

Sound Performance referred to ASHRAE standard conditions evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
Sound Power levels are measured in accordance with ISO 9614
Sound Pressure levels are measured in accordance with ISO 3744
The sound data in the Octave band spectrum is based on calculation, thus intended for reference only and not considering binding.
All data are subject to change without notice. For updated information on project base refer to specific selections.
NOTE: with exception of OPT76b Sound proof system (COMPRESSOR) the other options from Price List have no impact on sound performances
Customized selection made to meet specific project's requirements could lead to change in sound performances. Refer to the customized selection for specific data.

Despite "Sound power" and "Sound pressure" both share the same unit of measure, the decibel (dB), and the term "sound level" is commonly substituted for each they represent two distinct characteristics of sound.

Sound power is the acoustical energy emitted by the sound source. it is an absolute value and is not affected by the environment.

Sound pressure is a pressure disturbance in the atmosphere whose intensity is influenced not only by the strength of the source, but also by the surroundings and the distance from the source to the receiver.

Although dB is commonly used when referring to measuring sound, humans do not hear all frequencies equally. In order to account for this, corrections have been created to give a loudness measurement that takes into account how the human ear actually perceives sound. The most common of these corrections is the "A" weighting (different weights are applied at different frequencies). Values that have been corrected using the "A" weighting system are shown using units of dB(A). Values not corrected to account for human hearing are written using units of dB. The sound spectrum in octave band is reported in dB while the overall value of Sound power and pressure are in dB(A).

EWAD~M- XS C + OPT76b - SOUND PROOF SYSTEM (COMPRESSOR)										
Model	Sound pressure level @ 1 m from the unit (rif. 2 x10^{-5} Pa)								Sound pressure Lp @ 1 m	Sound power Lw
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz		
	dB								dB(A)	dB(A)
320	98	80	81	78	72	68	59	52	78	98
360	98	80	81	78	72	68	59	52	78	98
415	98	80	81	78	72	68	59	52	78	98
430	98	80	81	78	72	68	59	52	78	98
460	99	80	81	78	72	68	59	52	79	99
540	100	81	82	79	73	69	60	53	79	100
570	100	81	82	79	73	69	60	53	79	100
620	100	81	82	79	73	69	60	53	79	100
710	101	81	82	79	73	69	60	53	79	101
780	101	81	82	79	73	69	60	53	79	101
850	101	81	82	79	73	69	60	53	80	101
940	101	81	82	79	73	69	60	53	80	101
C10	102	81	82	79	73	69	60	53	80	102
C11	102	81	82	79	73	69	60	53	80	102
C12	103	82	83	80	74	70	61	54	80	103
B13	101	81	82	79	73	69	60	53	80	101
H13	101	81	82	79	73	69	60	53	80	101
A13	104	82	83	80	74	70	61	54	81	104
C14	104	82	83	80	74	70	61	54	80	104
H14	103	81	82	79	73	69	60	53	80	103
C15	104	82	83	80	74	70	61	54	80	104
C17	104	82	83	80	74	70	61	54	80	104
H18	103	81	82	79	73	69	60	53	80	103

Sound Performance referred to ASHRAE standard conditions evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
Sound Power levels are measured in accordance with ISO 9614
Sound Pressure levels are measured in accordance with ISO 3744
The sound data in the Octave band spectrum is based on calculation, thus intended for reference only and not considering binding.
All data are subject to change without notice. For updated information on project base refer to specific selections.
NOTE: with exception of OPT76b Sound proof system (COMPRESSOR) the other options from Price List have no impact on sound performances
Customized selection made to meet specific project's requirements could lead to change in sound performances. Refer to the customized selection for specific data.

Despite "Sound power" and "Sound pressure" both share the same unit of measure, the decibel (dB), and the term "sound level" is commonly substituted for each they represent two distinct characteristics of sound.

Sound power is the acoustical energy emitted by the sound source. it is an absolute value and is not affected by the environment.

Sound pressure is a pressure disturbance in the atmosphere whose intensity is influenced not only by the strength of the source, but also by the surroundings and the distance from the source to the receiver.

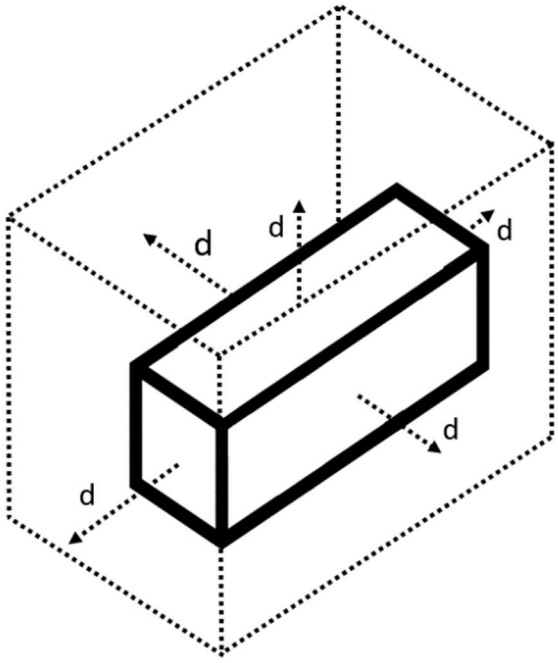
Although dB is commonly used when referring to measuring sound, humans do not hear all frequencies equally. In order to account for this, corrections have been created to give a loudness measurement that takes into account how the human ear actually perceives sound. The most common of these corrections is the "A" weighting (different weights are applied at different frequencies). Values that have been corrected using the "A" weighting system are shown using units of dB(A). Values not corrected to account for human hearing are written using units of dB. The sound spectrum in octave band is reported in dB while the overall value of Sound power and pressure are in dB(A).

EWAD~M- SS C – standard unit										
Model	**Sound pressure at different distances [dB(A)]**									
	@ 1 m	**@ 2 m**	**@ 3 m**	**@ 4 m**	**@ 5 m**	**@ 6 m**	**@ 7 m**	**@ 8 m**	**@ 9 m**	**@ 10 m**
300	80	77	75	73	72	71	70	69	68	67
340	80	77	75	73	72	71	70	69	68	67
400	80	77	75	74	73	71	70	69	69	68
420	80	77	75	74	73	71	70	69	69	68
450	80	77	75	74	73	71	70	69	69	68
520	82	79	77	76	74	73	72	71	70	70
550	82	79	78	76	75	73	72	72	71	70
590	82	80	78	76	75	74	73	72	71	70
680	81	79	77	75	74	73	72	71	70	70
740	81	79	77	75	74	73	72	71	70	70
830	80	78	76	75	73	72	71	70	70	69
920	81	79	77	76	75	73	72	72	71	70
970	81	79	77	75	74	73	72	71	70	70
H10	81	79	78	76	75	74	73	72	72	71
H11	81	79	77	76	75	74	73	72	71	71
C13	81	79	77	76	75	74	73	72	72	71
H13	81	79	77	75	74	73	72	71	70	70
C14	81	79	78	76	75	74	73	72	71	71
H17	81	79	78	77	75	74	73	73	72	71
H20	81	78	77	75	74	73	72	71	71	70
C19	81	79	77	76	75	74	73	72	71	70
H19	81	79	78	77	75	74	74	73	72	71
C21	82	80	78	77	76	75	74	73	72	71
C22	82	80	78	77	76	75	74	73	72	71

To calculate the sound pressure at different distances from the chiller the generic calculation of sound power from sound pressure is as follows:

$$L_p = L_w - 10 * \log_{10} A_d$$

Where A_d is the surface around the chiller calculated at the specific distance d

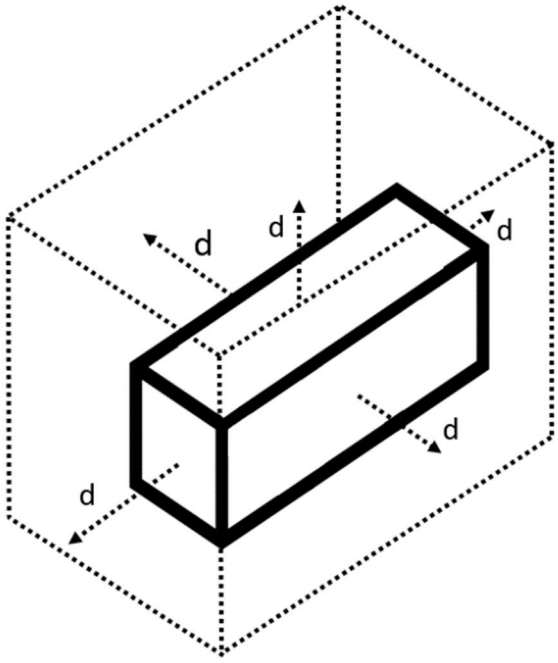


EWAD~M- SS C + OPT76b - SOUND PROOF SYSTEM (COMPRESSOR)										
Model	**Sound pressure at different distances [dB(A)]**									
	@ 1 m	**@ 2 m**	**@ 3 m**	**@ 4 m**	**@ 5 m**	**@ 6 m**	**@ 7 m**	**@ 8 m**	**@ 9 m**	**@ 10 m**
300	77	75	73	71	70	68	67	66	66	65
340	77	75	73	71	70	68	67	66	66	65
400	78	76	74	72	71	69	68	67	67	66
420	78	76	74	72	71	69	68	67	67	66
450	78	76	74	72	71	69	68	67	67	66
520	78	76	74	72	71	70	69	68	67	66
550	79	76	74	73	72	70	69	68	68	67
590	79	77	75	73	72	71	70	69	68	68
680	79	77	75	73	72	71	70	69	68	67
740	79	77	75	73	72	71	70	69	68	67
830	79	77	75	73	72	71	70	69	68	67
920	79	77	75	74	73	71	70	70	69	68
970	80	77	76	74	73	72	71	70	69	68
H10	81	79	78	77	75	74	74	73	72	71
H11	81	79	77	76	75	74	73	72	71	71
C13	81	79	78	76	75	74	73	72	72	71
H13	80	78	76	75	74	72	72	71	70	69
C14	80	78	76	75	74	72	72	71	70	69
H17	81	79	77	76	75	74	73	72	71	70
H20	81	79	78	76	75	74	73	72	71	71
C19	80	78	76	75	74	73	72	71	70	70
H19	81	79	77	76	75	74	73	72	71	70
C21	81	79	77	76	75	74	73	72	71	70
C22	81	79	77	76	75	74	73	72	71	70

To calculate the sound pressure at different distances from the chiller the generic calculation of sound power from sound pressure is as follows:

$$L_p = L_w - 10 * \log_{10} A_d$$

Where A_d is the surface around the chiller calculated at the specific distance d

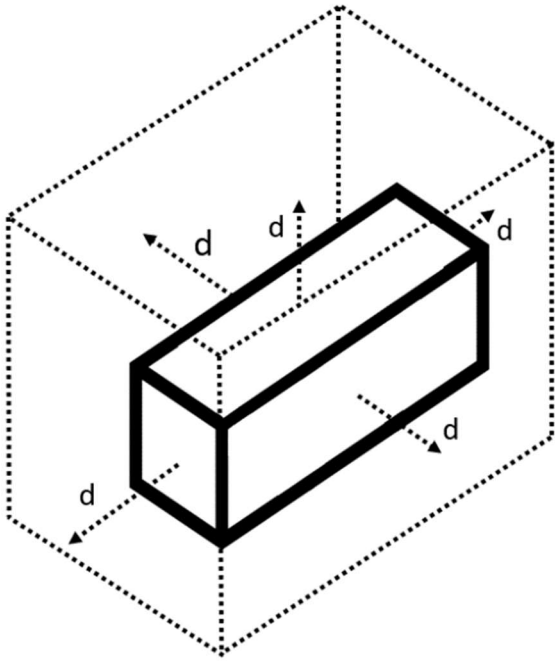


EWAD~M- XS C – standard unit										
Model	**Sound pressure at different distances [dB(A)]**									
	@ 1 m	**@ 2 m**	**@ 3 m**	**@ 4 m**	**@ 5 m**	**@ 6 m**	**@ 7 m**	**@ 8 m**	**@ 9 m**	**@ 10 m**
320	80	77	75	74	73	71	70	69	69	68
360	80	77	75	74	73	71	70	69	69	68
415	80	77	75	74	73	71	70	69	69	68
430	80	77	75	74	73	71	70	69	69	68
460	80	78	76	74	73	72	71	70	69	68
540	82	80	78	76	75	74	73	72	71	70
570	82	80	78	76	75	74	73	72	71	70
620	82	80	78	76	75	74	73	72	71	70
710	81	79	77	76	74	73	72	71	71	70
780	81	79	77	76	74	73	72	71	71	70
850	81	78	77	75	74	73	72	71	70	69
940	81	78	77	75	74	73	72	71	70	69
C10	81	79	77	76	74	73	72	71	71	70
C11	81	79	77	76	75	73	73	72	71	70
C12	81	79	77	76	75	74	73	72	71	71
B13	81	79	77	76	74	73	72	71	71	70
H13	81	79	77	75	74	73	72	71	70	70
A13	81	79	78	77	75	74	73	73	72	71
C14	81	79	77	76	75	74	73	72	71	70
H14	81	79	77	76	75	74	73	72	71	71
C15	81	79	78	77	75	74	74	73	72	71
C17	82	80	78	77	76	74	74	73	72	71
H18	81	79	78	77	75	74	73	73	72	71

To calculate the sound pressure at different distances from the chiller the generic calculation of sound power from sound pressure is as follows:

$$L_p = L_w - 10 * \log_{10} A_d$$

Where A_d is the surface around the chiller calculated at the specific distance d

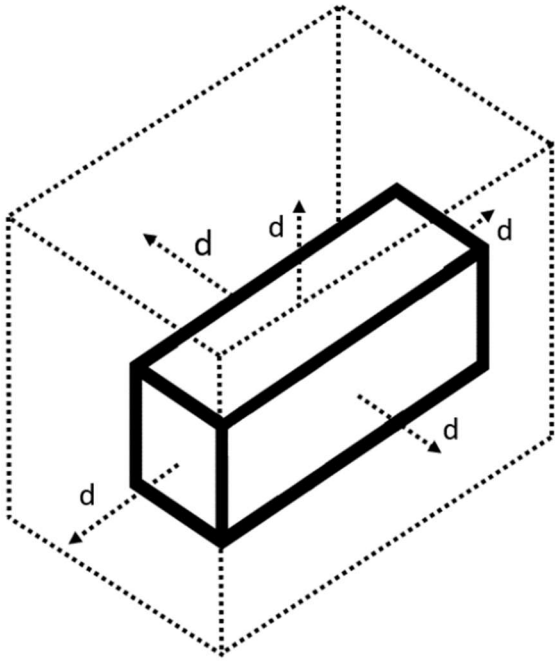


EWAD~M- XS C + OPT76b - SOUND PROOF SYSTEM (COMPRESSOR)										
Model	**Sound pressure at different distances [dB(A)]**									
	@ 1 m	**@ 2 m**	**@ 3 m**	**@ 4 m**	**@ 5 m**	**@ 6 m**	**@ 7 m**	**@ 8 m**	**@ 9 m**	**@ 10 m**
320	78	76	74	72	71	69	68	67	67	66
360	78	76	74	72	71	69	68	67	67	66
415	78	76	74	72	71	69	68	67	67	66
430	78	76	74	72	71	69	68	67	67	66
460	79	76	74	73	71	70	69	68	67	67
540	79	77	75	73	72	71	70	69	68	68
570	79	77	75	73	72	71	70	69	68	68
620	79	77	75	73	72	71	70	69	68	68
710	79	77	75	74	73	71	70	70	69	68
780	79	77	75	74	73	71	70	70	69	68
850	80	77	76	74	73	72	71	70	69	68
940	80	77	76	74	73	72	71	70	69	68
C10	80	78	76	74	73	72	71	70	70	69
C11	80	78	76	75	74	72	72	71	70	69
C12	80	78	76	75	74	73	72	71	70	69
B13	80	77	76	74	73	72	71	70	69	68
H13	80	78	76	75	74	73	72	71	71	69
A13	81	79	77	76	75	74	73	72	71	70
C14	80	78	76	75	74	73	72	71	70	69
H14	80	78	76	75	74	73	72	71	70	70
C15	80	78	77	76	74	73	73	72	71	70
C17	80	78	76	75	74	73	72	71	70	69
H18	80	78	77	76	74	73	73	72	71	70

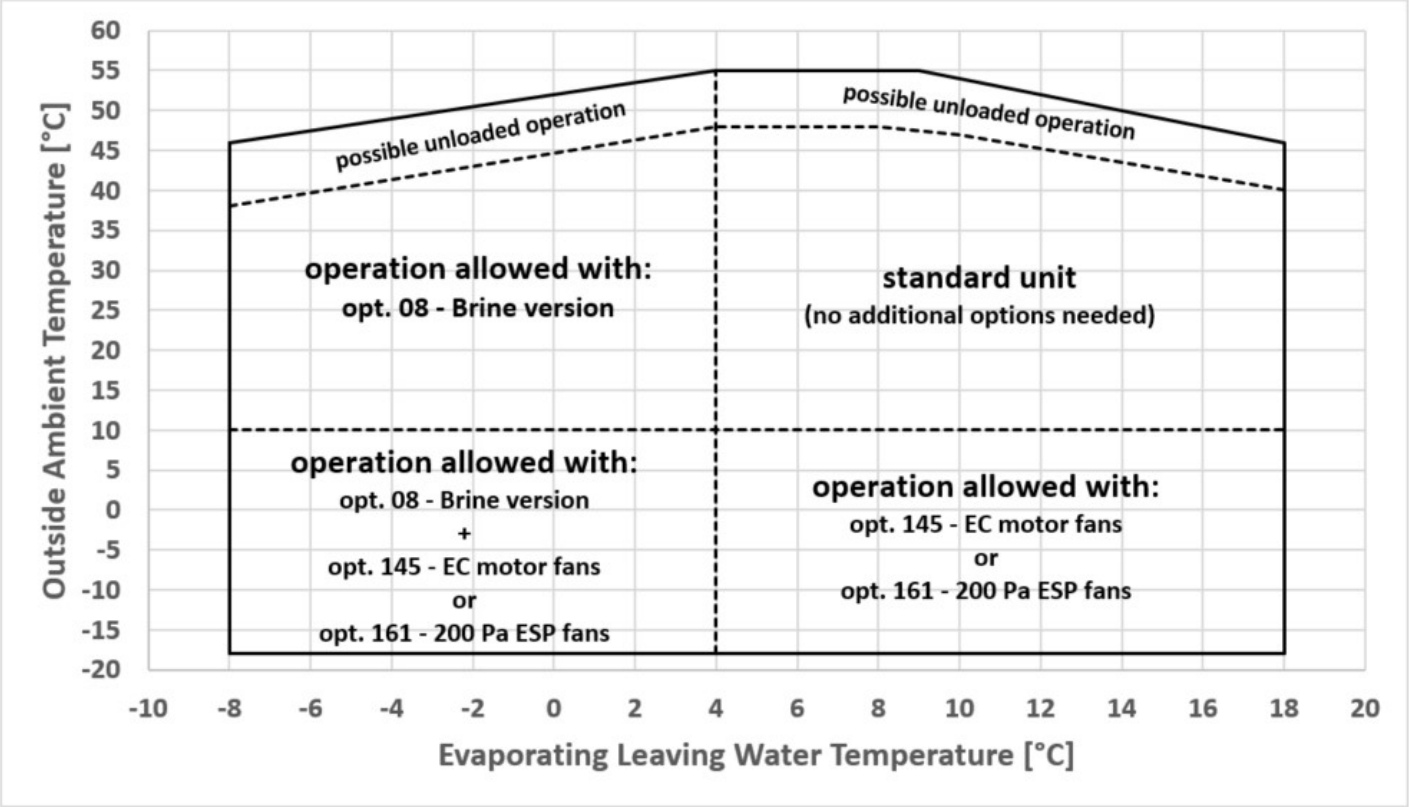
To calculate the sound pressure at different distances from the chiller the generic calculation of sound power from sound pressure is as follows:

$$L_p = L_w - 10 * \log_{10} A_d$$

Where A_d is the surface around the chiller calculated at the specific distance d



EWAD~M-SSC – Silver efficiency level



The above graphic represents a guideline about the operating limits of the range. Please refer to the latest Chiller Selection Software (CSS) for real operating limits working conditions for specific model and configuration.
For operation with EWLT below 4°C, the unit must operate with glycol mixture.
The glycol percentage must be provided according to the minimum ELWT needed.

Below the temperature limits for proper chiller operation:

- Min. Evaporator Entering Temperature during operation: -4°C
- Max. Evaporator Entering Temperature during operation: +26°C

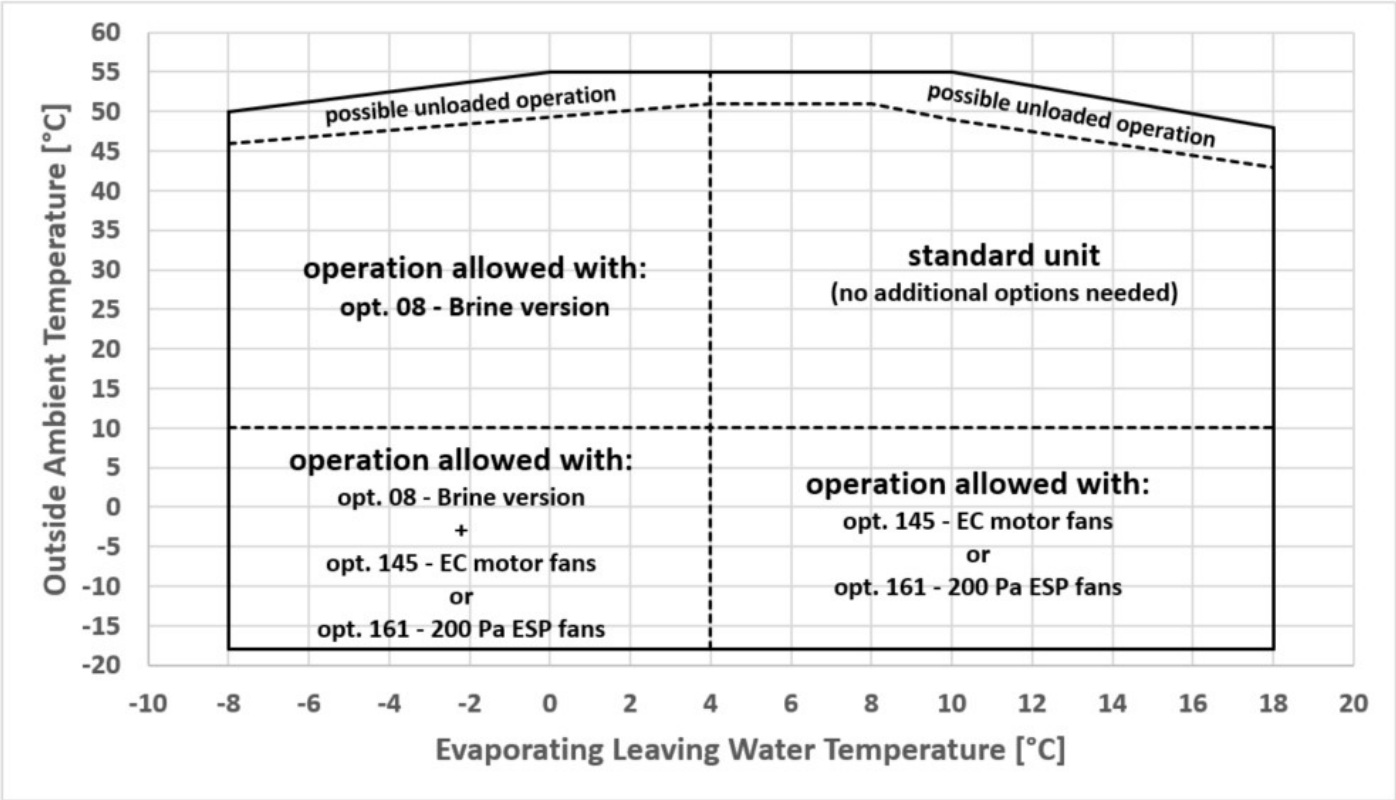
- Min. Evaporator deltaT during full load operation: 3K
- Max. Evaporator deltaT during full load operation 9K

- Min. Partial Heat Recovery exchanger temperature during operation: +25°C
- Max. Partial Heat Recovery exchanger temperature during operation: +60°C
- Min. Partial Heat recovery deltaT during full load operation: 4K
- Max. Partial Heat recovery deltaT during full load operation: 10K

- Min. Total Heat Recovery exchanger temperature during operation: +25°C **
- Max. Total Heat Recovery exchanger temperature during operation: +55°C
- Min. Total Heat recovery deltaT during full load operation: 4K
- Max. Total Heat recovery deltaT during full load operation: 10K

*maximum allowed temperature during start-up operation.
** the installation of the 3 ways valve is recommended (see dedicated “Heat recovery” paragraph)

EWAD~M-XSC – Gold Efficiency level



The above graphic represents a guideline about the operating limits of the range. Please refer to the latest Chiller Selection Software (CSS) for real operating limits working conditions for specific model and configuration.
For operation with EWLT below 4°C, the unit must operate with glycol mixture.
The glycol percentage must be provided according to the minimum ELWT needed.

Below the temperature limits for proper chiller operation:

- Min. Evaporator Entering Temperature during operation: -4°C
- Max. Evaporator Entering Temperature during operation: +26°C

- Min. Evaporator deltaT during full load operation: 3K
- Max. Evaporator deltaT during full load operation 9K

- Min. Partial Heat Recovery exchanger temperature during operation: +25°C
- Max. Partial Heat Recovery exchanger temperature during operation: +60°C
- Min. Partial Heat recovery deltaT during full load operation: 4K
- Max. Partial Heat recovery deltaT during full load operation: 10K

- Min. Total Heat Recovery exchanger temperature during operation: +25°C **
- Max. Total Heat Recovery exchanger temperature during operation: +55°C
- Min. Total Heat recovery deltaT during full load operation: 4K
- Max. Total Heat recovery deltaT during full load operation: 10K

*maximum allowed temperature during start-up operation.
** the installation of the 3 ways valve is recommended (see dedicated "Heat recovery" paragraph)

Minimum glycol percentage for low air ambient temperature to prevent freezing of the hydraulic circuit

Ambient temperature [°C]	-3	-8	-15	-20
Ethylene glycol [%]	10	20	30	40
Propylene Glycol [%]	10	20	30	40

In presence of glycol in the water system the performance will be affected. Refer to the selection software.
All machine protection systems, such as antifreeze, and low-pressure protection will need to be adjusted in accordance to the type and percentage of the glycol.

Air heat exchanger - Altitude correction factors

Elevation above sea level	[m]	0	300	600	900	1200	1500	1800
barometric pressure	[mbar]	1013	977	942	908	875	843	812
Cooling capacity correction factors		1	0,993	0,986	0,979	0,973	0,967	0,96
Power input correction factors		1	1,005	1,009	1,015	1,021	1,026	1,031

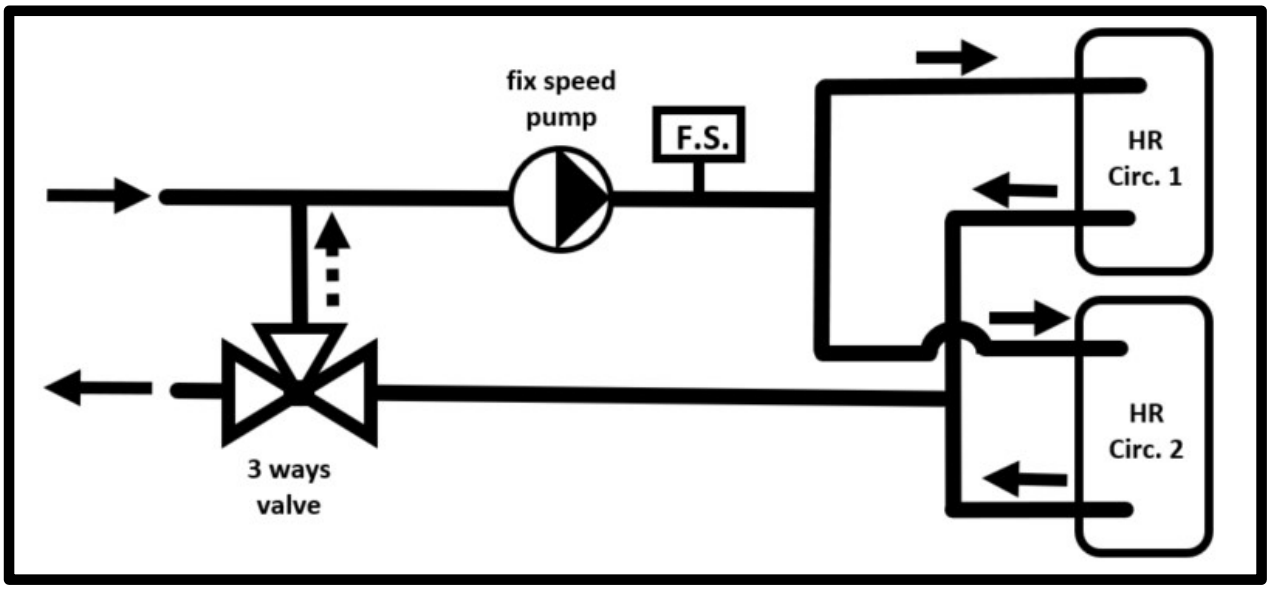
Maximum operating altitude is 1800 m above sea level.
Contact factory if the unit has to be installed 1000 m above the sea level.

Operating limits for Storage Environmental conditions must be within the following limits:

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

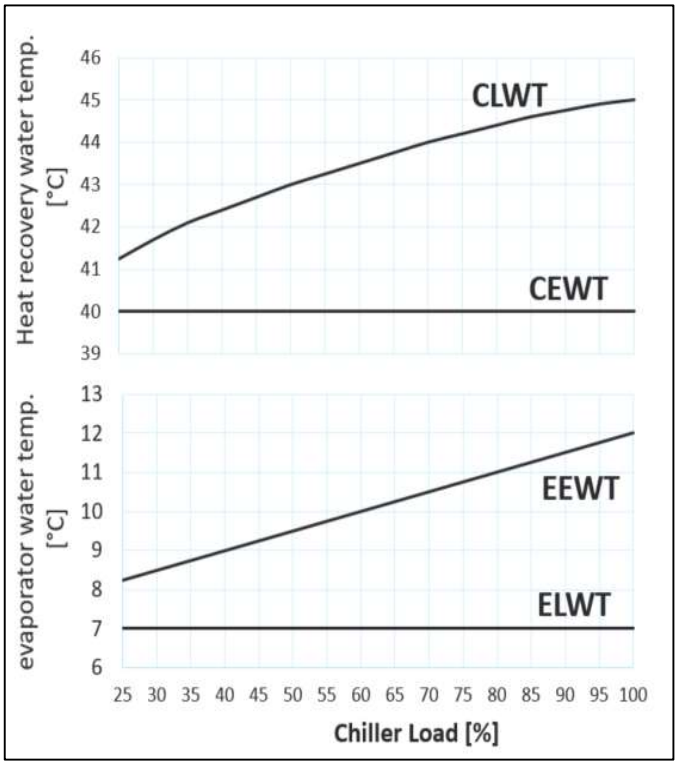
Storage below the minimum temperature may cause damage to components. Storage above the maximum temperature causes opening of safety valves.
Storage in condensing atmosphere may damage electronic components.

Heat recovery Units may be optionally equipped with heat recovery system. This system is made by a water-cooled heat exchanger located on the compressors discharge pipe and a dedicated management of condensing pressure. There is a plate to plate heat exchanger for each circuit. Check on unit drawing the position of Heat recovery heat exchangers.
The heat recovery exchangers are not manifolded on water side. All hydraulic connection must be done on job site. The water connections of recovery exchangers are threated. Check on unit drawing for the size of the connection.
Is strongly recommended to install a 3-ways valve on the heat recovery loop. The valve, not provided by factory, acts as a mixing valve, managed by the unit controller based on the temperature of the water entering the heat exchangers avoiding excessively cold water to enters.
This to ensure that the compressor operate within allowed temperatures range. Minimum water temperature to ensure proper chiller operation is 25°C.
NOTE: It is a responsibility of plant designer and chiller installer to guarantee the respect of this value by using the recirculating bypass valve or other systems.

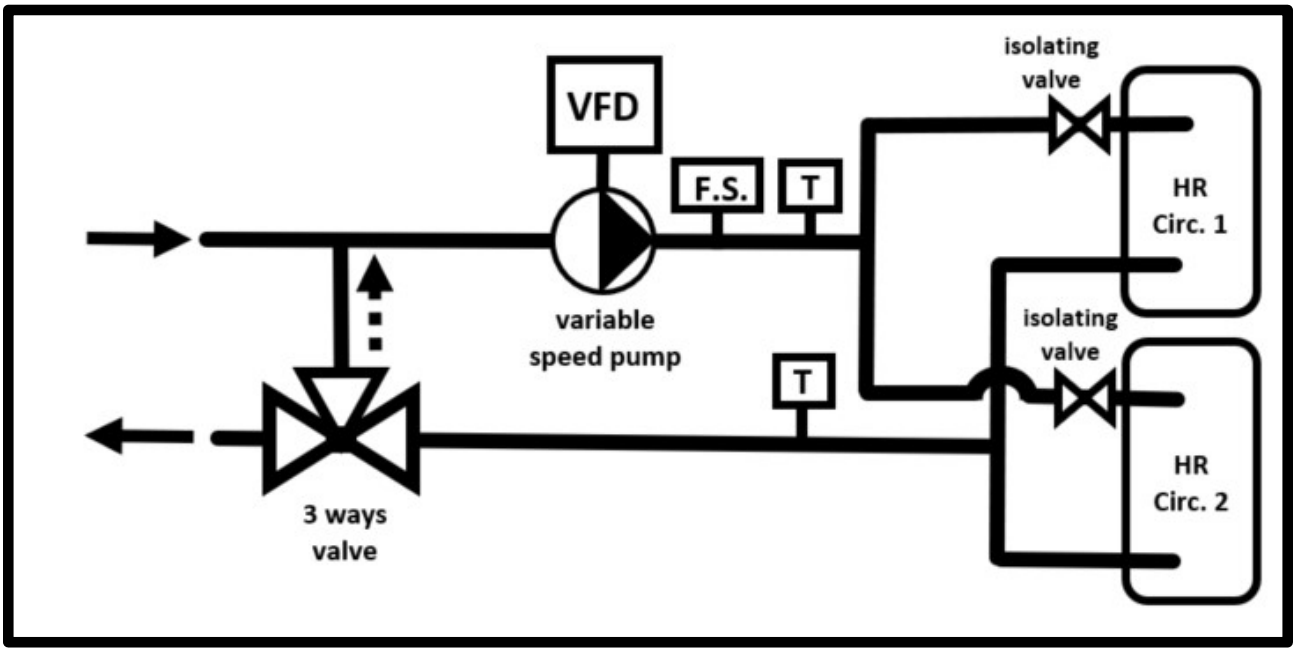


The flow switch must be installed on the heat recovery water loop.
Pump, valve, flow switch and manifold are not provided by the factory.

In case of fix water flow rate on heat recovery loop the outlet temperature from the heat recovery exchanger decrease with unit load.
The chiller follows the load on the cold loop and the heating capacity is always the result of the cooling operation. The capacity of the compressors is regulated on the Evaporating Leaving Water Temperature (ELWT). In part load operation the Evaporator Entering Water Temperature (EEWT) decreases.
With the unit is set on "Heat Recovery ON" the unit controller activates the circulating pump on the heating loop and start to check on the water entering the heat recovery exchangers (CEWT). If the CEWT is below the set point the unit starts to produce hot water.
The relation between the load of the compressors and the deltaT on the heat recovery exchanger (CLWT-CEWT) is can be approximated as linear.



Is possible to operate with variable flow rate on heat recovery. The control for the pump speed (not provided by the factory) can be done to keep constant the deltaT on heat recovery loop.
In this case isolating valve must be installed on each heat recovery exchanger to avoid that water passes through a heat recovery exchanger while the related compressor is OFF. The state of the isolating valve must be linked to the state of the compressor.



NOTE: flow switch must be set to detect the minim flow for the circuit.

Water treatment Before putting the unit into operation, clean the water circuit. Dirt, scales, corrosion debits and other material can accumulate inside the heat exchanger and reduce its heat exchanging capacity. Pressure drop can increase as well, thus reducing water flow. Proper water treatment therefore reduces the risk of corrosion, erosion, scaling, etc. The most appropriate water treatment must be determined locally, according to the type of system and water characteristics. The manufacturer is not responsible for damage to or malfunctioning of equipment caused by failure to treat water or by improperly treated water.

ACCEPTABLE WATER QUALITY LIMITS

• PH (25°C)	6.8 -8.0
• Electrical conductivity (µS/cm) (25°C)	< 800
• Chloride ion (mg Cl^-/l)	<150
• Chlorine molecular (mg Cl2/l)	<5
• Sulphate ion (mg SO_4^{--}/l)	<100
• Alkalinity (mg $CaCO_3$/l)	<100
• Total Hardness (mg $CaCO_3$/l)	<200
• Iron (mg Fe/l)	<1.0
• Copper (mg Cu/l)	<1.0
• Sulphide ion (S^{--}/l)	none
• Ammonium ion (mg NH_4^+/l)	<1.0
• Silica (mg SiO_2/l)	<50
• Maximum particle size to pass (filtration limit) through heat exchanger (mm)	0.5
• Total dissolved solids (mg/l)	<1500
• Max Ethylene, Propylene glycol	50%

Water-glycol mixture with the passing of time decays and it gives rise to acid products that can start corrosion processes. Also the degradation of products in the water-glicol mixture may allow biological proliferation and thus bacteria formation can give rise to corrosion. For these reasons glycol has to be used with suitable corrosion inhibitors.
The corrosion inhibitors have a lifespan (1 or 2 years) so it is important to periodically verify the percentage of the water-glycol mixture

Inhibitors may become insufficient due to “top ups” of water in the circuit (if water is added to the mixture due to low level, the percentage of glycol must remain as per requirements therefore the correct % of glycol should also be integrated.

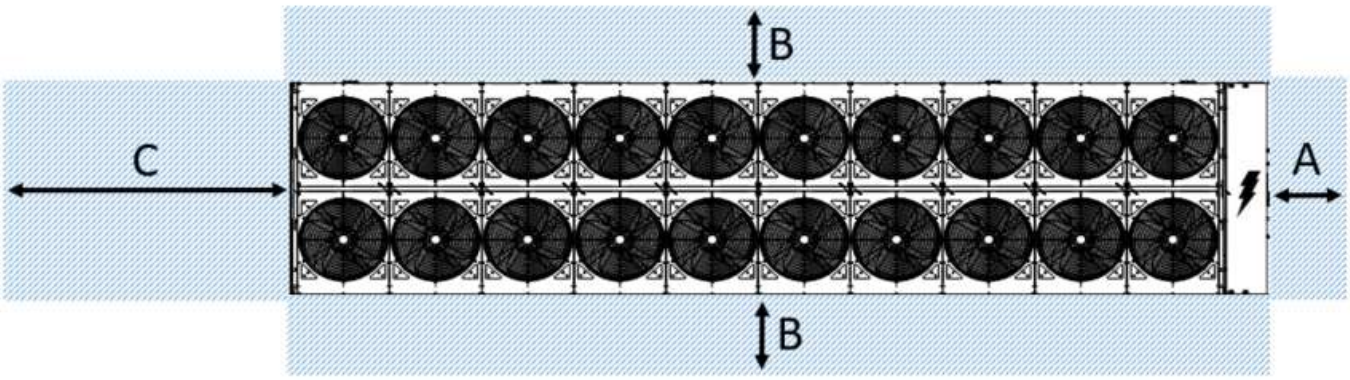
The parameters to be checked regularly are the antifreeze concentration and the pH of water-glycol mixture

Warning Installation and maintenance of the unit must 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 cabinet.

Location The units are produced for outdoor 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 leveled; 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 Each side of the unit must be accessible after installation for periodic service.
The following pictures shows you minimum recommended clearance requirements for service activities.

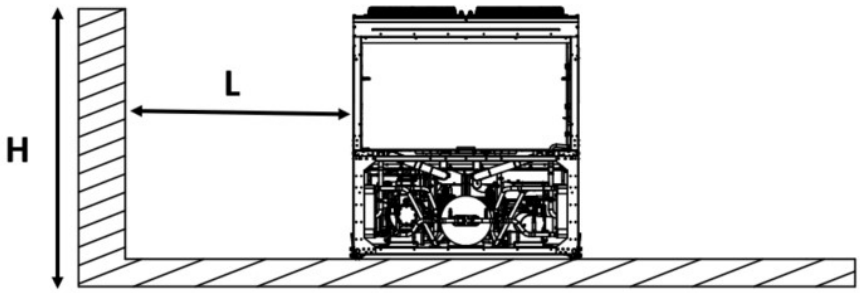


- A at least 1500 mm
- B at least 1800 mm
- C between 1800 and 3600 mm. To be checked on unit drawings.

These clearances ensure proper space to perform all possible maintenance activities and replacing of unit's components.
Deviations from the above should be evaluated by local service referent.
The units are air-cooled, then it is important to respect 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.

For single chiller installation in proximity of a wall the following indications are recommended:

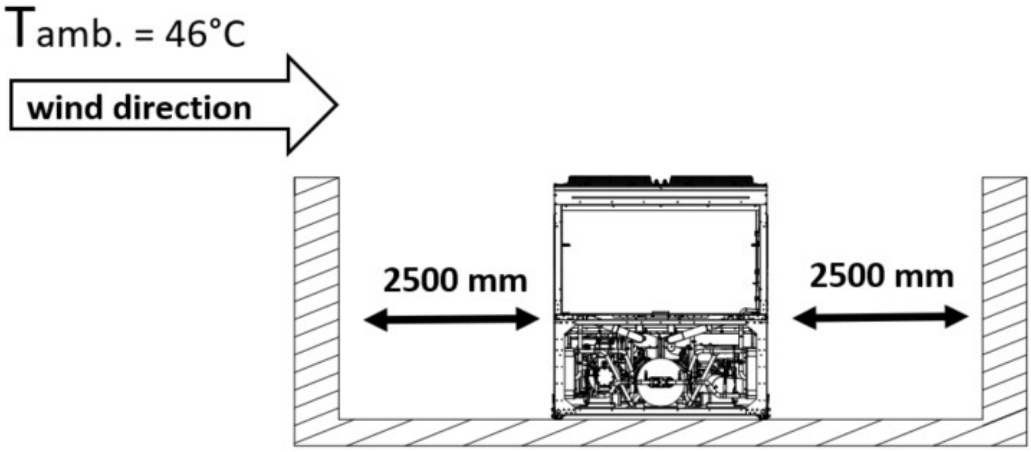
If H lower than chiller height and L must be at least 3 m no impact on chiller performances.



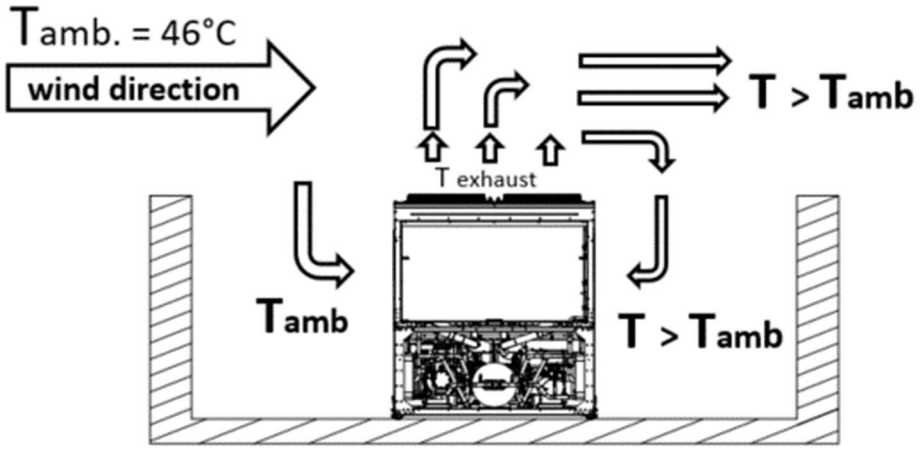
If H lower than chiller height and/or L shorter than 3 m chiller operation could be affected according to wind direction, ambient temperature. In such situation a proper analysis should be carried out to evaluate the impact on chiller operation considering all the specific boundary conditions.
Information on nominal air-flow are indicated in Technical specification tables.
The indicated airflow corresponds to an air velocity on condenser coil of ≈ 2.7 m/s.

Below some examples of possible derating due to installation conditions:

1) **Single chiller in a compound**

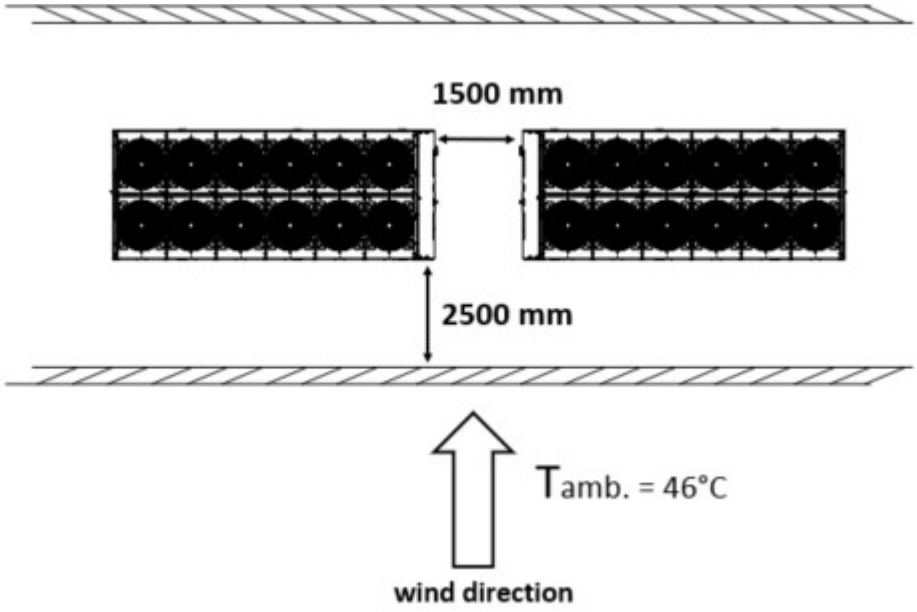


The walls have the same height of the chillers; ambient temperature = 46°C
In this due to the wind direction air recirculation will occur lading to air condensing pressure.



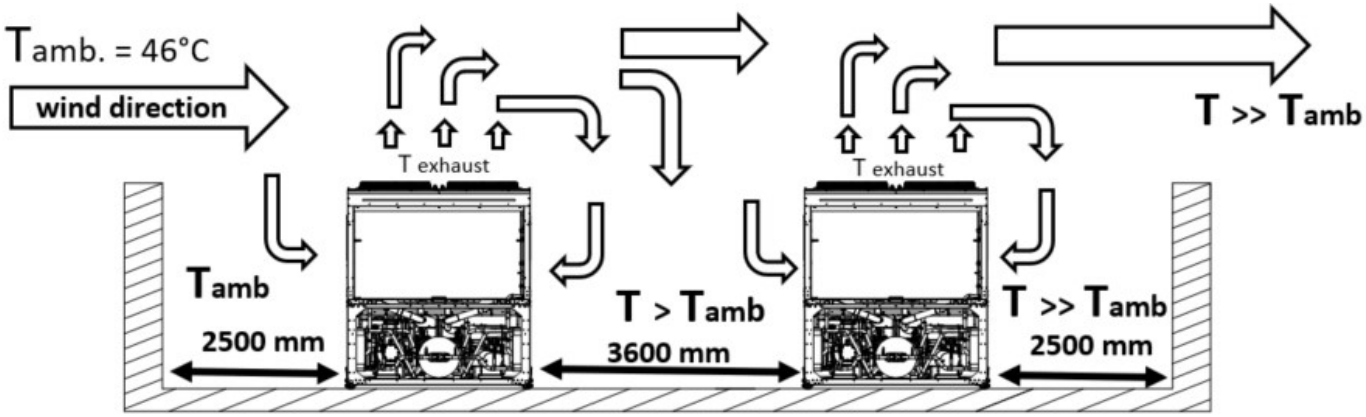
As result of this installation the impact on cooling capacity can be estimated in - 5% (avg. depending on unit size) on the catalog data.

2) Multiple chillers installed in line in a compound



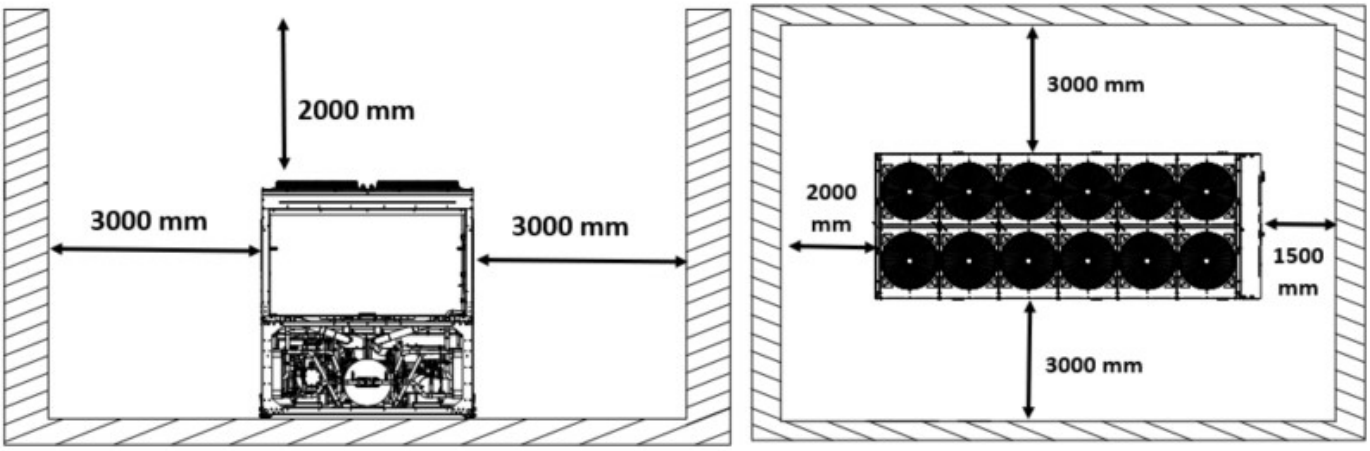
With walls having the same height of the chillers. The space between the chillers must be at least 1500 mm to ensure space to operate on the electrical panel. In this situation the impact on performances is the same of the previous.

3) Multiple chillers installed in parallel in a compound



The walls have the same height of the chillers; ambient temperature = 46°C;
The air temperature entering the second chiller is higher due to the mix with the exhaust air from 1th chiller in following the wind direction. The impact on the cooling capacity of the second chiller can be estimated in approximately -10% (avg. depending on unit size) on the catalog data.

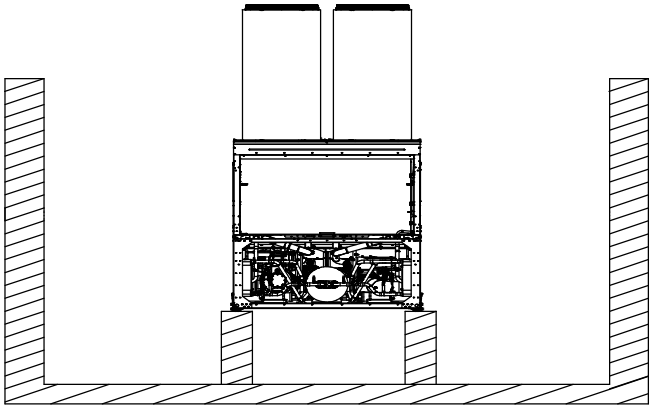
4) Single chiller installed in a pit



ambient temperature = 46°C.
In such situation the impact on cooling performances is about -20% (avg. depending on unit size) on catalog data.

To significantly reduce the negative effects countermeasures can be considered:

- Raise the chiller form the ground
- Provide ducts on fan's discharge.

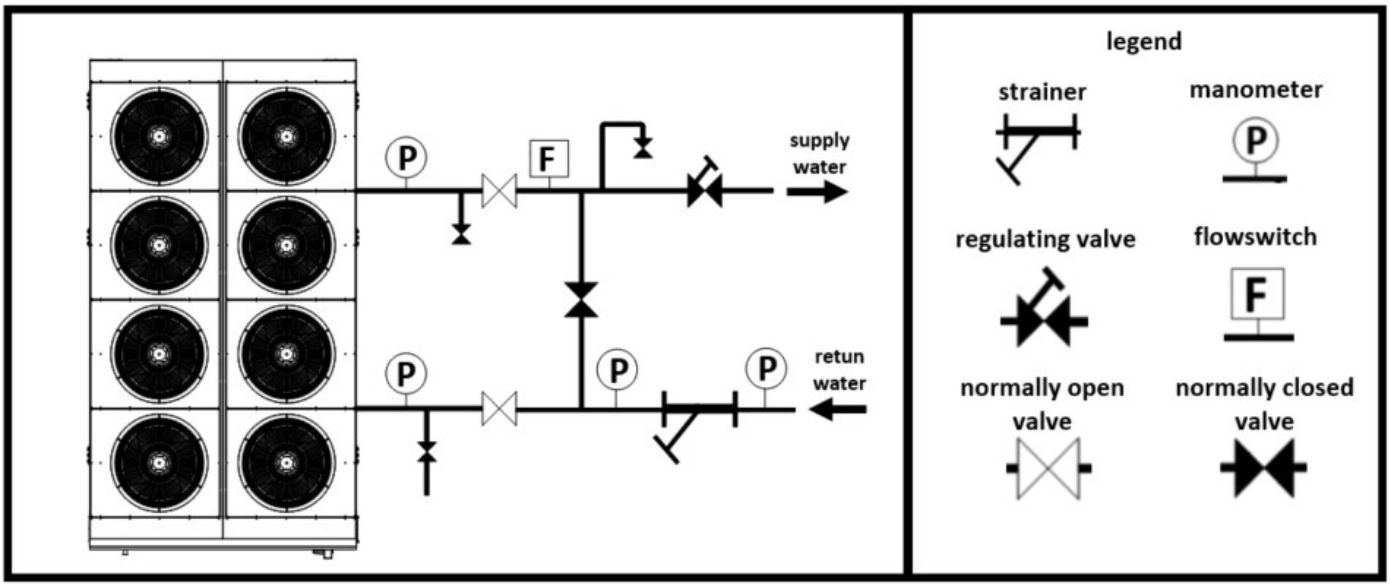


The above examples are intended as general guidelines and no comprehensive of all possible plant configuration and operating conditions.
In case of critical installation (not compliant with the advised clearances) should be analyzed by plant designer and proper to evaluate the impact on chiller operation and identify possible countermeasures.

Water piping

The water system must have:

- Anti-vibration joint in order to reduce transmission of vibrations to the structures.
- Isolating valves to isolate the unit from the water system during maintenance.
- The evaporator must not be exposed to flushing velocities or debris released during flushing. It is recommended that a properly sized bypass completed with valve arrangement is installed to insulate chiller's water heat exchanger during the flushing of the piping system.
- Flow switch.
- Manual or automatic air venting device at the system's highest point.; drain device at the system's lowest point.
- A suitable device that can maintain the water system under pressure (expansion tank, etc.).
- Water temperature and pressure indicators to assist the operator during service and maintenance.
- A filter or device that can remove particles from the fluid. The installation of the filter is mandatory. The use of a filter extends the life of the evaporator and pump and helps to keep the water system in a better condition.
- Precautions should be provided to protect the unit against freezing.
- The heat recovery device must be emptied of water during the winter season, unless an ethylene glycol mixture in appropriate percentage is added to the water circuit.
- If case of unit substitution, the entire water system must be emptied and cleaned before the new unit is installed. Regular tests and proper chemical treatment of water are recommended after starting up the new unit.
- In the event that glycol is added to the water system as anti-freeze protection, pay attention to the fact that suction pressure will be lower, the unit's performance will be lower and water pressure drops will be greater. All unit-protection systems, such as anti-freeze, and low-pressure protection will need to be readjusted.
- To avoid damages to evaporator during flushing operation a normally closed bypass should by installed.



General The chiller will be designed and manufactured in accordance with the following European directives:
• Construction of pressure vessel 2014/68/EU
• Machinery Directive 2006/42/EC
• Low Voltage 2014/35/EU
• Electromagnetic Compatibility 2014/30/EU
• Electrical & Safety codes EN 60204–1 / EN 60335-2-40
• Manufacturing Quality Standards UNI – UNI EN ISO 1400
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 HFC 134a

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
• Minimum full load efficiency (EER): ..... (kW/kW)
• Minimum part load efficiency (IPLV): ..... (kW/kW)

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 include two or three independent refrigerant circuits, semi-hermetic type rotary single screw compressors, electronic expansion device (EEXV), direct expansion 'shell & tube' evaporator, air-cooled condenser section made with aluminum Microchannel technology, 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.

Sound level and vibrations Sound power level shall not exceed ……dB(A). The sound power levels must be rated in accordance to ISO 9614 and Sound Power rated according to ISO 3744 (other types of rating cannot 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

Compressors The unit shall be equipped with:
• Semi-hermetic, single-screw type with one main helical rotor meshing with two diametrical opposed gate rotors. The gate rotor will be constructed of a carbon impregnated engineered composite material. The gate rotor supports will be constructed of cast iron. Electrical motor shall be 2-pole, semi-hermetic, squirrel-cage induction type and cooled by suction gas.
• 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 acceptable.
• The compressor's oil cooling must be realized, when necessary, by refrigerant liquid injection. External dedicated heat exchanger and additional piping to carry the oil from the compressor to heat exchanger and vice versa will be not accepted.
• 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 unit shall be provided with two thermal protection realized by a thermistor for high temperature protection: one temperature sensor to protect electrical motor and another sensor to protect unit and lubricating oil from high discharge gas temperature.

• The compressor shall be equipped with an electric oil-crankcase heater.
• 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 in order to continuously modulate the compressor's rotational speed.
• The unit capacity control shall be infinitely modulating between 100% and the minimum.
• The system shall control the unit based on the leaving evaporator water temperature that shall be controlled by PID (Proportional Integral Derivative) logic.

Evaporator
The units shall be equipped with a direct expansion shell & tube evaporator with copper tubes rolled into steel tube sheets.
The external shell shall insulated with flexible, closed cell polyurethane insulation material (20 -mm thick).
- The evaporator will have 2 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.
- Flow switch on evaporator available as option (shipped loose).
- Water filter needs to be provided on the plant.

Condenser coil The condenser is made entirely of aluminum with flat tubes containing small channels. Full - depth louvered aluminum fins are inserted between the tubes maximizing the heat exchange. The Microchannel technology ensures the highest performance with the minimum surface for the exchanger. The quantity of refrigerant is also reduced compared to Cu/Al condenser. Special treatments ensure resistance to the corrosion by atmospheric agents extending the life time (available on request).

Condenser fans The condenser fans used in conjunction with the condenser coils, shall be propeller type with aluminum-magnesium alloy blades for higher efficiencies. 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 IP55 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 breaker installed inside the electrical panel as a standard.

Refrigerant circuit The unit shall have two or three independent refrigerant circuits.
The circuit shall include as standard: electronic expansion device piloted by unit's microprocessor control, compressor discharge shut-off valves, economizer circuit, 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.

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.
• A choice of two pump types shall be available:
- in-line single pump
- in-line twin pumps.

Master/Slave the unit shell be able to operate in Master / Slave mode in order to be connected with other similar unit (up to 4). The master unit shall manage the slaves units connected in series on the hydraulic plant with the aim of optimize the running hours of each compressor and to balance running hours and the load between the units.

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 fans protection devices, 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 guarantee following minimum 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.
• 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.
• Master / Slave (provided as standard)
• 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