# Databook

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



## EWAD~M C

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





http://www.ahrinet.org



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 factoryrun-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:

cooling capacit

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.



**Building Load** 

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.



time

Compressor Load

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  $\sim 1.8$  MW ( $\sim 510$  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.).

#### **GENERAL CHARACTERISTICS**

**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

#### **GENERAL CHARACTERISTICS**

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).

#### **GENERAL CHARACTERISTICS**

**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  $\Delta P$  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 setpoints 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 <u>low inrush current</u> and <u>reduced starting torque</u>.

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) <u>Setpoint Reset</u>: The leaving water temperature set-point can be overwritten with an external 4-20mA, through the ambient temperature, or through the evaporator water temperature  $\Delta T$ . <u>Demand Limit</u>: Chiller capacity can be limited through an external 4-20mA signal or via network. <u>Alarm from external device</u>: 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 value 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.



#### **OPTIONS**



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:

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

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 overheated 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-Ib
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:

Connection diameter [mm]	а	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

### Pressure drop = $a^*$ (water flow in $m^3/h$ )<sup>b</sup>

### **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 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	$\rightarrow$	corresponding to water velocity equal to 1,5 m/s
Minimum water flow rate	$\rightarrow$	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 ( $\sim$ 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.

#### **OPTIONS**

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 this layout the with heat chiller is loaded recovery preferentially because it always receives the warmest returnwater 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 This command). is usually obtained through а 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.

#### **OPTIONS**

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 <sup>~</sup> 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)     I/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)     I/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 volumeIt8989181175164	164								
Minimum water rate     (4)     I/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 80	82								
Fan tune Direct Dreneller									
Fan type - Direct Propeller									
Fail dialifieter 050									
Fail fold total speed $RFW$ 900									
Number of fans n 6 6 8 8 8	8								
Number of fails     II     0	20.8								
Air flow     (8)     I/s     34167     34167     45556     45556	45556								
	13330								
Refrigerant circuits n 2 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 It 26 26 26 26 26 26	34								
Refrigerant Charge     kg     42     42     56     56     56	56								
Casing material - Galvanized Steel Sheet	· ·								
Linit length     mm     3300     3300     4200     4200     4200	4200								
Unit width     mm     2280	2280								
Unit height     mm     2540     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	400.4								
	4894								
Water connection size     mm     114,3     114,3     139,7     139,7	139,7								

(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
- (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 (2) = 0,0000176m2°C/W

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

(3) (4) (5) (6) (7) not including filter pressure drop. The installation of the filter is mandatory.
sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
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.

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

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		
	1									
Evaporator type		-		Ľ	irect Expansion	– Shell & Tubes	; [	1		
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		
	1			1	1			1		
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		
	1									
Fan type		-			Direct Pr	opeller				
Fan diameter		mm DDM			85	0				
Fan rotational speed		RPIVI			90	0 n/Off				
Number of fanc		-	10	10	AC - 0		12	14		
			10	21.2	21.2	21.2	21.2	26.4		
Air flow	(0)		56011	51,2	51,2	51,2	51,2	30,4		
Air now	(8)	1/5	50544	08555	08555	08555	08333	19122		
Refrigerant circuits		n	2	2	2	2	2	2		
Compressor type		-	2	2	Single 9	Screw	2	2		
Capacity control		-			Sten	ess				
Comp model per circuit		-	F3AS / F3AI	E3AL / E3AL	E3BS / E3AL	E3BL / E3AL	E3BL / E3BS	F4AL / F3AL		
Oil charge		lt	34	34	36	36	38	42		
Refrigerant Charge		kg	70	70	84	84	84	98		
Casing material					Calvanized 9	Staal Shaat	01			
		-			Gaivanizeu					
Color		-			Ivory V	Vhite				
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					Victa	ulic				

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

 (Nonisce 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
(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)

(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) (5)

 evaporation water inform = 12.276.7°C, annotant = 46.0°C, unit at non-odd operation; operating fund: water flowing factor = 0,000176n12°C/W
minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
not including filter pressure drop. The installation of the filter is mandatory.
sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
referred to unit with free discharge on condenser fans. (6) (7) (8)

(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		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	
	1	1							
Evaporator type		-		C	irect Expansion	– Shell & Tubes		1	
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	
	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	
Face have a	1	1			Disector				
Fan type		-			Direct pr	opeller			
Fan diameter					85	0			
Fan motor / control		<b>NPIVI</b>			90	0 n/Off			
Number of fans		- n	16	16	AC-0	20	20	20	
Power input fans			41.6	116	16.8	52	52	52	
Air flow	(8)	1/s	91111	91111	102500	113889	113889	113889	
	(0)	175	51111	51111	102500	115005	113003	113003	
Refrigerant circuits		n	2	2	2	2	2	2	
Compressor type		-		_	Single	Screw	_	<u> </u>	
Capacity control		-			Step	less			
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 S	Steel Sheet			
Color		_			lyony V	Vhite			
		_	7900	7900	8700	0600	0600	0600	
Unit length		mm	7800	7800	8700	9000	9000	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					Victa	ulic			
(1) – (ASHRAE standard co fouling factor = 0,000	onditions) ev 00176m2°C/	vaporator wate W	$r in/out = 12.2/6.7^{\circ}$	°C; ambient = 35.0	P°C, unit at full load	operation; operat	ing fluid: Water;		

- (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)

(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) (5) (6) (7) (8)

evaporation water inform = 12.276.7°C, annotant = 46.0°C, unit at non-odd operation; operating fund: water flowing factor = 0,000176n12°C/W
minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
not including filter pressure drop. The installation of the filter is mandatory.
sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
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.



#### **TECHNICAL SPECIFICATIONS**

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		
	1	1			I				
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 – Sh	ell & Tubes	05.0		
Water flow rate	(1)	l/s	78,3	82,8	85,5	91,5	95,2		
Evaporator pressure drop	(1)	кРа	74,9	82,8	111	99,2	107		
Water flow rate	(2)	l/s	70,2	62,9	/5,1	77,3	/8,5		
Evaporator pressure drop	(2)(5)	кРа	61,7	50,5	88,1	/3,2	/5,3		
Evaporator water volume	(4)	lt l/a	522	522	522	522	522		
Winimum water rate	(4)	1/5	24,2	19,9	26,3	26,3	26,3		
Sound Bower	(1) (6)	dP(A)	105	104	105	105	105		
Sound Pressure @ 1 meter	(1)(0)		2105 81	<u> </u>	205 81	82	82		
	(1)(7)	UD(A)	01	01	01	82	02		
Fan type		-			Direct prope	ler			
Fan diameter		mm			850				
Fan rotational speed		RPM			900				
Fan motor / control		-			AC – On/Of	f			
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 Screv	V			
Capacity control		-			Stepless				
Comp model per circuit			F4AL/F4AS/	F4AL/F4AL/	F4AXL/F4AL	F4AXL/F4AXL	F4AXL/F4AXL		
		-	F4AS	F4AL	/F4AL	/F4AL	/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	2			
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)

 CASIMAL Statuter conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,000176m2°C/W
(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 = 0,000176m2°C/W (2)

(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) (5)

evaporation water inform = 12.276.7°C, annotant = 46.0°C, unit at non-odd operation; operating fund: water flowing factor = 0,000176n12°C/W
minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
not including filter pressure drop. The installation of the filter is mandatory.
sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
referred to unit with free discharge on condenser fans.

(6) (7) (8)

(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.



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	
	1	1	1	1	1				
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	
	1								
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	
E construction de la constructio	1				in a Francisco				
Evaporator type	(4)	-	12.0	14.0	irect Expansion	- Shell & Tubes	10.2	22.2	
Evaporator prossure drop	(1)	I/S kDo	12,8	14,9	17,4	18,2	19,3	22,2	
Water flow rate	(1)	KPd	90,1	101	16.2	16.6	99,7 17.2	20.0	
Evaporator pressure drop	(2)	lys kPa	79.0	87.6	64.6	67.5	17,2 81.4	20,0	
Evaporator water volume	(2)(3)	It	80	80	181	175	164	164	
Minimum water rate	(4)	1/s	33	3.8	5.0	50	49	5.6	
	(4)	1/5	3,3	3,0	5,0	5,6	-,5	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	
		- ( )		1		-			
Fan type		-			Direct Pr	opeller			
Fan diameter		mm			85	0			
Fan rotational speed		RPM			90	0			
Fan motor / control		-		-	AC – 0	n/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	
	1		1	T					
Refrigerant circuits		n	2	2	2	2	2	2	
Compressor type		-			Single	Screw			
Capacity control		-	2110 / 2121	2120 / 2122	Stepi	ess	2122 / 2122		
Comp model per circuit		-	3118/3121	3120/3122	3122/3122	3122/3123	3123/3123	F3A5 / F3A5	
Oli charge		ll ka	20	20	20	20	20	54	
Cosing motorial		ĸg	42	42	Calvanizad G	JU Stool Shoot	50	50	
Calar		-			Galvanizeu				
Color		-	2200	2200		4200	4200	4200	
		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				0 11 1 0	Victa	ulic			
(1) – (ASHKAE standard co	martions) ev	aporator wate	er m/out = 12.2/6.7	-c; ambient = 35.0	-c, unit at full load	operation; operation	ny nula: Water;		

fouling factor = 0,0000176m2°C/W

- (Middle East standard conditions) evaporator water in/out =  $12.2/6.7^{\circ}$ C; ambient =  $46.0^{\circ}$ C, unit at full load operation; operating fluid: Water; fouling factor =  $0,0000176m2^{\circ}$ C/W (2)

(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

 evaporation water inform = 12.276.7°C, annotant = 46.0°C, unit at non-odd operation; operating fund: water flowing factor = 0,000176n12°C/W
minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
not including filter pressure drop. The installation of the filter is mandatory.
sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
referred to unit with free discharge on condenser fans. (4) (5) (6) (7) (8)

(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.



					TEC	HNICAL S	PECIFICA	TIONS			
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			
	1 ()	,	,	. ,		,	,	,			
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		-		D	irect 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			
	1										
Fan type		-			Direct Pr	opeller					
Fan diameter		mm			85	0					
Fan rotational speed		RPM			90	0					
Fan motor / control		-		1	AC – 0	n/Off	1				
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			
Deficience terresite	1		2	2	2	2	2	2			
Refrigerant circuits		n	2	2	2	2	Ζ	2			
Compressor type		-			Singles	Screw					
Capacity control		-	F2AC / F2AL	F2AL / F2AL		Iess					
		-	F3A5 / F3AL	F3AL / F3AL	1363 / F3AL	F3BL / F3AL	F3BL / F3B3	F4AL / F3AL			
Dil charge Rofrigorant Chargo		li ka	70		20	20	20	42			
		мg	70	70	04	04	04	58			
Casing material		-			Galvanized S	steel Sheet					
Color		-		1	Ivory V	Vhite	Γ				
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 - shinning		kø	4860	5387	5527	5527	5525	5858			
Unit weight - operation		kø	5030	5557	5825	5825	5825	6188			
Water connection size		<del>5</del> " mm	139 7	139.7	168.0	168.0	168.0	168.0			
Water connection type			,	,	 \/icto		200,0				
water connection type	I	I			victa						

(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) (5)

minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
not including filter pressure drop. The installation of the filter is mandatory.
sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
referred to unit with free discharge on condenser fans.

(6) (7) (8)

(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.



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	
	1	1							
Evaporator type		-		1	Direct Expansio	n – Shell & Tube	es	1	
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	
Caused Danage	(1) (2)	-10(4)	101	104	104	101	101	102	
Sound Power	(1)(6)	dB(A)	101	104	104	104	101	102	
Sound Pressure @ 1 meter	(1)(/)	dB(A)	80	81	81	81	80	80	
Ean type	1				Diroct r	ropollor			
Fan diameter		mm			2011001	50			
Fan rotational speed		RPM			8	00			
Fan motor / control		-			AC - 1	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	
	1 (-7	, ,		1		I		I	
Refrigerant circuits		n	2	2	2	2	2	2	
Compressor type		-			Single	Screw		•	
Capacity control		-			Ste	pless			
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		-			lvorv	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					Vict	aulic			

(1)

 CASIMAL Statuter conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,000176m2°C/W
(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 = 0,000176m2°C/W (2)

(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) (5)

 evaporation water inform = 12.276.7°C, annotant = 46.0°C, unit at non-odd operation; operating fund: water flowing factor = 0,000176n12°C/W
minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
not including filter pressure drop. The installation of the filter is mandatory.
sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
referred to unit with free discharge on condenser fans. (6) (7) (8)

(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.



				TE	CHNICAL	<b>SPECIFICA</b>	TIONS
EWAD~M- SS C + C	OPT76b ·	- SOUND P	<b>ROOF SYSTE</b>	M (COMPRE	SSOR)		
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)	k\\/	1621	1452	1724	1792	1912
	(2)		2 /1	2 12	2 2 2 2	2 20	2 18
	(2)	KVV/KVV	2,41	2,15	2,22	2,20	2,10
Cooling Capacity	(3)	kW	1536	1280	1587	1600	1622
EER	(3)	kW/kW	2,27	2,02	2,10	2,09	2,08
			1 .	1	1 1		
Evaporator type		-		Direct Ex	pansion – Shell 8	& 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)	dP(A)	104	102	104	104	104
Sound Pressure @ 1 meter	(1)(0)		81	80	<u> </u>	2104 81	104 81
Sound Pressure @ I meter	(1)(7)		01	00	01	01	01
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
	1		2	2	2	2	2
Refrigerant circuits		n	3	3	<u> </u>	3	3
Compressor type		-			Single Screw		
		-	ΕΛΔΙ / ΕΛΔς /	ΕΛΔΙ / ΕΛΔΙ /		ελαχι /ελαχι	<b>ΕΛΔΧΙ /ΕΛΔΧΙ</b>
Comp model per circuit		-	F4AS	F4AL	/F4AL	/F4AL	/F4AXL
Oil charge		lt	75	75	75	75	75
Refrigerant Charge		kg	210	168	182	196	210
Casing material		-		Galv	anized Steel She	eet	
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		

#### Water connection type

- (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)

(4) (5)

 evaporation water inform = 12.276.7°C, annotant = 46.0°C, unit at non-odd operation; operating fund: water flowing factor = 0,000176n12°C/W
minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
not including filter pressure drop. The installation of the filter is mandatory.
sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
referred to unit with free discharge on condenser fans. (6) (7) (8)

(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.



#### A I CDECTETCATIONS

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	
		1		1	1		1	1	
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	
	1	1							
Evaporator type		-		D	irect Expansion	– Shell & Tubes	;	1	
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	
		10(4)			100	100	100	102	
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	
Ean tuno	1	Disc d Disc d Disc d Disc							
Fan diamotor		-	Direct Propeller						
Fan rotational speed		RPM			00	0			
Fan motor / control		-			0	o n/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	
	(0)	., -							
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						

Water connection type

 - (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)

(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 = - (induce East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 46.0°C, unit at full load operation; operating fluid: water; for 0,0000176m2°C/W
- 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
- minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
- not including filter pressure drop. The installation of the filter is mandatory.
- sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
- Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
- Referred to unit with to unit operation with 100 Pa External Static Pressure (ESP) on the condenser fans.

(3)

(4) (5)

(6) (7)

(8)

(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		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	
	1			1	1	-	I	1	
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	
	T								
Evaporator type		-		D	irect Expansion	– Shell & Tubes	; 	1	
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	
Cound Downer	(1) (0)		102	102	102	102	101	102	
Sound Power	(1)(6)	dB(A)	102	103	102	102	101	103	
Sound Pressure @ 1 meter	(1)(/)	dB(A)	82	82	81	81	80	81	
Ean tuno	1		Direct Breneller						
Fan diameter		- mm							
Fan rotational speed		RPM	000						
Fan motor / control		-			AC - 0	n/Off			
Number of fans		n							
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	
	1 (-/								
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		-	lyory White						
		mm							
Unit width		mm	2280	2280	2280	2280	2280	2280	
			2540	2540	2540	2540	2540	2540	
		mm	4960	5297	5527	5527	5525	5959	
		кд	4000	5307	5025	5025	5323	6100	
Unit weight - operation		kg	5030	555/	5825	5825	5825	0188	
Water connection size		mm	139,7	139,7	168,0	168,0	168,0	168,0	
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; (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 fouling factor = 0,0000176m2°C/W (2)

(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) (5)

- minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load. - not including filter pressure drop. The installation of the filter is mandatory.

sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
Referred to unit with to unit operation with 100 Pa External Static Pressure (ESP) on the condenser fans.

(6) (7) (8)

(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		
	1	1 .	-							
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	(1)	-	40.7	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)	кРа	104	105	//,3	81,9	98,0	105		
Water flow rate	(2)	I/S	37,7	39,0	43,6	46,8	47,5	47,2		
Evaporator pressure drop	(2)(5)	кра	83,0	/6,8	59,1	62,8	69,0	68,2		
Evaporator water volume	(1)	lt I/-	283	461	485	492	492	492		
Minimum water rate	(4)	I/S	11,7	11,5	14,1	14,1	14,1	14,1		
Cound Dowor	(4) (5)		102	102	102	102	102	102		
Sound Prossure @ 1 motor	(1)(6)		102	102	103	103	103	103		
Sound Pressure @ 1 meter	(1)(/)	UB(A)	18	16	18	16	18	16		
Fan type		-	Direct propeller							
Fan diameter		mm			8	50				
Fan rotational speed		RPM	900							
Fan motor / control		-			AC – C	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 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							

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

 - (Middle East standard conditions) evaporator water in/out = 12:2/0.7 °C; ambient = 50.0 °C, unit at thin load operation; operating huid: water;
- (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 = (2) 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 - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load. - not including filter pressure drop. The installation of the filter is mandatory.

(4) (5)

(6) (7) (8)

- sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
- Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
- 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.


EWAD~M-SSC+O	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					
				1 .		,						
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		-		Direc	t Expansion – Shel	l & 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 propelle	r						
Fan diameter		mm			850							
Fan rotational speed		RPM			900							
Fan motor / control		-		1	AC – On/Off		1					
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					
	1	1		1			I					
Refrigerant circuits		n	3	3	3	3	3					
Compressor type		-			Single Screw							
Capacity control		-			Stepless							
Comp model per circuit			F4AL/F4AS	F4AL/F4AL	F4AXL/F4AL	F4AXL/F4AXL	F4AXL/ F4AXL					
		-	/F4AS	/F4AL	/F4AL	/F4AL	/F4AXL					
Oil charge		lt	/5	/5	/5	/5	/5					
Refrigerant Charge		kg	210	168	182	196	210					
Casing material		-			Galvanized Steel S	heet						
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 con fouling factor = 0.0000	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; fouring factor = 0.000176m39C/W											

- (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)

= 0,0000176m2°C/W
- 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
- minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
- not including filter pressure drop. The installation of the filter is mandatory.
- sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
- Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
- referred to unit with to unit operation with 100 Pa External Static Pressure (ESP) on the condenser fans.
- data subject to change in case of options or unit customizations. Pafer to unit's man plate for actual value. (3) (4) (5) (6) (7)

(8)

(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.



EWAD~M-SSC+0	OPT14	5 - EC M	<b>OTORS FA</b>	NS				
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
		1		1	1	1	1	1
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
	1	1						
Evaporator type		-		C	irect Expansion	– Shell & Tubes	;	1
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
		10(4)			100	100	100	100
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
Ean tuno					Direct D	apallar		
Fan diamotor		-				0		
Fan rotational speed		RDM			100	0		
Fan motor / control		-			FC – Varia	hle Sneed		
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
	1 (-7	7-						-
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-		1	Single	Screw	1	1
Capacity control		-			Step	less		
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 \	Vhite		
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					Victa	ulic	•	•

 - (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 = (2) 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) (5)

 evaporation water inform = 12.276.7°C, annotant = 46.0°C, unit at non-odd operation; operating fund: water flowing factor = 0,000176n12°C/W
 minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
 not including filter pressure drop. The installation of the filter is mandatory.
 sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
 Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
 referred to unit with free discharge on condenser fans. (6) (7) (8)

(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-SSC+0	VAD~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			
		1		1	1	1	1	1			
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			
	1	1									
Evaporator type		-		C	irect Expansion	– Shell & Tubes	5	1			
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			
Council Document	(1) (2)		402	102	102	102	101	102			
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			
Ean type	1				Diroct P	opollor					
Fan diameter		- mm			20	0					
Fan rotational speed		RPM			100	0					
Fan motor / control		-			FC – Varia	hle Sneed					
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			
	1 (-7	, -									
Refrigerant circuits		n	2	2	2	2	2	2			
Compressor type		-		1	Single	Screw	1	•			
Capacity control		-			Step	less					
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		-			lvorv \	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					Victa	ulic					

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

 (Nonisce 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
 (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)

(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) (5)

 evaporation water inform = 12.276.7°C, annotant = 46.0°C, unit at non-odd operation; operating fund: water flowing factor = 0,000176n12°C/W
 minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
 not including filter pressure drop. The installation of the filter is mandatory.
 sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
 Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
 referred to unit with free discharge on condenser fans. (6) (7) (8)

(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-SSC+C	OPT14	5 - EC M	<b>IOTORS FA</b>	NS				
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
	1	1.		L				
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
E construction de la constructio	1							
Evaporator type	(1)	-	42.2	47.2	Direct Expansio	n – Snell & Tube		61.0
Evaporator prossure drop	(1)	1/S	43,3	47,2	51,5	55,0	58,8	61,0 109
Water flow rate	(1)	KPd L/c	20.0	109	79,0	04,2 40.4	51.6	52.7
Evaporator pressure drop	(2) (5)	kPa	39,0 88.3	42,1	40,0	49,4 69.3	80.1	92,7 82.1
Evaporator water volume	(2)(5)	It	283	00,4 161	/85	492	492	83,1 /02
Minimum water rate	(4)	1/s	11 7	11 5	14.1	14 1	14 1	14.1
	(+)	1/5	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
				1	L	I	I	I
Fan type		-	Direct Propeller					
Fan diameter		mm			8	00		
Fan rotational speed		RPM			10	)90		
Fan motor / control		-		<b></b>	EC – Varia	able 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
	1	1	-	-	-	-	-	-
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-			Single	Screw		
Capacity control		-			Ste			
Comp model per circuit		-	F4AS / F3BL	F4AL / F3BL	F4AL / F4AS	F4AL / F4AL	F4AXL/F4AL	F4AXL/F4AXL
Dif Charge		IL ka	44	44	126	50	50	50
		кд	90	98	120		120	140
Casing material		-			Galvanized	Steel Sheet		
Color		-		1	lvory	White	1	1
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			-,-	-,	Vict	aulic	- /	-,

(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 - (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 = 0,000176m2°C/W (2)

(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) (5)

 - evaporation water inflott = 12.2/6.7°C, annotate 46.°C, unit at full load operation; operating full: water, fouring factor = 0,000176n12°C/W
 - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
 - not including filter pressure drop. The installation of the filter is mandatory.
 - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
 - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
 - referred to unit with free discharge on condenser fans.
 - dots outies the barge in each of externa or unit is unterminimizing. Defente unit/e name plate for actual value. (6) (7) (8)

(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.



EWAD~M-SSC+O	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		-		Direc	ct Expansion – Shel	l & 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					
	1	[]		I			I					
Sound Power	(1) (6)	dB(A)	105	104	105	105	105					
Sound Pressure @ 1 meter	(1) (7)	dB(A)	81	81	81	82	82					
	1											
Fan type		-			Direct Propelle	r						
Fan diameter		mm			800							
Fan rotational speed		RPM			1090							
Fan motor / control		-	20	24	EC – Variable Spe	ed	20					
Number of fans		n	30	24	30	30	30					
Power input fans	(2)	KW	89,4	/1,5	89,4	89,4	89,4					
AITTIOW	(8)	1/5	180833	144667	180833	180833	180833					
Pofrigorant circuits		n	2	2	2	2	2					
Comprossor type			5	5	Single Scrow	5	5					
Compressor type		-			Stoplace							
		-	<b>ΕΛΔΙ /ΕΛΔ</b>	ΕΛΔΙ /ΕΛΔΙ	5τεριεςς	<b>ΕΛΔΧΙ /ΕΛΔΧΙ</b>	ΕΛΔΧΙ / ΕΛΔΧΙ					
Comp model per circuit		_	/F4ΔS	/F4ΔΙ	/F4ΔI	/F4ΔΙ	/F4AXI					
Oil charge		lt	75	75	75	75	75					
Refrigerant Charge		kg	210	168	182	196	210					
Casing material		-			Galvanized Steel S	heet						
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 cor fouling factor = 0,0000	nditions) eva 0176m2°C/W	porator water in,	/out = 12.2/6.7°C;	ambient = 35.0°C, u	nit at full load operatio	on; operating fluid: Wat	er;					

- (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)

= 0,0000176m2°C/W
- 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
- minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
- not including filter pressure drop. The installation of the filter is mandatory.
- sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
- Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
- referred to unit with free discharge on condenser fans.
- data subject to charge in case of options or unit customizations. (3) (4) (5) (6) (7)

(8)

(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.



EWAD~M-SSC+C	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			
	1			T	ſ	ſ	I	I			
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			
	1	1									
Evaporator type		-		D	irect 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)	I/S	3,3	3,8	5,0	5,0	4,9	5,6			
Sound Dowor	(4) (5)		00	00	100	100	100	102			
Sound Prossure @ 1 motor	(1)(6)		99	99	100	100	100	102			
Sound Pressure @ 1 meter	(1)(/)	UB(A)	80	80	00	80	80	02			
Fan type	[	-			Direct Pr	opeller					
Fan diameter		mm			80	0					
Fan rotational speed		RPM			143	30					
Fan motor / control		-			EC – Varial	ole 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 S	Screw					
Capacity control		-			Step	ess					
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 S	Steel Sheet					
Color		-			Ivory V	Vhite					
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					Virta	ulic					
	1				victu						

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

fouling factor = 0,0000176m2°C/W

- (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)

(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 - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load. - not including filter pressure drop. The installation of the filter is mandatory.

(4) (5)

(6) (7) (8)

- sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
 - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
 - 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.



EWAD~M-SSC+C	OPT16	1 - 200 F	Pa ESP FAN	IS				
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
	1			1	ſ		I	T
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
	T	r						
Evaporator type		-		D	irect Expansion	– Shell & Tubes	; [	1
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
Coursel Document	(1) (2)		402	102	102	402	101	102
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
Ean tuno	1				Direct Dr	apallar		
Fan diameter		- mm			201000 PT	0		
Fan rotational speed		RPM			1/13	80		
Fan motor / control		-			FC – Varial	ole Sneed		
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
	1 (0)	., -		1				
Refrigerant circuits		n	2	2	2	2	2	2
Compressor type		-			Single S	Screw	I	8
Capacity control		-			Step	ess		
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 S	Steel Sheet		
Color		_			lvorv V	Vhite		
		mm	5100	6000	6000	6000	6000	6900
			2280	2280	2280	2280	2280	2280
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					Victa	ulic		

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

 - (Middle East standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 35.6°C, unit at the load operation; operating hald: water;
 - (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 = (2) 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 - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load. - not including filter pressure drop. The installation of the filter is mandatory.

(4) (5)

(6) (7) (8)

- sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
 - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
 - 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.



EWAD~M-SSC+C	NAD~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			
	1		r.	1	T	r.	1	1			
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			
	1	1									
Evaporator type		-		-	Direct Expansio	n – Shell & Tube	es				
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)	I/S	11,7	11,5	14,1	14,1	14,1	14,1			
Cound Downer	(1) (0)		102	102	102	102	102	102			
Sound Power	(1)(6)		102	102	103	103	103	103			
Sound Pressure @ 1 meter	(1)(7)	dB(A)	81	81	81	81	81	81			
Fan tyne		-			Direct F	Propeller					
Fan diameter		mm			8	00					
Fan rotational speed		RPM			14	130					
Fan motor / control		-			EC – Varia	able 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			
	1		1				•	•			
Refrigerant circuits		n	2	2	2	2	2	2			
Compressor type		-		·	Single	Screw	·				
Capacity control		-			Ste	oless					
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		-			lvory	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					Vict	aulic					

(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 = 0,0000176m<sup>2</sup>°C/W - (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 =

(2) 0,0000176m2°C/W

 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
 minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
 not including filter pressure drop. The installation of the filter is mandatory. (3) (4) (5) (6) (7) (8)

- sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
 - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
 - referred to unit operation with 200 Pa External Static Pressure (ESP) on the condenser fans.

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

The above data are referred to the unit without additional optional. The above data are referred the unit installed in compliancy with installation prescription.



EWAD~M-SSC+O	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		-		Direc	t Expansion – Shel	l & 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					
	1											
Fan type		-			Direct Propelle	r						
Fan diameter		mm			800							
Fan rotational speed		RPM			1430							
Fan motor / control		-		1	EC – Variable Spe	ed	1					
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		-	E441 / E440	<b>5444 (544</b> )	Stepless		54424 (54424)					
Comp model per circuit			F4AL/F4AS	F4AL/F4AL	F4AXL/F4AL	F4AXL/ F4AXL	F4AXL/ F4AXL					
Oil charge		-	7F4A5	75 /F4AL	/F4AL	/F4AL	/F4AXL					
Dif Charge		n ka	75	169	102	106	210					
		кg	210	108		190	210					
Casing material		-			Galvanized Steel Si	neet						
Color		-	4 4 4 0 0	11100	Ivory White	11100	14100					
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 con fouling factor = 0,0000	ditions) evap 176m2°C/W	orator water in/	out = 12.2/6.7°C; a	mbient = 35.0°C, un	nit at full load operation	n; operating fluid: Wate	er;					

- (Middle East standard conditions) evaporator water in/out =  $12.2/6.7^{\circ}$ C; ambient =  $46.0^{\circ}$ C, unit at full load operation; operating fluid: Water; fouling factor =  $0,0000176m2^{\circ}$ C/W (2)

= 0,000176m2°C/W
= 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
- minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
- not including filter pressure drop. The installation of the filter is mandatory.
- sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
- Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
- Referred to unit operation with 200 Pa External Static Pressure (ESP) on the condenser fans.
- data subject to change in case of ontions or unit customizations. Pafer to unit's name plate for actual value. (3) (4) (5) (6) (7)

(8) (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.



EWAD~M- XS C - s	WAD~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			
		1									
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			
	1			1	T	Γ	ľ	1			
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			
-	1					al 11.0 T 1					
Evaporator type	(1)	-	12.6		irect Expansion	- Shell & Tubes	20.0	22.2			
Water flow rate	(1)	I/S	13,6	15,6	17,9	18,8	20,0	23,2			
Evaporator pressure drop	(1)	кра	80,2	80,3	98,7	107	102	95,3			
Water flow rate	(2)	I/S	12,7	14,6	16,7	17,1	18,1	21,4			
Evaporator pressure drop	(2)(5)	кра	/1,6	/1,1	86,6	90,3	85,1	82,6			
Ainimum water rate	(4)		2.0	181	181	1/5		104			
	(4)	1/5	5,9	4,4	4,9	4,9	5,5	0,5			
Sound Power	(1) (6)	dB(A)	100	100	100	100	101	103			
Sound Pressure @ 1 meter	(1)(0)		80	80	80	80	80	82			
Sound Pressure @ I meter	(1)(/)	ub(A)	00	00	00	00	00	02			
Fan type		-			Direct Pr	opeller					
Fan diameter		mm	850								
Fan rotational speed		RPM			90	0					
Fan motor / control		-			AC – 0	n/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 S	Screw					
Capacity control		-		1	Step	ess	1	1			
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 S	Steel Sheet					
Color		-			Ivory V	Vhite					
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					Victa	ulic					
(1) – (ASHRAE standard co fouling factor = 0,000	(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										

- (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 = 0,000176m2°C/W (2)

(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

 evaporation water inform = 12.276.7°C, annotant = 46.0°C, unit at non-odd operation; operating fund: water flowing factor = 0,000176n12°C/W
 minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
 not including filter pressure drop. The installation of the filter is mandatory.
 sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
 Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
 referred to unit with free discharge on condenser fans. (4) (5) (6) (7) (8)

(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 - s	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				
					1							
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				
	1											
Evaporator type		-		D	virect Expansion	– Shell & Tubes		1				
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)	кРа	90,8	/6,/	/5,4	87,9	83,0	63,7				
Evaporator water volume	(1)	lt I/-	164	200	290	290	250	501				
Minimum water rate	(4)	I/S	6,5	6,9	9,8	9,8	9,7	11,5				
Sound Douver	(4) (5)		102	102	102	102	102	102				
Sound Prossure @ 1 motor	(1)(6)		103	103	103	103	102	102				
Sound Pressure @ 1 Meter	(1)(/)	<u>ав(А)</u>	82	82	81	81	16	81				
Fan tyne					Direct Pr	opeller						
Fan diameter		mm			85	0						
Fan rotational speed		RPM			90	0						
Fan motor / control		-			AC - 0	n/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				
				•	1							
Refrigerant circuits		n	2	2	2	2	2	2				
Compressor type		-		•	Single	Screw						
Capacity control		-			Step	ess						
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 S	Steel Sheet						
Color		-			Ivorv V	Vhite						
Unit length		mm	6000	6000	6900	6900	7800	7800				
			2280	2280	2280	2280	2280	2280				
		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					Victa	ulic						
(1) - (ASHRAE standard co fouling factor = 0,000 (2) - (Middle East standard	onditions) ev 00176m2°C/ d.conditions	/aporator wate /W ) evaporator w	$r \ln/out = 12.2/6.7^{\circ}$	C; ambient = 35.0	°C, unit at full load	operation; operation	ng fluid: Water; rating fluid: Water	fouling factor –				

(2) 0,0000176m2°C/W

0,0000176m2°C/W - 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 - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load. - not including filter pressure drop. The installation of the filter is mandatory. - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614 - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744 - referred to unit with free discharge on condenser fans. - data cubiect to charge in case of options or unit customizations. Pafer to unit's name plate for actual value (3) (4) (5) (6) (7) (8)

(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.



EWAD~M- XS C – s	WAD <sup>~</sup> 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			
	T	· · · · ·			1	1	1				
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			
	1										
Evaporator type		-			irect 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)	кРа	/4,1	65,9	/5,6	69,4	64,9	/0,2			
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			
Cound Douron	(1) (0)		102	102	104	101	105	104			
Sound Power	(1)(6)		103	103	104	104	105	104			
Sound Pressure @ 1 Meter	(1)(/)	<u>ав(А)</u>	18	81	81	81	81	16			
Fan type		_			Direct pr	opeller					
Fan diameter		mm			85	0					
Fan rotational speed		RPM			90	0					
Fan motor / control		-			AC – O	n/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			
	(-)	,		1		I	1	I			
Refrigerant circuits		n	2	2	2	2	2	2			
Compressor type		-			Single	Screw		•			
Capacity control		-			Step	less					
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 S	Steel Sheet					
Color		-			Ivory V	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					Victa	ulic					
<ul> <li>(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</li> <li>(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 = 0,000176m2°C/W</li> </ul>											

0,0000176m2°C/W - 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 - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load. - not including filter pressure drop. The installation of the filter is mandatory. - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614 - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744 - referred to unit with free discharge on condenser fans. - data cubiect to charge in cace of optices or unit customizations. Pefer to unit's pame plate for actual value (3)

(4) (5) (6) (7) (8)

(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.



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				
	1	1	1	1	1	1	1				
Cooling Capacity	(2)	kW	1292	1336	1378	1449	1566				
EER	(2)	kW/kW	2,35	2,38	2,42	2,23	2,25				
		1.14	1100	4252	42.42	1222	4.442				
	(3)	kW	1189	1252	1342	1333	1413				
EER	(3)	KW/KW	2,22	2,24	2,28	2,10	2,13				
Evaporator type	1			F	Viract Expansion	Shall & Tubas					
Water flow rate	(1)	-	62.8	64.6			<u>80 5</u>				
Evanorator pressure drop	(1)	i/s kPa	91.8	96.9	70.9	75,8 85.4	128				
Water flow rate	(1)	l/s	56.0	57.9	59.7	62.8	67.8				
Evaporator pressure drop	(2) (5)	kPa	74.8	79.5	593	63.8	93.9				
Evaporator water volume	(2) (3)	lt	451	451	946	522	522				
Minimum water rate	(4)	l/s	17.1	17.1	19.1	18.9	19.3				
	1 ( .,	, -	,	,	- ,	- / -	-,-				
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 pi	ropeller					
Fan diameter		mm			85	0					
Fan rotational speed		RPM			90	0					
Fan motor / control		-		1	AC – 0	n/Off	1				
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				
Defrigerent einewite	1		2	2	2	2	2				
Comprossor type		n	2	2	2 Single	<u> </u>	3				
Compressor type		-			Single						
Comp model per circuit		-	ΕΛΛΧΙ / ΕΛΛΙ				ΕΛΛΙ / ΕΛΛΙ / ΕΛΛς				
Oil charge		l+	50	50	50	75	75				
Refrigerant Charge		kg	173	189	196	210	210				
Casing material		-		200	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	nection size mm 219,1 219,1 273,0 273,0 273,0										
(1) – (ASHRAE standard co	onditions) e	vaporator wate	er in/out = 12.2/6.7	C; ambient = 35.0	P°C, unit at full load	operation; operating fluid:	Water;				

(1) fouling factor = 0,0000176m2°C/W

- (Middle East standard conditions) evaporator water in/out =  $12.2/6.7^{\circ}$ C; ambient =  $46.0^{\circ}$ C, unit at full load operation; operating fluid: Water; fouling factor =  $0,0000176m2^{\circ}$ 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)

(3) - evaporator water in/out = 12.2/6.7°C; ambient = 48.0°C, unit at full load operation; operating fulua: Water; fouling factor = 0,00001/6m2°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 9614
 (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



	TECHNICAL SPECIFICATIONS									
EWAD~M-XSC+0	OPT76	b - SOU	ND PROOF	SYSTEM (	COMPRES	SOR)				
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		
				1						
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		
	1			1				1		
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		
	1									
Evaporator type	(1)	-	10.0	D	irect Expansion	– Shell & Tubes				
Water flow rate	(1)	l/s	13,6	15,6	17,9	18,8	20	23,2		
Evaporator pressure drop	(1)	кРа	80,2	80,3	98,7	107	102	95,3		
Water flow rate	(2)	I/S	12,7	14,6	16,7	17,1	18,1	21,4		
Evaporator pressure drop	(2)(5)	кра	/1,6	/1,1	86,6	90,3	85,1	82,6		
Evaporator water volume	(4)	lt l/c	181	181	181	1/5	1/0	164		
Minimum water rate	(4)	1/5	3,9	4,4	4,9	4,9	5,5	6,5		
Sound Power	(1) (6)	dB(A)	98	08	98	98	99	100		
Sound Prossure @ 1 motor				70	70	70	70	70		
	(1)(/)	UD(A)	70	70	70	70	15	15		
Fan type		_			Direct Pr	opeller				
Fan diameter		mm			85	0				
Fan rotational speed		RPM			90	0				
Fan motor / control		-			AC – 0	n/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 S	Screw				
Capacity control		-		-	Step	ess				
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 S	Steel Sheet				
Color		-			Ivory V	Vhite				
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					Victa	ulic				

 - (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)

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

(4) (5)

(6) (7) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
 - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
 - referred to unit with free discharge on condenser fans.

(8)

(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.



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		-		D	irect Expansion	<ul> <li>Shell &amp; Tubes</li> </ul>					
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			
	ſ	I			1		1				
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 Pr	opeller					
Fan diameter		mm			85	0					
Fan rotational speed		RPM			90	0					
Fan motor / control		-	10		AC – 0	n/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	/9/22	/9/22	91111	91111			
Defrigerent eizewite	1		2	2	2	2	2	2			
		11	2	2	2 Single (		2	2			
Compressor type		-			Stop						
Comp model per circuit		_	F345 / F341	F3AL / F3AL	F3BS / F3AI	F3RI / F3ΔI	F3BL / F3BS	F3BL / F3BL			
Oil charge		lt	34	34	36	36	38	38			
Refrigerant Charge		kσ	84	84	98	98	112	112			
Casing material			01	01	Galvanized 9	Steel Sheet					
Color		-				Vhite					
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									
<ul> <li>(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</li> <li>(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</li> </ul>											

0,0000176m2°C/W - 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 - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load. - not including filter pressure drop. The installation of the filter is mandatory. - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614 - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744 - referred to unit with free discharge on condenser fans. - data cubiect to charge in case of options or unit customizations. Pefer to unit's name plate for actual value (3)

(4) (5) (6) (7) (8)

(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 + 0	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				
	ſ	1			1							
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				
	(-)	1144		0.05	1071	1210	1220	1171				
	(3)	kW	899	995	1074	1210	1229	11/4				
EER	(3)	KW/KW	2,3	2,28	2,28	2,37	2,4	2,25				
Evaporator type		-		D	irect 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 pr	opeller						
Fan diameter		mm			85	0						
Fan rotational speed		RPM			90	0						
Fan motor / control		-	40	20	AC - 0	n/Off	20	22				
Number of fans		n Lw	18	20	57.2	28	30	57.2				
Air flow	(0)	KVV	40,8	52	57,2	150444	/8	57,2				
Air now	(8)	1/ 5	102300	113889	125278	139444	170855	123278				
Refrigerant circuits		n	2	2	2	2	2	2				
Compressor type		-	_	_	 Single S	 Screw	_	_				
Capacity control		-			Stepl	ess						
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 S	Steel Sheet						
Color		-			Ivory V	Vhite						
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 co	onditions) ev	vaporator wate	r in/out = 12.2/6.7°	PC; ambient = 35.0	°C, unit at full load	operation; operati	ing fluid: Water;					
<ul> <li>fouling factor = 0,0000176m2°C/W</li> <li>(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</li> <li>(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</li> </ul>												

(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/V
 (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 9614
 (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 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 + (	OPT76	b - SOU	ND PROOF	SYSTEM (	COMPRES	SOR)		
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	
				1				
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		-			irect 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	
	4.1.4.7	10(4)	404	102	101	101	102	
Sound Power	(1)(6)	dB(A)	104	103	104	104	103	
Sound Pressure @ 1 meter	(1)(7)	dB(A)	80	80	80	80	80	
Ean type					Direct p	apollor		
Fan diamotor		- mm				opener		
Fan rotational speed					00	0		
Fan motor / control		-			0-0	v n/∩ff		
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)	1/s	125278	136667	159444	136667	148056	
	(0)	1/ 5	125270	130007	155444	190007	140000	
Refrigerant circuits		n	2	2	2	3	3	
Compressor type		-			Single	Screw	•	
Capacity control		-			Step	less		
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 S	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 co	onditions) ev	aporator wate	r 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

 $-0.0000176m2^{\circ}C/W$  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. - not including filter pressure drop. The installation of the filter is mandatory.

(4) (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
 - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
 - referred to unit with free discharge on condenser fans.

(6) (7) (8)

(9) - data subject to change in case of options or unit customizations. Refer to unit's name plate for actual value.
 (9) The above data are referred to the unit without additional optional.

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and unit's certified drawing



EWAD~M-XSC+(	OPT16	0a - 100	Pa ESP FA	NS				
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		-		D	irect 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)	1/c	12.6	14.4	16 5	16.8	17.8	21.2

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

69,9

84,8

87,5

82,4

80,8

70,6

								Contraction of the second s			
Fan type		-			Direct Pi	ropeller					
Fan diameter		mm			85	0					
Fan rotational speed		RPM			90	0					
Fan motor / control		-		AC – On/Off							
Number of fans		n	8	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 2 2							
Compressor type		-			Single	Screw					

Compressor type	-		Single Screw							
Capacity control	-			Step	less					
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				Victa	ulic					

Water connection type

Evaporator pressure drop

(2) (5)

kPa

(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)

(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 - 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. - not including filter pressure drop. The installation of the filter is mandatory. (4) (5)

(6) (7) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
 - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
 - Referred to unit operation with 100 Pa External Static Pressure (ESP) on the condenser fans.

(8)

(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.



EWAD~M-XSC+C	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		-		D	irect Expansion	<ul> <li>Shell &amp; Tubes</li> </ul>						
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			85	50				
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 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	-			Step	less			
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				Victa	ulic			

Water connection type

- (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

(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 = (1)

0,0000176m2°C/W - 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 (2)

(3) (4)

- minimum flow rate in your – 12.2/0, 7°C, ambient – 46.0°C, unit at in load operation, operating indit. water, indining ration – 0,000170in2°C, with indit of the operating indit operating indition of the filter is mandatory.
 - sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
 - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
 - Referred to unit operation with 100 Pa External Static Pressure (ESP) on the condenser fans.

(5) (6)

(7)

(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.



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		-		D	irect 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			
	ſ			1	1	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 pr	opeller					
Fan diameter		mm			85	0					
Fan rotational speed		RPM			90	0					
Fan motor / control		-			AC – 0	n/Off					
Number of fans		n	18	20	22	28	30	22			
Power input fans	(-)	kW	46,8	52	57,2	/2,8	/8	57,2			
Air flow	(8)	l/s	90000	100000	110000	140000	150000	110000			
Defricerent sinevite			2	2	2	2	2	2			
		n	2	2	L Z		2	Ζ			
Compressor type		-			Single						
Comp model per circuit		-	E4AS / E2DI								
		- 1+	11 11	11 F4AL / F3BL	50	50	50	50			
Refrigerant Charge		ka	126	140	154	196	210	172			
Casing material		-	120	140	Galvanized S	Steel Sheet	210	175			
Color		-			Ivory V	Vhite					
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					Victa	ulic					
(1) – (ASHRAE standard co fouling factor = 0,000 (2) – (Middle East standard	onditions) ev 00176m2°C/ d conditions	/aporator wate 'W ) evaporator w	r in/out = 12.2/6.7° ater in/out = 12.2/6	PC; ambient = 3 <u>5.0</u> 5.7°C; ambient = 4	°C, unit at full load 6.0°C, unit at full l	l operation; operati	ing fluid: Water; rating fluid: Water	; fouling factor =			

0,0000176m2°C/W

0,0000176m2°C/W - 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 - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load. - not including filter pressure drop. The installation of the filter is mandatory. - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614 - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744 - Referred to unit operation with 100 Pa External Static Pressure (ESP) on the condenser fans. - data cubiect to charge in case of options or unit customizations. Pafer to unit's man plate for actual value (3)

(*4*) (*5*) (*6*) (*7*) (*8*)

(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.



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	on – 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		-			Singl	e Screw	
Capacity control		-			Ste	epless	
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		-			Galvanize	d Steel Sheet	
Color		-			lvory	y 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

- (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)

(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

- 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)

(4)

(5)

 evaporation water infort = 12.2/o.7-c, ambient = 48.0-c, unit at initial objection; operating indit: water, ioning factor = 0,000176in2-c/v
 minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
 not including filter pressure drop. The installation of the filter is mandatory.
 sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
 Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
 Referred to unit operation with 100 Pa External Static Pressure (ESP) on the condenser fans. (6) (7)

(8)

(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.



EWAD~M-XSC+	OPT14	5 - EC N	IOTORS FA	NS				
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		-		C	irect Expansion	- Shell & Tubes	5	
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)	1/s	12.8	14.6	16.7	17.2	18.2	21.5

mater nem rate	(-)	., s	==)0	= !) <b>s</b>	=0):	=;)=	=0)=	==)0
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			80	00					
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 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	-			Step	less			
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				Victa	ulic			

Water connection type

 - (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)

(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

- 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. - not including filter pressure drop. The installation of the filter is mandatory. (4) (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
 - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
 - referred to unit with free discharge on condenser fans.

(6) (7)

(8)

(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.



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		-		D	irect Expansion	<ul> <li>Shell &amp; Tubes</li> </ul>					
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 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	-			Step	less			
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				Victa	ulic			

Water connection type

 - (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)

(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 - 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)

(4) (5)

 - minimum flow rate in your – 12.2/0, 7°C, ambient – 46.0°C, unit at in load operation, operating indit. water, indining rates – 0,000170in2°C, with indit operating at minimum load.
 - mot including filter pressure drop. The installation of the filter is mandatory.
 - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
 - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
 - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
 - referred to unit with free discharge on condenser fans. (6) (7)

(8)

(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.



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			
		,			1						
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			
	1										
Evaporator type		-		D	irect 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)	кРа	/4,9	66,6	76,3	/0,0	65,4	/1,0			
Evaporator water volume	(1)	lt	501	481	481	451	492	451			
Minimum water rate	(4)	I/S	11,5	13,7	13,7	17,1	18,8	17,1			
Sound Dower	(1) (0)	dD(A)	102	102	104	104	105	104			
Sound Prossure @ 1 motor	(1)(6)		103	103	104	104	105	104			
	(1)(7)	ив(А)	01	81	01	61	01	61			
Fan type		_			Direct Pr	oneller					
Fan diameter		mm			80	n					
Fan rotational speed		RPM			109	0					
Fan motor / control		-			EC – Varial	ole 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		-			Step	ess					
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 S	Steel Sheet					
Color		-			Ivory V	Vhite					
Unit length		mm	8700	9600	10500	13200	14100	10500			
			2280	2280	2280	2280	2280	2280			
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					Victa	ulic					
(1) – (ASHRAE standard co fouling factor = 0,000	<ul> <li>(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</li> </ul>										

(2)

- (Middle East standard conditions) evaporator water in/out =  $12.2/6.7^{\circ}$ C; ambient =  $46.0^{\circ}$ C, unit at full load operation; operating fluid: Water; fouling factor =  $0,0000176m2^{\circ}$ C/W - 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.
 not including filter pressure drop. The installation of the filter is mandatory.
 sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
 Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
 referred to unit with free discharge on condenser fans. (4) (5) (6) (7) (8)

(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.



EWAD~M- XS C + OPT145 - EC MOTORS FANS											
notes		C14	H14	C15	C17	H18					
(1)	kW	1454	1498	1526	1713	1867					
(1)	kW	467	477	488	581	627					
(1)	kW/kW	3,11	3,14	3,13	2,95	2,98					
	%	13	13	13	8	8					
(1)	kW/kW	4,64	4,58	4,69	4,54	4,30					
(2)	kW	1302	1346	1385	1473	1591					
(2)	kW/kW	2,35	2,37	2,39	2,22	2,24					
-											
(3)	kW	1221	1289	1350	1372	1464					
(3)	kW/kW	2,21	2,23	2,26	2,10	2,12					
-											
	-			Direct Expansio	n – Shell & Tubes						
(1)	l/s	63,0	64,9	66,1	74,2	80,9					
(1)	kPa	92,5	97,5	71,3	86,1	129					
	DPT14: notes (1) (1) (1) (1) (2) (2) (3) (3) (1) (1) (1)	Notes         KW           (1)         kW           (1)         kW           (1)         kW/kW           (1)         kW/kW           (1)         kW/kW           (2)         kW           (2)         kW/kW           (3)         kW/kW           (3)         kW/kW           (1)         l/s           (1)         l/s	Notes         C14           (1)         kW         1454           (1)         kW         467           (1)         kW/kW         3,11           (1)         kW/kW         3,11           (1)         kW/kW         4,64           (1)         kW/kW         4,64           (2)         kW         1302           (2)         kW/kW         2,35           (3)         kW/kW         2,21           (3)         kW/kW         2,21           (1)         I/s         63,0           (1)         kPa         92,5	Notes         C14         H14           (1)         kW         1454         1498           (1)         kW         467         477           (1)         kW/kW         3,11         3,14           %         13         13           (1)         kW/kW         4,64         4,58           (1)         kW/kW         2,35         2,37           (2)         kW         1302         1346           (2)         kW/kW         2,35         2,37           (3)         kW/kW         2,21         1289           (3)         kW/kW         2,21         2,23           (1)         I/s         63,0         64,9           (1)         kPa         92,5         97,5	Notes         C14         H14         C15           (1)         kW         1454         1498         1526           (1)         kW         467         477         488           (1)         kW/kW         3,11         3,14         3,13           (1)         kW/kW         4,64         4,58         4,69           (1)         kW/kW         4,64         4,58         4,69           (1)         kW/kW         2,35         2,37         2,39           (2)         kW         1302         1346         1385           (2)         kW/kW         2,35         2,37         2,39           U           (3)         kW/kW         2,21         2,23         2,26           Direct Expansion           (1)         I/S         63,0         64,9         66,1           (1)         kPa         92,5         97,5         71,3	Notes         C14         H14         C15         C17           (1)         kW         1454         1498         1526         1713           (1)         kW         467         477         488         581           (1)         kW/kW         3,11         3,14         3,13         2,95           %         13         13         13         8           (1)         kW/kW         4,64         4,58         4,69         4,54           (1)         kW/kW         2,35         2,37         2,39         2,22           (2)         kW         1302         1346         1385         1473           (2)         kW/kW         2,35         2,37         2,39         2,22           (3)         kW         1221         1289         1350         1372           (3)         kW/kW         2,21         2,23         2,26         2,10           Direct Expansion – Shell & Tubes           (1)         I/s         63,0         64,9         66,1         74,2           (1)         kPa         92,5         97,5         71,3         86,1					

Evaporator pressure drop	(1)	KPd	92,5	97,5	/1,3	80,1	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	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	-			lvory	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			

 - (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
 - (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 = (1)

(2) 0,0000176m2°C/W

 - 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
 - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load. (3) (4)

(5)

not including filter pressure drop. The installation of the filter is mandatory.
 sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
 Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744

(6) (7)

(8) (9)

referred to unit with free discharge on condenser fans.
 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.



EWAD~M- XS C + C	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		-		D	irect Expansion	<ul> <li>Shell &amp; Tubes</li> </ul>	;			
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 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	-			Step	less			
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				Victa	ulic			

Water connection type

 - (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)

(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

- 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. - not including filter pressure drop. The installation of the filter is mandatory. (4) (5)

(6) (7) - sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
 - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
 - Referred to unit operation with 200 Pa External Static Pressure (ESP) on the condenser fans.

(8)

(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.



EWAD~M-XSC+0	OPT16	1 - 200 I	Pa ESP FAN	IS				
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		-		D	irect Expansion	- Shell & Tubes	5	
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		IL	104	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 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	-			Step	ess					
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				Victa	ulic					

Water connection type

 - (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)

(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 - 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 in your – 12.2/0, 7°C, ambient – 46.0°C, unit at in load operation, operating indit. water, indining ration – 0,000170in2°C, with indit of the operating indit operating indition of the filter is mandatory.
 - sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
 - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
 - Referred to unit operation with 200 Pa External Static Pressure (ESP) on the condenser fans

(4) (5)

(6) (7)

(8)

(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.



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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			
	T	T			1						
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			
	(-)	1144	000	000	4070	424.4	4222	1101			
	(3)	KVV	899	999	1078	1214	1233	1184			
EER	(3)	KVV/KVV	2,15	2,15	2,15	2,20	2,22	2,13			
Evaporator type		_		ח	irect Expansion	– Shell & Tubes					
Water flow rate	(1)	1/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			
		1									
Fan type		-			Direct Pr	opeller					
Fan diameter		mm			80	0					
Fan rotational speed		RPM			143	80					
Fan motor / control		-	10	20	EC - Variat	Die Speed	20	22			
Number of fans		n Lw	18	20	22	28	30	22			
Air flow	(9)	KVV 1/c	106150	1179 <i>11</i>	120730	165122	176017	120720			
Air now	(8)	1/3	100150	117944	129739	105122	170317	129759			
Refrigerant circuits		n	2	2	2	2	2	2			
Compressor type		-		_	Single S	Screw	_				
Capacity control		-			Stepl	ess					
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 S	Steel Sheet					
Color		-			Ivory V	Vhite					
Unit length		mm	8700	9600	10500	13200	14100	10500			
			2280	2280	2280	2280	2280	2280			
		111111	2200	2200	2200	2200	2200	2200			
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					Victa	ulic					
<ul> <li>(1) - (ASHRAE standard cc fouling factor = 0,000</li> <li>(2) - (Middle East standar 0,0000176m2°C/W</li> <li>(3) - evaporator water in/o</li> </ul>	conditions) evolutions) evolutions) evolutionsout = 12.2/6	vaporator wate 'W ) evaporator w 5.7°C; ambient	er in/out = 12.2/6.79 vater in/out = 12.2/6 t = 48.0°C, unit at fu	°C; ambient = 35.0 5.7°C; ambient = 4 ull load operation; d	°C, unit at full load 6.0°C, unit at full lo operating fluid: Wa	operation; operation; operation; operation; ope ter; fouling factor =	ıng fluid: Water; vrating fluid: Water = 0,0000176m2°C;	; fouling factor = /W			

(4) (5) (6) (7) (8)

evaporation water inform = 12.276.7°C; annihilit = 46.0°C, unit at initial observation; operating fund: water footing factor = 0,0000176nt2°C/V
 minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load.
 not including filter pressure drop. The installation of the filter is mandatory.
 sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
 Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
 referred to unit operation with 200 Pa External Static Pressure (ESP) on the condenser fans.
 debte writing the formed in the pression of the filter is responsible.

(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		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				
		1		1			1				
Cooling Capacity	(2)	kW	1298	1342	1382	1465	1582				
EER	(2)	kW/kW	2,24	2,26	2,27	2,13	2,15				
	(2)	LOAD	1200	1077	1247	1250	1444				
	(3)	KVV	1208	2.12	1347	1358	1444				
EER	(3)	KVV/KVV	2,11	2,12	2,14	2,01	2,03				
Evaporator type		_			Direct Expansion	n – Shell & Tubes					
Water flow rate	(1)	1/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	(1)	I/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 P	ropeller					
Fan diameter		mm			8	00					
Fan rotational speed		RPM			14	30					
Fan motor / control		-			EC – Varia	able Speed					
Number of fans		n	22	24	28	24	26				
Power input fans	(0)	KW	88,0	96,0	112,0	96,0	104,0				
AIFTIOW	(8)	1/5	129739	141533	165122	141533	153328				
Refrigerant circuits	1	n	2	2	2	3	2				
Compressor type		-	۷	2	 Single	Screw	5				
Capacity control		_			Ster	bless					
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		-		1	Galvanized	Steel Sheet	1				
Color		-			lvory	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 co	onditions) ev	aporator wate	er in/out = 12.2/6.7	°C; ambient = 35.0	P°C, unit at full load	operation; operating fluid: Wa	ater;				

fouling factor = 0,0000176m2°C/W

- (Middle East standard conditions) evaporator water in/out =  $12.2/6.7^{\circ}$ C; ambient =  $46.0^{\circ}$ C, unit at full load operation; operating fluid: Water; fouling factor =  $0,0000176m2^{\circ}$ 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)

(4) (5) (6) (7) (8) - minimum flow rate to be reached in variable water flow system (not managed by the unit controller BMS) with unit operating at minimum load. - not including filter pressure drop. The installation of the filter is mandatory.

- sound power level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 9614
 - Sound pressure level (referred to evaporator 12,2/6,7°C, ambient 46°C full load operation) are measured in accordance with ISO 3744
 - referred to unit operation with 200 Pa External Static Pressure (ESP) on the condenser fans.

- 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. (9)

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.



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EWAD~M- SS C – standard unit										
MODEL	notes		300	340	400	420	450	520		
Phases		n		•		3				
Frequency		Hz				50				
Voltage	(6)	V			4	100				
Tolerances -		%			-10	/ +10				
min/max						•				
Nominal Running		1	1							
Current	(1)	Δ	178	206	229	241	257	290		
(@ OAT = 35°C)	(-)		1,0	200	225	2.12	237	250		
Nominal Running										
Current	(2)	A	209	241	266	284	304	351		
(@ OAT = 46°C)										
		1	1	I	I		1			
Max. running	(3)	A	236	266	304	328	352	378		
current	(-)									
Max. current for	(4)	A	270	330	368	461	485	590		
Wire sizing										
starting current	(5)	A	260	293	334	361	387	416		
Starting current										
Fan starting					_					
method		-			D.	0.L.				
Max running						- 2				
current per fan		A				5,5				
Total fans running		Δ	31.8	31.8	42.4	42.4	42.4	42.4		
current			01,0	01,0	,.	, .	, .	, .		
Comprossor		1								
starting method					Wye	- Delta				
Max, running										
current		A	82	99	126	126	148	162		
Compressor #1										
Max. running										
current		A	114	126	126	148	148	162		
Compressor #2										
Max. running										
current		A	-	-	-	-	-	-		
Starting current										
compressor #1	(7)	A	151	151	195	195	288	330		
Starting current	(7)		151	105	105	200	200	220		
compressor #2	(7)	A	151	195	195	288	288	330		
Starting current	(7)	Δ	_	_	_	_	_	_		
compressor #2	(7)									
			400	400	622	622	622	622		
IVIain switch size		A	400	400	630	630	630	630		
rerminal		-	Cables	Cables	Cables	Cables	Cables	Cables		
			1x240mma+PF	1x240mma+PF	2x185mma+PF	2x185mma+PF	2x185mma+PF	2x185mma+PF		
Cable per phase		-	1x120mma	1x120mma	1x185mma	1x185mma	1x185mma	1x185mma		
Short circuit		<u>.</u> .			2.20011119	2.120011119	2.120011119			
current Icw 1 sec.		kA	15	15	20	20	20	20		
(1) – (ASHRAF	standard	condi	tions) evanorator wa	ter in/out = 12.2/6	$7^{\circ}C^{\circ}$ ambient = 35 I		operation: operation	n fluid: Water:		

1; ор (1) - (ASHAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 36.0°C, unit at full load operation; operating fluid: Water;
 (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; ıy

fouling factor = 0,0000176m2°C/W

- Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
- Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
- starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
- Voltage unbalance between phases must be within ± 3%.
- For less than 1 second. (3) (4) (5)

(6) (7)

The data are referred to the unit without additional options.

EWAD~M- SS C – standard unit										
MODEL	notes		550	590	680	740	830	920		
Phases		n		•		3				
Frequency		Hz				50				
Voltage	(6)	V			4	100				
Tolerances -		%			-10	/ +10				
min/max										
Nominal Running										
Current	(1)	A	305	321	364	404	446	506		
(@ OAT = 35°C)	(-)									
Nominal Running										
Current	(2)	A	367	382	426	475	519	602		
(@ OAT = 46°C)										
		1	1							
Max. running	(3)	A	412	446	498	542	594	681		
Current 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		_			D	01				
method						0.2.				
Max running		A			Į	5,3				
Current per fan										
current		A	53	63,6	63,6	63,6	63,6	74,2		
	I	1								
Compressor					Marc	Dolta				
starting method					wye	- Della				
Max. running										
current		A	162	185	231	274	274	393		
Compressor #1										
Max. running			195	195	195	195	221	105		
Compressor #2			185	105	105	105	231	105		
Max. running										
current		A	-	-	-	-	-	-		
Compressor #2										
		1	1	I	1		1			
Starting current	(7)	A	330	330	410	410	410	540		
compressor #1										
Starting current	(7)	A	330	330	330	330	410	330		
Starting current										
compressor #2	(7)	A	-	-	-	-	-	-		
				·	· · · · · · · · · · · · · · · · · · ·		·			
Main switch size		Α	630	630	800	800	800	1000		
Terminal		_	Cables	Cables	Cables	Cables	Cables	Bars		
connection						Cubics	Cubics	Buij		
Cable per phase		-	2x185mmq+PE	2x185mmq+PE	2x240mmq+PE	2x240mmq+PE	2x240mmq+PE	2x300mmq+PE		
Chart airest			1x185mmq	1x185mmq	1x240mmq	1x240mmq	1x240mmq	1x300mmq		
current low 1 sec		kA	20	20	20	20	20	25		
(1) - (ASHRAE)	standard	condi	i tions) evaporator wa	ı ter in/out = 12.2/6.	 7°C: ambient = 35.0	n 1°C. unit at full load	operation: operating	g 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

 - Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
 - Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
 - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
 - Voltage unbalance between phases must be within ± 3%.
 - For less than 1 second. (3) (4) (5)

(6) (7)

The data are referred to the unit without additional options.

EWAD~M- SS C – standard unit										
MODEL	notes		970	H10	H11	H13	C13	C14		
Phases		n				3				
Frequency		Hz				50				
Voltage	(6)	V			4	100				
Tolerances -		%			-10	/ +10				
min/max										
Nominal Running										
Current	(1)	A	530	589	633	682	732	779		
(@ OAT = 35°C)	(-)					001				
Nominal Running										
Current	(2)	A	616	689	738	797	839	878		
(@ OAT = 46°C)										
		1	1		1		1			
Max. running	(3)	A	719	788	858	938	996	1054		
current	(-)		-							
Max. current for	(4)	A	910	910	980	1060	1206	1264		
Maximum										
starting current	(5)	A	791	867	944	1032	1096	1159		
Starting current										
Fan starting						<u>.</u>				
method		-			D.	0.L.				
Max running						: 2				
current per fan		~				5,5				
Total fans running		Δ	84.8	84.8	95.4	106	106	106		
current			,-	,-						
Compressor	[		1							
starting method					Wye	- Delta				
Max. running										
current		A	329	393	393	393	451	451		
Compressor #1										
Max. running										
current		A	274	274	329	393	393	451		
Compressor #2										
Max. running										
current		A	-	-	-	-	-	-		
Starting current				_	_	_				
compressor #1	(7)	A	410	540	540	540	684	684		
Starting current	(7)		F20	410	520	F 40	F 40	<b>CO</b> 4		
compressor #2	(7)	A	538	410	538	540	540	684		
Starting current	(7)	Δ	_	_	_	_	_	_		
compressor #2	(7)		_	_	_	_	_	_		
Daria in h i			1000	4050	4050	4050	4600	1000		
Main switch size		A	1000	1250	1250	1250	1600	1600		
Terminal		-	Bars	Bars	Bars	Bars	Bars	Bars		
connection			2v300mma±DE	2v/00mma±PE	2v/00mma±PE	2v/00mma±PE	2x500mma±DE	2v500mma±DE		
Cable per phase		-	1x300mma	1 400mma	1 400mma	1 400mma	1x500mma	2x30000004+PE		
Short circuit				± 100111114	- 100mmy	- 100mmq	Lisobonning	2,000111114		
current Icw 1 sec.		kA	25	25	25	25	25	25		
(1) – (ASHRAE	standard	condi	tions) evaporator wa	ter in/out = 12.2/6.	7°C: ambient = 35.0	0°C. unit at full load	operation: operating	g 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

 - Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
 - Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
 - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
 - Voltage unbalance between phases must be within ± 3%.
 - For less than 1 second. (3) (4) (5)

(6) (7)

The data are referred to the unit without additional options.

EWAD~M- SS C – standard unit										
MODEL	notes		H17	C19	H19	H20	C21	C22		
Phases		n		•		3				
Frequency		Hz				50				
Voltage	(6)	V			4	100				
Tolerances -		%			-10	/ +10				
min/max						•				
Nominal Running										
Current	(1)	Δ	915	1058	1053	1079	1123	1171		
(@ OAT = 35°C)	(-)		515	1000	1000	1075	1120	11/1		
Nominal Running										
Current	(2)	A	1110	1101	1153	1222	1262	1293		
(@ OAT = 46°C)										
		1	1							
Max. running	(3)	A	1269	1375	1465	1465	1523	1581		
current	. ,									
Max. current for	(4)	A	1391	1497	1675	1675	1733	1791		
Maximum										
starting current	(5)		1396	1513	1612	1612	1675	1739		
		1								
Fan starting					P	01				
method		-			D.	.U.L.				
Max running		Δ		E 2						
current per fan										
Total fans running		A	159	127,2	159	159	159	159		
current										
Compressor										
starting method					Wye	- Delta				
Max. running										
current		A	393	393	451	451	451	451		
Compressor #1										
Max. running										
current		A	329	393	393	393	451	451		
Compressor #2										
			320	303	303	303	303	151		
Compressor #2			525	555	555	555	333	431		
					I					
Starting current	(7)	_	E 40	F 40	694	694	694	694		
compressor #1	(7)	A	540	540	684	684	684	684		
Starting current	(7)	Δ	538	540	540	540	684	684		
compressor #2	(7)		550	540	540	540	004	004		
Starting current	(7)	A	538	540	540	540	540	684		
compressor #2										
Main switch size		Δ	2000	2000	2000	2000	2000	2000		
Terminal			2000	2000	2000	2000	2000	2000		
connection		-	Bars	Bars	Bars	Bars	Bars	Bars		
Cable a l	İ		3x600mmq+PE	3x600mmq+PE	3x600mmq+PE	3x600mmq+PE	3x600mmq+PE	3x600mmq+PE		
Cable per phase		-	2x500mmq	2x500mmq	2x500mmq	2x500mmq	2x500mmq	2x500mmq		
Short circuit		k∆	25	25	25	25	25	25		
current lcw 1 sec.	. ctarda			tor in/out = 12.2%	79C: ambient 25		operations operation			

1; ор (1) - (ASHAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 36.0°C, unit at full load operation; operating fluid: Water;
 (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; ıy

fouling factor = 0,0000176m2°C/W

- Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
- Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
- starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
- Voltage unbalance between phases must be within ± 3%.
- For less than 1 second. (3) (4) (5)

(6) (7)

The data are referred to the unit without additional options.

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			4	100				
Tolerances -						1 10				
min/max		%			-10	/ +10				
			•							
Nominal Running										
Current	(1)	A	182	211	233	247	263	298		
(@ OAT = 35°C)										
Nominal Running										
Current	(2)	A	213	240	274	292	314	366		
(@ OAT = 46°C)										
	1	1	1	1	1	1	1			
Max. running	(3)	Δ	236	266	304	378	352	378		
current	(3)	<u> </u>	250	200	504	520	552	570		
Max. current for	(4)	Α	270	330	368	461	485	590		
wire sizing	(.,									
Maximum	(5)	A	260	293	334	361	387	416		
starting current	(-)									
	1	1	1							
Fan starting		-			D.	.O.L.				
method										
Max running		A			1	5,3				
current per fan										
I otal fans running		A	31,8	31,8	42,4	42,4	42,4	42,4		
current										
Compressor		1								
starting method					Wye	- Delta				
Max running										
current		Δ	82	99	126	126	148	162		
Compressor #1			02		120	120	110	102		
Max. running										
current		A	114	126	126	148	148	162		
Compressor #2				_	-	_	_	-		
Max. running										
current		A	-	-	-	-	-	-		
Compressor #2										
Starting current	(7)		151	151	105	105	200	220		
compressor #1	(7)	A	151	151	195	195	200	550		
Starting current	(7)	Δ	151	195	195	288	288	330		
compressor #2	(7)		151	155	155	200	200	550		
Starting current	(7)	Δ	_	_	-	-	_	_		
compressor #2	(7)									
	1									
Main switch size		A	400	400	630	630	630	630		
Terminal		-	Cables	Cables	Cables	Cables	Cables	Cables		
connection			4 242 5-		2 405 5-	2.405 5-	2 4 95 5 -	2.405 5=		
Cable per phase		-	1x240mmq+PE	1x240mmq+PE	2x185mmq+PE	2x185mmq+PE	2x185mmq+PE	2x185mmq+PE		
Charter 1			1x120mmq	1x120mmq	1x185mmq	1x185mmq	1x185mmq	1x185mmq		
Short circuit		kA	15	15	20	20	20	20		
(1) - (ASHRAF)	standaro	 I condi	 tions) evaporator wa	     ter in/out = 12.2/6.		 0°C. unit at full load	operation: operation	g 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

 - Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
 - Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
 - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
 - Voltage unbalance between phases must be within ± 3%.
 - For less than 1 second. (3) (4) (5)

(6) (7)

The data are referred to the unit without additional options.

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			4	100			
Tolerances - min/max		%			-10	/ +10			
			1						
Nominal Running Current	(1)	A	313	328	372	414	458	519	
(@ OAT = 35 C) Nominal Running Current	(2)	A	380	394	440	476	523	604	
(@ OAT = 46°C)									
D.A	1	1							
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	
			1						
Fan starting method		-			D.	.O.L.			
Max running current per fan		A		5,3					
Total fans running		А	53	63,6	63,6	63,6	63,6	74,2	
Current			1						
Compressor									
starting method					Wye	- Delta			
Max. running									
current		A	162	185	231	274	274	393	
Compressor #1									
Max. running									
current		A	185	185	185	185	231	185	
Compressor #2									
Max. running									
current		A	-	-	-	-	-	-	
Compressor #2									
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	(7)	A	-	-	-	-	-	-	
compressor #2		I							
Main switch size		Δ	630	630	800	800	800	1000	
Terminal			030	0.50	000		000	1000	
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		<b>۲</b> ۸	20	20	20	20	20	25	
current Icw 1 sec.			20	20	20	20	20	25	
(1) – (ASHRAE	standard	l condit	tions) evaporator wa	ter in/out = 12.2/6.	7°C; ambient = 35.0	0°C, unit at full load	operation; operating	g fluid: Water;	

(1) fouling factor = 0,000176m2°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 - Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
 - Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
 - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
 - Voltage unbalance between phases must be within ± 3%.
 - For less than 1 second.

(3) (4) (5) (6) (7)

The data are referred to the unit without additional options.
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			4	100				
Tolerances - min/max		%		-10 / +10						
	<u> </u>		1							
Nominal Running Current (の OAT = 35℃)	(1)	A	541	603	647	697	750	800		
Nominal Running Current (@ OAT = 46°C)	(2)	А	631	675	743	803	827	853		
		1				1	1			
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					Wve	- Delta				
starting method				1	wye		1	1		
Max. running										
current		A	329	393	393	451	393	451		
Compressor #1										
			274	274	220	202	202	151		
Compressor #2			274	274	525	555	555	451		
Max. running current		A	-	_	_	-	_	_		
Compressor #2										
	1	1	1							
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	-	-	-	-	-	-		
	1	1	1							
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		kA	25	25	25	25	25	25		
current Icw 1 sec.	standard	   condit	tions) evaporator wa	ter in/out = 12.2/6.	7°C; ambient = .35.1	0°C, unit at full load	operation: operation	g fluid: Water:		

fouling factor = 0,0000176m2°C/W - Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
- Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
- starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
- Voltage unbalance between phases must be within ± 3%.
- For less than 1 second.

(3) (4) (5) (6) (7)

The data are referred to the unit without additional options.

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			4	100				
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		
	1		1							
Fan starting method		-		D.O.L.						
Max running current per fan		A			Į	5,3				
Total fans running current		A	159	127,2	159	159	159	159		
	•									
Compressor					Wve	- Delta				
starting method				1	wye		1	1		
Max. running current		A	393	393	451	451	451	451		
Compressor #1										
Max. running current		A	329	393	393	393	451	451		
Compressor #2										
current		A	329	393	393	393	393	451		
Starting current	(7)	A	540	540	684	684	684	684		
Starting current	(7)	A	538	540	540	540	684	684		
Starting current	(7)	A	538	540	540	540	540	684		
	1	1		l			I			
Main switch size		A	2000	2000	2000	2000	2000	2000		
Terminal		_	Bars	Bars	Bars	Bars	Bars	Bars		
connection			Bars	2015	2015	2015	2015	2015		
Cable per phase		-	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq		
Short circuit		kA	25	25	25	25	25	25		
(1) - (ASHRAF)	standaro	   condi	 tions) evaporator wa	 ter in/out = 12.2/6.	7°C: ambient = 35.0	 0°C. unit at full load	operation: operation	g fluid: Water:		

fouling factor = 0,0000176m2°C/W

 - Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
 - Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
 - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
 - Voltage unbalance between phases must be within ± 3%.
 - For less than 1 second. (3) (4) (5)

(6) (7)

The data are referred to the unit without additional options.

EWAD~M-S	EWAD~M- SS C + OPT06 – Soft Starter									
MODEL	notes		300	340	400	420	450	520		
Phases		n				3				
Frequency		Hz				50				
Voltage	(6)	V			2	100				
Tolerances -		%			-10	/ +10				
mm/max										
Nominal Running										
Current	(1)	A	178	206	229	241	257	290		
(@ OAT = 35°C)										
Nominal Running										
Current	(2)	A	209	241	266	284	304	351		
(@ OAT = 46°C)										
					-					
Max. running	(3)	Δ	236	266	304	378	352	378		
current	(3)		250	200	504	520	552	570		
Max. current for	(4)	Δ	270	330	368	461	485	590		
wire sizing	(+)	<u> </u>	270	550	500	-01	-05	550		
Maximum	(5)	Δ	260	293	334	361	387	416		
starting current	(0)									
	1	1	1							
Fan starting		-			D.	.O.L.				
method										
Max running		A				5,3				
current per fan						,				
Total fans running		A	31,8	31,8	42,4	42,4	42,4	42,4		
current										
Comprossor		1								
starting method					Soft Starter (So	olid State Starter)				
Max running										
current		Δ	82	99	126	126	1/18	162		
Compressor #1			02	55	120	120	140	102		
Max running										
current		Α	114	126	126	148	148	162		
Compressor #2										
Max. running										
current		A	-	-	-	-	-	-		
Compressor #2										
Starting current	(7)	^	151	151	105	105	200	220		
compressor #1	(7)	A	151	151	195	195	288	330		
Starting current	(7)		151	105	105	200	200	220		
compressor #2	(7)	A	151	195	195	200	200	550		
Starting current	(7)		_	_	_	_	_	_		
compressor #2	(7)		_	_	_	_	_	_		
	1		1							
Main switch size		A	400	400	630	630	630	630		
Terminal		-	Cables	Cables	Cables	Cables	Cables	Cables		
connection										
Cable per phase		-	1x240mmq+PE	1x240mmq+PE	2x185mmq+PE	2x185mmq+PE	2x185mmq+PE	2x185mmq+PE		
			1x120mmq	1x120mmq	1x185mmq	1x185mmq	1x185mmq	1x185mmq		
Short circuit		kA	15	15	20	20	20	20		
(1) = (ASHPAF)	standard	   condit	 tions) evanorator wa	ter in/out = 12 2/6	 7°C: ambient = 35 i	 N°C_unit at full load	operation: operation	n fluid: Water:		

fouling factor = 0,0000176m2°C/W

- Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
- Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
- starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
- Voltage unbalance between phases must be within ± 3%.
- For less than 1 second. (3) (4) (5)

(6) (7)

The data are referred to the unit without additional options.

EWAD~M-S	S C + 0	OPT	06 – Soft St	arter				
MODEL	notes		550	590	680	740	830	920
Phases		n			L	3		
Frequency		Hz				50		
Voltage	(6)	V			4	100		
Tolerances -		0/			10	1.10		
min/max		%			-10	/ +10		
Nominal Running								
Current	(1)	Α	305	321	364	404	446	506
(@ OAT = 35°C)								
Nominal Running								
Current	(2)	Α	367	382	426	475	519	602
(@ OAT = 46°C)								
		1			r.	1		
Max. running	(3)	Δ	412	446	498	542	594	681
current	(3)	~	112	110	150	512	331	
Max. current for	(4)	Α	601	635	665	665	717	803
wire sizing	(.)	~					, 1,	
Maximum	(5)	Α	453	491	548	596	653	749
starting current	(-)							
	1	1						
Fan starting		-			D.	.O.L.		
method								
Max running		A			I.	5.3		
current per fan				1				
Total fans running		Α	53	63,6	63,6	63,6	63,6	74,2
current								
Commencer								
compressor					Soft Starter (So	olid State Starter)		
Starting method								
iviax. running			160	105	221	274	274	202
Comprossor #1		A	102	105	251	274	274	595
Max running								
current			195	195	195	195	221	105
Compressor #2			105	105	105	105	231	105
Max running								
current		Δ	_	_	_	_	_	_
Compressor #2								
	<u> </u>							
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		Α	630	630	800	800	800	1000
Terminal			Cablas	Cablas	Cablas	Cablas	Cablas	Doro
connection		-	Caples	Caples	Caples	Caples	Caples	Bars
Coble ner sheet			2x185mmq+PE	2x185mmq+PE	2x240mmq+PE	2x240mmq+PE	2x240mmq+PE	2x300mmq+PE
Capie per phase		-	1x185mmq	1x185mmq	1x240mmq	1x240mmq	1x240mmq	1x300mmq
Short circuit		<u>۲</u> ۸	20	20	20	20	20	25
current Icw 1 sec.		NA	20	20	20	20	20	20
(1) – (ASHRAE	standard	condit	ions) evaporator wa	ter in/out = 12.2/6.	7°C; ambient = 35.0	0°C, unit at full load	operation; operating	g fluid: Water;

fouling factor = 0,0000176m2°C/W - Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
- Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
- starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
- Voltage unbalance between phases must be within ± 3%.
- For less than 1 second.

(3) (4) (5) (6) (7)

The data are referred to the unit without additional options.

EWAD~M-S	S C + (	OPT	06 – Soft St	arter				
MODEL	notes		970	H10	H11	H13	C13	C14
Phases		n				3		
Frequency		Hz				50		
Voltage	(6)	V			4	100		
Tolerances -		0/			10	1.10		
min/max		%			-10	/ +10		
	•		•					
Nominal Running								
Current	(1)	A	530	589	633	682	732	779
(@ OAT = 35°C)								
Nominal Running								
Current	(2)	A	616	689	738	797	839	878
(@ OAT = 46°C)								
Max. running	(2)		710	700	000	020	006	1054
current	(3)		/15	700	010	550	990	1054
Max. current for	(4)	<u>ہ</u>	910	910	980	1060	1206	1264
wire sizing	(4)	A	910	910	980	1000	1200	1204
Maximum	(5)	<u>ہ</u>	701	967	011	1022	1096	1150
starting current	(3)		751	807	544	1032	1090	1159
Fan starting					Л	01		
method					D.	0.L.		
Max running		<u>ہ</u>				5.2		
current per fan						5,5		
Total fans running		Δ	84.8	84.8	95.4	106	106	106
current			01,0	01,0		100	100	100
	[	1	1					
Compressor					Soft Starter (So	olid State Starter)		
starting method								
Max. running								
current		A	329	393	393	393	451	451
Compressor #1								
Max. running								
current		A	274	274	329	393	393	451
Compressor #2								
Max. running								
current		A	-	-	-	-	-	-
Compressor #2								
	[	1	1					
Starting current	(7)	A	410	540	540	540	684	684
compressor #1								
Starting current	(7)	A	538	410	538	540	540	684
compressor #2								
Starting current	(7)	A	-	-	-	-	-	-
compressor #2								
Main switch size			1000	1250	1250	1250	1600	1600
Torminal		A	1000	1250	1250	1250	1000	1000
rerminal		-	Bars	Bars	Bars	Bars	Bars	Bars
connection			2.200.000	2.400-	2.400	2.400	2.500	24500-45-55
Cable per phase		-	2x300mmq+PE	2x400mmq+PE	2x400mmq+PE	2x400mmq+PE	2x500mmq+PE	2x500mmq+PE
Chart size			pmmuocxt	1 400mmq	1 400mmq	1 400mmq	pmmuocxt	pmmuocxt
		kA	25	25	25	25	25	25
(1) - (ASHRAE)	standard	l condit	l tions) evaporator wa	ter in/out = 12.2/6.	 7°C; ambient = 35.0	l D°C, unit at full load	operation; operating	g fluid: Water;

fouling factor = 0,0000176m2°C/W - Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
- Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
- starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
- Voltage unbalance between phases must be within ± 3%.
- For less than 1 second.

(3) (4) (5) (6) (7)

The data are referred to the unit without additional options.

EWAD~M-S	EWAD~M- SS C + OPT06 – Soft Starter										
MODEL	notes		H17	C18	C19	H19	C21	C22			
Phases		n				3					
Frequency		Hz				50					
Voltage	(6)	V			4	400					
Tolerances -		%			-10	/ +10					
min/max		/				7 . 10					
	1	1	1			1					
Nominal Running	(1)			1050	1050						
Current	(1)	A	915	1058	1053	1079	1123	11/1			
$(@ OAT = 35^{\circ}C)$											
	(2)		1110	1101	1150	1222	1262	1202			
	(2)	A	1110	1101	1153	1222	1202	1293			
(@ 0A1 = 40 C)											
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	(5)		1205	4540	4642	1612	4675	4700			
starting current	(5)		1396	1513	1612	1612	1675	1739			
_											
Fan starting		_			D	01					
method					0.	.O.L.					
Max running		A				5.3					
current per fan				1							
Total fans running		A	159	127,2	159	159	159	159			
current											
Compressor	1										
starting method					Soft Starter (So	olid State Starter)					
Max. running											
current		A	393	393	451	451	451	451			
Compressor #1						_	-				
Max. running											
current		A	329	393	393	393	451	451			
Compressor #2											
Max. running											
current		A	329	393	393	393	393	451			
Compressor #2											
	1	1	1			1					
Starting current	(7)	A	540	540	684	684	684	684			
Compressor #1											
starting current	(7)	A	538	540	540	540	684	684			
Starting current											
compressor #2	(7)	A	538	540	540	540	540	684			
	1	1	1			1					
Main switch size		Α	2000	2000	2000	2000	2000	2000			
Terminal		_	Barc	Barc	Barc	Barc	Barc	Bars			
connection		_		5015	5015		5013	Dais			
Cable ner nhase		-	3x600mmq+PE	3x600mmq+PE	3x600mmq+PE	3x600mmq+PE	3x600mmq+PE	3x600mmq+PE			
			2x500mmq	2x500mmq	2x500mmq	2x500mmq	2x500mmq	2x500mmq			
Short circuit		kA	25	25	25	25	25	25			
(1) - (ASHRAF)	 = standaro	   condit	ions) evaporator wa	ter in/out = 12.2/6	 7°C: ambient = 35	 0°C. unit at full load	operation: operation	a fluid: Water:			

fouling factor = 0,0000176m2°C/W

- Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
- Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
- starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
- Voltage unbalance between phases must be within ± 3%.
- For less than 1 second. (3) (4) (5)

(6) (7)

The data are referred to the unit without additional options.

EWAD~M- SS C + OPT145 - EC MOTORS FANS										
MODEL	notes		300	340	400	420	450	520		
Phases		n		I	I	3	I			
Frequency		Hz				50				
Voltage	(6)	V			2	100				
Tolerances - min/max		%			-10	/ +10				
	1	1								
Nominal Running Current	(1)	Α	173	200	222	234	249	282		
(@ OAT = 35°C)						-	_	_		
Current (@ OAT = 46°C)	(2)	A	203	236	261	278	298	343		
	1	1	1	1	1	I	1			
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					Wve	- Delta				
starting method					, <b>.</b>					
			01	00	126	126	140	160		
Compressor #1			02	55	120	120	140	102		
Max. running										
current		A	114	126	126	148	148	162		
Compressor #2										
Max. running										
Comprossor #2		A	-	-	-	-	-	-		
Starting current	(7)	A	151	151	195	195	288	330		
Starting current	(7)	A	151	195	195	288	288	330		
Starting current	(7)	A	-	-	-	-	-	-		
compressor #2	<u> </u>		I							
Main switch size		Δ	400	400	630	630	630	630		
Terminal			100	100						
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		kA	15	15	20	20	20	20		
(1) = (ASHRAF)	 = standard	 1 condi	 tions) evaporator wa	$\frac{1}{12}$	 7°C: ambient = 35 (	 0°C, unit at full load	operation: operation	g fluid: Water:		

1; ор (1) - (ASHAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 36.0°C, unit at full load operation; operating fluid: Water;
 (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; ıy

fouling factor = 0,0000176m2°C/W

- Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
- Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
- starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
- Voltage unbalance between phases must be within ± 3%.
- For less than 1 second. (3) (4) (5)

(6) (7)

The data are referred to the unit without additional options.

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			4	100		
Tolerances -		%			-10	/ +10		
min/max						•		
N . 15 .	1	1	1	1		1		
	(1)		206	210	252	202	424	402
	(1)		290	310	303	392	434	492
(@UAT = 55 C)								
Current	(2)		250	272	110	166	500	590
	(2)		559	575	410	400	509	203
(@ 0A1 = 40 C)								
Max running	1			1				
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
Ean starting								
method		-			EC I	motor		
Max running								
current per fan		A				4		
Total fans running				_	_	_	_	_
current		A	40	48	48	48	48	56
	<b></b>		1	1	1	1	1	
Compressor					14/	Dalta		
starting method					vvye	- Delta		
Max. running								
current		A	162	185	231	274	274	393
Compressor #1								
Max. running								
current		A	185	185	185	185	231	185
Compressor #2								
Max. running								
current		A	-	-	-	-	-	-
Compressor #2								
	1	1	1	1		1		
Starting current	(7)	A	330	330	410	410	410	540
compressor #1	( )				_	_	-	
Starting current	(7)	A	330	330	330	330	410	330
compressor #2	. ,							
Starting current	(7)	A	-	-	-	-	-	-
compressor #2								
		•	620	620	800	800	800	1000
		A	630	630	800	800	800	1000
connection		-	Cables	Cables	Cables	Cables	Cables	Bars
	+		2v195mma+D5	2v195mma+D5	22240mma+DF	22240mma+DF	22240mma+DE	2200mma.DF
Cable per phase		-	2×1051111110+PE	2X10311111111111111111111111111111111111	2x2401111110+PE	2x2401111110+PE	2x2401111110+PE	2x500111119+PE
Short circuit					17240111114		17240111114	ришост
current low 1 sec		kA	20	20	20	20	20	25
(1) - (ASHRAF)	Standaro	l I condi	L tions) evaporator wa	$\frac{1}{1}$	7°C: ambient = 35.	i 0°C. unit at full load	operation: operation	a 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 - Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
 - Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
 - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
 - Voltage unbalance between phases must be within ± 3%.
 - For less than 1 second.

(3) (4) (5)

(6) (7)

The data are referred to the unit without additional options.

EWAD~M-S	EWAD~M- SS C + OPT145 - EC MOTORS FANS									
MODEL	notes		970	H10	H11	H13	C13	C14		
Phases		n				3	1			
Frequency		Hz				50				
Voltage	(6)	V			۷	100				
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)	А	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					W/vo	- Delta				
starting method					vvye		1			
Max. running										
current		A	329	393	393	393	451	451		
Compressor #1										
Max. running										
current		A	274	274	329	393	393	451		
Compressor #2										
Compressor #2										
		1								
Starting current compressor #1	(7)	A	410	540	540	540	684	684		
Starting current	(7)	А	538	410	538	540	540	684		
Starting current	(7)	A	-	-	-	-	-	-		
	I	I	I							
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		<b>۲</b> ۸	25	25	25	25	25	2⊑		
current Icw 1 sec.			2.5	25	25	25	25	25		
(1) – (ASHRAE	standard	condit	tions) evaporator wa	ter in/out = 12.2/6.	7°C; ambient = 35.0	D°C, unit at full load	operation; operating	g 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) (4)

 - Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
 - Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
 - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
 - Voltage unbalance between phases must be within ± 3%.
 - For less than 1 second. (5)

(6) (7)

The data are referred to the unit without additional options.

MODEL         notes         H17         C19         H19         H20         C21         (           Phases         n         3         50	22						
Phases n 3							
riequeilty n2 50							
Voltage (6) V 400							
Tolerances - % -10 / +10							
Nominal Running         Image: Current         Current<	140						
Nominal Running Current         (2)         A         1041         1076         1210         1221         1259         1           (@ OAT = 46°C)	300						
Max. running current         (3)         A         1245         1356         1441         1441         1499         1	557						
Max. current for wire sizing         (4)         A         1367         1478         1651         1651         1709         1	767						
Maximum starting current         (5)         1370         1492         1585         1585         1649         1	713						
Fan starting - EC motor	EC motor						
Max running A A 4	4						
Total fans running currentA12096120120120	120						
Compressor Mice Delta							
starting method wye - Delta							
Max. running	1 - 1						
Compressor #1	+51						
Max. running current A 329 393 393 393 451	151						
Compressor #2							
Max. running current         A         329         393         393         393         393         393	451						
Compressor #2							
Starting current compressor #1         (7)         A         540         540         684         684         684         684	684						
Starting current compressor #2         (7)         A         538         540         540         540         684         6	584						
Starting current compressor #2         (7)         A         538         540         540         540         540         60	584						
Main switch size         A         2000         2000         2000         2000         2000         2	000						
Terminal - Bars Bars Bars Bars Bars Bars	Bars						
Connection     3x600mmq+PE     3x600mmq+PE     3x600mmq+PE     3x600mmq+PE     3x600mmq+PE       Cable per phase     -     -     2x500mmq     2x500mmq     2x500mmq     2x500mmq	mmq+PE						
Short circuit							
current lcw 1 sec.         KA         25         25         25         25         25	25						

1; ор (1) - (ASHAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 36.0°C, unit at full load operation; operating fluid: Water;
 (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; ıy

fouling factor = 0,0000176m2°C/W

(3) (4)

- Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
- Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
- starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
- Voltage unbalance between phases must be within ± 3%.
- For less than 1 second. (5)

(6) (7)

The data are referred to the unit without additional options.

NODEL         notes         Image of the state of the	EWAD~M- SS C + OPT161 - 200 Pa ESP FANS									
$\begin{array}{ c c c c c c } \hline Prequency & Hz & & & & & & & & & & & & & & & & & $	MODEL	notes		300	340	400	420	450	520	
$\begin{array}{c c c c c c } \hline Product 1 \\ Voltage (6) V &$	Phases		n				3			
Voltage min/max         (i)         V $400$ Tolerances, min/max         v, i $-10/+10$ Nominal Running (QOAT = 35°C)         (1)         A         185         214         238         251         266         300           Current (@OAT = 46°C)         (2)         A         216         250         278         296         316         364           Max, running current (@OAT = 46°C)         (4)         A         241         271         312         336         360         386           Max, running current         (5)         A         265         298         343         370         396         425           Fan starting current per fan current         (5)         A         265         298         343         370         396         425           Total fans running current per fan current         (5)         A         265         298         343         370         396         59           Maximum         (5)         A         377         37         50         50         50           Total fans running current per fan         A         377         37         50         50         50           Starting (urrent compresor	Frequency		Hz				50			
Telerances- min/max         % $\cdot \cdot $	Voltage	(6)	V			4	100			
mominal Running Current (@ OAT = 35°C)         (1)         A         185         214         238         251         266         300           Nominal Running Current (@ OAT = 35°C)         (2)         A         216         250         278         296         316         364           Max. running current (@ OAT = 46°C)         V         V         A         241         271         312         336         360         386           Max. running current wire sizing method         (A)         A         2255         298         343         370         396         425           Fan starting current framethod         -	Tolerances -		%			-10	/ +10			
Nominal Running (Q OAT = 35°C) Nominal Running Current (@ OAT = 46°C)         A         185         214         238         251         266         300           Nominal Running Current (@ OAT = 46°C)         A         216         250         278         296         316         364           Max. current Max. current for wire sizing current method         (A)         A         2215         335         376         469         493         598           Max.nurent for wire sizing method         (A)         A         2255         298         343         370         396         425           Fan starting method         - $= 52^{-1000000000000000000000000000000000000$	min/max									
Normal Numming (Q) OAT = 35°C) (Q) OAT	Neminal Duranian		1	1						
Current (@ OAT = 35°C)         A         185         214         238         231         260         300           Nominal Running (@ OAT = 45°C)         (2)         A         216         250         278         296         316         364           Max. current (@ OAT = 46°C)         (3)         A         241         271         312         336         360         386           Max. current Max. current Max. current starting current         (4)         A         275         335         376         469         493         598           Max. current Max. current         (4)         A         275         335         376         469         493         598           Max. current method         -		(1)		105	214	220	251	200	200	
Nominal Running (Qrenet)         (2)         A         216         250         278         296         316         364           Max. running (current)         (3)         A         241         271         312         336         360         386           Max. current Max. current (7)         (4)         A         275         335         376         469         493         598           Max. current Max. current (7)         (4)         A         265         298         343         370         396         425           Total Fars running current per fan         .	(@ OAT = 35°C)	(1)	A	185	214	238	251	266	300	
Current (@ OAT = 46°C)         A         216         250         278         296         316         364           (@ OAT = 46°C)         .	Nominal Running									
(@ QAT = 46'C)       v       v       v       v         Max. current for wire sizing current is sizing current is size in granus and the size is size in the size is size is the	Current	(2)	A	216	250	278	296	316	364	
Max. running current         (3)         A         241         271         312         336         360         386           Max. current for wire sing starting current         (4)         A         275         335         376         469         493         598           Maximum starting current         (5)         A         265         298         343         370         396         425           Fan starting method                  Max running current per fan         A         377         377         50         50         50         50         50           Total fars running current         A         377         377         50         50         50         50         50           Max. running current         A         82         99         126         126         148         162           Max. running current         A         82         99         126         148         148         162           Max. running current         A         -114         126         126         148         162           Max. running current         A         -151         151	(@ OAT = 46°C)									
Max. running current         (3)         A         241         271         312         336         360         386           Max. current for wire sizing mation starting current         (4)         A         275         335         376         469         493         598           Max. current for wire sizing mathod         (4)         A         275         335         376         469         493         598           Max. running current per fan current per fan current         (A)         265         298         343         370         396         425           Total fans running current per fan current         (A)         (A)         265         50         50         50         50           Total fans running current         (A)         82         99         126         126         148         162           Compressor #2         (A)         82         99         126         126         148         162           Compressor #2         (A)         82         99         126         126         148         162           Compressor #2         (A)         114         126         126         148         162            Starting current compressor #2         (A)<										
current Max.current ompressor #2(7)A2.412.713.323.303.3003.3003.3003.500Max.current omethod method(5)A2.2753.353.764.6994.935.98Maximum starting current ourrent pran(5)A2.652.983.433.703.9604.25Fan starting method current pranA $2.65$ 2.983.433.703.9604.25Max running current pran current current current current current current current current current current current current (7)A3.775.005.005.00Max.running current current compressor #2A3.773.775.005.005.00Max.running current compressor #2A8.829.991.261.261.481.62Max.running current compressor #2A1.141.261.261.481.481.62Max.running current compressor #2A1.511.951.952.883.30Starting current compressor #2A1.511.951.952.883.30Starting current compressor #2(7)A1.511.951.952.883.30Starting current compressor #2(7)A1.511.951.952.883.30Starting current compressor #2(7)A4.004.006.306.306.306.30<	Max. running	(2)		241	271	212	226	260	296	
Max. current for wire sizing mathed         (4)         A         275         335         376         469         493         558           Maximum starting current method         (5)         A         265         298         343         370         396         425           Fan starting method         .	current	(3)	A	241	271	512	550	500	560	
wire sking Maximum starting current(MAAAAAAAAABABABABABAAAAAAAAAC $EC$	Max. current for	(4)		275	225	376	160	103	508	
Maximum starting current         (5)         A         265         298         343         370         396         425           Fan starting method         1         -	wire sizing	(4)	A	275	335	370	409	455	550	
starting current         (J)         A         2.00         2.90         3.90         3.90         3.90         4.20         4.20           Fan starting method         -	Maximum	(5)		265	200	242	270	206	125	
Fan starting methodImage: Comparison of the starting methodImage: Comparison of the starting methodMax running currentA373750505050Compressor starting methodA373750505050Compressor starting methodA8299126126148162Max. running currentA8299126126148162Compressor #1AA8299126126148162Compressor #1AA114126126148148162Compressor #2AA114126126148148162Compressor #2AA151195195288330Starting current compressor #2(7)A151195195288288330Starting current compressor #2A400400630630630630630Starting current compressor #2A400400630630630630630630Starting current compressor #2A400400630 <t< td=""><td>starting current</td><td>(5)</td><td>A</td><td>203</td><td>290</td><td>545</td><td>370</td><td>390</td><td>425</td></t<>	starting current	(5)	A	203	290	545	370	390	425	
Fan starting method.EC $\mbox{EC}\mbox{Urrent}$ Max running current per fanA373750505050Total fans running currentA37375050505050Compressor starting methodA8299126126148162Max. running current compressor #1A8299126148148162Max. running current compressor #2A114126126148148162Max. running current compressor #2A114126126148310162Max. running current compressor #2A151195195288330Starting current compressor #2(7)A151195195288330Starting current compressor #2(7)A151195268288330Starting current compressor #2(7)A400630630630630630Starting current compressor #2(7)A151195288288330Starting current compressor #2(7)A151195261esCablesCablesCablesStarting current compressor #2(7)A15119528863063063063063063063063063063063063063063063063										
methodAInterval to the term of the term of term	Fan starting					FC	motor			
Max running current per fanA $\cdot \cdot $	method		_			LCI	notor			
current per fan         A         37         50         50         50           Total fans running current         A         37         37         50         50         50         50           Compressor starting method         A         37         37         50         50         50         50           Max. running current         A         82         99         126         126         148         162           Max. running current         A         82         99         126         148         148         162           Max. running current         A         114         126         126         148         148         162           Max. running current         A         114         126         126         148         148         162           Starting current         A         114         126         126         148         148         162           Starting current         A         114         126         126         148         148         162           Starting current         A         151         151         195         288         330           Starting current         (7)         A         151	Max running						5.2			
Total fans running current         A         37         37         50         50         50         50           Compressor starting method         I         I         IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	current per fan		A				0.2			
currentImage: current starting methodImage: starting metho	Total fans running			37	37	50	50	50	50	
Compressor starting methodNoNoNoNoNoMax. running currentA8299126126148162Max. running currentA8299126148148162Max. running currentA114126126148148162Max. running currentAMax. running currentAMax. running currentAStarting current compressor #2(7)A151151195195288330330Starting current compressor #2(7)A151195195288630Starting current compressor #2(7)A151195195288288330Starting current compressor #2(7)AMain switch sizeA400400630630630630630630Terminal connectionCablesCablesCablesCablesCablesCablesCablesCablesCablesCablesCables2185mmq+PE1x185mmq1x185mmq1x185mmq1x185mmq1x185mmq1x185mmq1x185mmq1x185mmq1x185mmq1x185mmq1x185mmq1x185mmq1x185mmq1x185mmq1x185m	current			57	57	50	50	50	50	
Compressor starting methodImage: Compressor Max. running current Compressor #1A8299126126148162Max. running current current Compressor #2A114126126148148162Max. running current compressor #2A114126126148148162Max. running current compressor #2AMax. running current compressor #2AMax. running current compressor #2AStarting current compressor #2(7)A151151195195288288330Starting current compressor #2(7)AMain switch size connectionA400400630630630630630Terminal connection-Ix240mmq+PE2x185mmq+PE2x185mmq+PE2x185mmq+PE2x185mmq+PE2x185mmq+PE1x185mmqCable per phase-1x240mmq+PE1x120mmq1x185mmq1x185mmq+PE1x185mmq+PE1x185mmq+PE1x185mmq+PE1x185mmq+PE1x185mmq+PECable per phase <t< td=""><td></td><td></td><td>1</td><td>1</td><td></td><td></td><td></td><td></td><td></td></t<>			1	1						
starting methodAB299126126148162Max. running currentA114126126148148162Max. running currentA114126126148148162Max. running currentAA114126126148148162Max. running current compressor #2AStarting current compressor #1A151151195195288330330Starting current compressor #2(7)A151195195288288330Starting current compressor #2(7)A151195195288288330Starting current compressor #2(7)A400400630630630630630Starting current compressor #2Main switch sizeA400400630630630630630Terminal connection1x240mmq+PE1x185mmq+PE2x185mmq+PE2x185mmq+PE2x185mmq+PE2x185mmq+PE1x185mmqCable per phase-1x240mmq+PE1x240mmq+PE1x185mmq1x185mmq1x185mmq1x185mmq1x185mmqCable per phase-1x240mmq+PE1x240mmq+PE1x185mmq2x185mmq+PE1x185mmq1x185mmq1x185mmqCable per ph	Compressor					Wve	- Delta			
Max. running currentA8299126126148162Max. running current Compressor #2A114126126148148162Max. running current Compressor #2A114126126148148162Max. running current Compressor #2AMax. running current Compressor #2AStarting current compressor #1(7)A151195195288288330Starting current compressor #2(7)A151195195288288330Starting current compressor #2(7)A151195195288288330Starting current compressor #2(7)AMain switch sizeA400400630630630630630630Terminal connection-1x240mmq+PE1x240mmq+PE2x185mmq+PE2x185mmq+PE2x185mmq+PE1x185mmq1x185mmq1x185mmq1x185mmqGable per phase-1x240mmq+PE1x120mmq1x185mmq2x185mmq+PE2x185mmq+PE1x185mmq1x185mmq1x185mmq1x185mmqGable per phase-1x240mmq+PE1x240mmq+PE1x240mmq+PE2x185mmq+PE2x185mmq+PE1x185mmq1x185mmq1x185mmq1x185mmqGable	starting method				1	,e	Denta		1	
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Main switch size       A       400       400       630       630       630       630         Terminal connection       -       Cables       Cables <td< td=""><td>compressor #2</td><td></td><td>L</td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	compressor #2		L							
Width Switch SizeA400400630630630630630Terminal connection-CablesCablesCablesCablesCablesCablesCablesCablesCable per phase-1x240mmq+PE1x240mmq+PE2x185mmq+PE2x185mmq+PE2x185mmq+PE2x185mmq+PE2x185mmq+PEShort circuit current lcw 1 sec.kA15152020202020				400	400	620	620	620	630	
Terminal connection-CablesCablesCablesCablesCablesCablesCablesCable per phase-1x240mmq+PE 1x120mmq1x240mmq+PE 1x120mmq2x185mmq+PE 1x185mmq2x185mmq+PE 1x185mmq2x185mmq+PE 1x185mmq2x185mmq+PE 1x185mmq2x185mmq+PE 1x185mmq2x185mmq+PE 1x185mmq2x185mmq+PE 1x185mmqShort circuit current lcw 1 sec.kA151520202020	Tearsiant		A	400	400	630	630	630	630	
ConnectionImage: c	ierminal		-	Cables	Cables	Cables	Cables	Cables	Cables	
Cable per phase- $1x240mmq+PE$ $1x240mmq+PE$ $2x185mmq+PE$ $2x185mmq$ $2x185mmq+PE$	connection			1	1	2.105	2.105	2.105	2.405	
$\frac{1}{1} \times 120 \text{mmq}} = \frac{1}{1} \times 120 \text{mmq}} = \frac{1}{1} \times 120 \text{mmq}} = \frac{1}{1} \times 185 \text{mmq}} = \frac{1}{1} \times 100 \text{mm}} = \frac{1}{10} \times 100 \text{mm}} = \frac{1}{$	Cable per phase		-	1x240mmq+PE	1x240mmq+PE	2x185mmq+PE	2x185mmq+PE	2x185mmq+PE	2x185mmq+PE	
Short circuit       kA       15       15       20       20       20       20         current lcw 1 sec.       kA       15       15       20       20       20       20       20	Chart '			1x120mmq	1x120mmq	1x185mmq	1x185mmq	1x185mmq	1x185mmq	
CUITERT ICW 1 Sec	Short circuit		kA	15	15	20	20	20	20	
	$(1) = (\Delta SHPAF)$	standaro	   condit	 tions) evaporator wa	$\frac{1}{12}$	 7°C: ambient = 35 i	 N°C unit at full load	operation: operation	n fluid: Water:	

fouling factor = 0,0000176m2°C/W - Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
- Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
- starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
- Voltage unbalance between phases must be within ± 3%.
- For less than 1 second.

(3) (4) (5)

(6) (7)

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.

MODEL         notes         is         550         590         680         740         830         920           Phases         it	EWAD~M- SS C + OPT161 - 200 Pa ESP FANS								
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	MODEL	notes		550	590	680	740	830	920
Frequency Voltage (6)         Hz $50$ Voltage (7)         (6)         V $-400$ Tolerances- min/max         % $-10/+10$ Nominal Running Current (@ OAT = 3CC)         (1)         A         318         335         379         419         461         521           Nominal Running Current (@ OAT = 4CC)         (2)         A         382         399         444         494         537         620           Max. nument current Max. current (0)         (3)         A         421         456         508         552         604         694           Max. current weising method         (3)         A         461         502         559         607         664         763           Total fans running current per fan tarting method         A         620         74         74         74         87           Total fans running current per fan current per fan tarting method         A         62         74         74         74         87           Max running current per fan compresor #1         A         162         185         231         274         233         393           Max running current per fan compresor #1         A         162         185	Phases		n		L	L	3	I	
Voltage min/max         (i)         V $$	Frequency		Hz				50		
Tolerances- min/max         % $\cdot \cdot $	Voltage	(6)	V			2	100		
mm/max         im/max         im/max         im/max           Nominal Running ( $@ OAT = 35^{\circ}$ )         (1)         A         318         335         379         419         461         521           Nominal Running ( $@ OAT = 35^{\circ}$ )         (2)         A         382         399         444         494         537         620           Max.running current ( $@ OAT = 46^{\circ}$ )         (4)         A         610         645         675         675         727         816           Max.running current starting current current print         (5)         A         463         502         559         607         664         763           Fan starting method         -	Tolerances -		%			-10	/ +10		
Nominal Running ( $Q$ OAT = 35°) ( $Q$ OAT = 35°) ( $Q$ OAT = 35°) ( $Q$ OAT = 46°)         A         318         335         379         419         461         521           Nominal Running ( $Q$ OAT = 46°)         (2)         A         382         399         444         494         537         620           Max. current ( $Q$ OAT = 46°)         (2)         A         382         399         444         494         537         620           Max. current ( $Q$ OAT = 46°)         (4)         A         610         645         675         675         727         816           Max. current for wire sizing current for method         (5)         A         463         502         559         607         664         763           Total fans running current per fan current         -	min/max					-	, -		
Nomma Kunning ( $Q OAT = 35^{\circ}$ )         A         318         335         379         419         461         521           ( $Q OAT = 35^{\circ}$ )         (1)         A         382         399         444         494         537         620           ( $Q OAT = 35^{\circ}$ )         (2)         A         382         399         444         494         537         620           ( $Q OAT = 35^{\circ}$ )         (2)         A         421         456         508         552         604         694           Max. running current for starting urrent         (3)         A         421         456         508         552         604         694           Max. running current fra         (4)         A         610         645         675         675         727         816           Max. running current fra         A         463         502         559         607         664         763           Max. running current fra         A         62         74         74         74         74         87           Compressor fla         A         162         185         231         274         393         393           Compressor fla         A         162         1		1	1	1					
Lument (@ OAT = 35'C)         A         318         333         379         419         401         521           Nominal Running (@ OAT = 46'C)         A         382         399         444         494         537         620           Max. current (@ OAT = 46'C)         A         382         399         444         494         537         620           Max. current (@ OAT = 46'C)         A         610         645         508         552         604         694           Max. current (method         A         610         645         675         675         727         816           Max. current (method         A         620         559         607         664         763           Max. current (method         -         -         -         -         -         -         -           Total fars running current         A         622         74         74         74         74         87           Max. running current         A         162         185         231         274         274         393           Max. running current         A         162         185         185         185         185         231         185      M	Nominal Running	(1)		210	225	270	410	461	521
Lie Kurf 20 (1)         A		(1)		518	335	379	419	401	521
	Nominal Running								
(@ OAT = 6^C)         (a)         A         322         333         A44         454         337         600           Max. current for Max. current for Max. current for Max. current for Max. current for Max. current for Max. current for         (4)         A         610         645         675         675         727         816           Max. current for Max. current for Max. current for         (4)         A         463         502         559         607         664         763           Fan starting current per fan         A         463         502         559         607         664         763           Compressor starting method         A         622         74         74         74         74         87           Max. running current         A         622         74         74         74         74         87           Max. running current         A         162         185         231         274         393           Max. running current         A         162         185         185         185         231         185           Max. running current         A         162         185         185         185         231         185           Max. running current	Current	(2)	Δ	382	300	111	191	537	620
No. 0.0         No. 0.0 <t< td=""><td><math>(@ OAT = 46^{\circ}C)</math></td><td>(2)</td><td></td><td>502</td><td></td><td></td><td></td><td>557</td><td>020</td></t<>	$(@ OAT = 46^{\circ}C)$	(2)		502				557	020
Max. running current Wax. current Max. current is jzing         A         421         456         508         552         604         694           Max. current Max. current starting method         A         610         645         675         675         727         816           Fan starting method         -         A         463         502         559         607         664         763           Fan starting method         -         -         EC motor         -         6.2         -         -         -         87         87         - </td <td></td> <td></td> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>			1						
current         (3)         A         421         456         508         552         604         664           Max. current for wire sing starting current         (4)         A         610         645         675         675         727         816           Max. inum starting current         (5)         A         463         502         559         607         664         763           Fan starting method         .         .         .         .         .         .         .           Total fars running current per fan         A         622         74         74         74         74         87           Max. running current         A         622         74         74         74         74         87           Max. running current         A         62         74         74         74         74         87           Max. running current         A         162         185         231         274         274         393           Max. running current         A         185         185         185         231         185           Max. running current         A         185         185         185         231         185	Max. running	(-)							
Max. current for wire sizing maximum starting current         (A)         A         610         645         675         675         727         816           Maximum starting current         (S)         A         463         502         559         607         664         763           Fan starting method         .         EC motor         6.2           Total fars running current         A         62         74         74         74         74         87           Compressor starting method         A         62         74         74         74         74         87           Max. running current         A         62         74         74         74         74         87           Max. running current         A         162         185         231         274         274         393           Max. running current         A         162         185         185         185         231         274         274         393           Max. running current         A         162         185         185         185         231         185         231         185           Max. running current         A         -         -         -	current	(3)	A	421	456	508	552	604	694
wire sizing Maximum starting current         (A)         A         610         643         675         675         727         886           Maximum starting current         (S)         A         463         502         559         607         664         763           Fan starting method         . <td.< td=""><td>Max. current for</td><td>(1)</td><td></td><td>610</td><td>6.45</td><td>675</td><td>675</td><td>707</td><td>016</td></td.<>	Max. current for	(1)		610	6.45	675	675	707	016
Maximum starting current         (5)         A         463         502         559         607         664         763           Fan starting method         -	wire sizing	(4)	A	610	645	675	675	/2/	816
starting current         (5)         A         465         302         539         607         064         765           Fan starting method         - <td< td=""><td>Maximum</td><td>(5)</td><td></td><td>462</td><td>502</td><td>550</td><td>607</td><td>664</td><td>760</td></td<>	Maximum	(5)		462	502	550	607	664	760
Fan starting methodICCOMPASSIONMax running currentAICCOMPASSIONTotal fans running currentA6627474747487Compressor starting methodAICICICICICICICMax. running currentAA162185231274274393Max. running current current currentA162185185185185185231274274393Max. running current current current current current current current current current current current compressor #2A162185185185185185303303Max. running current current current current current current compressor #2A330330410410410540Starting current compressor #2(7)A330330330330330410330Starting current compressor #2A6306308008008001000Terminal connectionAGables sCables sCables sCables s2x40mmq2x240mmq+PE s2x40mmq+PE s2x40mmq+PE s2x40mmq+PE s2x40mmq+PE s2x40mmq+PE s2x40mmq+PE s2x40mmq+PE s2x40mmq+PE s2x40mmq+PE s2x40mmq+PE s2x40mmq+PE s2x40mmq+PE s2x40mmq+PE s <td>starting current</td> <td>(5)</td> <td>A</td> <td>463</td> <td>502</td> <td>559</td> <td>607</td> <td>664</td> <td>/63</td>	starting current	(5)	A	463	502	559	607	664	/63
Fan starting method $EC \cup tor IMax runningcurrent per fanATotal fans runningcurrentcurrentACompressorstarting methodMax runningcurrentcompressor #1Max runningcurrentcompressor #1<$		1		1					
method         A	Fan starting		-			FC	motor		
Max running current per fan         A         62         74         74         74         74         87           Total fans running current         A         62         74         74         74         74         87           Compressor starting method         A         62         74         74         74         74         87           Max. running current         A         162         185         231         274         274         393           Max. running current         A         162         185         185         185         231         274         393           Max. running current         A         185         185         185         185         231         185           Compressor #2         A         185         185         185         185         231         185           Max. running current         A         185         185         185         185         231         185           Starting current         (7)         A         330         330         330         330         330         330         330         330         1000           Starting current         (7)         A         630         630	method								
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Total fans running current         A         62         74         74         74         74         74         87           Compressor starting method         -	current per fan				1	1	-	1	
Current         Compressor starting method         A         162         185         231         274         274         393           Max. running current         A         162         185         231         274         274         393           Compressor #1         A         162         185         231         274         274         393           Compressor #1         A         162         185         185         185         185         231         185           Max. running current         A         185         185         185         185         231         185           Max. running current         A         185         185         185         185         231         185           Starting current compressor #2         A         -         -         -         -         -           Starting current compressor #2         (7)         A         330         330         330         330         410         330           Starting current compressor #2         (7)         A         630         630         800         800         1000           Starting current compressor #2         (7)         A         630         630         800	I otal fans running		A	62	74	74	74	74	87
Compressor starting methodAImage: Compressor with the probability of	current								
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$\begin{array}{c c c c c c c } \hline Compressor #1 & I & I & I & I & I & I & I & I & I & $	current		A	162	185	231	274	274	393
Max. running current Compressor #2A185185185185185231185Max. running current compressor #2AMax. running current compressor #2AStarting current compressor #1(7)A330330410410410540Starting current compressor #2(7)A330330330330330410330Starting current compressor #2(7)A6306308008008001000Starting current compressor #2(7)A6306308008008001000Terminal connectionMain switch sizeA6306308008008008001000Terminal connection2x185mmq+PE2x240mmq+PE2x240mmq+PE2x240mmq+PE1x240mmqShort circuit current lcw 1 sec.kA2020202020202025	Compressor #1								
current Compressor #2A185185185185185231185Max. running current Compressor #2AMax. running current Compressor #2AStarting current compressor #1(7)A330330410410410540Starting current compressor #2(7)A330330330330330410330Starting current compressor #2(7)A6306308008008001000Starting current compressor #2(7)A6306308008008001000Terminal connectionMain switch size connectionA6306308008008001000Terminal connection2x185mmq+PE2x240mmq+PE2x240mmq+PE2x300mmq+PEShort circuit current lcw 1 sec.kA202020202025	Max. running								
Compressor #2Image:	current		A	185	185	185	185	231	185
Max. running current Compressor #2AStarting current compressor #1(7)A330330410410410540Starting current compressor #2(7)A330330330330330410330Starting current compressor #2(7)A330330330330330Starting current compressor #2(7)AMain switch sizeA6306308008008001000Terminal connection-CablesCablesCablesCablesBarsCable per phase2x185mmq+PE 1x185mmq2x240mmq+PE 1x240mmq2x240mmq+PE 1x240mmq2x240mmq+PE 1x240mmq2x300mmq+PE 1x300mmq+PEShort circuit current lcw 1 sec.kA20202020202025	Compressor #2								
current Compressor #2A	Max. running								
Compressor #2Image: second	current		A	-	-	-	-	-	-
Starting current compressor #1(7)A330330410410410540Starting current compressor #2(7)A330330330330330410330Starting current compressor #2(7)A $A$ $      -$ Main switch sizeA6306308008008008001000Terminal connection $-$ CablesCablesCablesCablesCablesBarsCable per phase $ 2x185mmq+PE$ 1x185mmq $2x185mmq+PE$ 1x240mmq $2x240mmq+PE$ 1x240mmq $2x240mmq+PE$ 1x240mmq $2x240mmq+PE$ 1x240mmq $2x300mmq+PE$ 1x240mmqShort circuit current lcw 1 sec.kA20202020202025	Compressor #2								
Starting current compressor #1(7)A330330410410410540Starting current compressor #2(7)A330330330330330410330Starting current compressor #2(7)AMain switch size(7)A6306308008008001000Terminal connectionCable per phaseCablesCablesCablesCablesCables2x240mmq+PE2x240mmq+PE2x300mmq+PEShort circuit current lcw 1 sec.kA20202020202025		1		1					
compressor #1Image: Compressor #1Image: Compressor #1Image: Compressor #1Image: Compressor #2Image:	Starting current	(7)	A	330	330	410	410	410	540
Starting current compressor #2(7)A330330330330330410330Starting current compressor #2(7)AMain switch sizeA6306308008008001000Terminal connection-CablesCablesCablesCablesCablesBarsCable per phase-2x185mmq+PE 1x185mmq2x240mmq+PE 1x185mmq2x240mmq+PE 1x240mmq2x240mmq+PE 1x240mmq2x300mmq+PE 1x240mmqShort circuit current lcw 1 sec.kA20202020202025	Compressor #1								
Compressor #2(7)AStarting current compressor #2(7)A<	starting current	(7)	A	330	330	330	330	410	330
Starting current compressor #2(7)A <td>Starting current</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Starting current								
Main switch size       A       630       630       800       800       800       800       1000         Terminal connection       -       Cables       Cables       Cables       Cables       Cables       Bars         Cable per phase       -       2x185mmq+PE       2x185mmq+PE       2x240mmq+PE       2x240mmq+PE       2x240mmq+PE       2x240mmq+PE       1x300mmq         Short circuit current lcw 1 sec.       kA       20       20       20       20       20       20       25	compressor #2	(7)	A	-	-	-	-	-	-
Main switch sizeA6306308008008001000Terminal connection-CablesCablesCablesCablesCablesBarsCable per phase-2x185mmq+PE 1x185mmq2x240mmq+PE 1x185mmq2x240mmq+PE 1x240mmq2x240mmq+PE 1x240mmq2x240mmq+PE 1x240mmq2x300mmq+PE 1x240mmqShort circuit current lcw 1 sec.kA20202020202025		1		1					
Terminal connection-CablesCablesCablesCablesCablesBarsCable per phase-2x185mmq+PE 1x185mmq2x185mmq+PE 1x185mmq2x240mmq+PE 1x240mmq2x240mmq+PE 1x240mmq2x240mmq+PE 1x240mmq2x240mmq+PE 1x240mmq2x300mmq+PE 1x240mmqShort circuit current lcw 1 sec.kA20202020202025	Main switch size		A	630	630	800	800	800	1000
connection     -     Cables     Cables     Cables     Cables     Cables     Cables     Bars       Cable per phase     -     2x185mmq+PE     2x185mmq+PE     2x240mmq+PE     2x240mmq+PE     2x240mmq+PE     2x240mmq+PE     2x300mmq+PE       Short circuit     -     -     A     20     20     20     20     20     25	Terminal			Cables	Cablas	Cablas	Cablas	Cablas	Dava
Cable per phase         -         2x185mmq+PE 1x185mmq         2x240mmq+PE 1x185mmq         2x240mmq+PE 1x240mmq         2x240mmq+PE 1x240mmq         2x240mmq+PE 1x240mmq         2x240mmq+PE 1x300mmq           Short circuit current lcw 1 sec.         kA         20         20         20         20         20         20         25	connection		-	Cables	Cables	Cables	Cables	Cables	Bars
Cable per priseInterpretation1x185mmq1x240mmq1x240mmq1x240mmq1x300mmqShort circuit current lcw 1 sec.kA20202020202025	Cable nor share			2x185mmq+PE	2x185mmq+PE	2x240mmq+PE	2x240mmq+PE	2x240mmq+PE	2x300mmq+PE
Short circuit current lcw 1 sec.     kA     20     20     20     20     20     25	Capie per phase		-	1x185mmq	1x185mmq	1x240mmq	1x240mmq	1x240mmq	1x300mmq
current lcw 1 sec.	Short circuit		k A	20	20	20	20	20	25
M = M M =	current lcw 1 sec.	aton da			tor in/out 12.2/	79Ci ambient 25			a fluide 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

 - Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
 - Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
 - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
 - Voltage unbalance between phases must be within ± 3%.
 - For less than 1 second (3) (4) (5)

(6) (7)

The data are referred to the unit without additional options.

EWAD~M-S	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			4	100					
Tolerances -					10	1.10					
min/max		%			-10	/ +10					
Nominal Running											
Current	(1)	A	545	604	649	700	750	796			
(@ OAT = 35°C)											
Nominal Running											
Current	(2)	A	634	706	758	819	870	918			
(@ OAT = 46°C)											
	1		I			1					
Max. running	(3)	Α	733	802	875	956	1014	1072			
current	(0)				0/0			2072			
Max. current for	(4)	A	924	924	997	1078	1224	1282			
wire sizing	( )										
Maximum	(5)	A	806	882	963	1052	1115	1179			
starting current											
	1	1									
Fan starting		-			EC r	motor					
method											
Max running		A			(	5.2					
current per tan											
		A	99	99	112	124	124	124			
current											
Compressor											
starting method					Wye	- Delta					
Max, running											
current		A	329	393	393	393	451	451			
Compressor #1											
Max. running											
current		A	274	274	329	393	393	451			
Compressor #2											
Max. running											
current		A	-	-	-	-	-	-			
Compressor #2											
Starting current	(7)	Δ	410	540	540	540	684	684			
compressor #1	(7)		410	540	540	540	004	004			
Starting current	(7)	Δ	538	410	538	540	540	684			
compressor #2	(7)			110		510	5.10				
Starting current	(7)	Α	-	-	-	-	-	-			
compressor #2											
			1000	4250	4250	4250	4.600	4.600			
Main switch size		A	1000	1250	1250	1250	1600	1600			
Terminal		-	Bars	Bars	Bars	Bars	Bars	Bars			
connection			2	2.400	2.400	2.400	24500 225	24500			
Cable per phase		-	2x300mmq+PE	2x400mmq+PE	2x400mmq+PE	2x400mmq+PE	2x500mmq+PE	2x500mmq+PE			
Cheve aluquit			x300mmq	1 400mmq	1 400mmq	1 400mmq	TX200mmd	TX200mmd			
		kA	25	25	25	25	25	25			
(1) - (ASHRAF)	standard	   condit	 tions) evaporator wa	ter in/out = 12.2/6.		 0°C, unit at full load	operation: operating	n fluid: Water:			

fouling factor = 0,0000176m2°C/W - Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
 - Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
 - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
 - Voltage unbalance between phases must be within ± 3%
 - For less than 1 second

(3) (4) (5)

(6) (7)

The data are referred to the unit without additional options.

EWAD~M-S	S C + (	ОРТ	161 - 200 Pa	a ESP FANS					
MODEL	notes		H17	C19	H19	H20	C21	C22	
Phases		n				3			
Frequency		Hz				50			
Voltage	(6)	V			2	100			
Tolerances -		%			-10	/ +10			
Thiny that									
Nominal Running	1								
Current	(1)	A	943	1077	1080	1106	1149	1197	
Nominal Running Current	(2)	А	1097	1111	1260	1270	1308	1347	
(@ OAT = 46°C)									
	1	1	1						
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	(5)		1426	1537	1641	1641	1705	1769	
starting current									
Fan starting									
method		-			ECI	motor			
Max running current per fan		A		6.2					
Total fans running		A	186	149	186	186	186	186	
current									
Compressor	[								
starting method					Wye	- Delta			
Max. running									
current		A	393	393	451	451	451	451	
Compressor #1									
Max. running									
current		A	329	393	393	393	451	451	
Compressor #2									
Max. running current		A	329	393	393	393	393	451	
Compressor #2									
	r	1	1						
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	(7)	A	538	540	540	540	540	684	
compressor #2									
Main switch size		Α	2000	2000	2000	2000	2000	2000	
Terminal		-	Bars	Bars	Bars	Bars	Bars	Bars	
connection			Baij	Duis	Duij	Duis	Duis	Buis	
Cable per phase		-	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq	3x600mmq+PE 2x500mmq	
Short circuit		kA	25	25	25	25	25	25	
(1) = (ASHPAF)	standard	   condi	tions) evanorator wa	ter in/out = $12.2/6$		     0°C unit at full load	operation: operation	 n fluid: Water:	

1; ор (1) - (ASHAE standard conditions) evaporator water in/out = 12.2/6.7°C; ambient = 36.0°C, unit at full load operation; operating fluid: Water;
 (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; ıy

fouling factor = 0,0000176m2°C/W

(3) (4)

 - Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
 - Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
 - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
 - Voltage unbalance between phases must be within ± 3%.
 - For less than 1 second (5)

(6) (7)

The data are referred to the unit without additional options.

EWAD~M- X	EWAD~M- XS C – standard unit										
MODEL	notes		320	360	415	430	460	540			
Phases		n				3					
Frequency		Hz				50					
Voltage	(6)	V			4	100					
Tolerances -		%			-10	/ +10					
min/max											
Nominal Running											
Current	(1)	A	184	206	231	244	261	289			
(@ OAT = 35°C)			_				-				
Nominal Running											
Current	(2)	A	212	241	271	289	308	343			
(@ OAT = 46°C)											
N Anno manain a		1	1		[						
Wax. running	(3)	A	246	276	304	328	363	400			
Max current for											
wire sizing	(4)	A	280	340	368	461	496	612			
Maximum	(5)		274	204	22.4	264	200				
starting current	(5)	A	271	304	334	361	399	440			
	I	1									
Fan starting		-			D.	O.L.					
method						-					
Max running		A			Į,	5,3					
Total fans running											
current		A	42,4	42,4	42,4	42,4	53	63,6			
		1	1								
Compressor					W/ve	- Delta					
starting method				1	vvye		1				
Max. running					100	100		100			
current		A	82	99	126	126	148	162			
Max running											
current		A	114	126	126	148	148	162			
Compressor #2											
Max. running											
current		A	-	-	-	-	-	-			
Compressor #2											
Chartin a summant		1	I	[	[						
Starting current	(7)	A	151	151	195	195	288	330			
Starting current											
compressor #2	(7)	A	151	195	195	288	288	330			
Starting current	(7)										
compressor #2	(7)	A	-	-	-	-	-	-			
Main switch size		A	400	630	630	630	630	630			
Ierminal		-	Cables	Cables	Cables	Cables	Cables	Cables			
connection			1v2/0mma±DE	2v185mma±DE	2v185mma±DE	2v185mma±DE	2v185mma±DF	2v185mma±DE			
Cable per phase		-	1x120mma	1x185mma	1x185mma	1x185mma	1x185mma	1x185mma			
Short circuit				2.20011114	2.20011114		2.20011114	2.20011114			
current Icw 1 sec.		кА	15	20	20	20	20	20			
(1) - (ASHRAE)	standard	condi	tions) evaporator wa	ter in/out = 12.2/6.	$7^{\circ}C$ : ambient = 35.0	0°C, unit at full load	operation: operating	a fluid: Water:			

fouling factor = 0,0000176m2°C/W - Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
 - Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
 - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
 - Voltage unbalance between phases must be within ± 3%.
 - For less than 1 second

(3) (4) (5)

(6) (7)

The data are referred to the unit without additional options.

MODEL         notes         n         57.0         62.0         71.0         78.0         85.0         940           Prequency         it 2         -         50         -         50         -         -         -         -         -         -         -         -         0         0         Votage         60         V         -         -         0         -         -         0         -         -         0         -         -         0         -         0         -         0         -         0         -         0<	EWAD~M- X	EWAD <sup>~</sup> M- XS C – standard unit										
Preguery Preguery Moltage         n         J         J           Voltage         (6)         V         J        <	MODEL	notes		570	620	710	780	850	940			
Image         Hz         50           Votage         (6)         V $\rightarrow 000000000000000000000000000000000000$	Phases		n				3					
voltage         (i)         v $-10^{+1}$ (10)           Tolerances, min/max         * $-10^{+1}$ (11)         *           Morinal Running Current (20) A         306         326         368         405         443         483           Normal Running Current (20) A         365         389         431         476         514         562           Max. running (20) A         4         652         635         675         738         732           Max. running (20) A         4         652         635         675         738         732           Max. running (20) A         4         652         635         675         738         732           Max. running (15) A         4         652         635         672         677         738         732           Max. running (15) A         4         656         491         559         607         677         738         732           Total fans running (17) A         5         63         63.6         74.2         84.8         84.8           Current (17) A         63.6         63.6         74.2         274         274         274           Current (20) (20) A         552         185	Frequency		Hz				50					
Tolerances - min/max       % $\cdot \cdot $	Voltage	(6)	V			4	100					
mming mark         i         i           Nominal Running Current (@ OAT = 35°C)         (A         306         326         368         405         443         483           Nominal Running Current (@ OAT = 35°C)         (A         365         389         431         476         514         562           Max. running Current (@ OAT = 46°C)         (A)         A         612         635         675         675         738         782           Max. running Current (G)         (A)         A         6612         635         675         675         738         782           Max. running Current for method         (A)         A         663.6         64,6         74,2         74,2         84,8         84,8           Current for method         (A)         63.6         63,6         74,2         74,2         84,8         84,8           Current for current for method         (A)         63.6         63,6         74,2         74,2         84,8         84,8           Current for current for method         (A)         162         185         231         274         274         274           Max. running current for method         (A)         162         185         185         185	Tolerances -		%			-10	/ +10					
Nominal Running ( $Q$ OAT = 36°C)         (1)         A         306         326         368         405         443         483           Nominal Running ( $Q$ OAT = 46°C)         (2)         A         365         389         431         476         514         562           Nominal Running ( $Q$ OAT = 46°C)         (3)         A         423         446         508         552         615         659           Max, running ( $Q$ OAT = 46°C)         (4)         A         612         635         675         675         738         782           Max, running ( $Q$ rurent         (5)         A         465         491         559         607         677         725           Max running ( $Q$ rurent         (5)         A         465         491         559         607         677         725           Total fans running ( $Q$ rurent         (5)         A         63,6         64,6         74,2         84,8         84,8           Max, running ( $Q$ rurent         A         162         185         231         274         274         274           Max, running ( $Q$ rurent         A         185         185         185         185         231         274         274	min/max											
Current (@ OAT = 35'C) Current (@ OAT = 35'C) Current (@ OAT = 35'C) (D AT =	Nominal Running											
(a) Current Current (Current)))))))))))))))))))))))))))))))))))	Current	(1)	A	306	326	368	405	443	483			
Nominal Running (@ OAT = 6C')         2         A         365         389         431         476         514         562           Max. running current max. current max. current starting current method         (4)         A         612         635         675         675         738         782           Max. running max. current method         (4)         A         612         635         675         675         738         782           Max. running method         (5)         A         465         491         559         607         677         725           Max. running current primetion         (2)         A         63,6         74,2         74,2         84,8         84,8           Max. running current primetion         (2)         A         63,6         74,2         74,2         84,8         84,8           Max. running current primetion         (2)         A         162         185         231         274         274         274           Max. running current primesor #1         (3)         (3)         185         185         185         231         274         274           Max. running current primesor #2         (4)         (4)         (4)         410         410         410	(@ OAT = 35°C)							_				
Current (@ 0AT = 46'C)         (2)         A         365         389         431         476         514         562           Max. running current for wire sing starting current starting current starting current method         (4)         A         423         446         508         552         615         6659           Max. current for wire sing starting current starting current starting current starting method         (4)         A         6612         6635         6675         675         738         782           Max. running current for starting method         (5)         A         4655         491         559         607         677         725           Max. running current for starting method         (A)         (A)         63,6         74,2         74,2         84,8         84,8           Starting method starting method         (A)         (A)         63,6         231         274         274         274           Max. running current Compressor #2         (A)         162         185         185         185         185         231         274         274           Max. running current Compressor #2         (A)         162         185         185         185         185         185         123         274	Nominal Running											
(@ OAT = 46°C)III	Current	(2)	A	365	389	431	476	514	562			
Max. running current Max. current for Max. current for Max. current for starting current(a)A4423446650855266156615659Max. current for starting current(b)A6612635675675738782Max. funning current for methodC $     -$ Fan starting methodCA465491559607677772Max running current for tarting methodA $    -$ Total fans running current for tarting methodA63.663.674.274.284.884.8Max. running current compressor #1A162185231274274274Max. running current compressor #2A162185185185185231274274Max. running current compressor #2A162185185185185231274274Max. running current compressor #2A330330410410410410Max. running current compressor #2A330330330330410410410Max. running current compressor #2AMax. running current compressor #2AMax. running current compressor #2<	(@ OAT = 46°C)											
Max. running current(a)A423446508552615659Max. current for wire sting current(A)A612635675675738782Maximum starting current(S)A465491559607677725Max running current per fanCA $$	N Annu munaning a			1		[						
Total Max. current for wire sking max. current for wire sking max. current for wire sking max. current for max. and max. current for max. current	iviax. running	(3)	Α	423	446	508	552	615	659			
Miles effection wire sign starting current         (4)         A         612         635         675         675         738         782           Maximum starting current         (5)         A         465         491         559         607         677         725           Finit starting method         (1)         (2)         (4) <td< td=""><td>Max current for</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	Max current for											
Maximum starting current         (5)         A         465         491         559         607         677         725           Fan starting method         -	wire sizing	(4)	A	612	635	675	675	738	782			
starting current       (5)       A       465       491       559       607       677       725         Fan starting method       -	Maximum	(5)		105	101		607		705			
Fan starting methodImage: Second Starting Correct Part Part A Compressor starting methodAImage: Second Starting Correct Part Part A Compressor AA A	starting current	(5)	A	465	491	559	607	6//	/25			
Image and the set of the se		I										
$\begin{array}{c c c c c c } \hline \begin{tabular}{ c c c } \hline  c c c c c c c c c c c c c c c c c c $	Fan starting		-			D.	O.L.					
Max running current primeA $\cdot \cdot $	method						-					
Compressor         A         63,6         63,6         74,2         74,2         84,8         84,8           Compressor         -	Max running		A			i	5,3					
Note of the formation o	Total fans running											
Compressor starting methodAImage: Compressor withoutAImage: Compressor withoutAImage: Compressor withoutAImage: Compressor withoutCompressor withoutCompressor withoutCompressor withoutCompressor withoutAImage: Compressor withoutCompressor with	current		A	63,6	63,6	74,2	74,2	84,8	84,8			
Compressor starting methodImage: solution of the starting methodImage: solution				1								
starting methodImage: current current current current currentA162185231274274274Max. running current corrent corrent currentA185185185185231274Max. running current corrent corrent corrent corrent corrent corrent currentA185185185185231274Max. running current corrent corren	Compressor					W/ve	- Delta					
Max. running current Compressor #1A162185231274274274Max. running current Compressor #2A185185185185231274Max. running current Compressor #2A185185185185231274Max. running current compressor #2AMax. running current compressor #2AMax. running current compressor #2AMax. running current compressor #2A330330410410410410Starting current compressor #2(7)A330330330330330410410410Starting current compressor #2(7)A630800800100010001000Starting current connectionMai switch sizeA630800800100010001000Terminal connection-2x185mmq+PE 1x185mmq+PE2x240mmq+PE 1x240mmq2x300mmq+PE 1x240mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300	starting method				1	vvye		1				
current Compressor #1A162185185231274274274274Max. running current Compressor #2A185185185185185231274Max. running current compressor #2AMax. running current compressor #2AMax. running current compressor #2AMax. running current compressor #2AStarting current compressor #1(7)A330330410410410410410Starting current compressor #2(7)A330330330330330410410Starting current compressor #2(7)A630800800100010001000Starting current compressor #2Main switch sizeA630800800100010001000Terminal connectionCablesCablesBarsBarsBarsCable per phase2x185mmq+PE2x240mmq+PE2x300mmq+PE2x300mmq+PE1x300mmqShort circuit current lew 1 sec.kA202020252525	Max. running				105			074	07.0			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Comprossor #1		A	162	185	231	274	274	274			
Max. running current Compressor #2A185185185185185231274Max. running current Compressor #2A <td>Max running</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Max running											
Compressor #2AAA <t< td=""><td>current</td><td></td><td>A</td><td>185</td><td>185</td><td>185</td><td>185</td><td>231</td><td>274</td></t<>	current		A	185	185	185	185	231	274			
Max. running current Compressor #2AAStarting current compressor #1(7)A330330410410410410410410Starting current compressor #2(7)A330330330330330410410410Starting current compressor #2(7)A330330330330330410410Starting current compressor #2(7)A630800800100010001000Starting current compressor #2(7)A630800800100010001000Main switch sizeA6308008001000100010001000Terminal connectionCable per phase-2x185mmq+PE 1x185mmq2x240mmq+PE 1x240mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq3x300mmq3x303x303x303x303x303x303x303x303x303x303x303x30	Compressor #2											
current Compressor #2AAAAAAAStarting current compressor #1(7)A330330410410410410Starting current compressor #2(7)A330330330330330410410Starting current compressor #2(7)A330330330330300410410Starting current compressor #2(7)AAAMain switch size connectionA6308008001000100010001000Terminal connection-CablesCablesCablesBarsBarsBarsCable per phase2x185mmq+PE 1x185mmq2x240mmq+PE 1x240mmq2x300mmq+PE 1x240mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmqShort circuit current lcw 1 sec.kA202020252525	Max. running											
Compressor #2Image: Compressor #2Image: Compressor #1Image: Compressor #1Image: Compressor #1Starting current compressor #1(7)A330330410410410410Starting current compressor #2(7)A330330330330330410410Starting current compressor #2(7)AA3303303303303301000410Starting current compressor #2(7)AAMain switch sizeA6308008001000100010001000Terminal connection-CablesCablesCablesBarsBarsBarsCable per phase2x185mmq+PE 1x185mmq2x240mmq+PE 1x240mmq2x300mmq+PE 1x240mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmqShort circuit current lcw 1 sec.kA202020252525	current		A	-	-	-	-	-	-			
Starting current compressor #1 $(7)$ A330330410410410410410Starting current compressor #2 $(7)$ A330330330330330410410Starting current compressor #2 $(7)$ AAAAAAAStarting current compressor #2 $(7)$ AAAAAAAMain switch size $(7)$ A630800800100010001000Terminal connectionA630Starting CablesCablesCablesBarsBarsBarsCable per phase $ 2x185mmq+PE$ 1x185mmq2x240mmq+PE 1x240mmq2x240mmq+PE 1x240mmq2x300mmq+PE 1x240mmq2x300mmq+PE 1x300mmq1x300mmqShort circuit current lcw 1 sec.kA202020252525	Compressor #2											
Starting current compressor #1(7)A330330410410410410Starting current compressor #2(7)A330330330330330410410Starting current compressor #2(7)AStarting current compressor #2(7)AMain switch size(7)A6308008001000100010001000Terminal connection-CablesCablesCablesBarsBarsBarsBarsCable per phase2x185mmq+PE 1x185mmq2x240mmq+PE 1x240mmq2x300mmq+PE 1x240mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmqShort circuit current lcw 1 sec.kA20202025252525	Starting current											
Compression 12CII	compressor #1	(7)	A	330	330	410	410	410	410			
Compressor #2 compressor #2(7)A330330330330410410Starting current compressor #2(7)A	Starting current											
Starting current compressor #2(7)AImage: AABAAA <t< td=""><td>compressor #2</td><td>(7)</td><td>A</td><td>330</td><td>330</td><td>330</td><td>330</td><td>410</td><td>410</td></t<>	compressor #2	(7)	A	330	330	330	330	410	410			
compressor #2       (1)       A       -	Starting current	(7)	^									
Main switch sizeA630800800100010001000Terminal connection-CablesCablesCablesBarsBarsBarsBarsCable per phase-2x185mmq+PE 1x185mmq2x240mmq+PE 1x240mmq2x240mmq+PE 1x240mmq2x300mmq+PE 1x240mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmq2x300mmq+PE 1x300mmqShort circuit current lcw 1 sec.kA202020252525	compressor #2	(7)	^	-	-	-	-	-	-			
Main switch sizeA6308008001000100010001000Terminal connection-CablesCablesCablesBarsBarsBarsBarsBarsCable per phase- $2x185mmq+PE$ $2x240mmq+PE$ $2x240mmq+PE$ $2x300mmq+PE$ $2x300mmq+PE$ $2x300mmq+PE$ $2x300mmq+PE$ $2x300mmq+PE$ Short circuit current lcw 1 sec.kA202020252525				620	000	000	1000	1000	1000			
Terminal connection-CablesCablesCablesBarsBarsBarsCable per phase-2x185mmq+PE2x240mmq+PE2x240mmq+PE2x300mmq+PE2x300mmq+PE2x300mmq+PEShort circuit current lcw 1 seckA202020252525	IVIain switch size		A	630	800	800	1000	1000	1000			
Cable per phase-2x185mmq+PE 1x185mmq2x240mmq+PE 1x240mmq2x240mmq+PE 1x240mmq2x300mmq+PE 1x300mmq2x300mmq2x300mmq2x300mmq2x300mmq2x300mmq2x300mmq2x300mmq2x300mmq2x300mmq2x300mmq2x300mmq2x300mmq2x300mmq2x300mmq2x300mmq2x300mmq2x300mmq2x300mmq2x300mm	connection		-	Cables	Cables	Cables	Bars	Bars	Bars			
Cable per phase-1x185mmq1x240mmq1x240mmq1x300mmq1x300mmqShort circuit current lcw 1 sec.kA202020252525				2x185mma+PF	2x240mma+PF	2x240mma+PF	2x300mma+PF	2x300mma+PF	2x300mma+PE			
Short circuit current lcw 1 sec.     kA     20     20     20     25     25	Cable per phase		-	1x185mmq	1x240mmq	1x240mmq	1x300mmq	1x300mmq	1x300mmq			
current lcw 1 sec. 20 20 20 20 25 25 25	Short circuit		k۸	20	20	20	25	25	25			
	current lcw 1 sec.	<u> </u>		20	20	20	23	2.5	23			

fouling factor = 0,0000176m2°C/W - Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
 - Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
 - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
 - Voltage unbalance between phases must be within ± 3%.
 - For less than 1 second

(3) (4) (5)

(6) (7)

The data are referred to the unit without additional options.

**ELECTRICAL SPECIFICATIONS** 

EWAD~M- X	EWAD <sup>~</sup> M- XS C – standard unit										
MODEL	notes		C10	C11	C12	B13	H13	A13			
Phases		n				3					
Frequency		Hz			-	50					
Voltage	(6)	V			4	00					
Tolerances -		%			-10	/ +10					
min/max		/0			-10	/ 10					
Nominal Running											
Current	(1)	A	530	587	632	694	699	693			
(@ OAT = 35°C)											
Nominal Running	(-)										
Current	(2)	A	616	684	736	805	809	809			
(@ OAT = 46°C)											
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						01					
method		-			D.	U.L.					
Max running						- 2					
current per fan		A			-	0,0					
Total fans running		Δ	95 /	106	116.6	1/18 /	159	116.6			
current			55,4	100	110,0	140,4	155	110,0			
Compressor					Wye	- Delta					
starting method											
Max. running			220	202	202	202	202	202			
Comprossor #1		A	329	393	393	393	393	393			
Max rupping											
current		<u>ہ</u>	274	274	320	303	303	303			
Compressor #2			274	274	525	333	333	555			
Max running											
current		A	-	-	-	-	-	-			
Compressor #2											
·											
Starting current	(7)	_	E 2 9	E 40	E40	E40	E40	E40			
compressor #1	(7)	A	538	540	540	540	540	540			
Starting current	(7)		410	410	E20	540	540	E 2 9			
compressor #2	(7)		410	410	550	540	540	550			
Starting current	(7)	Δ		-	_	-	_	_			
compressor #2	(')										
			4250	4250	1000	4.000	4.000	4.000			
Torminal		A	1250	1250	1600	1600	1600	1600			
connection		-	Bars	Bars	Bars	Bars	Bars	Bars			
			2v/00mma±DE	2v/00mma±PE	2v500mma±DE	2v500mma±DE	2v500mma±DE	2v500mma±DE			
Cable per phase		-	1 400mma	1 400mma	1x500mma	1x500mma	1x500mma	1x500mma			
Short circuit			Trooming	1 Foolining	INSCOMING	TYROOMING	INSCOMING	TYPOOLIUIA			
current lcw 1 sec.		kA	25	25	25	25	25	25			
(1) – (ASHRAE	standard	condit	ions) evaporator wa	ter in/out = 12.2/6.	7°C; ambient = 35.0	D°C, unit at full load	operation; operating	g fluid: Water;			

 (1) fouling factor = 0,000176m2°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

- Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
- Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
- starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
- Voltage unbalance between phases must be within ± 3%.
- For less than 1 second.

(3) (4) (5)

(6) (7)

The data are referred to the unit without additional options.

EWAD~M- XS C – standard unit											
MODEL	notes		C14	H14	C15	C17	H18				
Phases		n			3	I					
Frequency		Hz			50						
Voltage	(6)	V			400						
Tolerances -		0/			10/-10						
min/max		%			-10/+10						
Nominal Running Current	(1)	A	736	776	778	912	984				
(@ OAT = 35°C) Nominal Running											
Current	(2)	A	866	917	914	1029	1097				
(@ OAT = 46°C)											
	1				1	1					
Max. running current	(3)	А	1007	1075	1096	1237	1317				
Max. current for wire sizing	(4)	А	1217	1285	1306	1359	1439				
Maximum starting current	(5)	А	1108	1183	1206	1361	1449				
Fan starting method		-		D.O.L.							
Max running current per fan		А		5,3							
Total fans running current		А	116,6	127,2	148,4	127,2	137,8				
Compressor					Muo Dolta						
starting method					wye - Deita						
Max. running											
current		Α	451	451	451	393	393				
Compressor #1											
Max. running											
current		Α	393	451	451	329	393				
Compressor #2											
Max. running											
current		A	-	-	-	329	329				
Compressor #2											
	1										
Starting current	(7)	Α	684	684	684	540	540				
compressor #1	,										
Starting current	(7)	A	540	684	684	538	540				
compressor #2											
Starting current	(7)	A	-	-	-	538	538				
compressor #2											
Main quitch size			1600	1600	1600	2000	2000				
		A	1000	1000	1000	2000	2000				
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		kΔ	25	25	25	25	25				
current lcw 1 sec.			23	23			25				
(1) – (ASHRAE	standard o	conditic	ons) evaporator water	in/out = 12.2/6.7°C; am	bient = 35.0°C, unit at	full load operation; oper	rating 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

- Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
- Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
- starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
- Voltage unbalance between phases must be within ± 3%.
- For less than 1 second.

(3) (4) (5) (6) (7)

The data are referred to the unit without additional options.

EWAD~M- X	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			4	100					
Tolerances - min/max		%			-10	/ +10					
				-	-	-	-				
Nominal Running Current	(1)	A	186	210	235	250	266	294			
Nominal Running Current (@ OAT = 46°C)	(2)	A	215	245	276	295	314	350			
	1		1	I	I	1	I				
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			Į	5,3					
Total fans running current		A	42,4	42,4	42,4	42,4	53	63,6			
	•		•								
Compressor					Wve	- Delta					
starting method					Wye	Denta					
Max. running											
current		A	82	99	126	126	148	162			
Compressor #1											
current		Δ	114	126	126	1/18	1/18	162			
Compressor #2			114	120	120	140	140	102			
Max. running current		A	-	-	-	-	-	-			
Compressor #2											
	1	1									
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		_	Cables	Cables	Cables	Cables	Cables	Cables			
connection											
Cable per phase		-	1x240mmq+PE 1x120mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq	2x185mmq+PE 1x185mmq			
Short circuit		kA	15	20	20	20	20	20			
(1) = (ASHRAF)	standaro	 I condi	 tions) evaporator wa	ter in/out = $12.2/6$	7°C: ambient = 35 (	 0°C, unit at full load	operation: operation	n 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

 - Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
 - Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
 - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
 - Voltage unbalance between phases must be within ± 3%.
 - For less than 1 second (3) (4) (5)

(6) (7)

The data are referred to the unit without additional options.

EWAD~M- XS C + OPT160a - 100 Pa ESP FANS										
MODEL	notes		570	620	710	780	850	940		
Phases		n		I		3				
Frequency		Hz				50				
Voltage	(6)	V			4	100				
Tolerances - min/max		%			-10	/ +10				
Nominal Running Current	(1)	A	312	333	375	413	451	493		
(@ OAT = 35 C) Nominal Running Current (@ OAT = 46°C)	(2)	А	373	398	440	486	523	574		
	1	1	1	1	I	1				
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		
	1		1							
Fan starting method		-			D.	.O.L.				
Max running current per fan		A			ţ	5,3				
Total fans running current		A	63,6	63,6	74,2	74,2	84,8	84,8		
Compressor					W/ve	- Delta				
starting method				1	vvye					
Max. running										
current		A	162	185	231	274	274	274		
Compressor #1										
Max. running			105	105	105	105	221	274		
Compressor #2			105	105	105	105	251	274		
Max. running										
current		A	-	-	-	-	-	-		
Compressor #2										
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		Α	630	800	800	1000	1000	1000		
Terminal		-	Cables	Cables	Cables	Bars	Bars	Bars		
connection			Cables	Cables	Cables	5013	5013	Durs		
Cable per phase		-	2x185mmq+PE 1x185mmq	2x240mmq+PE 1x240mmq	2x240mmq+PE 1x240mmq	2x300mmq+PE 1x300mmq	2x300mmq+PE 1x300mmq	2x300mmq+PE 1x300mmq		
Short circuit		kA	20	20	20	25	25	25		
(1) = (ASHRAF)	standaro	   condit	ions) evaporator wa	$\frac{1}{12}$		 0°C, unit at full load	operation: operating	 n 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

 - Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
 - Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
 - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
 - Voltage unbalance between phases must be within ± 3%.
 - For less than 1 second (3) (4) (5)

(6) (7)

The data are referred to the unit without additional options.

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			4	100				
Tolerances -		%			-10	/ +10				
min/max		/0			10	/ 10				
	1		1				1			
Nominal Running										
Current	(1)	A	540	598	643	705	709	707		
(@ OAT = 35°C)										
	(2)		620	<u> </u>	75.0	017	021	000		
	(2)	A	629	696	750	817	821	808		
(@ OAT = 40 C)										
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	(5)		000		0.00	4070	1000	1011		
starting current	(5)	A	802	890	968	1078	1090	1044		
	-		-							
Fan starting		_			п	01				
method					D.	0.L.				
Max running		A				5.3				
current per fan										
I otal fans running		A	95,4	106	116,6	148,4	159	116,6		
current										
Compressor										
starting method					Wye	- Delta				
Max. running										
current		A	329	393	393	393	393	393		
Compressor #1										
Max. running										
current		A	274	274	329	393	393	393		
Compressor #2										
Max. running										
current		A	-	-	-	-	-	-		
Compressor #2										
Ctantin a cumulant										
Starting current	(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		Α	1250	1250	1600	1600	1600	1600		
Terminal		-	Bars	Bars	Bars	Bars	Bars	Bars		
connection			Duis	Duis	Duis	Duis	Dais	Duis		
Cable per phase		-	2x400mmq+PE	2x400mmq+PE	2x500mmq+PE	2x500mmq+PE	2x500mmq+PE	2x500mmq+PE		
			1 400mmq	1 400mmq	1x500mmq	1x500mmq	1x500mmq	1x500mmq		
Short circuit		kA	25	25	25	25	25	25		
(1) - (ASHRAF)	standard	condit	ions) evaporator wa	ter in/out = 12.2/6.	7°C: ambient = 35.0	 )°C. unit at full load	operation: operation	g fluid: Water:		

fouling factor = 0,0000176m2°C/W

 - Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
 - Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
 - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
 - Voltage unbalance between phases must be within ± 3%.
 - For less than 1 second (3) (4) (5)

(6) (7)

The data are referred to the unit without additional options.

## **ELECTRICAL SPECIFICATIONS**

EWAD~M- XS	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 -		%			-10 / +10							
min/max												
Nominal Running												
Current	(1)	А	752	793	792	936	1009					
(@ OAT = 35°C)												
Nominal Running												
Current	(2)	A	862	932	931	1017	1071					
(@ OAT = 46°C)												
May supping												
current	(3)	Α	1007	1075	1096	1237	1317					
Max. current for												
wire sizing	(4)	A	1217	1285	1306	1359	1439					
Maximum starting	(E)	^	1109	1100	1206	1261	1440					
current	(5)	A	1108	1183	1206	1301	1449					
Fan starting		-			D.O.L.							
method												
current per fan		А		5,3								
Total fans running												
current		A	116,6	127,2	148,4	127,2	137,8					
Compressor					Wve - Delta							
starting method					Wye Delta							
Max. running			454	451	451	202	202					
Comprossor #1		A	451	451	451	393	393					
Max running												
current		А	393	451	451	329	393					
Compressor #2												
Max. running												
current		Α	-	-	-	329	329					
Compressor #2												
Chartin a current												
Starting current	(7)	А	540	540	684	540	540					
Starting current												
compressor #2	(7)	A	538	538	684	538	540					
Starting current	(7)					F 20	F 20					
compressor #2	(7)	A	-	-	-	538	538					
Main switch size		A	1600	1600	1600	2000	2000					
Terminal		-	Bars	Bars	Bars	Bars	Bars					
connection			2x500mma±DE	2v500mma±DE	2v500mma±DE	3v600mma±DE	3x600mma±DE					
Cable per phase		-	1x500mma	1x500mma	1x500mma	2x500mma	2x500mma					
Short circuit			25	25	2	25	25					
current Icw 1 sec.		кА	25	25	25	25	25					
(1) - (ASHRAF)	standard o	conditic	ons) evanorator water	$r_{in/out} = 12.2/6.7$ °C; am	$bient = 35.0^{\circ}C$ , unit at	full load operation: oper	rating 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. - Based on minimum allowed voltage  $\rightarrow$  Max. current for wire sizing = Max. Running current x 1,1 - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load (4) (5)

(6) - Voltage unbalance between phases must be within  $\pm 3\%$ 

(Ź) - 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- X	<mark>S C +</mark> (	ΟΡΤΟ	<mark>06 – Soft St</mark>	arter				
MODEL	notes		320	360	415	430	460	540
Phases		n				3		
Frequency		Hz				50		
Voltage	(6)	V			2	100		
Tolerances -		%			-10	/ +10		
min/max								
Nominal Running								
Current	(1)	A	184	206	231	244	261	289
(@ OAT = 35°C)			-		-			
Nominal Running								
Current	(2)	A	212	241	271	289	308	343
(@ OAT = 46°C)								
May running		1 1						
current	(3)	A	246	276	304	328	363	400
Max. current for								
wire sizing	(4)	A	280	340	368	461	496	612
Maximum	(E)		271	204	224	261	200	440
starting current	(5)	A	271	504	554	501	599	440
Fan starting		-			D	.O.L.		
Max running								
current per fan		A			!	5,3		
Total fans running								<u> </u>
current		A	42,4	42,4	42,4	42,4	53	63,6
	1							
Compressor					Soft Starter (So	olid State Starter)		
starting method						,		
current			87	99	126	126	1/18	162
Compressor #1			02	55	120	120	140	102
Max. running								
current		A	114	126	126	148	148	162
Compressor #2								
Max. running								
Comprossor #2			-	-	-	-	-	-
Starting current	(¬)		454	454	105	105	200	222
compressor #1	(7)	A	151	151	195	195	288	330
Starting current	(7)	Δ	151	195	195	288	288	330
compressor #2	(7)		191	195	155	200	200	550
Starting current	(7)	A	-	-	-	-	-	-
compressor #2								
Main switch size		A	400	630	630	630	630	630
Terminal	ĺ		Cables	Cables	Cables	Cables	Cables	Cokles
connection		-	Caples	Caples	Caples	Caples	Caples	Cables
Cable ner nhase			1x240mmq+PE	2x185mmq+PE	2x185mmq+PE	2x185mmq+PE	2x185mmq+PE	2x185mmq+PE
			1x120mmq	1x185mmq	1x185mmq	1x185mmq	1x185mmq	1x185mmq
Short circuit		kA	15	20	20	20	20	20
(1) - (ASHRAE)	standard	conditio	ons) evaporator wa	ter in/out = 12.2/6.		 0°C, unit at full load	operation; operating	g fluid: Water:

fouling factor = 0,0000176m2°C/W

 - Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
 - Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
 - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
 - Voltage unbalance between phases must be within ± 3%.
 - For less than 1 second (3) (4) (5)

(6) (7)

The data are referred to the unit without additional options.

EWAD~M-X	<mark>S C +</mark>	ΟΡΤΟ	<mark>06 – Soft St</mark>	arter				
MODEL	notes		570	620	710	780	850	940
Phases		n				3		
Frequency		Hz				50		
Voltage	(6)	V			Z	00		
Tolerances -		%			-10	/ +10		
min/max		/0			10	/ 10		
	1				I			
Nominal Running	(.)							
Current	(1)	A	306	326	368	405	443	483
(@ OAT = 35°C)								
	(2)		265	200	121	176	E14	EGO
$(@ OAT = 46^{\circ}C)$	(2)		202	203	451	470	514	502
(@ 0A1 = 40 C)								
Max. running						_		
current	(3)	A	423	446	508	552	615	659
Max. current for	(4)		612	C25	C75	C75	720	700
wire sizing	(4)	A	612	635	675	675	/38	782
Maximum	(5)	Δ	465	/191	559	607	677	725
starting current	(3)		-05	451	555	007	0//	725
Fan starting		-			D.	0.L.		
method								
		A			I.	5,3		
Total fans running								
current		A	63,6	63,6	74,2	74,2	84,8	84,8
					1			
Compressor					Coft Stortor (Sc	lid State Starter)		
starting method						niu state starter)		
Max. running								
current		A	162	185	231	274	274	274
Compressor #1								
Max. running			105	105	105	105	221	274
Compressor #2			192	185	185	185	231	274
Max running								
current		A	-	-	-	-	-	-
Compressor #2								
Starting current	(7)	Δ	330	330	410	410	410	410
compressor #1	(7)		550	550	410	410	410	410
Starting current	(7)	A	330	330	330	330	410	410
compressor #2	( )						-	-
Starting current	(7)	A						
compressor #2			-	-	-	-	-	-
Main switch size		A	630	800	800	1000	1000	1000
Terminal								
connection		-	Cables	Cables	Cables	Bars	Bars	Bars
Cable ner abase			2x185mmq+PE	2x240mmq+PE	2x240mmq+PE	2x300mmq+PE	2x300mmq+PE	2x300mmq+PE
Capie per phase		-	1x185mmq	1x240mmq	1x240mmq	1x300mmq	1x300mmq	1x300mmq
Short circuit		kA	20	20	20	25	25	25
current lcw 1 sec.	atox d= 1				70Ci ambiant 25			
(I) – (ASHRAE	standard	conditio	uns) evaporator wa	ter ID/OUT = 12.2/6.	/~c; ampient = 35.0	ייכ, unit at full load	operation; operating	y nula: water;

fouling factor = 0,0000176m2°C/W

 - Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
 - Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
 - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
 - Voltage unbalance between phases must be within ± 3%.
 - For less than 1 second (3) (4) (5)

(6) (7)

The data are referred to the unit without additional options.

EWAD~M-X	<mark>S C +</mark> (	OPT	06 – Soft St	arter				
MODEL	notes		C10	C11	C12	B13	H13	A13
Phases		n				3		
Frequency		Hz				50		
Voltage	(6)	V			Z	100		
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)	А	616	684	736	805	809	809
Max. running current	(3)	A	729	809	880	980	991	949
Max. current for wire sizing	(4)	А	920	931	1002	1102	1113	1071
Maximum starting current	(5)	А	802	890	968	1078	1090	1044
Ŭ								
Fan starting method		-			D.	0.L.		
Max running current per fan		А			ļ	5,3		
Total fans running current		А	95,4	106	116,6	148,4	159	116,6
	1				1			
Compressor starting method					Soft Starter (So	olid State Starter)		
Max running								
current		A	329	393	393	393	393	393
Max, running								
current Compressor #2		A	274	274	329	393	393	393
Max. running current		А	-	-	-	-	-	-
Compressor #2								
					1			
Starting current compressor #1	(7)	A	538	540	540	540	540	540
Starting current compressor #2	(7)	А	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		LA	25	25	25	25	25	2⊑
current lcw 1 sec.		KA	23	25	25	25	25	25
(1) – (ASHRAE	standard	conditi	ons) evaporator wa	ter in/out = 12.2/6.	7°C; ambient = 35.0	0°C, unit at full load	operation; operating	g fluid: Water;

fouling factor = 0,0000176m2°C/W - Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
 - Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
 - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
 - Voltage unbalance between phases must be within ± 3%.
 - For less than 1 second

(3) (4) (5) (6) (7)

The data are referred to the unit without additional options.

EWAD~M- XS	<mark>6 C + C</mark>	)PT(	<mark>)6 – Soft Sta</mark> l	rter			
MODEL	notes		C14	H14	C15	C17	H18
Phases		n	I		3		
Frequency		Hz			50		
Voltage	(6)	V			400		
Tolerances -		%			-10 / +10		
min/max		/0			107 10		
	1	1					
Nominal Running			700	776	770	012	004
Current	(1)	A	/36	//6	//8	912	984
(@ UAT = 35 C)							
Current	(2)	Δ	866	917	914	1029	1097
(@ OAT = 46°C)	(-/		000	517	511	1023	2007
					1		
Max. running	(2)	•	1007	1075	1000	1227	1217
current	(3)	A	1007	1075	1096	1237	1317
Max. current for	(4)	Δ	1217	1285	1306	1359	1/139
wire sizing	(-)	^	1217	1205	1500	1333	1435
Maximum starting	(5)	А	1108	1183	1206	1361	1449
current	(-)						_
Fon starting	1						
Fan starting method		-			D.O.L.		
Max running							
current per fan		Α			5,3		
Total fans running							
current		A	116,6	127,2	148,4	127,2	137,8
Compressor				Soft	Starter (Solid State S	tarter)	
starting method							1
Max. running			454	454	454	202	202
Comprossor #1		A	451	451	451	393	393
Max running							
current		Δ	393	451	451	329	393
Compressor #2			333	431	431	525	333
Max. running							
current		Α	-	-	-	329	329
Compressor #2							
Starting current	(7)	A	540	540	684	540	540
compressor #1				- • •			
Starting current	(7)	A	538	538	684	538	540
Starting current							
compressor #2	(7)	A	-	-	-	538	538
	1				I		
Main switch size		A	1600	1600	1600	2000	2000
Terminal			Dara	Dara	Doro	Doro	Boro
connection		-	Bars	Bars	Bars	Bars	Bars
Cable ner phase			2x500mmq+PE	2x500mmq+PE	2x500mmq+PE	3x600mmq+PE	3x600mmq+PE
			1x500mmq	1x500mmq	1x500mmq	2x500mmq	2x500mmq
Short circuit		kA	25	25	25	25	25
current lcw 1 sec. $(1) = (1)^{-1}$	standard	onditi	ns) evenorator water	in/out - 12 2/6 700,	hight - 25 MC unit -+	full load operations are	ating fluid: Materi
(1) - (ASTIRAE)	5.d11Ud1U (		ms; evaporator water	inyout = 12.2/0.7°C; am	$u_{i} = 33.0^{\circ} C, u_{i} = 10^{\circ} C$	тап тоай орегаціон; орег	aung nulu. Water;

(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

- Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
 - Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
 - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
 - Voltage unbalance between phases must be within ± 3%.
 - For less than 1 second.

(3) (4) (5) (6) (7)

The data are referred to the unit without additional options.

EWAD~M- X	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			Δ	100				
Tolerances -		%			-10	/ +10				
min/max					-	• -				
Nominal Running										
Current	(1)	Δ	177	200	224	237	252	279		
$(@ OAT = 35^{\circ}C)$	(1)		1,,	200	227	237	252	275		
Nominal Running										
Current	(2)	A	205	234	263	281	299	332		
(@ OAT = 46°C)										
Max. running	(3)	Δ	240	270	298	322	355	390		
current	(3)	~	210	270	250	522	555			
Max. current for	(4)	A	274	334	362	455	488	602		
wire sizing										
Maximum	(5)	A	264	297	328	354	391	429		
Ean starting										
method		-			EC r	motor				
Max running										
current per fan		A				4				
Total fans running		^	27	27	27	27	40	10		
current		A	52	52	52	52	40	48		
-		1								
Compressor					Wye	- Delta				
Max running										
current		Δ	82	99	126	126	148	162		
Compressor #1			02	55	120	120	140	102		
Max. running										
current		A	114	126	126	148	148	162		
Compressor #2										
Max. running										
current		A	-	-	-	-	-	-		
Compressor #2										
Starting ourrant										
Starting current	(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		_	Cables	Cables	Cables	Cables	Cables	Cables		
connection							Cubico	Cubics		
Cable per phase		-	1x240mmq+PE	2x185mmq+PE	2x185mmq+PE	2x185mmq+PE	2x185mmq+PE	2x185mmq+PE		
Chant street			1x120mmq	1x185mmq	1x185mmq	1x185mmq	1x185mmq	1x185mmq		
		kA	15	20	20	20	20	20		
(1) = (ASHRAF)	standard	condit	ions) evanorator wa	ter in/out = 12 2/6	 7°C: ambient = 35 I	 N°C unit at full load	operation: operating	n 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. - Based on minimum allowed voltage  $\rightarrow$  Max. current for wire sizing = Max. Running current x 1,1 - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load (4) (5)

 Voltage unbalance between phases must be within ± 3%.
 For less than 1 second. (6)

(Ź)

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		1		3			
Frequency		Hz				50			
Voltage	(6)	V			4	100			
Tolerances -		%			-10	/ +10			
min/max		70			-10	/ 10			
				1	1				
Nominal Running									
Current	(1)	A	296	316	356	392	429	469	
(@ OAT = 35°C)									
Nominal Running	(2)								
Current	(2)	A	354	378	419	462	499	547	
(@ OAT = 46°C)									
Max rupping									
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					FC -				
method		-			EUI	notor			
Max running						Λ			
current per fan		A				4			
Total fans running		Δ	48	48	56	56	64	64	
current							•	•	
Commencer	1		1						
compressor starting mothod					Wye	- Delta			
Max running									
current			162	185	231	27/	274	274	
Compressor #1			102	105	231	2/4	2/4	274	
Max, running									
current		A	185	185	185	185	231	274	
Compressor #2							_		
Max. running									
current		A	-	-	-	-	-	-	
Compressor #2									
	T			1	1				
Starting current	(7)	A	330	330	410	410	410	410	
compressor #1	(.,								
Starting current	(7)	A	330	330	330	330	410	410	
compressor #2	. ,								
Starting current	(7)	A							
compressor #2			-	-	-	-	-	-	
Main switch size		Δ	630	800	800	1000	1000	1000	
I IVIGILI SIVILULI SIZC	1		0.50	000	000	1000	1000	1000	
Terminal						Dava	Dore	Parc	
Terminal connection		-	Cables	Cables	Cables	Bars	BdlS	Bais	
Terminal connection		-	Cables	Cables	Cables	2x300mma+PF	2x300mma+PF	2x300mma+PF	
Terminal connection Cable per phase		-	Cables 2x185mmq+PE 1x185mma	Cables 2x240mmq+PE 1x240mma	2x240mmq+PE 1x240mma	2x300mmq+PE 1x300mma	2x300mmq+PE 1x300mma	2x300mmq+PE 1x300mma	
Terminal connection Cable per phase Short circuit		-	Cables 2x185mmq+PE 1x185mmq	Cables 2x240mmq+PE 1x240mmq	Cables 2x240mmq+PE 1x240mmq	2x300mmq+PE 1x300mmq	2x300mmq+PE 1x300mmq	2x300mmq+PE 1x300mmq	
Terminal connection Cable per phase Short circuit current Icw 1 sec.		- - kA	Cables 2x185mmq+PE 1x185mmq 20	Cables 2x240mmq+PE 1x240mmq 20	Cables 2x240mmq+PE 1x240mmq 20	2x300mmq+PE 1x300mmq 25	2x300mmq+PE 1x300mmq 25	2x300mmq+PE 1x300mmq 25	

rouling factor = 0,0000176m2°C/W - (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 - Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current. - Based on minimum allowed voltage  $\rightarrow$  Max. current for wire sizing = Max. Running current x 1,1 - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load - Voltage unbalance between phases must be within ± 3%. For loce than 1 cocond (2)

(3) (4) (5) (6)

(7) - For less than 1 second.
 The data are referred to the unit without additional options.

EWAD~M-X	S C + (	ΟΡΤ	145 - EC M(	<b>DTORS FAN</b>	S			
MODEL	notes		C10	C11	C12	B13	H13	A13
Phases		n				3		
Frequency		Hz				50		
Voltage	(6)	V			4	00		
Tolerances -		%			-10	/ +10		
min/max		70			-10	/ 10		
			1		1			
Nominal Running								
Current	(1)	A	514	570	613	672	676	673
(@ OAT = 35°C)								
Nominal Running	(2)							
Current	(2)	A	600	666	/1/	/82	/85	789
(@ OAT = 46 C)								
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
Ŭ	1							
Fan starting					EC	motor		
method		-			ECT	ΠΟΙΟΙ		
Max running		Δ				Д		
current per fan					1	7		
Total fans running		A	72	80	88	112	120	88
current							_	
Comprosor								
starting method					Wye	- Delta		
Max running								
current		Δ	329	393	393	393	393	393
Compressor #1			525	333	333	333	333	333
Max. running								
current		A	274	274	329	393	393	393
Compressor #2								
Max. running								
current		A	-	-	-	-	-	-
Compressor #2								
Starting current	(7)	A	538	540	540	540	540	540
compressor #1								
starting current	(7)	A	410	410	538	540	540	538
Starting current								
compressor #7	(7)	A	-	-	-	-	-	-
Main switch size		Α	1250	1250	1600	1600	1600	1600
Terminal		· ·						
connection		-	Bars	Bars	Bars	Bars	Bars	Bars
Cable accession			2x400mmq+PE	2x400mmq+PE	2x500mmq+PE	2x500mmq+PE	2x500mmq+PE	2x500mmq+PE
Cable per phase		-	1 400mmq	1 400mmq	1x500mmq	1x500mmq	1x500mmq	1x500mmq
Short circuit		kΔ	25	25	25	25	25	25
current lcw 1 sec.	<u> </u>					23		23
(1) – (ASHRAE fouling fac	standard c tor — 0.00	onditioi	ns) evaporator water i n2°C/W	n/out = 12.2/6.7°C;	ambient = 35.0°C, un	it at full load operatio	n; operating fluid: Wa	ter;

fouling factor = 0,000176m2°C/W
(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
Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
Voltage unbalance between phases must be within ± 3%. (2)

(3) (4) (5) (6)

(7) - For less than 1 second.
 The data are referred to the unit without additional options.

EWAD~M- XS	EWAD~M- XS C + OPT145 - EC MOTORS FANS										
MODEL	notes		C14	H14	C15	C17	H18				
Phases		n	I		3						
Frequency		Hz			50						
Voltage	(6)	V			400						
Tolerances -		%			-10 / +10						
min/max		<i>,</i> ,,			107 10						
	1	r 1									
Nominal Running			74.6	755	75.4	000	050				
	(1)	A	/16	/55	/54	889	958				
(@ UAT = 35 C)											
Current	(2)	Δ	8/15	89/	889	1011	1081				
$(@ OAT = 46^{\circ}C)$	(2)		0-5	004		1011	1001				
	1										
Max. running	(2)		222	4056	1071	1210	1205				
current	(3)	A	989	1056	1074	1218	1296				
Max. current for	(4)	^	1100	1266	1294	1240	1/19				
wire sizing	(4)	^	1199	1200	1204	1340	1410				
Maximum starting	(5)	Α	1088	1162	1181	1340	1426				
current	(-)										
Esta atoutina											
Fan starting		-			EC motor						
Max rupping											
current ner fan		A			4						
Total fans running											
current		A	88	96	112	96	104				
Compressor					Wye - Delta						
starting method					wye - Deita						
Max. running											
current		A	451	451	451	393	393				
Compressor #1											
Max. running			202	451	451	220	202				
Comprossor #2		A	393	451	451	329	393				
Max running											
current		Δ	-	_	_	329	329				
Compressor #2						010	010				
· · ·					·						
Starting current	(7)		540	540	691	540	540				
compressor #1	(7)		J40	J40	004	J40	540				
Starting current	(7)	Α	538	538	684	538	540				
compressor #2											
Starting current	(7)	A	-	-	-	538	538				
compressor #2											
Main switch size		Δ	1600	1600	1600	2000	2000				
Terminal			1000	1000	1000	2000	2000				
connection		-	Bars	Bars	Bars	Bars	Bars				
			2x500mma+PE	2x500mma+PE	2x500mma+PE	3x600mma+PE	3x600mma+PE				
Cable per phase		-	1x500mmq	1x500mmq	1x500mmq	2x500mmq	2x500mmq				
Short circuit		6.0	<u>.</u> Эг	זר	25	25	25				
current lcw 1 sec.		КА	25	25	25	25	25				
(1) – (ASHRAE s	tandard co	nditions	) evaporator water in/o	out = 12.2/6.7°C; ambient	= 35.0°C, unit at full load	operation; operating fluid	: Water;				

 (Middle East standard conditions) evaporator water in/out = 12:2/6.7°C; ambient = 50:0°C, unit at full load operation; operating fluid: Water; fouling factor = 0,0000176m2°C/W
 (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
 Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
 Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
 starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
 Voltage unbalance batween phases must be within + 3% (2)

(3) (4) (5) (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.

EWAD~M- X	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			4	00				
Tolerances -		%			-10	/ +10				
min/max		/*				/ - = 0				
	1	1								
Nominal Running	(1)		102	216	240	254	272	202		
(@ OAT = 35°C)	(1)		193	210	240	254	273	303		
Nominal Running										
Current	(2)	A	221	250	280	299	320	357		
(@ OAT = 46°C)										
Max. running	(3)	Δ	254	284	312	336	372	410		
current	(3)	~	234	204	512	330	572	410		
Max. current for	(4)	A	288	348	376	469	505	622		
Wire sizing										
starting current	(5)	A	279	312	343	370	409	451		
Starting current										
Fan starting					F.C.					
method		-			ECI	notor				
Max running		Δ				5.2				
current per fan						5.2				
Total fans running		A	50	50	50	50	62	74		
current										
Compressor										
starting method					Wye	- Delta				
Max. running										
current		A	82	99	126	126	148	162		
Compressor #1										
Max. running				120	120	140	140	462		
Compressor #2		A	114	126	126	148	148	162		
Max running										
current		A	-	-	-	-	-	-		
Compressor #2										
	1	1								
Starting current	(7)	A	151	151	195	195	288	330		
compressor #1	. ,		-	-						
starting current	(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		-	Cables	Cables	Cables	Cables	Cables	Cables		
connection										
Cable per phase		-	1x240mmq+PE	2x185mmq+PE	2x185mmq+PE	2x185mmq+PE	2x185mmq+PE	2x185mmq+PE		
Short circuit			TXTZOWWD	TXT&2WWG	pmmcerxt	pmmcatxt	TXT&2mmd	TX182mmd		
current low 1 sec		kA	15	20	20	20	20	20		
(1) – (ASHRAE	standard c	onditio	ns) evaporator water i	n/out = 12.2/6.7°C;	ambient = 35.0°C, un	it at full load operatio	n; operating fluid: Wa	ter;		

 (ASTRACE standard conductors) evaporator water infort = 12.2/6.7°C; ambient = 53.0°C; unit at full load operation; operating fluid: water; fouling factor = 0,0000176m2°C/W
 (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
 Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
 Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
 starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
 Voltage unbalance between phases must be within ± 3%. (2)

(3) (4) (5) (6)

(7) - For less than 1 second. The data are referred to the unit without additional options.

EWAD~M- X	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			4	100				
Tolerances -		%			-10	/ +10				
min/max		/0			10	7 10				
			1			1				
Nominal Running	(1)		220	244	205	422	462	500		
	(1)	A	320	341	385	422	462	503		
(@ UAT = 35 C)										
	(2)		200	404	110	102	522	501		
	(2)		560	404	440	495	555	501		
(@ 0A1 = 40 C)										
Max. running				_	_					
current	(3)	A	433	456	521	565	629	673		
Max. current for	(1)			6.15				700		
wire sizing	(4)	A	622	645	688	688	/52	/96		
Maximum	(5)		470	502	572	622	602	740		
starting current	(5)	A	476	502	573	622	692	740		
			1							
Fan starting		-			FC	motor				
method					201					
Max running		A			(	5.2				
current per fan						-				
Total fans running		A	74	74	87	87	99	99		
current										
Compressor										
starting method					Wye	- Delta				
Max. running										
current		A	162	185	231	274	274	274		
Compressor #1										
Max. running										
current		A	185	185	185	185	231	274		
Compressor #2										
Max. running										
current		A	-	-	-	-	-	-		
Compressor #2										
Chartin a compart										
Starting current	(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		Α	630	800	800	1000	1000	1000		
Terminal			Cables	Cables	Cables	Dere	Darra	Darr		
connection			Cables	Cables	Cables	Bars	Bars	Bars		
Cable per phase			2x185mmq+PE	2x240mmq+PE	2x240mmq+PE	2x300mmq+PE	2x300mmq+PE	2x300mmq+PE		
Capie per phase		-	1x185mmq	1x240mmq	1x240mmq	1x300mmq	1x300mmq	1x300mmq		
Short circuit		kA	20	20	20	25	25	25		
current lcw 1 sec.	ator			in/out = 12,2/2,702	ambient 25.000					
(1) – (ASHRAE	standara c tor = 0.00	00176n	ns) evaporator water i	11/00t = 12.2/6.7°C;	ambient = 35.0°C, un	n at run ioad operatio	n; operating fiula: Wa	ler;		

rouling factor = 0,0000176m2°C/W - (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 - Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current. - Based on minimum allowed voltage  $\rightarrow$  Max. current for wire sizing = Max. Running current x 1,1 - starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load - Voltage unbalance between phases must be within ± 3%. For loce than 1 cocond (2)

(3) (4) (5) (6)

(7) - For less than 1 second. The data are referred to the unit without additional options.

EWAD~M-X	<mark>S C +</mark> (	ΟΡΤ	161 - 200 Pa	a ESP FANS							
MODEL	notes		C10	C11	C12	B13	H13	A13			
Phases		n				3					
Frequency		Hz				50					
Voltage	(6)	V			4	00					
Tolerances -		~			10	1.10					
min/max		%		-10 / +10							
Nominal Running											
Current	(1)	A	549	607	653	722	730	713			
(@ OAT = 35°C)											
Nominal Running											
Current	(2)	A	636	703	757	833	839	829			
(@ OAT = 46°C)											
		1									
Max. running	(3)	A	746	827	899	1006	1018	968			
current											
Max. current for	(4)	A	937	949	1021	1128	1140	1090			
wire sizing											
IVIAXIMUM	(5)	A	821	910	989	1107	1120	1065			
starting current											
Ean starting											
method		-			EC r	notor					
Max running											
current per fan		A			(	5.2					
Total fans running											
current		A	112	124	136	174	186	136			
			I		l						
Compressor					When	Dolta					
starting method					vvye	- Della					
Max. running											
current		A	329	393	393	393	393	393			
Compressor #1											
Max. running											
current		A	274	274	329	393	393	393			
Compressor #2											
Max. running											
current		A	-	-	-	-	-	-			
Compressor #2											
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	-	-	-	-	-	-			
		1	I		I						
Main switch size		Α	1250	1250	1600	1600	1600	1600			
Terminal			Bara	Bara	Boro	Bara	Para	Para			
connection		-	BdIS	BdIS	BdrS	BdrS	BdrS	Ddl2			
Cable ner phase			2x400mmq+PE	2x400mmq+PE	2x500mmq+PE	2x500mmq+PE	2x500mmq+PE	2x500mmq+PE			
		-	1 400mmq	1 400mmq	1x500mmq	1x500mmq	1x500mmq	1x500mmq			
Short circuit		kΔ	25	25	25	25	25	25			
current lcw 1 sec.				23		23	23	2.5			
(1) – (ASHRAE fouling fac	standard c tor - 0 00	ondition	ns) evaporator water i n2°C/W	n/out = 12.2/6.7°C;	ambient = 35.0°C, un	it at full load operatio	n; operating fluid: Wa	ter;			

fouling factor = 0,000176m2°C/W
(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
Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
Voltage unbalance between phases must be within ± 3%. (2)

(3) (4) (5) (6)

(7) - For less than 1 second.
 The data are referred to the unit without additional options.

EWAD~M- XS	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 -		%			-10 / +10						
min/max											
Nominal Running											
Current	(1)	А	756	799	805	934	1007				
(@ OAT = 35°C)											
Nominal Running											
Current	(2)	А	886	939	941	1053	1126				
(@ OAT = 46°C)											
Max rupping											
current	(3)	А	1026	1097	1122	1259	1340				
Max. current for	()										
wire sizing	(4)	A	1236	1307	1332	1381	1462				
Maximum starting	(5)	٨	1120	1207	1224	1205	1474				
current	(5)	A	1129	1207	1234	1385	1474				
Fan starting		-			EC motor						
Max running											
current per fan		А			6.2						
Total fans running			100	4.40	474	110	4.54				
current		А	136	149	1/4	149	161				
Compressor					Wye - Delta						
Starting method											
current		Δ	451	451	451	393	393				
Compressor #1		~	451	451	431	333	555				
Max. running											
current		А	393	451	451	329	393				
Compressor #2											
Max. running						222	220				
current		A	-	-	-	329	329				
Starting current	(-)		<b>F</b> ( )	5.40		5.00	5.40				
compressor #1	(7)	A	540	540	684	540	540				
Starting current	(7)	Δ	538	538	68/	538	540				
compressor #2	(7)	~	550	550	004	550	540				
Starting current	(7)	А	-	-	-	538	538				
compressor #2											
Main switch size		Α	1600	1600	1600	2000	2000				
Terminal					-	-					
connection		-	Bars	Bars	Bars	Bars	Bars				
Cable per phase			2x500mmq+PE	2x500mmq+PE	2x500mmq+PE	3x600mmq+PE	3x600mmq+PE				
canie hei hiiase		-	1x500mmq	1x500mmq	1x500mmq	2x500mmq	2x500mmq				
Short circuit		kA	25	25	25	25	25				
current Icw 1 sec. (1) $- (ASHRAF current)$	tandard co	ndition	) evaporator water in//	out = 12.2/6.7°C ambient	 = 35.0°C, unit at full load	operation: operating fluid	: Water:				
fouling factor	r = 0.000	0176m	2°C/W/		22.0 0, and at run 1080	operating hald					

fouling factor = 0,000176m2°C/W
(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 = 0,000176m2°C/W
Maximum running current is based on max compressor absorbed current in its envelope and max fans absorbed current.
Based on minimum allowed voltage → Max. current for wire sizing = Max. Running current x 1,1
starting current of biggest compressor + current of the other compressors at 80% maximum load + fans current at 80% load
Voltage unbalance between phases must be within ± 3%. (2)

(3) (4) (5) (6)

(7) - For less than 1 second.
 (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.

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EWAD~M- SS C – standard unit												
		Sound	pressure le	evel @ 1 m	from the u	nit (rif. 2 x1	0⁻⁵ Pa )		Sound	Sound		
Model	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	pressure	power		
									Lp@1m	LW		
	62	01		0	IB TO	60	60	50	dB(A)	dB(A)		
300	62	81	82	/9	/3	69	60	53	80	99		
340	62	81	82	/9	/3	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)										
		Sound	pressure le	evel @ 1 m	from the u	nit (rif. 2 x1	0 <sup>-5</sup> Pa )		Sound	Sound
Model	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	pressure	power
widdei									Lp @ 1 m	Lw
				d	B				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										
		Sound	pressure le	evel @ 1 m	from the u	nit (rif. 2 x1	0 <sup>-5</sup> Pa )		Sound	Sound
Model	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	pressure	power
WIDUEI									Lp @ 1 m	Lw
		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.

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EWAD~M-	EWAD~M- XS C + OPT76b - SOUND PROOF SYSTEM (COMPRESSOR)										
		Sound	pressure le	evel @ 1 m	from the u	nit (rif. 2 x1	0 <sup>-5</sup> Pa )		Sound	Sound	
Model	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	pressure	power	
WIGGET									Lp @ 1 m	Lw	
		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

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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	Sound pressure at different distances [dB(A)]												
200	@ 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				

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



EWAD~M- SS C + OPT76b - SOUND PROOF SYSTEM (COMPRESSOR)										
Model	Sound	pressur	e at diff	erent di	stances	[dB(A)]				
Fload	@ 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

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



<b>EWAD</b>	M-XSC	– standa	rd unit							
Model	Sound	pressur	e at diff	erent di	stances	[dB(A)]				
Model	@ 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

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



EWAD~M_ XS C + OPT76h - SOUND DROOF SYSTEM (COMPRESSOR)										
LVVAD		+ 0F170	0 - 3001				FILISSO	<u>v</u>		
Model	Sound	pressur	e at diff	erent di	stances	[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

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





# 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: Max. Evaporator Entering Temperature during operation:	-4°C +26°C
•	Min. Evaporator deltaT during full load operation: Max. Evaporator deltaT during full load operation	3K 9K
• • •	Min. Partial Heat Recovery exchanger temperature during operation: Max. Partial Heat Recovery exchanger temperature during operation: Min. Partial Heat recovery deltaT during full load operation: Max. Partial Heat recovery deltaT during full load operation:	+25°C +60°C 4K 10K
• • •	Min. Total Heat Recovery exchanger temperature during operation: Max. Total Heat Recovery exchanger temperature during operation: Min. Total Heat recovery deltaT during full load operation: Max. Total Heat recovery deltaT during full load operation:	+25°C ** +55°C 4K 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: Max. Evaporator Entering Temperature during operation:	-4°C +26°C
•	Min. Evaporator deltaT during full load operation: Max. Evaporator deltaT during full load operation	3K 9K
• • •	Min. Partial Heat Recovery exchanger temperature during operation: Max. Partial Heat Recovery exchanger temperature during operation: Min. Partial Heat recovery deltaT during full load operation: Max. Partial Heat recovery deltaT during full load operation:	+25°C +60°C 4K 10K
• • •	Min. Total Heat Recovery exchanger temperature during operation: Max. Total Heat Recovery exchanger temperature during operation: Min. Total Heat recovery deltaT during full load operation: Max. Total Heat recovery deltaT during full load operation:	+25°C ** +55°C 4K 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
<ul> <li>Electrical conductivity (µS/cm) (25°C)</li> </ul>	< 800
• Chloride ion (mg Cl <sup>-</sup> /l)	<150
Chlorine molecular (mg Cl2/l)	<5
• Sulphate ion (mg SO <sub>4</sub> <sup></sup> /l)	<100
• Alkalinity (mg CaCO <sub>3</sub> /I)	<100
• Total Hardness (mg CaCO <sub>3</sub> /I)	<200
• Iron (mg Fe/l)	<1.0
• Copper (mg Cu/l)	<1.0
• Sulphide ion (S <sup></sup> /I)	none
<ul> <li>Ammonium ion (mg NH4<sup>+</sup>/l)</li> </ul>	<1.0
• Silica (mg SiO <sub>2</sub> /l)	<50
• Maximum particle size to pass (filtration limit) through heat exchanger (mm)	0.5
<ul> <li>Total dissolved solids (mg/l)</li> </ul>	<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  $\approx$  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 =  $46^{\circ}$ 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 =  $46^{\circ}$ 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 = $46^{\circ}$ 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 : ..... I/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  $\pm$ 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 -  $20^{\circ}$ C to +  $65^{\circ}$ 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

