MITSUBISHI ELECTRIC HYDRONICS & IT COOLING SYSTEMS S.p.A.

Climaveneta **Data Book** wrx2_0162_0264_202012_EN



WRX2 / WRX2-T

0162 - 0264 48 - 80 kW Fully-configurable air-source reverse-cycle and cooling only rooftop units



(The photo of the unit is purely indicative and may vary depending on the model)

- Maximum flexibility
- Very high reliability
- High versatility
- 3 functions available





Product certifications

System certifications



Climaveneta S.p.A.:

Quality System complying with the requirements of UNI EN ISO9001:2008 regulation

Environmental Management System complying with the requirements of UNI EN ISO14001:2004 regulation



SUMMARY

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The units highlighted in this publication contain HFC R410A [GWP $_{100}$ 2088] fluorinated greenhouse gases.

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1. GREEN CERTIFICATION RELEVANT

Mitsubishi Electric Hydronics & IT Cooling Systems S.p.A., as a major player in the world HVAC market and a leading manufacturer of energy efficient, sustainable HVAC solutions, recognizes and supports the diffusion of green certification systems, as an effective way to deliver high performance buildings and improve the quality and the sustainability of the built environment.

Since the first certification system was introduced at the beginning of the 1990s, the demand for certified buildings has grown considerably, as well as the number of standards, rating and certification programs.

Operating worldwide Mitsubishi Electric Hydronics & IT Cooling Systems S.p.A., has extensive experience with many of them and is active member of Green Building Council Italy.

Mitsubishi Electric Hydronics & IT Cooling Systems S.p.A., commitment to develop responsible and sustainable HVAC solutions, is reflected by a full range of premium efficiency products and systems, designed with special care to improve building energy performance ratings, according to major certification protocols, including LEED, BREAM, GREENSTAR, BCA, NABERS, DNGB, HQE and BEAM.

To find out more about how our products contribute to enhanced green certification rating and energy performance of a building, please refer to:

https://www.melcohit.com/GLOBAL/Company/Green-Certifications/QR%20code/







2. PRODUCT PRESENTATION

The WRX2-T / WRX2 units are packaged cooling only / reversecycle air-to-air units resulting from MEHITS's extensive experience in the design and development of rooftop units.

This packaged solution directly serving the air-conditioned ambient optimises the system and simplifies installation, thanks to the flexibility and operating versatility guaranteed by the WRX2 range.

Based on the selected version, these units can completely manage all air handling and air change requirements in spaces featuring large surface areas and volumes, such as supermarkets, shopping centres and exhibition centres.

All models come with a double refrigerant circuit, scroll compressors, R410A refrigerant and EC plug fans.

The units can be customised by choosing different air handling sections (3 different functions available) and several accessories.

The unit is intended for outdoor installations.

2.2 Maximum flexibility

Maximum freedom in choosing the direction of air flows, both supply and return, means the units can be adapted to all installation contexts.

The building's constructional limits can therefore be overcome, offering a highly flexible solution.

In addition, ducting installation is much easier, as there are no restrictions in unit layout regarding the position of the supply and return duct connections.

2.3 High reliability

One of the main features of rooftop units is that they serve the system directly, and in many cases are the sole source of room air-conditioning.

As a result, it is fundamental to guarantee continuous and efficient unit operation in all conditions or situations that may arise. The WRX2 units respond perfectly to this requirement, as all models feature two completely independent refrigerant circuits. This means that in the event of a fault on one of the circuits or during defrost cycles for heat pump versions, the unit can still at least partially fulfil requirements.

2.4 High versatility

Each application has different needs, all of which require an optimum response. There may be applications requiring less specialised units in which the rooftop works as an integration of other systems, or vice-versa applications in which the rooftop represents the main or only air handling and ventilation system. The WRX2 units offers various possibilities in terms of air handling sections, ranging from recirculation only to mixing of fresh air and return ambient air, up to the solution with heat recovery from the exhaust air.

As well as this, each of the different configurations can be further customised thanks to a vast selection of accessories.

Moreover, each of the different functions can be further customised thanks to a vast range of accessories.



3. MAIN CHARACTERISTICS

3.1 Introduction

The WRX2 units are packaged reverse-cycle (WRX2) or cooling only (WRX2-T) air to air units, that are dedicated to the treatment and renewal of the air in environments with large surfaces or volumes, such as cinemas, shopping centers, exhibition centers and warehouses. All models come with a double refrigerant circuit, scroll compressors, electronic thermostatic valves, R410A refrigerant and EC plug fans for the supply air.

The ample freedom available in choosing the direction of air flows, as well as the possibility to customise the units with different air handling sections, make WRX2 the ideal unit for all application contexts.

The range comprises 4 sizes, from 48 to 80 kW (10000 - 16000 m^3/h), each available in three different functions, allowing the unit to be adapted to the specific requirements of the system.

The possibility to reverse the refrigeration cycle, careful sizing of the components and specific design decisions mean the WRX2 units can work continuously across a wide operating range (outside temperatures down to -15°C in heat pump operation and over 46°C for some sizes in cooling operation). Considerable reductions in compressor power consumption can be achieved using the free cooling/free heating accessory, as standard on all the functions apart from the basic version (AR function).



The unit meets the seasonal energy efficiency requirements in heating (η s,h) and cooling modes (η s,c), as specified by EU regulation 2016/2281.

The WRX2 range is part of the Eurovent certification program for rooftop (RT) units. The list of certified products is available on the website www.eurovent-certification.com

A wide range of accessories completes the offering; in particular, several filter options are available, in addition to ISO coarse 50% filters (ISO 16890 - G4 in accordance with EN779), with flat filters certified class ePM010 80% (ISO 16890 - M6 in accordance with EN 779), ePM01 50% (ISO 16890 - F7 in accordance with EN 779), ePM01 70% (ISO 16890 - F8 in accordance with EN 779) or ePM01 80% (ISO 16890 - F9 in accordance with EN 779). The unit, based on the selected function and accessories, is delivered in one or more packages to simplify transport.

3.2 Plug fan

The WRX2 units are fitted with plug fans with EC brushless motors. These fans differ from traditional centrifugal fans due to absence of the scroll and direct coupling to the motor, thus eliminating energy loss from the belt and pulley transmission. The rotor is realized with high performace composite material that enhances the efficiency and reduces the noise.

This type of technology ensures clear advantages, with installation being simplified based on the parameters set by the user, without needing any flow-rate adjustment during calibration. In addition, fan speed adapts to the characteristics of the system even when the unit is operating, for example compensating for any variations in flow-rate due to progressive fouling of the filters. The low power consumption of these types of fans can be further reduced by applying the exclusive control logic developed by MEHITS S.p.A. All this means high operating efficiency even for the part involving the fans, traditionally a critical area in terms of running costs.



3.3 Electronic expansion valve as standard

The use of electronic expansion valves brings considerable benefits, especially when load is variable and with different outdoor conditions. Application of the valve on this unit is a result of specific design decisions regarding the refrigerant circuit configuration and optimisation of operation across a range of different operating conditions. The electronic expansion valve is standard on all versions.



3.4 AIR 3000 TE advanced controller

All units are fitted with the AIR 3000 TE controller, especially developed by MEHITS S.p.A. for rooftop units. It features a double control board, one for the refrigerant circuit and one for the air treatment, and a liquid crystal display (LCD) on board of all the units.

This keypad accesses a user interface with eighteen European languages available for selection by the user. This allows an interface that's specific for the country where the unit is installed, or alternatively, by setting English, completely independent for all other regions.

Temperature control is performed using algorithms that control available devices (compressors, hot gas reheat coil, heating devices) based on the unit configuration. Control is applied using the return air temperature probe reading, based on proportional or proportional + integral logic. As an alternative also supply temperature control is available. The temperature set point can be set directly on the controller, or managed via a remote digital or analogue contact.

Interfacing to commercially-available BMS systems is provided thanks to compatibility with BACnet, BACnet OverIP, ModBus, ModBus OverIP, and LonWorks protocols.

The **built-in clock** provides a daily scheduler function, organized into time bands so as to optimise unit operation, minimizing system energy consumption.

In fact, several time bands (up to 10) of different types (4) can be activated throughout the day, with each band being assigned: • temperature set point for cooling and heating

- humidity set point
- unit operating modes: control on, off, purging, start-up.

Ventilation, according to unit's configuration, can be managed in the following modes:

- constant air flow (standard operation);
- · constant pressure;
- variable air flow.

Other available functions:

• room humidity control in cooling and heating mode;

- automatic temperature- and enthalpy-based free cooling Management;
- self-adaptive defrost management using algorithms that reduce defrost duration or prevent unnecessary or wasteful cycles;
- demand limit on compressors to reduce mains power consumption;
- set point compensation based on outside temperature, in both cooling and heating operation;
- Management of the heating devices as integration or substitution of the heat pump;
- Control and management of the ambient air quality with on board sensors or remote signal;
- · Air flow set point management with digital or analog signal;
- Auxiliary controls vailable through remote contact or directly from the controller: room washing mode, running-up mode, ventilation mode, full fresh air mode.



Display and acquisition of the last 200 alarm events (user level) are also available as well as recording of operating variables in the 10 minutes prior to each alarm event (assistance level through Black Box) with display via PC. Compatibility with remote keypad (management of up to 8 units).

3.5 Simplified installation and maintenance

The WRX2 rooftop units simplify and reduce the costs of maintenance and work on site, through:

- Sturdy and perfectly insulated structure that guarantees resistance to the elements and mechanical stress.
- Easy access to the inside sections and the components that require periodical cleaning, for fast and economical routine maintenance.
- "PLUG and PLAY" construction that ensures, once the unit has been positioned, simpler and faster electrical and air connections.
- Automatic calibration of air flow-rates, with consequent savings in technical service and greater comfort.



3.6 Variable Air Flow

On rooftop units, that directly serve the air-conditioned environment and represent the main source of ventilation, the supply and return fans work continuously at a fixed flow-rate, in all operating conditions, even during freecooling and at part loads, which together account for the majority of operating hours.

Consequently, power consumption from fan operation on rooftop units represents over 50% of total annual unit power consumption, which is why MEHITS S.p.A. decided to develop a system for controlling fans that could reduce fan power consumption.

The most effective way to reduce power consumption is to decrease fan speed, and consequently flow-rate, whenever system operating conditions allow.

The advanced logic featured on the AIR 3000 TE controller and the use of plug fans with electronic speed control have allowed the **Variable Air Flow function** to be developed. This involves changing the supply and return air flow-rate based on effective demand from the system, considering the activation percentage of each device - compressors, heaters or burners, freecooling or freeheating. For example, progressive shutdown of the compressors will bring a reduction in air flow-rate, defined within the limits set by the user.

This means flow-rates are managed based on the actual conditions in the air-conditioned space, while still observing any limits defined on the components and the type of system. In addition to benefits in terms of comfort, there are also economic advantages, as reducing fan speed cuts total unit power consumption by 30% compared to the traditional fixed flow-rate solution.





Simulation on annual base, commercial area in the north of Italy



4. DESCRIPTION OF THE UNIT

4.1 Description

Packaged reverse-cycle (WRX2) or cooling only (WRX2-T) air-cooled rooftop air-conditioner with scroll compressor and R410A refrigerant.

Packaged reverse-cycle air-cooled rooftop air-conditioner for outdoor installation, for air handling, filtration and ventilation, based on the selected configuration. Hermetic rotary scroll compressors specifically for operation on R410A with two independent refrigerant circuits. Depending on the chosen version, the unit can manage free cooling based on temperature, with supply and return fans and motorised outside air, recirculation and exhaust dampers. The WRX2 units are part of the EURO-VENT CERTIFICATION program for rooftop (RT) units: the list of certified products is available at www.eurovent-certification.com. The units can work at full load across a very wide range of operating temperatures (outdoor temp. down to -15°C in heating mode and +46°C / 52°C at full/partial load for units 0204-0264 and up to 48°C at full load for units 0162-0182).

Structure

Structure designed specifically for outdoor installation, base and load-bearing frame made from suitably thick hot galvanised steel sections. The external panelling is painted with polyester powder coat to ensure complete resistance to the elements (colour RAL 7035).

In particular, the panels making up the air handling supply section are insulated on the inside with a 6 mm layer of black closed cell flexible elastomeric foam (FEF) coupled with a 3 mm layer of cross-linked expanded PE, with embossed PE film surface finish. The insulation is rated Euroclass E regarding reaction to fire (EN-13501-1). The insulation is fixed to the metal panelling using specific adhesives and mechanical fasteners (washers) to guarantee durable fixing.

Alternatively, the lining can be made with rockwool (A1 fire reaction class according to EN13501-1), 25 mm thick, enclosed in a metallic shell to preserve it, creating a sandwich panel.

The unit, based on the selected function and/or accessories, is delivered separate packages to simplify transport.

Compressors

Hermetic rotary scroll compressors, R410A refrigerant, fitted with timed crankcase heater (automatically deactivated when not needed) and a two-pole electric motor with direct starting, internally protected against excess temperature.

Indoor heat exchanger

Direct expansion air handling coil for heat exchange with the refrigerant gas, made from a coil of mechanically expanded copper tubes and corrugated aluminium fins.

The speed of the air through the coil is kept below the limit value of 2.7 m/s, even at full flow, to avoid entraining condensate, even in the most extreme temperature-humidity conditions.

Aluminium basin for collecting condensate, with sloping bottom and complete with drain attachment.

Outdoor heat exchanger

Direct expansion outdoor coil for heat exchange between the refrigerant gas and the outside air, made from a coil of mechanically expanded copper tubes and corrugated aluminium. Each circuit has its own dedicated and independent condensing coil.

Accessory. Mixing and free-cooling (reference function MF)

The MF function allows the recirculated ambient air to be mixed with some fresh outside air.

The unit is fitted with two dampers, managed via two independent actuators.

Free cooling and free heating operation is managed by the controller, which automatically opens the dampers according to the indoor and outdoor temperatures and the set point.

Accessory: energy recovery from the exhaust air by thermodynamic heat transfer. (reference function AX-F)

The AX-F function allows the recirculated ambient air to be mixed with some fresh outside air. The unit is fitted with two dampers, managed via two independent actuators and a barometric relief damper.

Free cooling and free heating operation is managed by the controller, which automatically opens the dampers according to the indoor and outdoor temperatures and the set point.

The unit is also equipped with EC plug fans to ensure exhaust air rejection even at high air renewal flow rate. This particular unit can recover the energy from the exhaust air flow, thanks to the pass through the outdoor coil. In this way, the air facing to the outdoor coil is milder than the surrounding one, granting a better working conditions to the cooling circuit (decreasing of the condensing temperature in cooling mode and increasing the evaporating temperature in heating mode).

Moreover, thanks to the exhaust air duct, recirculation betweeen fresh air and exhaust one is avoided.

Refrigerant circuit

The unit has two complete refrigerant circuits, each comprising, in addition to the above:

- R410A refrigerant charge
- filter-drier
- · liquid flow indicator
- bi-directional electronic thermostatic expansion valve
- charge and pressure control valves
- high pressure switch
- double high pressure safety valve (protects the unit against explosion in the event of fire)
- low pressure safety valve
- non-return valve
- four-way reversing valve (only for WRX2)
- liquid receivers at condenser outlet (only for WRX2)
- compressor sump heaters

Air handling Plug fans (standard)

Supply plug fans with brushless EC motors. Three-dimensional profiled blades made of high performance composite material, optimized to enhance efficiency and reduce noise. EC brushless electric motor, directly coupled with electronic speed adjustment for the precise and continuous regulation of the air flow rate. Two types of fans are available: standard, and a higher-performance version for higher static pressure.

Outdoor ventilation section (standard)

Die-cast aluminium axial-flow airfoil fans, directly coupled, with external impeller. The electric motor is fitted with built-in thermal protector. Motor ingress protection IP54, insulation class F.

The fans are fitted with special diffusers to recover the residual kinetic energy from the supply air, converting this into static energy. Consequently, for the same air flow-rate there is lower power consumption and less noise produced.

Unit size 162 and 182 are fitted with EC motor as standard, while 204 and 264 units have AC motor as standard (EC fans are available as an option).

Filtration

Pleated synthetic fibre pre-filter, grade ISO coarse 55% (ISO 16890 - G4 in accordance with EN 779), 98 mm thick at the air inlet. The filters are positioned on steel guides with easy access for routine maintenance and replacement.



To increase pre-filter capacity, it's possible to chose among different prefilter options. Downstream prefilter section, it's possible to add another filter set with higher filtration, with grade ePM10 75% (ISO 16890 - M6 in accordance with EN 779), ePM01 50% (ISO 16890 - F7 in accordance with EN 779), ePM01 70% (ISO 16890 - F8 in accordance with EN 779), and ePM01 80% (ISO 16890 - F9 in accordance with EN 779).

Power and control electrical panel

Power and control electrical panel built in compliance with EN60204-1 and IEC204-1, complete with:

- Control circuit transformer
- Main door lock disconnect switch
- Power section with busbars
- Fuses to protect the loads (as standard, circuit-breakers available as options)
- · Spring-loaded terminals on the control circuits
- Electrical panel for outdoor installation, made from hot galvanised and painted panels and complete with gaskets
- Electrical heaters on external coils (only for WRX2)
- AIR 3000 TE microprocessor-based electronic controller
- Operator panel with LCD interface
- · Compressor crankcase heaters with timer

Unit power supply voltage: 400V~ ±10% - 50Hz.

The electric panel is supplied with two air grills with filter and a flexible duct that connect supply air treatment side with the electric panel. In this way, electrical panel is cooled during summer and heated in winter time, reducing the problem of condensation on electrical device.

4.2 AIR 3000 TE controller

The AIR3000 TE controller offers advanced functions and algorithms. It is made up by two control boards, dedicated to the air side and the refrigerant side respectively. The keypad features functional controls and a complete LCD display that allows for the monitoring and intervention on the unit by means of a multilevel menu with selectable user's language.

- It can be used to:
- set the unit start-up
- set unit the operating mode (manual heating or cooling, automatic changeover)
- ventilation and temperature set point
- 100% fresh air mode (not for AR function)
- 100% recirculation mode
- ventilation only mode

Temperature control is based on proportional or proportional + integral logic using the return air temperature probe reading; the set point can also be adjusted based on the outside temperature, in both cooling and heating mode.

For units fitted with motorised outside air damper, the controller automatically manages free cooling operation based on the outside air temperature; optionally, free cooling can also be managed based on enthalpy.

The ventilation section can work at constant flow-rate (standard) or variable flow-rate, at constant pressure (optional).

The controller can also integrate and automatically manage different optional heating devices (hot water coil, electric heater), hot gas post-heating (optional) and percentage of fresh air (optional via CO₂ probe).

Defrosts use proprietary self-adaptive logic involving monitoring of multiple operating and climate parameters.

This reduces the number and duration of defrosts, consequently increasing overall energy efficiency.

Compressor power consumption can be controlled using a demand limit function (optional), while, for unit with 2 compres-

sors per circuit, an unloading function is available for part-load operation of the refrigerant circuit in critical conditions (HPTC function), which involves both the compressors and the outside air intake damper (where fitted).

In critical conditions (high outside temperatures), this function switches off one of the two tandem compressors in the refrigerant circuit and progressively closes the outside air intake damper, thus at least partly providing the required cooling capacity.

Supervision is available with different options, using proprietary devices or by integration into third party systems using BACnet, BACnet over-IP, Modbus, Modbus over-IP, Echelon and Lon-Works protocols.

Compatibility with remote keypad (management of up to 8 units). The timer can be used to create an operating profile with up to 4 typical days and 10 different time bands.

4.3 Certification

Unit compliant with the following directives and amendments:

- Machinery directive 2006/42/EC.
- Electromagnetic compatibility directive 2014/30/EC.
- Pressure equipment directive 2014/68/EU
- Low voltage directive 2014/35/EC.
- 2011/65/EU RoHS Directive (As far as applicable)
- Gas appliances directive 2016/426/EU (As far as applicable)
- Regulation (EU) 2016/2281 (implementation of Directive 2009/125/EC).
- Eurovent certification (www.eurovent-certification.com) rooftop unit program (RT)



4.4 Functions

Opt. 1071 (Basic unit) - AR function - Air recirculation This represents the basic unit in the WRX2 range. The unit extracts air from the ambient and inflows it back after

The unit extracts air from the ambient and inflows it back after air treatment using internal coil. Ambient air expulsion and air renovation must be managed using systems that are separate from the rooftop unit. This unit perfectly substitutes old products in pre-existing HVAC plants which already have a system dedicated to air renewal.





Opt. 1072 - MF function - Mixing and Free cooling

Compared to the basic version, the unit features two opposing motorised dampers managed by the unit's controller so as to allow operation with 100% recirculated air, mixtures and free cooling. This function allows the recirculated ambient air to be mixed with some fresh outside air, either at a fixed percentage set on the controller, or using an air quality probe (CO₂ reading). Free cooling operation is managed by the controller, which opens the dampers so as to create a mixture of fresh outside air and recirculated air that requires less energy for the treatment,

depending on the outside temperature, indoor temperature and set point. During this function one or more cooling devices are disconnected, and are completely switched off with total free cooling operation. The supply fans guarantee rated air flow; ambient air expulsion must be managed using systems that are separate from the rooftop unit. This function should be chosen when the amount of fresh outside air to be introduced into the spaces is quite low, pressure drop in the return ducts is also low and the building is not particularly airtight (older buildings).



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Option 1073A - Function AX-F - Exhaust air fan + Heat Recovery Free (Mix and exhaust with heat recovery-free)

Compared to the basic version, the unit features two opposing motorised dampers managed by the unit's controller so as to allow operation with 100% recirculated air, mixtures and free cooling.

This function allows the recirculated air taken from the rooms to be mixed with some fresh outside air, either at a fixed percentage set on the controller, or using an air quality probe (CO_2 reading). Free cooling operation is managed by the controller, which opens the dampers so as to create a mixture of fresh outside air and recirculated air that requires less energy to air-condition, based on the outside temperature, indoor temperature and set point.

During this function one or more compressors are deactivated, and are completely switched off with total free cooling operation. The supply fans guarantee the design flow-rate. A barometric damper is fitted on the exhaust air flow so as to minimize the overpressure in the building caused by the introduction of fresh outside air. This damper guarantees quite good control of indoor pressure when introducing small percentages of outside air (up to around 20% of total air flow).

To assist the discharge of exhaust air with higher outside air intake flow-rates, one or more fans are fitted downstream of the barometric damper, and switch on when the amount of outside air introduced exceeds a certain set value.

With reference to the exhaust air flow-rate, these fans can overcome quite high pressure drop in the return air duct.

To maximize the energy efficiency, the exhaust fan(s) have brushless EC motor. The speed is adjusted continuously according to fresh air damper opening.

The supply fans guarantee the design flow-rate, and in the event of high outside air flow-rates (for example, during free cooling or free heating), they can also generate considerable overpressure in the room: in buildings with good air tightness, it is recommended to install an additional extraction system. **Thermodynamic heat recovery:** it is achieved by deviating the exhaust air though the outdoor section of the refrigerant circuit; in this way, the air facing to the outdoor coil is milder than the sorrounding one, granting a better working conditions to the cooling circuit (decreasing of the condensing temperature in cooling mode and increasing the evaporating temperature in heating mode).

In both cases, the result is an increasing of the cooling/heating capacity and a reduced power absorbed by compressor(s).

This type of unit finds application in all those environments of the small medium commercial, characterized by structures with medium air-tightness such as supermarkets, shops and service stations, allowing with a single unit to meet the building's thermal needs and renewal. air.





4.5 Remote keypad

The unit's display is located on the electrical panel door and is connected directly to the AIR3000 TE controller.

The unit can also be connected to a remote keypad, choosing between different configurations.

Code C9261063. Remote keypad kit up to 200 m (K200), being the distance between the last unit and the remote keypad. The kit includes a second keypad/display and two "T" junction boards: one to be fitted near the controller, the other near the remote keypad.

Code C9261064. Remote keypad kit up to 500 m (K500), being the distance between the last unit and the remote keypad. The kit includes a second keypad/display and two "T" junction boards: one to be fitted near the first controller in the LAN, the other near the remote keypad. The kit also includes an AC/DC power supply for the remote keypad, to be placed near the keypad.

The maximum length possible is 500 m.

The same remote keypad can display up to 8 rooftop units, exploiting the LAN connection between the units.

After having correctly completed the connections, the remote keypad can switch from interfacing to one unit to the next, following the procedure shown in the user manual.





5. ACCESSORIES

CODE	ACCESSORY NAME	DESCRIPTION	ADVANTAGES
1062	Unit ErP 2021 Compliant	This indicates that the unit complies with the minimum seasonal energy efficiency requirements for space heating and cooling specified in EU regulation 2016/2281	The unit fully respect the compatibility directives required for the CE mark, including new efficency limits in force since January 1st, 2021
2070	Supply air	The supply air flow direction can be choosen among lateral (right), from the bottom the rear or the top.Check compatibility with some accesories and functions on the table reported in this technical bulletin. The refer- ence point always refers to looking at the unit from the electrical panel.	The installation of the unit and the ducts are sig- nificantly semplified.
2060	Return air	The return air flow direction can be choosen among lateral (left), from the bottom, the rear or the top. Check compatibility with some accesories and functions on the table reported in this technical bulletin. The refe- rence point always refers to looking at the unit from the electrical panel.	The installation of the unit and the ducts are sig- nificantly semplified.
4461	Powdered coated panels + insulating material	Air tratment section downstream the air treatment coil is made of powdered coated self-supporting metal sheet panels, coated inside with an insulating mat 6+3 mm thick. Insulating layer is fixed with a specific ad- hesives together with mechanical fasteners (washers) that ensure maximum tightness over time.	This solution guarantees an excellent mechani- cal strength of the structure together with a suit- able thermal insulation
4465	Sandwich panel with rockwool	The air treatment section downstream the air treatment coil consists of self-supporting panels in painted sheet metal, and internally insulated with rock wool panels 25mm thick, enclosed in a galvanized sheet metal shell, to create a sandwich panel.	This solution guarantees excellent mechanical resistance of the structure together with thermal insulation in fire reaction class A1 (EN13501-1)
2411	Remote phase-se- quence control	Relay for controlling the phase sequence of mains.	Protects loads against faults due to incorrect connection of the electric line.
3412	Automatic circuit break- ers	Over-current switch on the major electrical loads.	In case of overcurrent allows resetting of the switch without the replacement of relative fuses.
3301	Power factor correction	Capacitors on the compressors' power inlet line. For the combination with option 1511 (soft start), contact the office.	The unit's average cos(phi) increases from an average value of 0,87 to a value (average) of 0,92.
4181	ModBUS connectivity	Interface module for ModBUS protocols	Allows integration with BMS operating with Mod- BUS protocol
4182	Echelon connectivity	Interface module for Echelon systems	Allows integration with BMS operating with Lon- Works protocol
4184	BACnet connectivity	Interface module for BACnet protocols	Allows integration with BMS operating with BAC- net protocol
4185	BACnet OVER IP con- nectivity	Interface module for BACnet OVER-IP pro- tocols	Allows to interconnect BACnet devices over In- ternet protocol within wide-area networks
4188	Modbus TCP/IP connectivity	Interface module for Modbus OVER-IP protocols	Integrazione in sistemi di supervisione operan- ti con protocollo Modbus connessi attraverso reti IP (Modbus OVER-IP)
861	Pressostatic condensing control for low ambient	System for the management of external axial fans. The system allows a step regula- tion of axial fans' speed.	When the unit is working at low external air tem- peratures, the device stops one or more fans in sequence in order to maintain control over codensing pressure
865	EC Axial Outdoor fans	Electronically commutated fans (EC fans). The brushless motor, governed by a special controller, continuously adjust fans' speed. This accessory is recommended in cooling mode with external temperatures below 12 ° C	Reduced energy consumption and minimized current's absorption during start-up phase. The noise reduces proportionally to the unit's partialization.

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CODE	ACCESSORY NAME	DESCRIPTION	ADVANTAGES
1511	Soft start	Electronic device adopted to manage the inrush current. It acts on 2 phases. For the combination with option 3301 (compressor phase-shifting) contact the office.	Break down of the inrush current compared to the direct motor start, lower motor windings' mechanical wear, avoidance of mains voltage fluctuations during starting, favourable sizing for the electrical system.
B841	Public spaces safety pack	The package includes some accessories to detect the presence of smoke inside the unit. Among other things, they comply with the French ERP regulation. The accessories included are: - D.A.D. (NF S 61961 certified) - Smoke detector (NF S 61961 certified) - Spring return dampers (if foreseen by the chosen function of the unit) - smoke alarm management according to ERP standard - If there are electric heaters, they will be equipped with an automatic reset thermo- stat set at 90 ° C and a manual reset ther- mostat set at 120 ° C.	It's necessary to satisfy the specifications re- quired by the ERP regulation (établissements recevant du public)
B830	Fans blade material	It is possible to choose the type of material of the supply or supply and return fans blades (if present)	It's necessary to satisfy the specifications re- quired by the ERP regulation (établissements recevant du public)
3422	Lights on electri board + power socket	230V power socket in the electrical board, CEE 7/3 type (Schuko). The maximum power available is 500VA. Electrical board equipped with lights.	It allows to power small electrical/electronic de- vices (lights, notebooks, tablets, etc.) during maintenance operations. The interior lighting simplifies maintenance and operations to the electrical panel. Not available together with opt. B841
4230	Supply fan uprated motor	Increment of the motor electrical power of the supply fans	Increment of the static available pressure at the supply fans outlet
1861	Costant air flow regula- tion + Vair	The unit can manage the air flow set point, both on supply and return, according to the actual load of the resources.	The reduction of the air flow according to the ac- tual load of the system allows to achieve consid- erable savings and to increase the efficiency.
1862	Costant air flow regula- tion	Air fan speed is regulated in order to main- tain costant air flow valure.	As pressure drop varies, the fans adjust the speed so as to maintain flow-rate at the design value for the system, regardless of how dirty the filters are. We raccomend to select this option to- gether with Filters differential pressure switch.
1863	Costant pressure regula- tion	Air fan speed is regulated in order to main- tain costant static available pressure value.	Fan speed is controlled in such a way as to maintain a constant available static pressure in the system's air distribution plenum. This is useful for variable air volume (VAV) air distribution systems.
4141	CO ₂ air quality probe	Used to manage air quality inside the build- ing. The signal is processed by the control unit in order to adjust the external air intake (signal to the outside air intake damper)	Automatic management of the fresh air flow- rate al-lows outside air to be handled only when needed, guaranteeing compliance with relevant standards and occupant comfort.
B860	Prefilters	In the standard units there is a 55% isocoarse class filter (ISO 16890 - G4 according to EN779). Pre-filters of different efficiency are available (M6 or F7 according to EN779)	It guarantees a pre-filtering of the air in order to reduce fouling of the high efficency filter.
2525 ÷ 2528	High-efficiency flat filters	In addition to the standard filters, these are fibreglass-reinforced paper filters with differ- ent efficiencies ePM01 75% (ISO 16890 M6 in accordance with EN 779), ePM01 50% (ISO 16890 F7 in accordance with EN 779) or ePM01 70% (ISO 16890 F8 in accordance with EN 779) or ePM01 80% (ISO 16890 F9 in accordance with EN 779), with Class 1 fire resistance. Easy access from the outside thanks to the large inspection panels, and sliding on steel grills to allow simple removal for cleaning or replacement	Mounted on the treatment coil inlet, they ensure that the air effectively introduced into the room is filtered.



CODE	ACCESSORY NAME	DESCRIPTION	ADVANTAGES
1852	Filters differential pressure switch	Differential air pressure switch to detect fil- ters' obstruction, with warning. It measures standard filter and optional high efficiency filters clogging.	
1461	Hot gas coil with ON/OFF management	Condensing finned coil, installed dow- stream the treatment coil, fed by hot gas coming from the compressor's supply, with on-off management. For a correct function- ing, this option has to be choos-en with option dehumidification (opt. 4133-4135 -4137)	The hot gas post-heating adjusts supply air tem- pera-ture during dehumidification phases.
1466	Electric heater manage- ment	Option for Electric heater management, that are placed after direct expansion coil. For electric heater capacities, refer to 1312 ÷ 1318.	The electrical heating coil is a heating source which can be used as integration in heat pump working. Furthermore it can be used during de- frosting cycles.
1467	2 Rows Water (heating) coil	Water heating coil installed after the internal treatment coil	The coil can be used as a heating source or as in-tegration in heat pump working. Antifreeze function trough opening of the three way valve.
1468	3 Rows Water (heating) coil	Water heating coil installed after the internal treatment coil	The coil can be used as a heating source or as integration in heat pump working. Anti-freeze function trough opening of the three way valve.
1341	2 way valve V2V	Modulating mixing valve installed dow- stream the water heating coil, with modulat- ing drive. This option can be choosen only with water heating coil (opt. 1467 or 1468)	
1342	3 way valve V3V	Modulating mixing valve installed close to the water heating coil, with modulating drive. This option can be choosen only with water heating coil (opt. 1467 or 1468)	
1345	Water coil control continu- ous signal	It's a continuous signal from controller to manage an external water valve actuator that controls hot water coil flow. This option can be choosen only with water heating coil (opt. 1467 or 1468)	
1312 ÷ 1318	Electrical heating coil	Electrical heater installed after the internal treatment coil. This option can be choosen only with electric heater management (opt. 1466)	The electrical heating coil is a heating source which can be used as integration in heat pump working. Furthermore it can be used during de- frosting cycles.
4131	Ambient humidity probe	Probe to measure relative humidity per-cent- age in the ambient, intalled on the return	
4132	Enthalpic Free cooling	Function manged by temperature and hu- midity probes, installed in a position allow- ing them to check and compare the energy status of both the ambient and the external air. The control manages the opening/clos- ing of the dampers in order to exploit more favourable external conditions.	During Free cooling functioning, the resources are progressively disconnected, till complete switch off, keeping the requried termo-hygro- metric ambient condition, thanks to the exter-nal favourable conditions
4133	Dehumidification	Thanks to a humidity probe, this function reduces during cooling mode the excess of humidity of the indoor air	Enthalpic control to mantain the ambient humidity to wellbeing values. It's reccomended to use hot resource to post-heating supply air temperature during dehumidification phases.
4134	Signal for external humidi- fier	The unit provides a signal for driving a hu- midifier, thanks to the reading of the humid- ity probe placed on reurn side. The type of the signal is described in option 4309	Adjustment of relative humidity in winter mode
4309	ON/OFF signal for humidi- fier control	The unit provides a digital signal for driving a humidifier, thanks to the reading of the humidity probe placed on return side.	
881	Cu/Cu condensing coils	Air-refrigerant heat exchanger with copper fins and tubes.	Recommended for applications in corrosive at- mospheres
883	Condensing coils with epoxy-coated fins	Painted air-refrigerant heat exchanger.	Recommended for applications in medium level pollution atmospheres.



CODE	ACCESSORY NAME	DESCRIPTION	ADVANTAGES
884	Condensing coils with Electrofin treatment	The outdoor coil is trated with a factory- applied electro-deposition coating process that guarantees complete heat exchanger coverage	Recommended for marine exposure conditions, with an high level of pollution or other aggressive atmospheres.
895	Condensing coils with Fin Guard Silver treatment	Air-refrigerant heat exchanger with epoxidic treatment on coils and fins.	Recommended for marine exposure condi-tions, with an high level of pollution or other aggressive atmospheres.
2032	Welded mesh protection coil	Welded mesh to protect outdoor coil	These grills protect outside coil and part of the refrigerant circuit against the intrusion of solid bodies with medium large dimensions.
971	Cu/Cu internal coil	Internal air treatment coil with copper fins and tubes. Remark: this accessory is ap- plied only to the main air treatment coil; please contact the headquarter if you need the same accessory applied ot other optional coils (such as hot gas coil or hot water coil).	Recommended for applications in corrosive at- mospheres
974	Internal coil with Fin Guard Silver treatment	Internal air treatment coil with epoxidic treatment on coils and fins. Remark: this accessory is applied only to the main air treatment coil; please contact the head- quarter if you need the same accessory ap- plied ot other optional coils (such as hot gas coil or hot water coil).	Recommended for marine exposure conditions, with an high level of pollution or other aggressive atmospheres.
975	Internal coil with prepaint- ed fins	Internal air treatment coil with prepainted fins. Remark: this accessory is applied only to the main air treatment coil; please con- tact the headquarter if you need the same accessory applied ot other optional coils (such as hot gas coil or hot water coil).	Recommended for applications in medium level pollution atmospheres.
976	Internal coil with Electrofin treatment	The indoor coil is trated with a factory- applied electro-deposition coating process that guarantees complete heat exchanger coverage. Remark: this accessory is applied only to the main air treatment coil; please contact the headquarter if you need the same ac- cessory applied to other optional coils (such as hot gas coil or hot water coil).	Recommended for marine exposure conditions, with an high level of pollution or other aggressive atmospheres.
381	Numbered wiring on elec- tric board	During the execution of the electrical panel, in addition to identifying the individual in- puts and outputs, elettric cables are labeled for easier recognition.	Increase the usability of the electrical panel dur- ing maintenance.
382	PWR wirings according to Uk request	Power cables with coloring according to the U.K. standards.	
3591	Fans operating signal	Auxiliary contacts providing a voltagefree signal	Allows remote signalling of fans' activation or re- mote control of any auxiliary loads.
3601	Compressors' on/off signal	Auxiliary contacts providing a voltagefree signal	Allows remote signalling of compressor's activa- tion or remote control of any auxiliary loads.
4121	Forced shut down	Digital inlet to switch off the unit from re- mote	
4162	Automatic summer/winter switch	The unit changes its operating mode from cooling to heating according to out-door and indoor air temperature	
6171	Input remote demand limit	Digital input (voltage free) to enable de- mand limit function	It permits to limit the unit's power absorption for safety reasons or in temporary situation.
4442	Double set point return temperature	It is possible to choose a second tem- perature set point value, different from that normally set and choose with whom to work via a digital input	
4271	Ambient air probe	Return air temperature probe supplied loose for ambient installation	
4272	Return air probe	Return air temperature probe supplied loose for return duct installation	

CODE	ACCESSORY NAME	DESCRIPTION	ADVANTAGES
411	Electrical Panel with forced ventilation	Forced ventilation for electric switchboard	As standard, the electric panel is supplied with two air grills with filter. When unit is installed in hot climate, it's suggested to add 411 option, that include two fans that extract hot air from the enclosure. Exhaust fans are controlled via a thermostat
2101	Rubber anti vibration de- vice		
1972	Reinforced Structure for long distance transporta- tion for units only with sup- ply fan(s)	For AR, MF and AX-F functions. The acces- sory includes: reinforcing bar on compres- sors' base, frame supports on air treatment section, fixing brackets for fans, reinforced hinges that allow the sandwich panels opening	This accessory prevents the unit from possible structural damage during a long journey, espe- cially by lorry, to the installation site
9996	Container slides		



6. GENERAL TECHNICAL SPECIFICATIONS

WRX2 /AR - Basic unit						
SIZE			0162	0182	0204	0264
Cooling (Gross Value)			·	·		
Cooling capacity	(1)	kW	48,0	54,3	66,6	79,7
Total sensible capacity	(1)	kW	41,9	52,1	62,3	73,2
Total power input	(1)	kW	17,6	18,8	25,3	32,9
EER	(1)	-	2,73	2,89	2,63	2,42
Heating (Gross Value)					•	
Heating capacity	(2)	kW	44,4	50,6	64,2	76,1
Total power input	(2)	kW	12,8	14,5	20,4	23,8
COP	(2)	-	3,47	3,49	3,15	3,20
Supply fans						
Turne			١	/entilatore rad	diale (Plug far	1)
			Mot	ore EC con c	ontroller integ	rato
Number		n°	1	1	1	1
Supply air flow-rate		m³/h	10.500	12.000	14.000	16.000
Available external static pressure	(3)	Pa	250	250	250	250
Outdoor fans						
Туре				Axial φ	800mm	
Number		n°	2	2	2	2
Outside air flow rate		m³/h	40200	40200	41000	40200
Nominal installed power		kW	3,9	3,9	3,8	3,8
Compressori						
No. compressors		n°	2	2	4	4
No. circuits		n°	2	2	2	2
Number of capacity		n°	2	2	4	4
Refrigerant charge	(8)	kg	12	14,5	16,5	19
Refrigerant				R4	10A	
Sound power			,	,		
Total	(4)	dB(A)	88	85	88	88
Weights and dimensions						
Length		mm	2.8	300	3.6	650
Width		mm	2.2	200	2.2	200
Height		mm	1.7	720	1.7	720
Operating weight standard units	(5)	kg	880	900	1.130	1.140

Notes:

(1) Cooling: Outdoor 35°C 50% R.H. / Indoor 27°C 47% R.H. / Mix 0%.

(2) Heating: Outdoor 7°C 87% R.H. / Indoor 20°C 50% R.H. / Mix 0%.

(3) ESP for standard configuration (optional accessories not included/calculated).

(4) Sound power on the basis of measurements made in compliance with ISO 3744. For complete sound data consult Elca World.

(5) The weight shown refers to the unit including any accessory batteries. Any additional modules are not considered.

(8) The refrigerant charge is the result of a theoretical calculation and could be different from the actual amount of refrigerant which is charged in the unit and on the label.



GENERAL TECHNICAL SPECIFICATIONS

WRX2 /MF						
SIZE			0162	0182	0204	0264
Cooling (Gross Value)		ł		•		
Cooling capacity	(1)	kW	51,0	57,7	71,0	84,9
Total sensible capacity	(1)	kW	43,0	53,5	63,9	75,1
Total power input	(1)	kW	17,8	19,1	25,5	33,5
EER	(1)	-	2,87	3,02	2,78	2,53
Heating (Gross Value)						
Heating capacity	(2)	kW	45,0	51,1	64,9	76,9
Total power input	(2)	kW	12,1	13,8	19,2	22,4
COP	(2)	-	3,72	3,70	3,38	3,43
Supply fans						
Turna				Radial far	ı (plug fan)	
			E	C motor with I	puilt-in control	ler
Number		n°	1	1	1	2
Supply air flow-rate		m³/h	10.500	12.000	14.000	16.000
Available external static pressure	(3)	Ра	250	250	250	250
Outdoor fans						
Туре				Axial φ	800mm	
Number		n°	2	2	2	2
Outside air flow rate		m³/h	40200	40200	41000	40200
Nominal installed power		kW	3,9	3,9	3,8	3,8
Compressors						
No. compressors		n°	2	2	4	4
No. circuits		n°	2	2	2	2
Number of capacity		n°	2	2	4	4
Refrigerant charge	(8)	kg	12	14,5	16,5	19
Refrigerant				R4	10A	
Sound power						
Total	(4)	dB(A)	88	85	88	88
Weights and dimensions						
Length		mm	2.8	300	3.6	650
Width	(6)	mm	2.2	200	2.2	200
Height		mm	1.7	720	1.7	720
Operating weight standard units	(5)	kg	930	960	1.200	1.210

Notes:

(1) Cooling: Outdoor 35°C 50% R.H. / Indoor 27°C 47% R.H. / Mix 30%.

(2) Heating: Outdoor 7°C 87% R.H. / Indoor 20°C 50% R.H. / Mix 30%.

(3) ESP for standard configuration (optional accessories not included/calculated).

(4) Sound power on the basis of measurements made in compliance with ISO 3744. For complete sound data consult Elca World.

(6) It doesn't include rain hoods dimension

(8) The refrigerant charge is the result of a theoretical calculation and could be different from the actual amount of refrigerant which is charged in the unit and on the label.



⁽⁵⁾ Unit in standard configuration/execution, without optional accessories. The weight shown refers to the unit including any accessory batteries. Any additional modules are not considered.

GENERAL TECHNICAL SPECIFICATIONS

WRX2 /AX-F						
SIZE			0162	0182	0204	0264
Raffrescamento (Gross Value)			·		•	
Cooling capacity	(1)	kW	51,3	58,1	71,5	85,7
Total sensible capacity	(1)	kW	43,2	53,7	61,1	75,5
Total power input	(1)	kW	18,5	19,7	26,0	33,9
EER	(1)	-	2,77	2,50	2,75	2,53
Heating (Gross Value)						
Heating capacity	(2)	kW	45,8	52,1	66,4	79,0
Total power input	(2)	kW	13,0	14,7	20,2	23,5
COP	(2)	-	3,52	3,54	3,29	3,36
Supply fans						
Type				Radial far	n (plug fan)	
			E	C motor with I	built-in control	ler
Number		n°	1	1	1	2
Supply air flow-rate		m³/h	10.500	12.000	14.000	16.000
Available external static pressure	(3)	Pa	250	250	250	250
Outdoor fans						
Туре				Axial φ	800mm	
Number		n°	2	2	2	2
Outside air flow rate		m³/h	40200	40200	41000	40200
Nominal installed power		Kw	3,9	3,9	3,8	3,8
Compressors						
No. compressors		n°	2	2	4	4
No. circuits		n°	2	2	2	2
Number of capacity		n°	2	2	4	4
Refrigerant charge	(8)	kg	12	14,5	16,5	19
Refrigerant				R4	10A	
Expulsion fans		1				
Туре				Radial far	n (plug fan)	
Number		n°	2	2	2	2
Expulsion air flow-rate			3150	3600	4200	4800
Available external static pressure	(3)	Pa	476	435	355	250
Sound power				,	,	
Total	(4)	dB(A)	89	88	90	91
Weights and dimensions						
Length		mm	2.8	800	3.6	350
Width	(6)	mm	2.2	200	2.2	200
Height		mm	1.	720	1.7	720
Operating weight standard units	(5)	kg	980	1.000	1.270	1.280

Notes:

(1) Cooling: Outdoor 35°C 50% R.H. / Indoor 27°C 47% R.H. / Mix 30%.

(2) Heating: Outdoor 7°C 87% R.H. / Indoor 20°C 50% R.H. / Mix 30%.

(3) ESP for standard configuration (optional accessories not included/calculated).

(4) Sound power on the basis of measurements made in compliance with ISO 3744. For complete sound data consult Elca World.

(5) Unit in standard configuration/execution, without optional accessories. The weight shown refers to the unit including any accessory batteries. Any additional modules are not considered.

(6) It doesn't include rain hoods dimension

(8) The refrigerant charge is the result of a theoretical calculation and could be different from the actual amount of refrigerant which is charged in the unit and on the label.



TECHNICAL DATA SEASONAL EFFICIENCY IN HEATING (EN14825:2016 VALUE) - WRX2

SIZE			0162	0182	0204	0264	
WEATHER CONDITIONS - AVERAGE (1)							
Air flow		m³/h	10.500	12.000	14.000	16.000	
Design heating load	P _{design,h}	kW	26,2	29,8	38,8	45,9	
Reference design temperature	T _{design,h}	°C	-10,0	-10,0	-10,0	-10,0	
Bivalent temperature	T _{biv}	°C	-5,5	-5,5	-5,5	-5,5	
Seasonal coefficient of performance	SCOP		3,22	3,21	3,21	3,22	
Seasonal space heating energy efficiency	$\eta_{s,h}$	%	125,80	125,40	125,40	125,80	

(1) Indoor conditions: 20°C d.b. - 15°C w.b.

TECHNICAL DATA SEASONAL EFFICIENCY IN COOLING (EN14825:2016 VALUE) - WRX2

SIZE			0162	0182	0204	0264	
WEATHER CONDITIONS - AVERAGE (2)							
Air flow		m³/h	10.500	12.000	14.000	16.000	
Design cooling load	$P_{design,c}$	kW	49,4	56,0	68,0	81,3	
Reference design temperature	$T_{design,c}$	°C	35,0	35,0	35,0	35,0	
Seasonal coefficient of performance	SEER		3,87	3,85	4,18	3,78	
Seasonal space cooling energy efficiency	$\eta_{s,c}$	%	151,80	151,00	164,20	148,20	

(2) Indoor conditions: 27°C d.b. - 19°C w.b.

TECHNICAL DATA SEASONAL EFFICIENCY IN COOLING (EN14825:2016 VALUE) - WRX2-T

SIZE			0162	0182	0204	0264	
WEATHER CONDITIONS - AVERAGE (2)							
Air flow		m³/h	10.500	12.000	14.000	16.000	
Design cooling load	P _{design,c}	kW	49,4	56,0	68,0	81,3	
Reference design temperature	T _{design,c}	°C	35,0	35,0	35,0	35,0	
Seasonal coefficient of performance	SEER		3,87	3,85	4,18	3,78	
Seasonal space cooling energy efficiency	η _{s,c}	%	151,80	151,00	164,20	148,20	

(2) Indoor conditions: 27°C d.b. - 19°C w.b.

GLOBAL SEASONAL EFFICIENCY (EU 2016:2281) - WRX2

SIZE	0162	0182	0204	0264	
ErP Tier Achieved (Cooling & Heating)	ErP Tier	2021	2021	2021	2021

GLOBAL SEASONAL EFFICIENCY (EU 2016:2281) - WRX2-T

SIZE	0162	0182	0204	0264	
ErP Tier Achieved (Cooling & Heating)	ErP Tier	2021	2021	2021	2021



EUROVENT CERTIFICATION PROGRAM

MEHITS S.p.A., in order to ensure greater transparency in relation to its rooftop units, has chosen have the performance of its units certified by a third party, Eurovent Certita Certification, a body recognised both in Europe and internationally (www. eurovent-certification.com).

The performance values certified in the third-party laboratory are declared in accordance with the following regulations:

EN 14511 "Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling" (Update 2018).

EN 14825 "Air conditioners, liquid chilling packages and heat pumps, with electrically driven compressors, for space heating and cooling. Testing and rating at part-load conditions and calculation of seasonal performance" (Update 2018).

EN 12102 "Air conditioners, liquid chilling packages, heat pumps and dehumidifiers with electrically driven compressors for space heating and cooling - Measurement of airborne noise – Determination of the sound power level".

The main certified values are shown below.

WRX2					
SIZE		0162	0182	0204	0264
Nominal airflow rate (indoor)	m³/h	10500	12000	14000	16000
External Static Pressure	Pa	200	200	200	250
Cooling capacity (EN14511)	kW	49,4	56,0	68,0	81,7
Energy Efficiency Ratio (EN14511)		3,1	3,3	2,88	2,64
Seasonal Energy Efficiency (cooling) according to EN14825, ηs,c		151,80	151,00	164,20	148,20
SEER Class		В	В	В	В
Heating capacity (EN14511)	kW	42,9	49,0	62,8	74,1
Coefficient of Performance (EN14511)		3,85	3,87	3,35	3,39
Seasonal Energy Efficiency (heating) according to EN14825, ŋs,h		125,80	125,40	125,40	125,80
SCOP Class		В	В	В	В
Sound power level (LWO - environment)	dB(A)	88	85	88	88
Sound power level (LWI - duct)	dB(A)	77	80	83	85

WRX2-T					
SIZE		0162	0182	0204	0264
Nominal airflow rate (indoor)	m³/h	10500	12000	14000	16000
External Static Pressure	Pa	200	200	200	250
Cooling capacity (EN14511)	kW	49,4	56,0	68,0	81,7
Energy Efficiency Ratio (EN14511)		3,1	3,3	2,88	2,64
Seasonal Energy Efficiency (cooling) according to EN14825, ηs,c		151,80	151,00	164,20	148,20
SEER Class		В	В	В	В
Sound power level (LWO - environment)	dB(A)	88	85	88	88
Sound power level (LWI - duct)	dB(A)	77	80	83	85

Check ongoing validity of certificate and data update on: www.eurovent-certification.com



MATCHING TABLE FOR FUNCTIONS, ACCESSORIES AND AIR FLOW DIRECTIONS

		CONFIGURATION		SL		R DIRECT	ION (1)	RETURN AIR DIRECTION (1)			
			Option code \rightarrow	2075	2079A	2073	2074	2067	2065	2061	2063
		Accessory		TOP	PICHT		DOWN- STREAM	TOP SIDE	LEFT SIDE	REAR	
Function	Option code	Decription	What is it possible?	SIDE	SIDE	REAR					STREAM
	1467	2 ROWS WATER COIL H2R			YES						
	1468	3 ROWS WATER COIL H3R									
AR	1466	ELECTRIC HEATER MANAGEMENT	OF THEM	YES		YES (3)	YES	YES	YES	YES	YES
	1461	HOT GAS COIL									
	252-5/6/7/8	AIR FILTERS HIGH EFFICENCY	(2)								
	1467	2 ROWS WATER COIL H2R							YES	NO	YES
	1468	3 ROWS WATER COIL H3R									
MF	1466	ELECTRIC HEATER MANAGEMENT	OF THEM	YES	YES	YES (3)	YES	NO			
	1461	HOT GAS COIL									
	252-5/6/7/8	AIR FILTERS HIGH EFFICENCY	(2)								
	1467	2 ROWS WATER COIL H2R									
	1468	3 ROWS WATER COIL H3R									
AX-F	1466	ELECTRIC HEATER MANAGEMENT	OF THEM	YES	YES	YES (3)	YES	NO	NO	NO	YES
	1461	HOT GAS COIL									
	252-5/6/7/8	AIR FILTERS HIGH EFFICENCY	(2)								

Remarks:

(1) = Point of view: in front of electric panel.

(2) = Available as an option.

(3) = Sizes 204 and 264 can not have rear side supply air direction if 4251 or 4252 (MM1 or MM2 fan type) options are selected.

YES: Available (as an option)

NO: Not available. For special request, contact the Headquarter.



SUPPLY FAN(S) (For all functions)

Size	0162	0182	0204	0264	
Minimum air flow	[m³/h]	8.400	9.600	11.200	12.800
Nominal air flow	[m³/h]	10.500	12.000	14.000	16.000
Maximum air flow	[m³/h]	12.600	13.000	16.800	19.200

Туре	Option code	Size	0162	0182	0204	0264
	4050	F.L.I.	2,8	2,8	2,7	3,7
EC PLUG FAN	4250	F.L.A.	4,4	4,4	4,1	5,8
	Number	Nr.	1	1	1	1
	4251	F.L.I.	4,1	4,1	8,1	8,1
EC PLUG FAN uprated (MM1)		F.L.A.	6,1	6,1	12,2	12,2
	Number	Nr.	1	1	2	2
	4050	F.L.I.	5,5	8,3	9,0	9,0
EC PLUG FAN uprated (MM2)	4252	F.L.A.	6,0	9,4	14,4	14,4
	Number	Nr.	1	1	2	2

The electrical data shown are total values.

FLI Power consumption in max. admissible conditions. [kW]

FLA Current draw in max. admissible conditions. [A]

Unit in the standard configuration, without accessories

Limit flow-rate to ensure a maximum coil flow-through speed of 2.7 m/s

For detailed specifications contact Elca World

EXHAUST AIR FANS (for AX-F function)

Size		0162	0182	0204	0264				
Fan type		EC plug fan							
Electrical data	F.L.I.		0,9						
	F.L.A.	4,4							
Nominal diameter fan	mm	250							
Number	Nr.	2							

The electrical data shown are total values.

FLI Power consumption in max. admissible conditions. [kW]

FLA Current draw in max. admissible conditions. [A]

Unit in the standard configuration, without accessories

For detailed specifications contact Elca World

STANDARD COMPRESSORS

Size Ty	Туре		CIRCUIT 1					CIRCUIT 2					
		No	Connection	F.L.I.	F.L.A.	L.R.A.	No	Connection	F.L.I.	F.L.A.	L.R.A.		
		NO.		[kW]	[A]	[A]	NO.		[kW]	[A]	[A]		
0162	scroll	1	single	9	14	101	1	single	9	14	101		
0182	scroll	1	single	10	17	128	1	single	10	17	128		
0204	scroll	2	tandem	13	22	75	2	tandem	13	22	75		
0264	scroll	2	tandem	17	29	202	2	tandem	17	29	202		

Total electrical data per each circuit

FLI Power consumption in max. admissible conditions.

FLA Current draw in max. admissible conditions.

LRA Locked rotor current



HEATING WATER COIL (Accessory)

		Size	0162	0182	0204	0264		
	Airflow	[m³/h]	10.500	12.000	14.000	16.000		
	Thermal power	kW	65	70	94	103		
	Flowrate	l/s	0,79	0,86	1,15	1,25		
ō	Pressure drops water side	kPa	39	45	53	60		
so	Pressure drop air side	Pa	35	39	25	31		
NO	Water contenent	dm ³	7	7	12	12		
2-RC	Type of water connections		Threaded connections					
	DN - Nominal diameter IN	mm	RP 3/4"	RP 3/4"	RP 3/4"	RP 3/4"		
	DN - Nominal diameter OUT	mm	RP 3/4"	RP 3/4"	RP 3/4"	RP 3/4"		
	Thermal power	kW	91	100	128	140		
	Flowrate	l/s	1,11	1,22	1,56	1,71		
0	Pressure drops water side	kPa	52	60	44	51		
s C	Pressure drop air side	Pa	48	66	37	47		
NC	Water contenent	dm³	12	12	18	18		
L K	Type of water connections			Threaded of	connections			
۳ ۳	DN - Nominal diameter IN	mm	RP 3/4"	RP 3/4"	RP 1"	RP 1"		
	DN - Nominal diameter OUT	mm	RP 3/4"	RP 3/4"	RP 1"	RP 1"		

Nominal heating capacity, entering air temperature 20°C, to the capacity indicated and IN/OUT water temperature 80/60°C.

THREE-WAY WATER VALVES (accessory)

		Taglie	0162	0182	0204	0264			
	kvs valve	[m³/h]	6,3	6,3	6,3	6,3			
2-ROWS COIL	DN - Nominal diameter	mm	20	20	20	20			
	kvs valve	[m³/h]	6,3	6,3	10	10			
3-ROWS COIL	DN - Nominal diameter	mm	20	20	25	25			
	Type of actuator		0-10 V proportional control (managed by AIR 3000 TE controller)						
	Type of valve connection		Threaded connections						

ELECTRICAL HEATING COIL (Accessory)

Combinations units / electrical heating coil

	E	lectrical heating coil				Unit	size	
Option code	Size	Thermal power [kW]	Absorbed current [A]	Step	0162	0182	0204	0264
1312	12	12	17	0-50-100%	Х			
1313	18	18	26	0-50-100%	X	X	X	
1314	24	24	35	0-50-100%	X	Х	X	X
1314A	30	30	43	0-50-100%		Х	X	X
1315	36	36	52	0-50-100%				Х
1318	45	45	65	0-50-100%				
1319	60	60	87	0-50-100%				
1319A	80	80	115	0-50-100%				

Three-phase power supply with star connection, no neutral ${\bf Note:}$ The possible combinations are marked with an ${\bf X}$



ELECTRICAL DATA

General note:

The electrical data shown are total values.

F.L.I. Absorbed power at max. permissible conditions

F.L.A. Absorbed current at max. permissible conditions

L.R.A. Compressor lock rotor current

S.A. Peak current of unit with standard motors

Electrical power input:

- 400/3/50 WITHOUT NEUTRAL

- Permissible voltage variation 10%

- Maximum unbalance between phase voltages 3%

AR and MF functions														
		Compress	ssors	Supply fans			Axia	al-flow outsi	de air fans	Auxi	liary	Total		
Size	No	F.L.I.	F.L.A.	No.	F.L.I.	F.L.A.	No.	F.L.I.	F.L.A.	F.L.I.	F.L.A.	F.L.I.	F.L.A.	S.A.
	NO.	[kW]	[A]		[kW]	[A]		[kW]	[A]	[kW]	[kW]	[kW]	[A]	[A]
0162	1	17	28	1	2,80	4,40	2	3,90	6,60	0,50	1,25	24	40	127
0182	1	20	34	1	2,80	4,40	2	3,90	6,60	0,50	1,25	27	47	157
0204	2	26	44	1	2,65	4,10	2	3,80	7,80	0,50	1,25	33	58	120
0264	2	33	57	1	3,70	5,80	2	3,80	7,80	0,50	1,25	41	72	159

AX function																	
Size	Compresssors			Supply fans			Exhaust air fans			Axial-flow outside air fans			Auxiliary		Total		
	No.	F.L.I.	F.L.A.	No.	F.L.I.	F.L.A.	No.	F.L.I.	F.L.A.	No	F.L.I.	F.L.A.	F.L.I.	F.L.A.	F.L.I.	F.L.A.	S.A.
		[kW]	[A]		[kW]	[A]		[kW]	[A]		[kW]	[kW]	[kW]	[kW]	[kW]	[A]	[A]
0162	1	17	28	1	2,80	4,40	2	0,90	4,40	2	3,90	6,60	0,50	1,25	25	44	131
0182	1	20	34	1	2,80	4,40	2	0,90	4,40	2	3,90	6,60	0,50	1,25	28	51	161
0204	2	26	44	1	2,65	4,10	2	0,90	4,40	2	3,80	7,80	0,50	1,25	34	62	124
0264	2	33	57	1	3,70	5,80	2	0,90	4,40	2	3,80	7,80	0,50	1,25	42	76	163



7. OPERATING LIMITS FOR EACH SIZE

OPERATING LIMITS CALCULATED IN THE FOLLOWING CONDITIONS:

- Unit correctly installed and used
- Operating in stable conditions

Warning:

- 1. When unit is installed in very hot climate (external temperature goes up to 46°C), it's suggested to use 411 Electric panel with forced ventilation
- 2. When the unit is working in cooling mode with outdoor temperature below 12°C, it's suggested to use 865 EC Axial Outdoor fans
- 3. For detailded working limits, please refer to ElcaWorld selection software



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CLIMAVENETA 30

UNIT PERFORMANCE IN COOLING MODE WITH OUTDOOR TEMPERATURE ABOVE 46°C

Units size 0444-0804 can work with outdoor temperature above 46°C, up to 52°C, in cooling mode, at partial load (means half compressors are working) if the air facing to the indoor coil is included between 19°C and 28°C d.b., with whatever airflow rate.

It's possible to assess unit cooling performances (total cooling capacity, sensible cooling capacity and compressor(s) power input) thanks to the graph below.

Instructions:

- with ElcaWorld, calculate unit performances at your desired working conditions, but with 46°C outdoor air temperature;
- to correct those cooling performance (total and sensible) and the compressor power input, use the graph below, where correction factors are reported (ordered) in function of outdoor temperature (abscissa).

Key

C_Pft = corr. Factor for total cooling capacity gross

C_Pfs = corr. Factor for sensible cooling capacity gross

C_Pac = corr. Factor for compressor power input





The reference of the supply and return air flow directions is from the front of the electrical panel.

Remarks: for installation purposes, please refer to the documentation sent after the purchase-contract. This technical data should be considered as indiciative. Mitsubishi Electric Hydronics & IT Cooling Systems S.p.A. may modify them at any moment. Data valid for standard units without any additional option.

Legend symbols								
SUPPLY AIR DIRECTION								
CODE (price list)	DESCRIPTION	CODE (draw)						
2072	BOTTOM SIDE SUPPLY AIR	M1						
2075	TOP SIDE SUPPLY AIR	M2						
2076	RIGHT SIDE SUPPLY AIR	M3						
2077	LEFT SIDE RETURN AIR	M4						
2073	REAR SIDE SUPPLY AIR	M5						
2079	FRONT SIDE SUPPLY AIR	M6						

(price list)	DESCRIPTION	(draw)						
2061	REAR SIDE RETURN AIR	R1						
2062	RIGHT SIDE RETURN AIR	R2						
2063	BOTTOM SIDE RETURN AIR	R3						
2065	LEFT SIDE RETURN AIR	R4						
2067	TOP SIDE RETURN AIR	R5						
2066	FRONT SIDE RETURN AIR	R6						

WRX2 /AR 162-182





WRX2 /AR 204-264





WRX2 /MF 162-182





WRX2 /MF 204-264





WRX2 /AX-F 162-182





WRX2 /AX-F 204-264









Eco Changes is the Mitsubishi Electric Group's environmental statement, and expresses the Group's stance on environmental management. Through a wide range of businesses, we are helping contribute to the realization of a sustainable society.

MITSUBISHI ELECTRIC HYDRONICS & IT COOLING SYSTEMS S.p.A.

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