RTX 01-08

Rooftop

Cooling capacity 12,1 ÷ 51,1 kW
Heating capacity 12,4 ÷ 52,9 kW

- **Fan treatment section Plug fans coupled with ec brushless motors**
- **Thermodynamic heat recovery**
- **Free-cooling/enthalpic free-cooling option**
- **For medium density applications**



Independent Roof-Top air-cooled air conditioner to treat, filter and renew air based on the selected configuration. Being fitted to function with 30% external and expelled air (MB4 versions), RTX units are designed for medium density applications like shopping malls, shops, offices and production areas.
Based on the version and accessories selected, the units allow you to manage free-cooling mode and, in the MB4 versions, there is thermodynamic recovery of the energy contained in the expelled air, allowing for higher performance and efficiency.

VERSIONS

RTX_F cold only
RTX_H heat pump

CONFIGURATIONS

MB1 single ventilating section for recirculation only
MB2 single ventilating section for return air and external air
MB4 double ventilating section for return air, external air and expelled air. Partial free-cooling function (up to 50% of the external air) and standard thermodynamic recovery function.

Each of the different configurations can be further customised thanks to a wide selection of accessories.

— 1 Cooling circuit
— Scroll compressor with high performance and low electric absorption
— Finned pack direct expansion internal and external exchangers.
— Plug type (EC) flow and recovery fans (if any). The impellers are facing so as to ensure that the air flows through all the internal components with minimum noise.
— Axial fan unit for extremely silent functioning positioned on the condensing section.
— G4 air filter installed upstream of the components to ensure low pressure drops.

CONTROL

Microprocessor control able to manage the different functioning modes, ensuring maximum energy savings in any conditions of use.
Interfaces to connect to remote supervision and control systems available as options.

ACCESSORIES

RS: RS485 BMS serial card
LW: LonWorks interface card
BIP: Ethernet-pCOweb interface card (BACNET IP)
BAC: BACnet MS/TP pCOnet interface card
FCT: Partial Temperature Free-Cooling for MB2, MB4 versions
PSTEP: Constant flow rate adjustment, flow rate steps based on cooling circuit modulation.
FT7: F7 efficiency pocket filters positioned on the supply air flow
FT9: F9 efficiency pocket filters positioned on the supply air flow
FTE: Electronic filters positioned on the supply air flow.
PSF4: Differential pressure switch signalling dirty recovery and renewal filters (if any)
BW: Two-row hot water heating coil.
BWV2V: Two-row hot water heating coil, with 2-way modulating valve
BWV3V: Two-row hot water heating coil, with 3-way modulating valve
BE: 2-stage electric heating coil
BPGC: Hot gas post-heating coil
VELC: Electronic thermostatic valve
DCPR: AC fans with pressure switch device to regulate revolutions based on the condensation and evaporation pressure.
AXEC: Axial fans featuring EC motors with the function of regulating revolutions based on the condensation and evaporation pressure
MAN: High and low pressure gauges
CUR: Humidification control (recovery humidity probe, flow humidity limit probe, ON/OFF contact and modulating analogue output)
DP: Dehumidification (recovery humidity probe) and post-heating (if any) control
SCO2: CO2 probe **(not available on MB1 model)**

SVOC: VOC Probe **(not available on MB1 model)**
STA: Room temperature probe
SUA: Relative humidity probe
RF: Smoke detector
RFC: smoke detector and damper management
PRT1: Wall/recessed (up to 50 m) remote control panel
PRT2: Wall/recessed (up to 200 m) remote control panel
SCM: modulating servo-controls (standard on MB3 model or if temperature or enthalpic free-cooling is present)

SCMRM: Modulating servo-controls with spring return
CA: Waterproof covers on external air intake
GP: External coil protection grid
VT: anti-vibration mounts

Note: for more details on accessories and equipment, please refer to the technical manual

TECHNOLOGICAL FUNCTIONS AND ADVANTAGES

RTX units are designed with the aim of reducing the energy consumption that subsequently dictated the technological choices made on the unit we will now introduce in brief.

EXTREMELY HIGH-EFFICIENCY VENTILATION

As ventilation is one of the major power consumption factors, we dedicated particular attention to designing and constructing the ventilation system.

Both in flow and in recovery (if any), EC brushless motor plug fans were used, which enable high performance and reduced consumption. Furthermore, compared to conventional centrifugal fans, they have no belts or pulleys, thus facilitating flow adjustment and resulting in compactness, versatility and easy maintenance.
Special adaptive logic allows you to adjust the air flow rate to actual system demand with further resulting advantages in terms of consumption reduction.
Axial fans for the external section of the unit are helical. Electronic condensation control is available as an accessory, which regulates fan speed based on the load required, allowing for noise reduction.

As an option, the motors can have electronic control (EC) to reduce consumption even in the condensing part.

AIR QUALITY IN THE ROOM

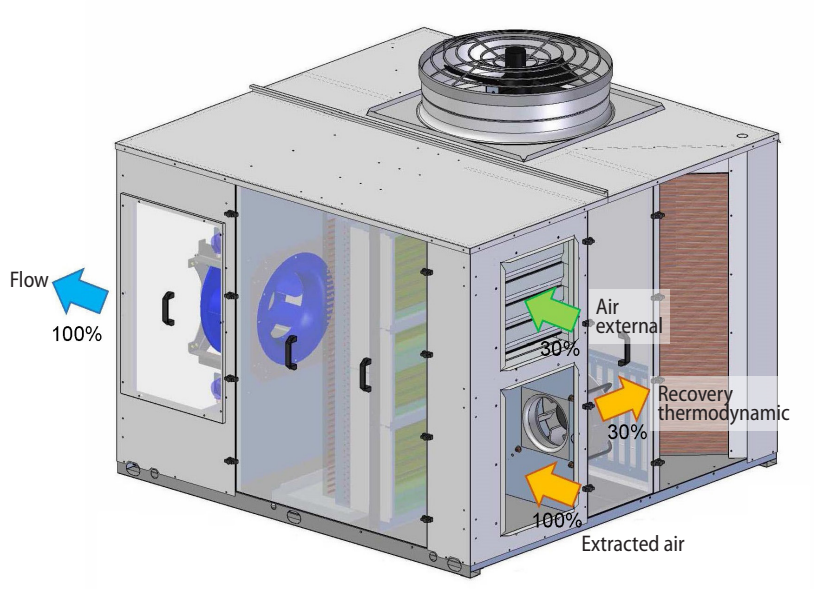
Naturally, we also paid special attention to the quality of the air in the room, a task **entrusted to the standard G4 efficiency filters.**
F7 and F9 or electronic H10 filters are also optionally available on the fresh air flow.

ACTIVE THERMODYNAMIC RECOVERY

In the MB4 configurations, the units have a thermodynamic recovery function to recover the energy contained in the exhaust air, causing the expelled air flow to hit the external finned pack exchanger, allowing for higher performance and efficiency.

Obviously, all of these technological advantages are controlled by cutting edge thermoregulation that is able to manage the different functioning modes, ensuring maximum energy savings in all conditions of use via dedicated software.

MB4 CONFIGURATION WITH DOUBLE VENTILATING SECTION FOR RETURN AIR, EXTERNAL AIR AND EXPELLED AIR. STANDARD FREE-COOLING AND THERMODYNAMIC HEAT RECOVERY FUNCTION.



PERFORMANCE SPECIFICATIONS

Mod. RTX (vers. MB1)

Size			01	02	03	04	05	06	07	08
Cooling capacity	(1)	kW	12,1	15,1	19,5	22,0	28,0	31,9	42,3	48,0
Sensitive cooling capacity		kW	8,7	10,8	13,8	15,3	19,4	22,3	29,3	32,7
Sensitive / total cooling power		kW/kW	0,72	0,71	0,71	0,70	0,69	0,70	0,69	0,68
Compressor input power		kW	2,8	3,9	4,8	5,8	6,7	8,8	10,1	12,0
EER	(2)	W/W	4,37	3,91	4,09	3,80	4,20	3,64	4,17	4,00
EER global		W/W	3,68	3,33	3,42	3,20	3,46	3,09	3,30	3,14
Heating capacity	(3)	kW	12,4	15,7	20,1	23,2	28,9	33,9	44,2	50,3
Compressor input power		kW	2,6	3,4	4,3	5,0	5,9	7,5	9,2	10,5
COP	(2)	W/W	4,68	4,61	4,71	4,61	4,90	4,54	4,78	4,77
COP global		W/W	3,90	3,82	3,86	3,78	3,94	3,74	3,69	3,64

Mod. RTX (vers. MB2)

Size			01	02	03	04	05	06	07	08
Cooling capacity	(1)	kW	13,0	16,2	20,8	23,4	29,6	33,8	45,0	50,7
Sensitive cooling capacity		kW	9,2	11,4	14,7	16,3	20,6	23,3	30,9	34,5
Compressor input power		W/W	2,8	3,9	4,8	5,9	6,8	8,9	10,3	12,2
EER	(2)	W/W	4,64	4,16	4,31	3,96	4,37	3,81	4,38	4,15
EER global		kW	3,88	3,50	3,56	3,33	3,60	3,21	3,45	3,26
Heating capacity	(3)	kW	12,8	16,1	20,6	23,7	29,4	34,4	45,2	51,0
Compressor input power		W/W	2,45	3,15	3,93	4,64	5,41	6,91	8,59	9,76
COP	(2)	W/W	5,21	5,10	5,25	5,11	5,44	4,98	5,26	5,23
COP global		W/W	4,25	4,15	4,18	4,11	4,28	4,03	3,98	3,90

Mod. RTX (vers. MB4 dynamic)

Taglia			01	02	03	04	05	06	07	08
Cooling capacity	(1)	kW	13,0	16,3	21,0	23,6	29,9	34,1	45,4	51,1
Sensitive cooling capacity		kW	9,3	11,4	14,8	16,3	20,6	23,6	31,0	34,6
Compressor input power		W/W	2,7	3,8	4,7	5,8	6,6	8,6	10,1	12,0
EER	(2)	W/W	4,75	4,28	4,44	4,10	4,50	3,95	4,50	4,28
EER global		kW	3,81	3,42	3,45	3,23	3,50	3,08	3,25	3,07
Heating capacity	(3)	kW	13,1	16,7	21,3	24,6	30,4	35,7	46,5	52,9
Compressor input power		W/W	2,48	3,19	3,99	4,74	5,51	6,97	8,73	9,96
COP	(2)	W/W	5,29	5,23	5,34	5,19	5,52	5,11	5,33	5,31
COP global		W/W	4,15	4,01	3,98	3,91	4,10	3,80	3,70	3,61

Date 14511: Cooling (performance is the same also for the cold only versions)
(1) Internal temperature 27°C d.b., 19°C w.b.; External temperature 35°C d.b., 24°C w.b.; U.R. 40%;
(2) Only compressors
Heating
(3) Internal temperature 20°C d.b., 15°C w.b.; External temperature 7°C d.b. 6°C w.b.;

GENERAL TECHNICAL DATA

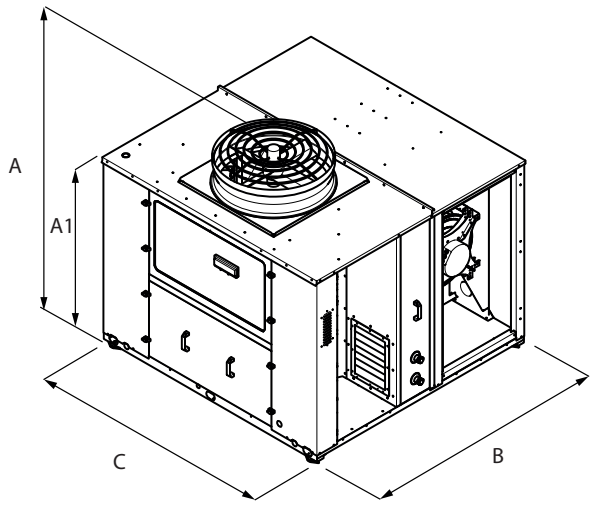
Size			01	02	03	04	05	06	07	08
Compressors										
Compressors		type				Scroll				
		n°	1	1	1	1	1	1	1	1
Circuits		n°	1	1	1	1	1	1	1	1
Partialisation steps		%	1	1	1	1	1	1	1	1
Refrigerant gas		type				R410A				
Fans										
External fans		type				Axials AC				
		n°	1	1	1	1	1	1	1	1
Internal flow fans		type				RAD EC				
		n°	1	1	1	1	1	1	1	1
		Ø mm	355	355	355	400	400	450	450	500
Expulsion fans (MB4)		type				RAD EC				
		n°	1	1	1	1	1	1	1	1
		Ø mm	250	250	280	280	355	355	400	400
Air flow rate	min	m^3/h	1800	1800	2700	2700	4000	4000	6500	6500
	nom	m^3/h	2000	2700	3500	4000	5200	6500	8000	9500
	max	m^3/h	2900	2900	4100	4100	6900	6900	10100	10100
Flow available static pressure (1)	max	Pa	760	569	473	561	424	570	634	681
Sound data										
Sound power		dB(A)	71	71	71	72	77	74	80	81
Sound Pressure (2)		dB(A)	63	63	63	64	69	66	72	73

Power supply	V/ph/Hz	400V / 3Ph+N / 50Hz	400V / 3Ph / 50Hz	

(1) At nominal/maximum flow rate, new clean G4 filter
(2) Sound Pressure: Sound pressure measured in free field (1m, Q=2) away from the outer surface of the ducted unit, Available static pressure 50Pa. (UNI EN ISO 9614-2)

Note: For further information, refer to the technical documentation available at www.aermec.com

DIMENSIONS



Size			Vers.	01	02	03	04	05	06	07	08
Dimensions and weights											
Height	mm	A	All	1150	1150	1450	1450	1670	1670	1780	1780
Total height	mm	A1	All	910	910	1210	1210	1410	1410	1510	1510
Length	mm	B	All	1460	1460	1460	1460	1860	1860	2310	2310
Width	mm	C	All	1560	1560	1560	1560	1910	1910	1910	1910
Weight	kg		MB2	305	305	345	345	535	535	615	615
			MB4	315	315	365	365	560	560	645	645

Aermec reserves the right to make any modifications deemed necessary.
All data is subject to change without notice. Aermec does not assume responsibility or liability for errors or omissions.

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RTX 09-16

Roof-Top for applications in medium crowed

Cooling capacity 50 ÷ 135 kW
Heating capacity 49 ÷ 141 kW

- **For medium crowding applications**
- **Upgraded thermodynamic heat recovery**
- **Handling section with plug fan coupled with BRUSHLESS EC motors**
- **Free-cooling / enthalpic free-cooling / photocatalytic system option**



DESCRIPTION

Independent Roof -top type air cooled air conditioner, for treatment, filtration and renewal of the air , based on the chosen configuration.
RTX 09-16units are designed fot medium crowding applications, like shopping malls, shops, offices , production areas being designed for operation with 30% external and expelled air (version MB3). The unit based on the version and selected accessories allows the management of the free-cooling operation, and can be equipped with a recuperator to recover the energy contained in the exaust air allowing higher perfomances and efficiencies.

VERSIONS

F Cooling only
H Heat pump.

FEATURES

Refrigerant circuit

functioning with R410A refrigerant, consisting of scroll compressors in "uneven" tandem configuration (except for sizes 09, 10 and 14) to ensure maximum energy savings at partial loads and better adaptability to system demands, providing only the energy actually needed. The compressors are equipped with electric resistances on the guards and thermal protection on the exhaust. The compressor compartment is isolated from the air flow.

Ventilation

The air treatment cross-section ventilation, which represents the highest expense in terms of machine operating costs, is entrusted to the plug fans with EC brushless motors which enable high performance, easy flow rate adjustment, compactness, low noise, versatility and easy maintenance. Furthermore, a special adaptive logic allows you to adjust the air flow rate to actual system demand with further advantages in terms of consumption reduction.

Axial fans

The axial fans, located in the condensing section of the unit, are the helical type, statically and dynamically balanced, protected electrically and mechanically by grids. Electronic condensation control is optional in F versions and condensation and evaporation during winter functioning in H versions.
The fans are also available with electronically controlled (EC) permanent magnet synchronous motor.

Exchangers

The internal and external heat exchangers are finned pack direct expansion, made with copper pipes arranged in staggered rows and mechanically expanded to better adhere to the collar of the louvers. The louvers are made of aluminium with a special corrugated surfaces, suitably spaced to ensure maximum heat exchange yield.

Air filtration

Affidata a filtro con efficienza Coarse 55% (secondo EN ISO 16890) sul flusso d'aria di rinnovo.
Also available: compact filter with ePM1 50% efficiency or ePM1 80% efficiency (according to EN ISO 16890) and electronic filter on fresh air flow. Positioning upstream of the components to be protected to ensure low pressure drops, having a large surface. Air quality control systems are also available (VOC and CO2 probe).

Cleaning system with photocatalytic lamp

The Photocatalytic Oxidation technology generates natural oxidising ions capable of attracting and destroying the pollutants present in the air and on surfaces, by means of the combined action of UV rays with a catalyst structure composed of a four-metal alloy, mainly consisting of TiO_2 (titanium dioxide).

Thermoregulation

Electronic controller able to manage the different functioning modes, ensuring maximum energy savings in all conditions of use by means of special software. Interfaces to connect to remote supervision and control systems available as options. The electrical panel complete with all devices is easily accessible.
The free-cooling/heating and defrosting logics are particularly sophisticated. As soon as the external conditions allow it, the unit is able to automatically activate the free-cooling or free-heating mode, which cools or heats the served room, while keeping the compressors off and introducing suitably treated external air. This mode significantly reduces both energy consumption and wear of the compressors. These functions are also used when the external air energy content is not enough to cool or heat the room. In this case, the thermal cooling capacity is integrated by the compressors.

CONFIGURATIONS

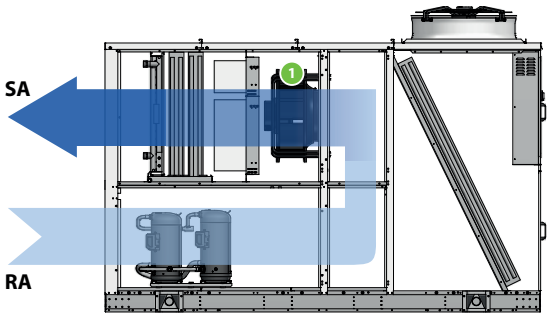
MB1: Single ventilating cross-section for recovery air.
Recovery air only configuration where no fresh air is required.
The useful flow and recovery static pressure is provided by the flow ventilating cross-section.

MB2: Single ventilating cross-section for recovery and external air.
Recovery and external air configuration. The useful flow and recovery static pressure is provided by the flow ventilating cross-section.
The presence of the recirculation damper (optional) allows for total free-cooling (100% external air).
If there are no extraction systems, the room will be in overpressure.

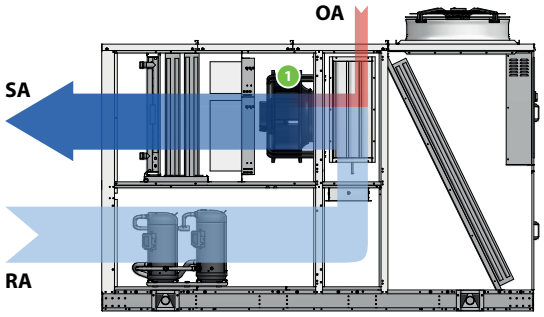
MB3: double ventilating cross-section (flow and return) for recovery air, external air and exhaust air, thermodynamic recovery.
Recovery, external and exhaust air configuration. The flow ventilating cross-section provides the useful flow static pressure while the recovery ventilating cross-section provides the useful recovery static pressure.
The double flow and recovery ventilating cross-section allows for total free-cooling (100% external air) without the need for a dedicated extraction system. The room overpressure or depression can be obtained by unbalancing the flow rates.
Thermodynamic recovery is performed by conveying expelled air on the external heat exchanger.

MB4: double ventilating cross-section (flow and expulsion) for recovery air, external air and exhaust air, thermodynamic recovery.
Recovery, external and exhaust air configuration. The flow ventilating cross-section provides the flow and recovery useful static pressure. The exhaust ventilating cross-section only controls the air flow rate to be expelled, with consequent reduction of the installed ventilation power.
The double flow and exhaust ventilating cross-section allows for partial free-cooling.
As for the MB3 version, it has the thermodynamic recovery function.
Advantages of thermodynamic recovery (MB3 - MB4 version):
— Energy recovery from the exhaust air flow that would otherwise be lost
— No further components are introduced and, therefore, there are no additional pressure drops
— Cooling circuit functioning with heat sources at more advantageous temperatures
— Reduction of defrosting cycles
— Increase in thermal and cooling efficiency
— Efficiency increase (EER/COP)

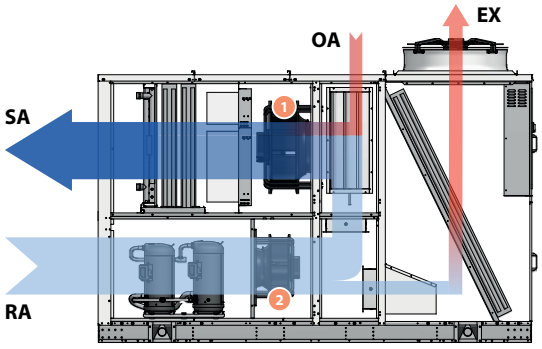
MB1



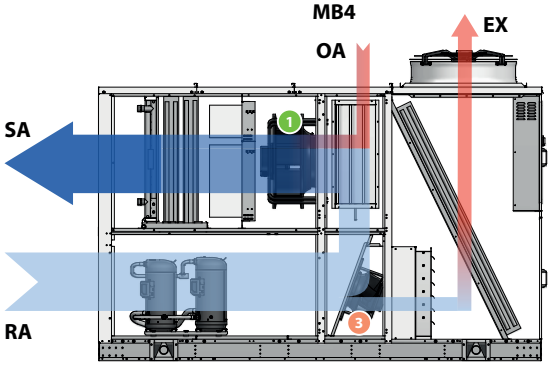
MB2



MB3



MB4



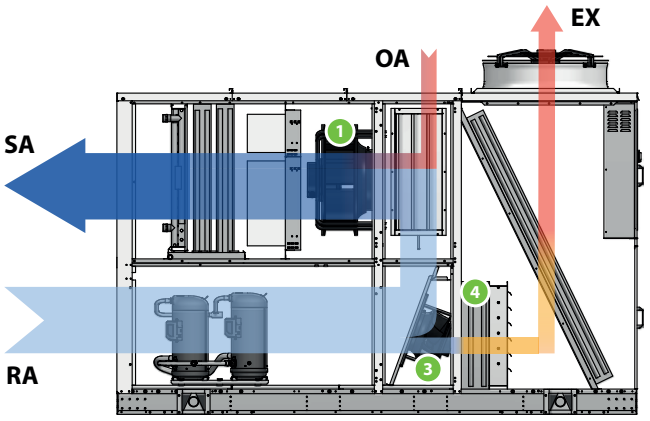
SA supply air
RA fresh air
OA fresh air
EX Exhaust air

1 Delivery fan
2 Return fan
3 Expulsion fan

MBT: DOUBLE VENTILATING CROSS-SECTION (FLOW AND EXPULSION) FOR RECOVERY AIR, EXTERNAL AIR AND EXHAUST AIR, UPGRADED THERMODYNAMIC RECOVERY.

Recovery, external and exhaust air configuration. The flow ventilating cross-section provides the flow and recovery useful static pressure.
The exhaust ventilating cross-section only controls the air flow rate to be expelled, with consequent reduction of the installed ventilation power.
The double flow and exhaust ventilating cross-section allows for partial free-cooling.
The MBT configuration allows for the upgraded thermodynamic recovery on the exhaust air by fully exploiting the energy content still present in it.
The exhaust flow rate, controlled by the dedicated exhaust fan, is conveyed to the innovative finned pack recovery coil, integrated in the cooling circuit of the unit.
The coil, perfectly hit by the air flow, recovers the energy still present in the exhaust flow and transfer it to the cooling circuit, increasing the treatment coil performance without increasing the input power of the compressors.
In summer functioning, the coil makes it possible to increase the liquid subcooling, while in winter functioning, the coil takes on part of the evaporation by operating the cooling circuit at more advantageous temperatures.
Advantages of upgraded thermodynamic recovery (MBT version):
— High heat exchange efficiency thanks to the dedicated recovery coil
— Further increase in unit cooling and heating capacity
— Further increase in unit efficiency (EER/COP)
— Reduced additional air side pressure drops (expelled air side only)

— The unit remains compact
— In heating functioning, the defrost cycles are further reduced due to the increase in evaporation temperature. The result is an increase in efficiency and greater room comfort.
— Compared to traditional passive recuperators, in heating functioning it allows for exhaust air recovery even with low temperature difference between external and indoor air (mild winters)
— Compared to traditional passive recuperators, in cooling functioning it allows for exhaust air recovery even with low temperature difference between external and indoor air (continental and temperate climate)
— The presence of the dedicated coil determines the recovery efficiency that can be used in the energy certification calculations.



SA supply air
RA fresh air
OA fresh air
EX Exhaust air

1 Delivery fan
2 Return fan
3 Expulsion fan
4 Dedicated thermodynamic recovery coil

ACCESSORIES

AXEC: Axial fans with EC motors with speed control function according to the pressure of condensation and evaporation.
AXECP: EC axial fans with available useful static pressure.
BAC: Interface card BACnet MS/TP pCOnet.
BE: Electric heating coil 2 stages.
BEM: Modulating electric heating coil.
BIP: Interface card Ethernet-pCOweb (BACNET IP)
BPGC: After heating coil with hot gas.
BW: 2-rows-heating coil with hot water.
BWV2V: 2 -rows -heating coil with hot water, with 2-way modulating valve.
BWV3V: 2-rows heating coil with hot water, with 3-way modulating valve.
CA: Waterproof covers on external air intake.
CF: Flue, only on unit with gas burner module.
CUR: Humidification control (humidity probe in recovery, limit humidity probe in supply , contact ON/OFF and modulating analog output).
DCPR: AC fans with pressure switch device of speed control function of the pressure of condensation and evaporation.
DP: Dehumidification control (humidity probe in recovery) and of after-heating (if present).
FCT: Partial Temperature Free-Cooling for MB2, MB4 versions.
FT7: F7 efficiency pocket filters positioned on the supply air flow.
FT9: Pocket filters F9 efficiency placed on the flow of supply air.
FTE: Electronic filters placed on the flow of supply air.
FTH: Enthalpy free-cooling.
GP: External coil protection grid.
Gx: Heating module with gas burner.
LFX: Device with photocatalytic effect.
LW: Interface card LonWorks.
MAN: High and low pressure gauges.
MSSM: Flow silencer module, only for rear flow.
MSSR: Recovery silencer module, only for rear air recovery.
PRT1: Wall/recessed (up to 50 m) remote control panel.
PRT2: Wall/recessed (up to 200 m) remote control panel.
PSFT: Differential pressure switch signalling dirty filters.
PSTEP: Adjusting constant flow, step flow in function of the modulation of the cooling circuit.
RF: Smoke detector.
RFC: Smoke detector and damper management.
RS: Serial card BMS RS485.
SCM: Modulating servo-controls (standard on MB3 model or if temperature or enthalpic free-cooling is present).
SCMRM: Modulating Servo-control with spring return.
SCO2: Probe CO2 (not available on MB1 fittings).
STA: Room temperature probe
SUA: Room humidity probe.
SVOC: Probe VOC (not available on MB1 fittings).
UP: Manufacturer of immersed electrodes supplied and steam ramp installed.
VT: Antivibration mounts.

PERFORMANCE SPECIFICATIONS

MB1

Size		09	10	11	12	13	14	15	16
Configuration: MB1									
Cooling performances (1)									
Cooling capacity	kW	50,00	60,10	68,60	81,00	93,40	103,50	114,00	125,30
Sensible cooling capacity	kW	40,10	46,10	52,70	63,20	70,90	81,80	89,30	97,10
Compressors absorbed power	kW	11,90	14,40	18,80	17,90	23,10	25,60	30,50	35,50
EER compressors		4,20	4,17	3,65	4,53	4,04	4,04	3,74	3,53
Heating performances (2)									
Heating capacity	kW	49,40	61,10	69,30	80,60	93,70	102,20	113,70	126,60
Compressors absorbed power	kW	9,80	12,20	15,50	15,70	20,60	21,00	24,40	28,40
Compressor COP		5,04	5,01	4,47	5,13	4,55	4,87	4,66	4,46

(1) Ambient air 27°C d.b./19°C w.b.; External air 35°C/24°C w.b.; Functioning with 30% of external and expelled air.
(2) Ambient air 20°C D.B./15°C W.B.; Outside air 7°C D.B./6°C W.B. (EN14511); Operation with 30% outside and expelled air.

MB2

Size		09	10	11	12	13	14	15	16
Configuration: MB2									
Cooling performances (1)									
Cooling capacity	kW	52,90	63,30	72,30	85,30	98,40	108,80	120,10	131,60
Sensible cooling capacity	kW	42,70	48,80	55,90	67,10	75,00	86,70	94,80	102,80
Compressors absorbed power	kW	12,10	14,60	19,00	18,10	23,30	25,90	30,90	35,90
EER compressors		4,37	4,34	3,81	4,71	4,22	4,20	3,89	3,67
Heating performances (2)									
Heating capacity	kW	50,50	61,90	70,60	82,20	94,90	103,60	115,30	128,10
Compressors absorbed power	kW	9,00	11,20	14,10	14,30	18,90	19,20	22,50	26,00
Compressor COP		5,61	5,53	5,01	5,75	5,02	5,40	5,12	4,93

(1) Ambient air 27°C d.b./19°C w.b.; External air 35°C/24°C w.b.; Functioning with 30% of external and expelled air.
(2) Ambient air 20°C D.B./15°C W.B.; Outside air 7°C D.B./6°C W.B. (EN14511); Operation with 30% outside and expelled air.

MB3

Size		09	10	11	12	13	14	15	16
Configuration: MB3									
Cooling performances (1)									
Cooling capacity	kW	53,40	63,70	73,10	86,10	99,30	110,00	121,30	133,30
Sensible cooling capacity	kW	43,00	48,90	56,20	67,40	75,30	87,00	95,10	103,20
Compressors absorbed power	kW	11,80	14,20	18,50	17,70	22,80	25,10	30,10	34,80
EER compressors		4,53	4,49	3,95	4,86	4,36	4,38	4,03	3,83
Heating performances (2)									
Heating capacity	kW	52,10	64,10	74,10	85,00	98,60	107,80	120,60	134,30
Compressors absorbed power	kW	9,20	11,40	14,40	14,60	19,10	19,40	22,90	26,70
Compressor COP		5,66	5,62	5,15	5,82	5,16	5,56	5,27	5,03

(1) Ambient air 27°C d.b./19°C w.b.; External air 35°C/24°C w.b.; Functioning with 30% of external and expelled air.
(2) Ambient air 20°C D.B./15°C W.B.; Outside air 7°C D.B./6°C W.B. (EN14511); Operation with 30% outside and expelled air.

MB4

Size		09	10	11	12	13	14	15	16
Configuration: MB4									
Cooling performances (1)									
Cooling capacity	kW	53,40	63,70	73,10	86,10	99,30	110,00	121,30	133,30
Sensible cooling capacity	kW	43,00	48,90	56,20	67,40	75,30	87,00	95,10	103,20
Compressors absorbed power	kW	11,80	14,20	18,50	17,70	22,80	25,10	30,10	34,80
EER compressors		4,53	4,49	3,95	4,86	4,36	4,38	4,03	3,83
Heating performances (2)									
Heating capacity	kW	52,10	64,10	74,10	85,00	98,60	107,80	120,60	134,30
Compressors absorbed power	kW	9,20	11,40	14,40	14,60	19,10	19,40	22,90	26,70
Compressor COP		5,66	5,62	5,15	5,82	5,16	5,56	5,27	5,03

(1) Ambient air 27°C d.b./19°C w.b.; External air 35°C/24°C w.b.; Functioning with 30% of external and expelled air.
(2) Ambient air 20°C D.B./15°C W.B.; Outside air 7°C D.B./6°C W.B. (EN14511); Operation with 30% outside and expelled air.

MBT

Size		09	10	11	12	13	14	15	16
Configuration: MBT									
Cooling performances (1)									
Cooling capacity	kW	57,10	67,80	78,00	90,50	103,70	116,90	128,80	140,60
Sensible cooling capacity	kW	46,60	53,00	61,20	71,90	79,70	94,00	102,60	110,60
Compressors absorbed power	kW	11,80	14,20	18,50	17,70	22,80	25,10	30,10	34,80
EER compressors		4,84	4,77	4,22	5,11	4,55	4,66	4,28	4,04
Heating performances (2)									
Heating capacity	kW	55,40	68,00	78,30	90,10	103,60	114,40	127,50	141,40
Compressors absorbed power	kW	9,20	11,40	14,40	14,60	19,10	19,40	22,90	26,70
Compressor COP		6,02	5,96	5,44	6,17	5,42	5,90	5,57	5,30
Recovery efficiency	%	84%	92%	87%	90%	85%	85%	82%	78%

(1) Ambient air 27°C d.b./19°C w.b.; External air 35°C/24°C w.b.; Functioning with 30% of external and expelled air.
(2) Ambient air 20°C D.B./15°C W.B.; Outside air 7°C D.B./6°C W.B. (EN14511); Operation with 30% outside and expelled air.

ENERGY INDEX

Size		09	10	11	12	13	14	15	16
Energy index									
SEER	W/W	4,24	3,94	3,76	3,92	3,89	4,22	4,10	4,05
ηsc	%	166.6%	154.5%	147.2%	153.9%	152.7%	165.7%	161.1%	159.1%
Pdesignh	kW	29	34	38	46	52	57	62	71
SCOP	W/W	3,59	3,50	3,30	3,27	3,22	3,47	3,41	3,38
ηsh	%	140.5%	137.0%	128.8%	127.7%	126.0%	135.9%	133.5%	132.3%

GENERAL TECHNICAL DATA

Size		09	10	11	12	13	14	15	16
Power supply									
Power supply	V/Ph/Hz	400V~3 50Hz	400V~3 50Hz	400V~3 50Hz	400V~3 50Hz	400V~3 50Hz	400V~3 50Hz	400V~3 50Hz	400V~3 50Hz
Compressor									
Type	type	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Number	no.	2	2	2	2	2	2	2	2
Circuits	no.	1	1	1	1	1	1	1	1
Refrigerant	type	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
Partialisation step	no.	2	2	3	3	3	2	3	3

FANS

External fans

Size		09	10	11	12	13	14	15	16
Configuration: MB1, MB2, MB3, MB4, MBT									
External fans									
Type	type	Assiali AC	Assiali AC	Assiali AC	Assiali AC	Assiali AC	Assiali AC	Assiali AC	Assiali AC
Number	no.	2	2	2	2	2	2	2	2

Internal fans MB1-MB2-MB3-MB4-MBT

Size		09	10	11	12	13	14	15	16
Configuration: MB1, MB2, MB3, MB4, MBT									
Internal fans									
Nominal air flow rate	m^3/h	9.500	11.000	13.000	15.000	17.000	20.000	22.000	24.000
Minimum air flow rate	m^3/h	6.650	7.700	9.100	10.850	12.600	14.000	15.400	16.800
Maximum air flow rate	m^3/h	9.500	11.000	13.000	15.500	18.000	20.000	22.000	24.000

Internal recovery fans

Size		09	10	11	12	13	14	15	16
Configuration: MB3									
Recovery									
Type	type	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC
Number	no.	1	1	1	2	2	2	2	2

Expulsion fan MB4-MBT

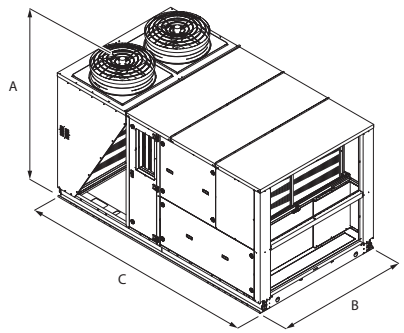
Size		09	10	11	12	13	14	15	16
Configuration: MBT									
Exhaust									
Type	type	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC
Number	no.	1	1	1	2	2	2	2	2

Internal flow fans

Size		09	10	11	12	13	14	15	16
Configuration: MB1, MB2, MB3, MB4, MBT									
Delivery									
Type	type	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC
Number	no.	1	1	1	2	2	2	2	2
Maximum useful head (1)	Pa	770	510	445	555	740	640	525	675
High static pressure (EN14511) (1)	Pa	200	200	200	200	250	250	250	300

(1) At the nominal/maximum flow rate with a new, clean air filter.

DIMENSIONS



Size		09	10	11	12	13	14	15	16
Dimensions and weights									
A	mm	2.061	2.061	2.061	2.373	2.373	2.440	2.440	2.440
B	mm	1.900	1.900	1.900	2.100	2.100	2.200	2.200	2.200
C	mm	3.400	3.400	3.400	3.400	3.400	4.000	4.000	4.000

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RTX-17-23

Roof-Top for applications in medium crowed

Cooling capacity 151 ÷ 307 kW
Heating capacity 152 ÷ 310 kW

- **For medium crowding applications**
- **Thermodynamic heat recovery**
- **Handling section with plug fan coupled with BRUSHLESS EC motors**
- **Free cooling / Enthalpy free cooling**



DESCRIPTION

Independent Roof -top type air cooled air conditioner, for treatment, filtration and renewal of the air , based on the chosen configuration.
The RTX 09-16 units are designed for installation in places with an average degree of crowding such as shopping centres, shops, offices and production sites, as operation uses 30% outside expelled air (versions MB3 and MB4). Depending on the version and the accessories chosen, the unit can manage free cooling mode. Versions MB3 and MB4 feature the thermodynamic recovery of the energy contained in the exhaust air, leading to higher performance and efficiency levels.

VERSIONS

F Cooling only
H Heat pump.

CONFIGURATIONS

MB1: Single ventilating cross-section for recovery air.
Recovery air only configuration where no fresh air is required.
The useful flow and recovery static pressure is provided by the flow ventilating cross-section.

MB2: Single ventilating cross-section for recovery and external air.
Recovery and external air configuration. The useful flow and recovery static pressure is provided by the flow ventilating cross-section.
The presence of the recirculation damper (optional) allows for total free-cooling (100% external air).
If there are no extraction systems, the room will be in overpressure.

MB3: double ventilating cross-section (flow and return) for recovery air, external air and exhaust air, thermodynamic recovery.
Recovery, external and exhaust air configuration. The flow ventilating cross-section provides the useful flow static pressure while the recovery ventilating cross-section provides the useful recovery static pressure.
The double flow and recovery ventilating cross-section allows for total free-cooling (100% external air) without the need for a dedicated extraction system. The room overpressure or depression can be obtained by unbalancing the flow rates.
Thermodynamic recovery is performed by conveying expelled air on the external heat exchanger.

MB4: double ventilating cross-section (flow and expulsion) for recovery air, external air and exhaust air, thermodynamic recovery.
Recovery, external and exhaust air configuration. The flow ventilating cross-section provides the flow and recovery useful static pressure. The exhaust ventilating cross-section only controls the air flow rate to be expelled, with consequent reduction of the installed ventilation power.
The double flow and exhaust ventilating cross-section allows for partial free-cooling.
As for the MB3 version, it has the thermodynamic recovery function.
Advantages of thermodynamic recovery (MB3 - MB4 version):
— Energy recovery from the exhaust air flow that would otherwise be lost
— No further components are introduced and, therefore, there are no additional pressure drops
— Cooling circuit functioning with heat sources at more advantageous temperatures
— Reduction of defrosting cycles
— Increase in thermal and cooling efficiency
— Efficiency increase (EER/COP)

FEATURES

— 2 cooling circuits with electronic thermostatic expansion valve;
— Scroll compressors (UNEVEN tandem) with high capacity and low electrical power consumption;
— Finned pack direct expansion internal and external exchangers;
— Plug fan type (EC) flow and exhaust fans (if any). The impellers are facing so as to ensure that the air flows through all the internal components with minimum noise;
— Axial fan unit for extremely silent functioning positioned on the condensing section.
— Filter with 55% COARSE efficiency (according to EN ISO 16890) on the fresh air flow; Also available: compact filter with ePM1 50% efficiency (according to EN ISO 16890). Positioning upstream of the components to be protected to ensure low pressure drops, having a large surface. Air quality control systems are also available (VOC and $CO_{2\ probe}$);
— The structure consists of a galvanised sheet metal base, frame in galvanised sheet metal shaped profiles powder coated in RAL9003

(self-bearing structure), pre-painted sheet metal panels (external) insulated with 28kg/mc dense adhesive insulation and sandwich type panels insulated with 25 mm thick 45kg/mc polyurethane, eco-friendly "GWP 0" (Global Warming Potential);
— The casing, designed to allow the internal components to be accessed for routine and extraordinary maintenance.

CONTROL

Microprocessor control able to manage the different functioning modes, ensuring maximum energy savings in any conditions of use. Interfaces to connect to remote supervision and control systems available as options.

FUNCTIONALITY AND TECHNOLOGICAL ADVANTAGES

RTX units are designed with the aim of reducing the energy consumption that subsequently dictated the technological choices made on the unit we will now introduce in brief.

Very high ventilation efficiency

As ventilation is one of the major power consumption factors, we dedicated particular attention to designing and constructing the ventilation system.
State-of-the-art plug fans with EC brushless motors have been used both in flow and in recovery (if any), which enable high performance and reduced consumption. Furthermore, compared to conventional centrifugal fans, they have no belts or pulleys, thus facilitating flow rate adjustment and resulting in compactness, versatility and easy maintenance.
Special adaptive logic allows you to adjust the air flow rate to actual system demand with further resulting advantages in terms of consumption reduction.

Axial fans for the external section of the unit are helical. Electronic condensation control is available as an accessory, which regulates fan speed based on the load required, allowing for noise reduction. As an option, the motors can have electronic control (EC) to reduce consumption even in the condensing part.

Maximum seasonal efficiency

To improve the efficiency of the cooling circuit, tandem scroll compressors of different power levels are used (UNEVEN compressors on all sizes). This distinctive trait, combined with the use of next generation fans, means reduced consumption and enhanced adaptability to system requests (particularly in partial load operation), guaranteeing boosted seasonal efficiency levels.

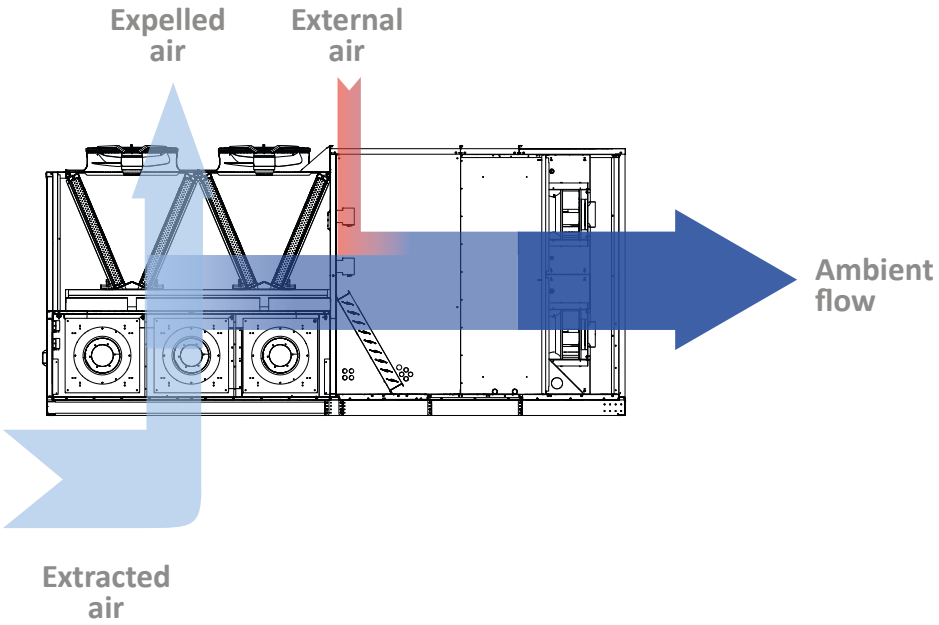
Room air quality

Special attention has been paid to the quality of the air in the room, entrusted to filters that ensure 55% COARSE efficiency as standard. There is also the option of F7, F9 or electronic filters on the fresh air flow.

Active thermodynamic recovery

In the MB3-MB4 configuration, the unit with thermodynamic recovery function also takes advantage of the energy contained in the exhaust air, which would otherwise be lost; this ensures better performance and efficiency.
All of these technological advantages are controlled by a thermoregulation that is able to manage the different functioning modes, ensuring maximum energy savings in all conditions of use via dedicated software.

MB3 CONFIGURATION WITH TWIN FAN SECTION FOR RECIRCULATION AIR, OUTSIDE AIR AND EXHAUST AIR. TOTAL FREE COOLING FUNCTION (WITH 100% OUTSIDE AIR) AND THERMODYNAMIC RECOVERY FUNCTION AS STANDARD.



ACCESSORIES

AXEC: Axial fans with EC motors with speed control function according to the pressure of condensation and evaporation.
AXECP: EC axial fans with available useful static pressure.
BAC: Interface card BACnet MS/TP pCOnet.
BE: Electric heating coil 2 stages.
BEM: Modulating electric heating coil.
BIP: Interface card Ethernet-pCOweb (BACNET IP)
BPGC: After heating coil with hot gas.
BW: 2-rows-heating coil with hot water.
BWV2V: 2 -rows -heating coil with hot water, with 2-way modulating valve.
BWV3V: 2-rows heating coil with hot water, with 3-way modulating valve.
CA: Waterproof covers on external air intake.
CF: Flue, only on unit with gas burner module.
CUR: Humidification control (humidity probe in recovery, limit humidity probe in supply , contact ON/OFF and modulating analog output).
DCPR: AC fans with pressure switch device of speed control function of the pressure of condensation and evaporation.
DP: Dehumidification control (humidity probe in recovery) and of after-heating (if present).
FCT: Partial Temperature Free-Cooling for MB2, MB4 versions.
FT7: F7 efficiency pocket filters positioned on the supply air flow.
FT9: Pocket filters F9 efficiency placed on the flow of supply air.
FTE: Electronic filters placed on the flow of supply air.
FTH: Enthalpy free-cooling.
GP: External coil protection grid.
Gx: Heating module with gas burner.
LFX: Device with photocatalytic effect.
LW: Interface card LonWorks.
MAN: High and low pressure gauges.
MSSM: Flow silencer module, only for rear flow.

MSSR: Recovery silencer module, only for rear air recovery.
PRT1: Wall/recessed (up to 50 m) remote control panel.
PRT2: Wall/recessed (up to 200 m) remote control panel.
PSFT: Differential pressure switch signalling dirty filters.
PSTEP: Adjusting constant flow, step flow in function of the modulation of the cooling circuit.
RF: Smoke detector.
RFC: Smoke detector and damper management.
RS: Serial card BMS RS485.
SCM: Modulating servo-controls (standard on MB3 model or if temperature or enthalpic free-cooling is present).
SCMRM: Modulating Servo-control with spring return.
SCO2: Probe CO2 (not available on MB1 fittings).
STA: Room temperature probe
SUA: Room humidity probe.
SVOC: Probe VOC (not available on MB1 fittings).
UP: Manufacturer of immersed electrodes supplied and steam ramp installed.
VT: Antivibration mounts.

PERFORMANCE SPECIFICATIONS

MB1

Size		17	18	19	20	21	22	23
Configuration: MB1								
Cooling performances (1)								
Cooling capacity	kW	151,90	170,10	191,70	213,30	231,70	246,10	289,10
Sensible cooling capacity	kW	114,30	125,40	136,10	151,60	164,70	178,50	202,30
Compressors absorbed power	kW	32,70	39,20	45,30	54,00	60,70	69,00	68,90
EER compressors		4,65	4,34	4,23	3,95	3,82	3,57	4,20
Heating performances (2)								
Heating capacity	kW	152,70	170,80	192,80	216,20	230,80	245,50	296,30
Compressors absorbed power	kW	28,20	33,90	39,20	43,90	46,30	51,20	58,60
Compressor COP		5,41	5,04	4,92	4,92	4,98	4,79	5,06

(1) Ambient air 27°C d.b./19°C w.b.; External air 35°C/24°C w.b.; Functioning with 30% of external and expelled air.
(2) Ambient air 20°C D.B./15°C W.B.; Outside air 7°C D.B./6°C W.B. (EN14511); Operation with 30% outside and expelled air.

MB2

Size		17	18	19	20	21	22	23
Configuration: MB2								
Cooling performances (1)								
Cooling capacity	kW	160,20	179,40	201,80	224,60	243,90	258,90	304,50
Sensible cooling capacity	kW	120,90	132,60	143,20	159,70	173,50	188,30	212,90
Compressors absorbed power	kW	33,10	39,50	45,60	54,60	61,60	69,80	69,70
EER compressors		4,84	4,54	4,43	4,11	3,96	3,71	4,37
Heating performances (2)								
Heating capacity	kW	155,10	174,20	195,50	219,50	234,00	248,60	300,70
Compressors absorbed power	kW	25,80	31,10	35,70	40,40	42,50	47,00	54,10
Compressor COP		6,01	5,60	5,48	5,43	5,51	5,29	5,56

(1) Ambient air 27°C d.b./19°C w.b.; External air 35°C/24°C w.b.; Functioning with 30% of external and expelled air.
(2) Ambient air 20°C D.B./15°C W.B.; Outside air 7°C D.B./6°C W.B. (EN14511); Operation with 30% outside and expelled air.

MB3

Size		17	18	19	20	21	22	23
Configuration: MB3								
Cooling performances (1)								
Cooling capacity	kW	161,30	181,10	203,70	226,90	246,70	262,10	307,20
Sensible cooling capacity	kW	121,30	133,30	143,80	160,50	174,50	189,20	213,90
Compressors absorbed power	kW	32,50	38,80	44,50	53,20	59,90	67,70	68,30
EER compressors		4,96	4,67	4,58	4,27	4,12	3,87	4,50
Heating performances (2)								
Heating capacity	kW	159,10	179,00	202,30	227,70	243,60	259,90	310,90
Compressors absorbed power	kW	26,20	31,40	36,30	41,00	43,30	47,90	55,00
Compressor COP		6,07	5,70	5,57	5,55	5,63	5,43	5,65

(1) Ambient air 27°C d.b./19°C w.b.; External air 35°C/24°C w.b.; Functioning with 30% of external and expelled air.
(2) Ambient air 20°C D.B./15°C W.B.; Outside air 7°C D.B./6°C W.B. (EN14511); Operation with 30% outside and expelled air.

MB4

Size		17	18	19	20	21	22	23
Configuration: MB4								
Cooling performances (1)								
Cooling capacity	kW	161,30	181,10	203,70	226,90	246,70	262,10	307,20
Sensible cooling capacity	kW	121,30	133,30	143,80	160,50	174,50	189,20	213,90
Compressors absorbed power	kW	32,50	38,80	44,50	53,20	59,90	67,70	68,30
EER compressors		4,96	4,67	4,58	4,27	4,12	3,87	4,50
Heating performances (2)								
Heating capacity	kW	159,10	179,00	202,30	227,70	243,60	259,90	310,90
Compressors absorbed power	kW	26,20	31,40	36,30	41,00	43,30	47,90	55,00
Compressor COP		6,07	5,70	5,57	5,55	5,63	5,43	5,65

(1) Ambient air 27°C d.b./19°C w.b.; External air 35°C/24°C w.b.; Functioning with 30% of external and expelled air.
(2) Ambient air 20°C D.B./15°C W.B.; Outside air 7°C D.B./6°C W.B. (EN14511); Operation with 30% outside and expelled air.

ENERGY INDEX

Size		17	18	19	20	21	22	23
Energy index								
SEER	W/W	4,01	3,94	4,18	3,92	4,15	3,94	3,85
ηsc	%	157.6%	154.6%	164.3%	153.8%	162.9%	154.5%	150.9%
Pdesignh	kW	89	98	109	123	130	141	168
SCOP	W/W	3,47	3,31	3,45	3,36	3,49	3,43	3,26
ηsh	%	135.7%	129.4%	134.8%	131.5%	136.4%	134.2%	127.3%

GENERAL TECHNICAL DATA

Size		17	18	19	20	21	22	23
Power supply								
Power supply	V/Ph/Hz	400V~3 50Hz	400V~3 50Hz	400V~3 50Hz	400V~3 50Hz	400V~3 50Hz	400V~3 50Hz	400V~3 50Hz
Compressor								
Type	type	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Number	no.	4	4	4	4	4	4	4
Circuits	no.	2	2	2	2	2	2	2
Refrigerant	type	R410A	R410A	R410A	R410A	R410A	R410A	R410A
Partialisation step	no.	6	6	6	6	6	6	6

FANS

External fans

Size		17	18	19	20	21	22	23
Configuration: MB1, MB2, MB3, MB4								
External fans								
Type	type	Assiali AC	Assiali AC	Assiali AC	Assiali AC	Assiali AC	Assiali AC	Assiali AC
Number	no.	4	4	4	4	4	4	4

Internal fans

Size		17	18	19	20	21	22	23
Configuration: MB1, MB2, MB3, MB4								
Internal fans								
Nominal air flow rate	m^3/h	26.000	29.000	33.000	37.000	40.000	44.000	48.000
Minimum air flow rate	m^3/h	18.200	20.300	23.100	25.900	28.000	30.800	33.600
Maximum air flow rate	m^3/h	36.000	36.000	44.000	44.000	53.000	53.000	53.000

Internal recovery fans

Size		17	18	19	20	21	22	23
Configuration: MB3								
Recovery								
Type	type	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC
Number	no.	3	3	3	3	3	3	3

Expulsion fan

Size		17	18	19	20	21	22	23
Configuration: MB4								
Exhaust								
Type	type	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC
Number	no.	2	2	2	2	2	2	2

Internal flow fans

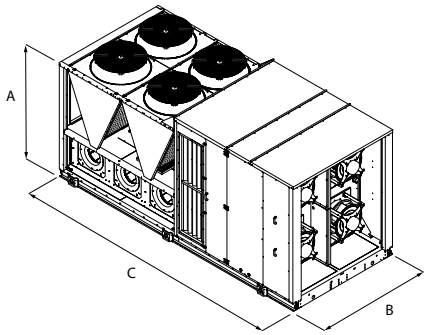
Size		17	18	19	20	21	22	23
Configuration: MB1								
Delivery								
Type	type	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC
Number	no.	2	2	3	3	3	4	4
Maximum useful head (1)	Pa	700	475	520	580	520	690	550
High static pressure (EN14511) (1)	Pa	350	350	350	350	350	350	350

(1) At the nominal/maximum flow rate with a new, clean air filter.

Size		17	18	19	20	21	22	23
Configuration: MB2, MB3, MB4								
Delivery								
Type	type	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC
Number	no.	2	2	3	3	3	4	4
Maximum useful head (1)	Pa	519	341	330	470	460	636	467
High static pressure (EN14511) (1)	Pa	350	350	350	350	350	350	350

(1) At the nominal/maximum flow rate with a new, clean air filter.

DIMENSIONS



Size		17	18	19	20	21	22	23
Dimensions and weights								
A	mm	2.430	2.430	2.430	2.430	2.430	2.430	2.430
B	mm	2.200	2.200	2.200	2.200	2.200	2.200	2.200
C	mm	5.210	5.210	5.210	5.210	7.750	7.750	7.750

Aermec reserves the right to make any modifications deemed necessary.
All data is subject to change without notice. Aermec does not assume
responsibility or liability for errors or omissions.

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