RTX-N1-N8

Roof-Top for applications in medium crowed

Cooling capacity 12,70 ÷ 49,95 kW
Heating capacity 13,50 ÷ 50,79 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 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.

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.

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 and has the thermodynamic recovery function.
Advantages of thermodynamic recovery (MB4):
— 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;
— High efficiency scroll compressors with low 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.

Room air quality

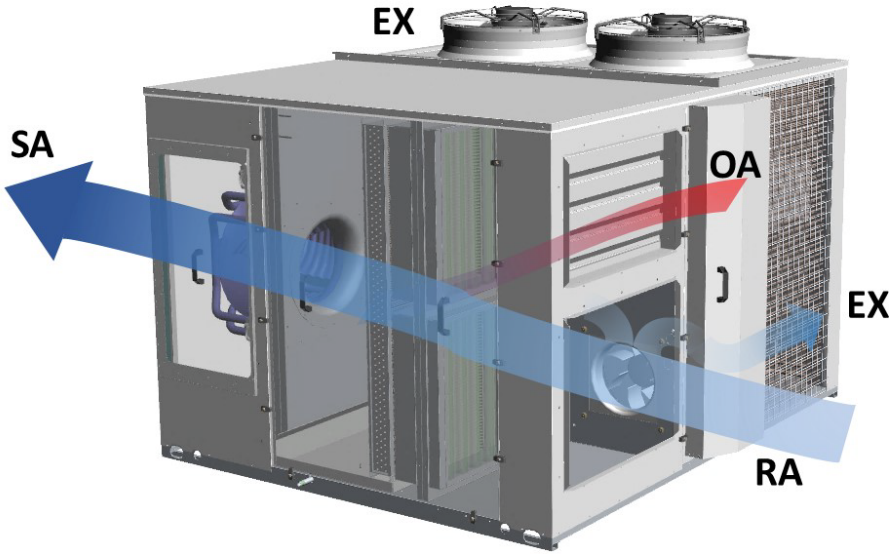
Special attention was paid to the quality of the room air, entrusted to the standard 55% COARSE efficiency filters. F7 filters are also available as optional.

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.

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.

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



SA Supply air
EX Exhaust air
OA Fresh air
RA Return air

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.
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.
DP: Dehumidification control (humidity probe in recovery) and of after-he- ating (if present).
FCT: Partial Temperature Free-Cooling for MB2, MB4 versions.
FT7: F7 efficiency pocket filters positioned on the supply air flow.
GP: External coil protection grid.
LW: Interface card LonWorks.
PRT1: Wall/recessed (up to 50 m) remote control panel.
PRT2: Wall/recessed (up to 200 m) remote control panel.
PSF4: Differential pressure switch signalling dirty recovery and renewal filters (if any).
PSTEP: Adjusting constant flow, step flow in function of the modulation of the cooling circuit.
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).
VT: Antivibration mounts.

PERFORMANCE SPECIFICATIONS

Size		N1	N2	N3	N4	N5	N6	N7	N8
Configuration: MB1									
Cooling performances (1)									
Cooling capacity	kW	12,70	15,50	19,10	22,20	28,60	33,00	43,00	47,00
Sensible cooling capacity	kW	8,60	10,40	12,80	14,80	19,00	22,40	28,80	32,10
Compressors absorbed power	kW	3,30	4,20	5,00	6,00	7,20	8,70	11,40	12,50
EER compressors		3,87	3,71	3,82	3,69	3,98	3,79	3,75	3,75
Heating performances (2)									
Heating capacity	kW	13,50	16,10	19,90	23,00	29,60	34,00	44,70	48,50
Compressors absorbed power	kW	3,07	3,65	4,28	5,15	6,23	6,86	9,43	10,02
Compressor COP		4,40	4,41	4,64	4,47	4,75	4,96	4,74	4,84

(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.

Size		N1	N2	N3	N4	N5	N6	N7	N8
Configuration: MB2									
Cooling performances (1)									
Cooling capacity	kW	13,42	16,34	20,16	23,35	30,21	34,79	45,26	49,44
Sensible cooling capacity	kW	8,92	10,86	13,40	15,40	19,70	23,40	30,00	33,50
Compressors absorbed power	kW	3,33	4,22	5,04	6,07	7,29	8,85	11,65	12,74
EER compressors		4,03	3,87	4,00	3,85	4,14	3,93	3,88	3,88
Heating performances (2)									
Heating capacity	kW	13,65	16,24	20,02	23,18	29,87	34,22	45,17	48,94
Compressors absorbed power	kW	2,77	3,31	3,86	4,65	5,62	6,15	8,58	9,22
Compressor COP		4,92	4,91	5,18	4,99	5,32	5,57	5,26	5,31

(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.

Size		N1	N2	N3	N4	N5	N6	N7	N8
Configuration: MB4									
Cooling performances (1)									
Cooling capacity	kW	13,49	16,49	20,33	23,58	30,45	35,16	45,65	49,95
Sensible cooling capacity	kW	8,93	10,91	13,40	15,50	19,80	23,50	30,20	33,60
Compressors absorbed power	kW	3,27	4,12	4,92	5,90	7,13	8,59	11,39	12,43
EER compressors		4,13	4,00	4,13	4,00	4,27	4,10	4,01	4,02
Heating performances (2)									
Heating capacity	kW	14,00	16,81	20,69	24,05	30,77	35,50	46,63	50,79
Compressors absorbed power	kW	2,81	3,36	3,92	4,73	5,71	6,27	8,74	9,38
Compressor COP		4,98	5,00	5,28	5,08	5,39	5,67	5,33	5,41

(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			N1	N2	N3	N4	N5	N6	N7	N8
Energy index										
SEER	H	W/W	3,73	3,60	3,76	3,70	3,86	3,86	3,80	3,77
ηsc	H	%	146.1%	141.2%	147.5%	144.8%	151.5%	151.5%	148.8%	147.8%
Pdesignh	H	kW	7	9	11	13	16	19	25	26
SCOP	H		3,47	3,34	3,46	3,36	3,29	3,50	3,47	3,44
ηsh	H	%	135.6%	130.5%	135.4%	131.2%	128.7%	137.1%	135.7%	134.4%

GENERAL TECHNICAL DATA

Size		N1	N2	N3	N4	N5	N6	N7	N8
Power supply									
Power supply		400V~3N 50Hz	400V~3N 50Hz	400V~3N 50Hz	400V~3N 50Hz	400V~3 50Hz	400V~3 50Hz	400V~3 50Hz	400V~3 50Hz
Compressor									
Type	type	Scroll							
Number	no.	2	2	2	2	2	2	2	2
Circuits	no.	2	2	2	2	2	2	2	2
Refrigerant	type	R410A							
Sound data									
Sound power level	dB(A)	73,3	73,7	76,4	76,3	81,2	79,7	82,8	82,9
Sound pressure (1)	dB(A)	65,3	65,8	68,5	68,3	73,2	71,7	74,8	74,9

(1) MB1 configuration sound pressure measured in free field (Q=2), 1m away from the outer surface of the ducted unit, high static pressure 50 Pa (EN ISO 9614-2).. 3 dB(A) tolerance on sound power level (Eurovent 8/1).

FANS

Size			N1	N2	N3	N4	N5	N6	N7	N8
Configuration: MB1, MB2, MB4										
External fans										
Type	H	type	axials	axials	axials	axials	axials	axials	axials	axials
Number	H	no.	2	2	2	2	2	2	2	2

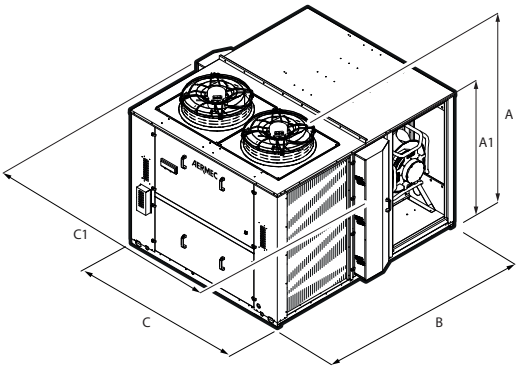
Size			N1	N2	N3	N4	N5	N6	N7	N8
Configuration: MB1, MB2, MB4										
Internal fans										
Nominal air flow rate	H	m^3/h	2000	2800	3500	4000	5000	6500	8000	9500
Minimum air flow rate	H	m^3/h	1800	1800	2700	2700	4000	4000	6500	6500
Maximum air flow rate	H	m^3/h	2900	2900	4100	4100	6900	6900	10100	10100

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

Size			N1	N2	N3	N4	N5	N6	N7	N8
Configuration: MB1, MB2										
Delivery										
Type	H	type	Brushless EC	Brushless EC	Brushless EC	Brushless EC	Brushless EC	Brushless EC	Brushless EC	Brushless EC
Number	H	no.	1	1	1	1	1	1	1	1
Maximum useful head (1)	H	Pa	755	575	460	555	435	460	575	765
High static pressure (EN14511) (1)	H	Pa	100	100	124	124	124	150	150	200
Configuration: MB4										
Delivery										
Type	H	type	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC
Number	H	no.	1	1	1	1	1	1	1	1
Maximum useful head (1)	H	Pa	755	575	460	555	435	460	575	765
High static pressure (EN14511) (1)	H	Pa	100	100	124	124	124	150	150	200

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

DIMENSIONS



Size			N1	N2	N3	N4	N5	N6	N7	N8
Configuration: MB1										
Dimensions and weights										
A	H	mm	1170	1170	1470	1470	1610	1610	1710	1710
A1	H	mm	910	910	1210	1210	1410	1410	1510	1510
B	H	mm	1460	1460	1460	1460	1860	1860	2310	2310
C	H	mm	1560	1560	1560	1560	1910	1910	1910	1910
C1	H	mm	-	-	-	-	-	-	-	-
Empty weight	H	kg	335	335	405	405	594	594	745	745
Configuration: MB2										
Dimensions and weights										
A	H	mm	1170	1170	1470	1470	1610	1610	1710	1710
A1	H	mm	910	910	1210	1210	1410	1410	1510	1510
B	H	mm	1460	1460	1460	1460	1860	1860	2310	2310
C	H	mm	1560	1560	1560	1560	1910	1910	1910	1910
C1	H	mm	-	-	-	-	-	-	-	-
Empty weight	H	kg	335	335	405	405	594	594	745	745
Configuration: MB4										
Dimensions and weights										
A	H	mm	1170	1170	1470	1470	1610	1610	1710	1710
A1	H	mm	910	910	1210	1210	1410	1410	1510	1510
B	H	mm	1460	1460	1460	1460	1860	1860	2310	2310
C	H	mm	-	-	-	-	-	-	-	-
C1	H	mm	1850	1850	1850	1850	2200	2200	2200	2200
Empty weight	H	kg	345	345	429	429	619	619	775	775

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