RTY

Roof-Top for high-crowding applications

Cooling capacity 30.2 ÷ 133.6 kW
Heating capacity 29.3 ÷ 137.9 kW

- **For high-crowding applications**
- **Thermodynamic heat recovery**
- **Handling section with plug fan coupled with BRUSHLESS EC motors**
- **Free cooling option**

DESCRIPTION

Independent Roof -top type air cooled air conditioner, for treatment, filtration and renewal of the air , based on the chosen configuration.
The RTY 01-10 units are designed for highly crowded contexts such as cinemas, conference halls, restaurants and discos, as they work with 80% outside and exhaust air.

CONFIGURATIONS

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.

FEATURES

— 1 refrigerant circuit;
— 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 $CO_{2\ probe}$);
— Electronic control of condensation and evaporation as standard, to further extend the operating limits of the unit;

The standard unit permits the use of free cooling mode and the thermodynamic recovery of the energy in the exhaust air, guaranteeing higher output and efficiency levels.

VERSIONS

H Heat pump.

— 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 size taglie except size 08). 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.

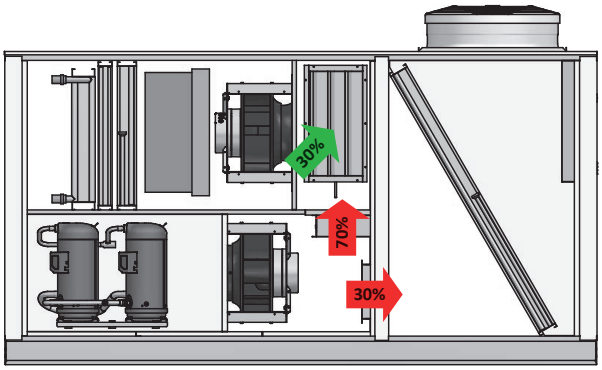
Room air quality

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 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.
DP: Dehumidification control (humidity probe in recovery) and of after-heating (if present).
FT7: F7 efficiency pocket filters positioned on the supply air flow.
FT9: Pocket filters F9 efficiency placed on the flow of supply air.
FTH: Enthalpy free-cooling.
GP: External coil protection grid.
Gx: Heating module with gas burner.
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.
PR1: Remote control panel.
PSF2: 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.
RF: Smoke detector.
RFC: Smoke detector and damper management.
RS: Serial card BMS RS485.
SCMRM: Modulating Servo-control with spring return.
SCO2: Probe CO2 (not available on MB1 fittings).
SSV: Supervision systems.
STA: Room temperature probe
SUA: Room humidity probe.
SVOC: Probe VOC (not available on MB1 fittings).
U: Steam ramp installed.
UP: Manufacturer of immersed electrodes supplied and steam ramp installed.
VT: Antivibration mounts.

PERFORMANCE SPECIFICATIONS

MB3

Size		01	02	03	04	05	06	07	08	09	10
Configuration: MB3											
Cooling performances (1)											
Cooling capacity	kW	30,20	39,60	48,70	65,40	75,30	84,30	90,90	107,60	121,40	133,60
Sensible cooling capacity	kW	21,20	27,10	32,60	43,10	48,90	55,20	61,10	70,50	80,60	87,40
Compressors absorbed power	kW	5,30	8,40	9,70	13,10	15,20	17,50	18,50	23,30	27,60	32,60
EER compressors		5,70	4,71	5,00	5,00	4,96	4,82	4,92	4,61	4,39	4,09
Heating performances (2)											
Heating capacity	kW	29,30	39,70	48,50	66,50	76,60	85,80	91,40	110,40	123,40	137,90
Compressors absorbed power	kW	4,40	7,00	8,40	12,40	14,20	15,70	15,50	19,20	21,80	25,50
Compressor COP		6,67	5,68	5,77	5,38	5,39	5,47	5,89	5,73	5,66	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		01	02	03	04	05	06	07	08	09	10
Energy index											
SEER	W/W	4,78	4,68	4,19	3,46	3,37	3,40	3,27	3,46	3,45	3,24
ηsc	%	188,40	184,40	164,60	135,50	131,80	133,00	127,70	135,60	134,90	126,70
Pdesignh	kW	26	35	44	62	70	78	82	99	110	122
SCOP	W/W	4,16	3,97	3,55	2,97	2,95	3,01	2,99	3,15	3,10	2,99
ηsh	%	163,60	155,70	139,00	115,70	115,10	117,40	116,40	122,90	121,20	116,60

GENERAL TECHNICAL DATA

Size		01	02	03	04	05	06	07	08	09	10
Configuration: MB3											
Power supply											
Power supply	V/Ph/Hz	400V 3 ~ 50Hz									
Compressor											
Type	type	Scroll									
Number	no.	2	2	2	2	2	2	2	2	2	2
Circuits	no.	1	1	1	1	1	1	1	1	1	1
Refrigerant	type	R410A									
Partialisation step	no.	3	3	3	3	3	3	3	3	3	3

FANS

External fans

Size		01	02	03	04	05	06	07	08	09	10
Configuration: MB3											
External fans											
Type	type	Axial	Axial	Axial	Axial	Axial	Axial	Axial	Axial	Axial	Axial
Number	no.	1	1	2	2	2	2	2	2	2	2

Internal fans

Size		01	02	03	04	05	06	07	08	09	10
Configuration: MB3											
Internal fans											
Nominal air flow rate	m^3/h	3.500	4.500	5.500	7.000	8.000	9.500	11.500	14.000	15.000	16.500
Minimum air flow rate	m^3/h	2.450	3.150	3.850	4.900	5.600	6.650	8.050	9.800	10.500	11.550
Maximum air flow rate	m^3/h	3.500	4.500	5.500	7.000	8.000	9.500	11.500	14.000	15.000	16.500

Internal recovery fans

Size		01	02	03	04	05	06	07	08	09	10
Configuration: MB3											
Recovery											
Type	type	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC
Number	no.	1	1	1	1	1	1	1	2	2	2

Expulsion fan

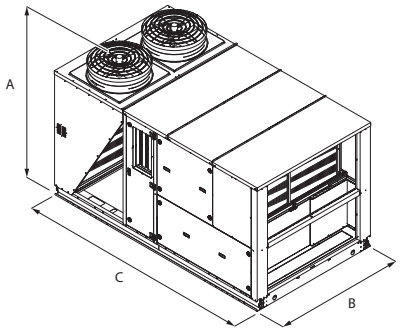
Size		01	02	03	04	05	06	07	08	09	10
Configuration: MB3											
Exhaust											
Type	type	-	-	-	-	-	-	-	-	-	-
Number	no.	-	-	-	-	-	-	-	-	-	-

Internal flow fans

Size		01	02	03	04	05	06	07	08	09	10
Configuration: MB3											
Delivery											
Type	type	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC	RAD EC
Number	no.	1	1	1	1	1	1	1	1	1	2
Maximum useful head (1)	Pa	150	150	200	200	200	250	250	250	300	300
High static pressure (EN14511) (1)	Pa	-	-	-	-	-	-	-	-	-	-

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

DIMENSIONS



Size		01	02	03	04	05	06	07	08	09	10
Configuration: MB3											
Dimensions and weights											
A	mm	2.061	2.061	2.061	2.373	2.373	2.373	2.373	2.373	2.373	2.373
B	mm	1.900	1.900	1.900	2.100	2.100	2.100	2.100	2.100	2.100	2.100
C	mm	3.400	3.400	3.400	3.400	3.400	3.400	3.400	3.400	3.400	3.400

Aermec reserves the right to make any modifications deemed necessary.
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