# RTY 01-10

## Rooftop

**Cooling capacity 30,2 ÷ 133,6 kW**
**Heating capacity 29,3 ÷ 137,9 kW**

- **Handling section with plug fans coupled with brushless EC motors**
- **Thermodynamic heat recovery**
- **Free-cooling operation**
- **For high crowding applications**


Independent Roof-top type air conditioner for treatment, filtration and renewal of the air, based on the chosen configuration. RTY units are designed for high crowding applications, such as cinemas, conference rooms, restaurants, nightclubs being intended for operation with 80% external and expelled air .
The standard unit allows to manage the cooling operation and the recovery of the energy contained in the exhaust air allowing higher performances and efficiencies.

### VERSIONS

**RTY_H** heat pumps

### CONFIGURATIONS

**MB3** with mixing chamber with three dampers, return fan and heat recovery from expelled air.

The configuration can be further customized with a wide choice of accessories

— 1 refrigerant circuit
— High efficiency scroll compressors (tandem UNEVEN) and low power consumption
— Finned exchangers of the refrigerant circuit direct expansion.
— Supply and return fans, of plug fan type (EC). The impellers are so oriented to ensure that the air flow passes through all the internal components, with the minimum noise.
— Group of axial fans for extremely silent operation placed on the condensing section.
— Electronic control of condensation and evaporation are standard to extend further the operating limits of the unit.
— G4 air filter on the flow of outside air and on the recovery; they are installed upstream of the components, to ensure low pressure drops.

### CONTROL

Microprocessor control can handle the different modes of operation ensuring maximum energy savings in any conditions C
Interfaces for connections to remote control supervision system, available as optional.

### ACCESSORIES AND FITTINGS

**SSV:** Supervision system
**RS:** Serial card BMS RS485
**LW:** Interface card LonWorks
**BIP:** Interface card Ethernet-pCOweb (BACNET IP)
**BAC:** interface card BACnet MS/TP pCOnet
**FTH:** Enthalpic free-cooling
**PSTEP:** Adjusting constant flow, step flow in function of the modulation of the cooling circuit
**FT7:** pocket filters F7 efficiency placed on the flow of supply air.
**FT9:** Pocket filters F9 efficiency placed on the flow of supply air
**H10:** Electronic filters placed on the flow of supply air.
**PSF2:** Differential pressure switch signaling fouled filters of recovery, renewal and discharge
**Gx:** Heating module with gas burner
**BW:** 2-rows heating coil with hot water
**BWV2V:** 2-rows heating coil with with hot water, with 2-way modulating valve.
**BWV3V:** 2-rows heating coil with hot water, with 3-way modulating valve.
**BE:** Electric heating coil 2 stages **(not available with hot air generator)**
**BEM:** Modulating electric heating coil **(not available with hot air generator)**
**BPGC:** After heating coil with hot gas .
**AXEC:** Axial fans with EC motors with speed control function according to the pressure of condensation and evaporation.
**MAN:** High and low pressure gauges
**U:** installed steam ramp
**UP:** Immersed electrode producer standard supplied and installed steam ramp
**CUR:** Humidification control (Humidity probe in recovery , limit humidity probe in supply, contact ON/OFF and modulating analog output)
**DP:** Dehumidification control (humidity probe in recovery) and of after-heating (if present)
**SCO2:** Probe CO2
**SVOC:** Probe VOC
**STA:** Room temperature probe
**SUA:** Room humidity probe

**RF:** Smoke detector
**RFC:** Smoke detector and recirculation damper closure management and external air intake
**PR1:** Remote control panel
**SCMRM:** Modulating servo-controls with spring return
**CA:** Waterproof headphones on external air intake
**CF:** Flue pipe (only on version with gas burner module)

**GP:** Protection grille for external coils
**VT:** antivibration mounts
**MSSM:** Delivery silencers forms (only for rear air delivery)
**MSSR:** Recovery silencers forms (only for rear air delivery)

*NOTE: for more details on accessories and equipment, please refer to the technical handbook.*

## FEATURES AND TECHNOLOGICAL ADVANTAGES

RTY units have been designed with the aim of reducing energy consumption that dictated the result of technological choices present on the unit that we briefly present.

### HIGH EFFICIENCY VENTILATION

Ventilation is one of the major factors of power consumption, for this reason particular attention has been given to the study and the construction of the ventilation system.

Fans type plug-fans with brushless EC motors have been used in both supply and recovery; they enables high performances and low power consumption; also comparing them to conventional centrifugal fans, they have no belts or pulleys allowing easy flow regulation, compactness, versatility and ease of maintenance.
A particular adaptive logic allows to adjust the air flow to the actual demand of the system with more consequent advantages in terms of reduction of consumption.

Axial fans for the external section of the unit are of helycal type; the electronic control of condensation is standard and it regulates the fan speed according to the load required, allowing a noise reduction.
As an option, the motors can be electronically controlled (EC) for the reduction in consumption of the condenser section.

### MAXIMUM SEASONAL EFFICIENCIES

To improve the efficiency of the refrigerant circuit, we have used scroll tandem compressors with different power between them (compressors UNEVEN except for size 08. This feature allows a reduction of consumptions and a better adaptability to the demands of the system, especially in the operation at partial loads, ensuring higher seasonal efficiency.

### AIR QUALITY IN THE ROOM

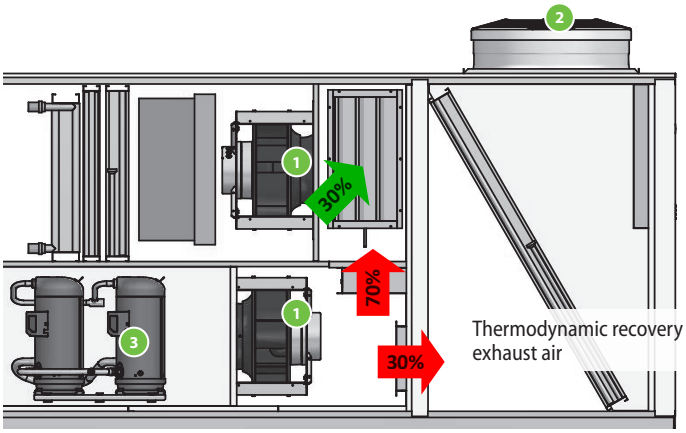
Particular attention has been given naturally also to the quality of air in the room, **entrusted to the standard filters with G4 efficiency on the flow of outside air, also available on the recovery (optional) for process applications.**
They are also available as an (optional) compact filters F7 and F9 or electronic H10 on the flow of fresh air.

### ACTIVE THERMODYNAMIC RECOVERY

**It is also available a thermodynamic recovery for the recovery of the energy contained in the exhaust air** in such a way that the flow of exhaust air invests the external finned heat exchanger, allowing higher performances and efficiencies.

Of course all these technological advantages are controlled by a temperature control of the latest generation, able to handle the different modes of operation; ensuring maximum energy savings in all operating conditions by means of a special software.

## CONFIGURATION WITH THERMODYNAMIC RECOVERY "MB3"




1 Plugfan supply and recovery
2 Axial fans
3 Tandem scroll compressors

## PERFORMANCE SPECIFICATIONS

***Mod. RTY Heat pump***

| Size | | | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cooling capacity | (1) | kW | 30,2 | 39,6 | 48,7 | 65,4 | 75,3 | 84,3 | 90,9 | 107,6 | 121,4 | 133,6 |
| Sensitive cooling capacity | | kW | 21,2 | 27,1 | 32,6 | 43,1 | 48,9 | 55,2 | 61,1 | 70,5 | 80,6 | 87,4 |
| Sensitive / total cooling power | | kW | 0,70 | 0,68 | 0,67 | 0,66 | 0,65 | 0,66 | 0,67 | 0,66 | 0,66 | 0,65 |
| Compressor input power | | kW | 5,3 | 8,4 | 9,7 | 13,1 | 15,2 | 17,5 | 18,5 | 23,3 | 27,6 | 32,6 |
| EER | | W/W | 5,70 | 4,71 | 5,00 | 5,00 | 4,96 | 4,82 | 4,92 | 4,61 | 4,39 | 4,09 |
| EER global | | W/W | 4,63 | 4,02 | 3,86 | 3,54 | 3,54 | 3,44 | 3,41 | 3,33 | 3,20 | 3,01 |
| Heating capacity | (2) | kW | 29,3 | 39,7 | 48,5 | 66,5 | 76,6 | 85,8 | 91,4 | 110,4 | 123,4 | 137,9 |
| Compressor input power | | kW | 4,4 | 7,0 | 8,4 | 12,4 | 14,2 | 15,7 | 15,5 | 19,2 | 21,8 | 25,5 |
| COP | | W/W | 6,67 | 5,68 | 5,77 | 5,38 | 5,39 | 5,47 | 5,89 | 5,73 | 5,66 | 5,41 |
| COP global | | W/W | 5,21 | 4,70 | 4,30 | 3,75 | 3,78 | 3,77 | 3,85 | 3,91 | 3,84 | 3,70 |

(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) Internal temperature 20°C d.b., 15°C w.b.; External temperature 7°C d.b. 6°C w.b.;

## GENERAL TECHNICAL DATA

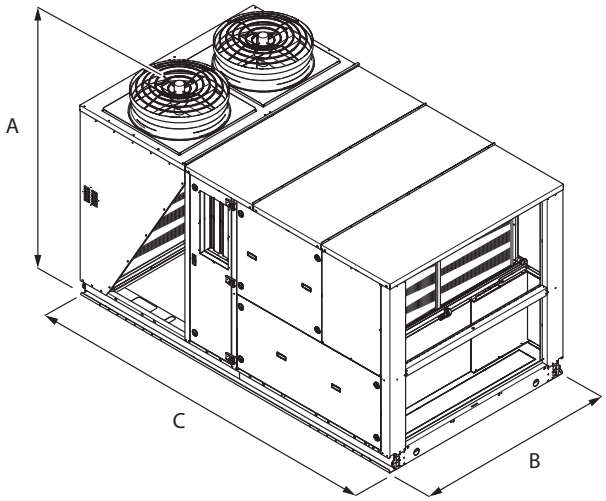
| Size | | | | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Compressors** | | | | | | | | | | | | | |
| Compressors | | | type | Scroll | | | | | | | | | |
| | | | n° | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Circuits | | | n° | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Capacity steps | (1) | | % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 |
| Refrigerant gas | | | type | R410A | | | | | | | | | |
| **Fans** | | | | | | | | | | | | | |
| External fans | | | type | Axials AC | | | | | | | | | |
| | | | n° | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Internal fans of flow | | | type | RAD EC | | | | | | | | | |
| | | | n° | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
| | | | Ø mm | 400 | 450 | 450 | 450 | 450 | 450 | 500 | 560 | 630 | 450 |
| Internal fans of recovery | | | type | RAD EC | | | | | | | | | |
| | | | n° | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 |
| | | | Ø mm | 400 | 450 | 450 | 450 | 450 | 500 | 500 | 450 | 450 | 450 |
| Air flow of inside fan | | nom/max | $m^3/h$ | 3500 | 4500 | 5500 | 7000 | 8000 | 9500 | 11500 | 14000 | 15000 | 16500 |
| | | min | $m^3/h$ | 2450 | 3150 | 3850 | 4900 | 5600 | 6650 | 8050 | 9800 | 10500 | 11550 |
| Available static pressure of supply | (2) | max | Pa | 150 | 150 | 200 | 200 | 200 | 250 | 250 | 250 | 300 | 300 |
| Available static pressure of recovery | (2) | max | Pa | 171 | 184 | 248 | 235 | 245 | 311 | 336 | 372 | 439 | 465 |
| Power supply | | | V/ph/Hz | 400V/3/50Hz | | | | | | | | | |

(1) Sizes 08 don't have UNEVEN compressors
(2) At the nominal/maximum flow rate, G4 medium fouling filter

Sound pressure: Sound pressure measured in free field, (1m, Q=2) away from the external surface of the ducted unit, available static pressure 300Pa at a nominal flow (in accordance with the UNI EN ISO 3744).

*Note: For more informations please refer to the technical documentation available on the website www.aermec.com*

## DIMENSIONS




| Size | | Vers. | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimensions** | | | | | | | | | | | | |
| A | mm | All | 2061 | 2061 | 2061 | 2373 | 2373 | 2373 | 2373 | 2373 | 2373 | 2373 |
| B | mm | All | 1900 | 1900 | 1900 | 2100 | 2100 | 2100 | 2100 | 2100 | 2100 | 2100 |
| C | mm | All | 3400 | 3400 | 3400 | 3400 | 3400 | 3400 | 3400 | 3400 | 3400 | 3400 |



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