



COMPACT VENTILATION UNITS  
**DUPLEX R5**





## COMPANY HISTORY

**ATREA** was founded in 1990 in Jablonec nad Nisou in the Czech Republic as a purely family company. Even today, it still remains a family company, although in the meantime it has become an important player on the European market.

Production of recuperative units – ventilation units with recuperation of heat gain was the main orientation of the company ATREA from the very beginning. In this sphere, the company founder – Ing. Petr Morávek, CSc. – is the author of many author's certificates, patents and industrial designs. The company still stands on these foundations and thanks to long-term experience, its own innovations, modern testing room and a young and strong team of construction developers and technicians it is still a leader in this sphere.

In 2016, ATREA launched a new series of recuperative units with the option of circulation **DUPLEX R5**. This already 5th generation is realised on the basis of previous four generations and achieves even better parameters in terms of economy, effectiveness as well as control used – among others, with standard option of connection and control on the internet.

## ATREA PRODUCTS

- Multi-purpose ventilation units with heat recovery
- Residential ventilation and warm-air heating systems
- Kitchen ventilation – ventilation ceilings and kitchen hoods
- Passive ATREA houses

For more information visit: [www.atrea.eu](http://www.atrea.eu)

# DUPLEX R5

The new and already fifth generation of balanced ventilation units with heat recovery and the possibility of circulation **DUPLEX R5 is, same as its predecessors, intended for comfort ventilation, cooling and warm-air heating of houses and flats.** In most cases, it is used in the category of low-energy and passive houses.

These units are very suitable for ventilation and cooling in combination with a heat pump, when the circulation circuit is only used during certain seasons of the year for cooling as well as heating. These units are also very successfully used for warm-air heating of houses with a low heat loss, when this original system as the only one allows real heating only by warmed air.

**Production is realised in two basic designs** – DUPLEX **RB5** is a very flat version intended for ceiling mounting in the horizontal position, DUPLEX **RA5** and **RK5** in the upright design to be placed on floor.



## COMPETITIVE ADVANTAGES

- Several operation modes from ventilation to circulation
- The possibility to be extended by electric (E) or water (T) heating.
- Extendable by cooling (also additionally) – water (CHW) as well as direct (CHF)
- Ceiling and upright installation
- Selection of three output versions
- Counterflow heat recovery exchangers
- Heat recovery efficiency up to 91 %
- Fully closeable automatic bypass
- The most energy-saving EC ventilators
- Simple controls
- Easily connectible control system
- Constant air flow function
- **INTEGRATED WEB SERVER** @  
Option of controlling via PC, tablet or phone





## DUPLEX R5



### WHAT YOU GET WITH R5

**1. Three output sizes** – Ventilation units with air circulation DUPLEX R5 are available in three output versions:

- RB5** – ceiling-mounted design – ventilation output of 60–420 m<sup>3</sup>/h circulation output of 60–850 m<sup>3</sup>/h
- RA5** – upright design – ventilation output of 60–420 m<sup>3</sup>/h circulation output of 60–800 m<sup>3</sup>/h
- RK5** – upright design – ventilation output of 60–440 m<sup>3</sup>/h circulation output of 120–1400 m<sup>3</sup>/h

**2. Suitable for a wide scope of applications** – Owing to the clever construction, it is possible to use one device in different modes, for balanced ventilation with occasional use of air circulation as well as cooling and partial heating, or warm-air heating. It is possible to automatically change over the modes owing to the sophisticated built-in control with the weekly schedule.

**3. Universality** – In case of the ceiling version, it is possible to relocate the circulation fan outlet on site, if required. Condensate outlets are as standard prepared for all the versions, i.e., outlet from recovery and simultaneously for cooling as well.

**4. Up to 91% recovery efficiency** – Our counterflow recovery exchangers reach an exquisite real efficiency of 91 % with the airflow of 75 m<sup>3</sup>/h, which is of course reflected in lower energy consumption and a reduction in heating costs.

**5. Fully closeable bypass** – In case of the DUPLEX R5 unit, the recovery exchanger fully closes when the by-pass opens, all is automatically controlled, unlike many other HVAC units.

**6. Top-class EC fans** – The fans used are of a „freewheel“ type from the world leading producer EBM Papst. This quality ensures a minimum failure rate and maximum output at low energy consumption. The EC technology allows continuous control of the unit output in the range from 20 to 100 %.

**7. Adjustment of air flow** – The control systems of our units allow easy control depending on three output stages that the user selects in the range from 20 to 100 %.

**8. New housing** – The housing structure was considerably improved for the fifth generation – owing to ingenious details, thermal bridges and above all, noise propagated into the unit surroundings are considerably reduced.

**9. Control system RD5** – The unique, fully equipped digital control system is intended for automatic control of all the unit functions, including constant flow in all the operation modes (ventilation, ventilation with air circulation, circulation without ventilation). As standard, this control has the integrated web interface for remote control of the unit via the internet.

Furthermore, the entire unit operation can be automatically controlled by air quality sensors or external signals (e.g. from WC, bathroom, or kitchen).

**10. Simple installation and plugging in** – Plug-and-use – this is a basic feature of our control system, which saves time and costs during installation and putting into service. In addition to that, DUPLEX R5 units only leave the factory after a thorough inspection of all the functions of the integrated control system as well as the unit itself.

# DUPLEX R5

ATREA also offers 5 compact systems for air distribution, which are mutually compatible. It is thus possible to cover all installation types.



## DUPLEX SIZE COMPARISON

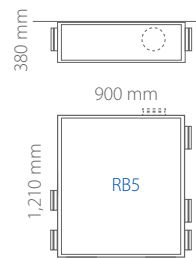
**11. Constant flow function** – Owing to the control, the unit is operated in the constant flow mode during ventilation as well as circulation to provide a user with a high comfort. When a fireplace is in operation, it is possible to balance air inlet and air outlet to create a moderate overpressure.

**12. Air heaters and air coolers** – The unit can be equipped with registers for heating and/or cooling precisely according to a concrete need. The electric heaters (E) or water heaters (T) can be selected. These heaters provide comfort air afterheating after recuperation or heating of the object. The water heater can also be used for water cooling. As standard, it is possible to additionally install the second water cooler or the direct evaporator of the heat pump to provide cooling but also afterheating and heating.

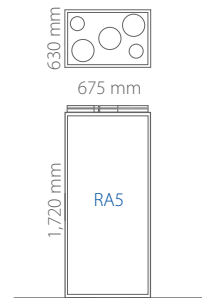
**13. Integrated web server @** – A great advantage is the possibility to control or monitor the units remotely over the Internet using a built-in web server in the RD5 digital control system. This means not only the comfort of a remote control option for the user, but also greatly simplified, more convenient and significantly cheaper servicing.

By means of selection of DUPLEX R5 units, the subsequent many years' operation of the entire system is considerably more economic and comfortable due to a number of useful functions.

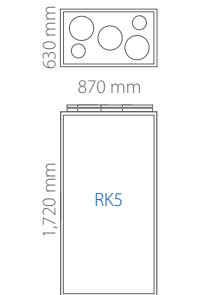
### RB5



### RA5

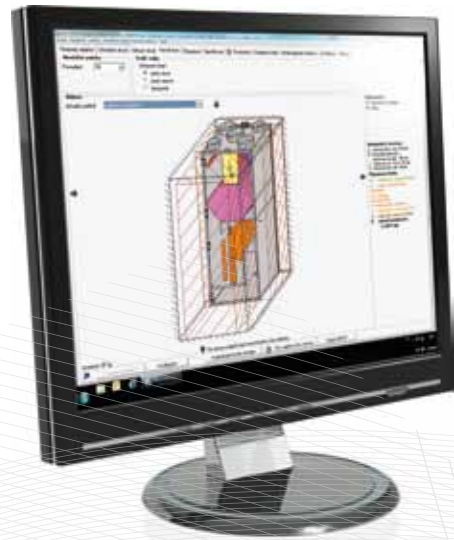


### RK5





## SELECTION SOFTWARE



[www.atrea.eu](http://www.atrea.eu)

ATREA is only producer who also developed the highly effective and sophisticated software for designing the balanced ventilation units with possible air circulation for ventilation, cooling and warm-air heating of houses and flats, that has been proved through many years of service.

ATREA offers its proprietary design software that is a highly useful and practical tool to select DUPLEX series units and provide great marketing support!

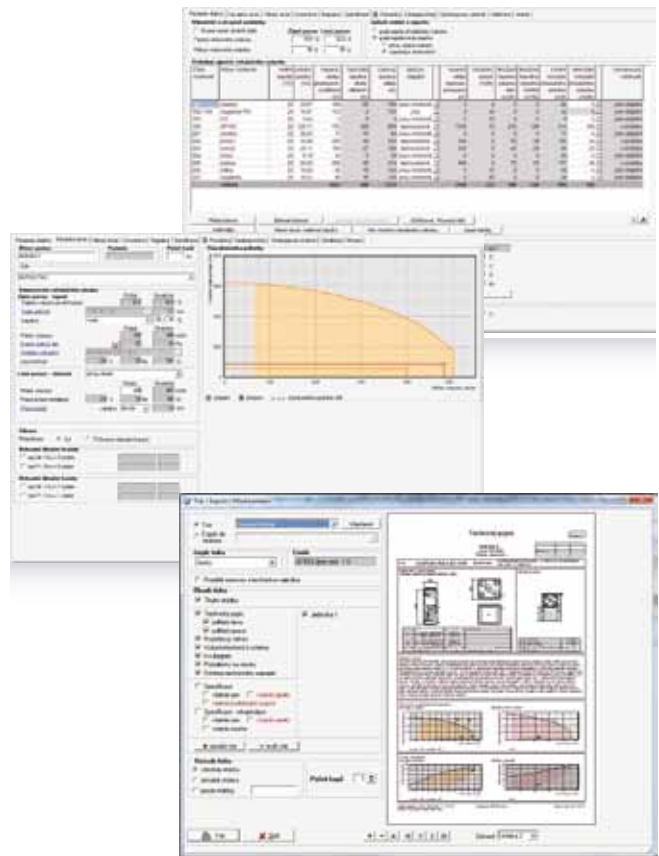
**Very positive feedback from designers of all over Europe gives a good opportunity to easily include ATREA's units in all kinds of projects.**

Very detailed calculations on all specifications are standard.

The software checks whether all components were selected and whether the selected system is working. This way you can avoid any possible mistakes.

### It includes:

- Selecting a unit and its accessories
- Showing parameters of the selected appliance
- An option to adjust the various parameters, designs or mounting positions of the units
- Selecting the control system with accessories in a functional set
- Electrical wiring diagrams
- Displaying and printing the components installed, an h-x diagram and HVAC diagrams
- Price specifications of individual components
- Print output to a printer or PDF
- Exporting drawings and diagrams to DXF in 2D or 3D
- Sending the design and export by e-mail
- **Additionally, the design software includes a full catalogue of ATREA's products in PDF format.**



Give it a try – the ATREA design software is now prepared already in seventeen languages

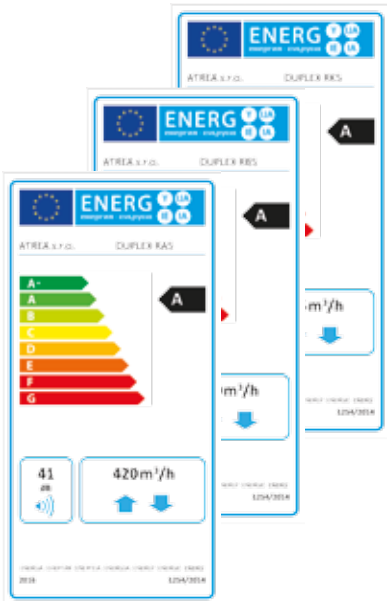


# CONSTRUCTION R5

## BASIC DESCRIPTION

The unit's casing is made of a high-quality, 30 mm thick mineral insulation with metal plating ( $U = 0.81 \text{ W}^2\text{mK}^{-1}$ ) on both sides and thoroughly suppressed thermal bridging. The units are fitted with the ATREA counterflow plastic heat recovery exchanger, the real recovery efficiency without condensation is up to 90 %, with condensation is even higher. A pair of freewheel type EC fans with automatic function of constant flow control, filtration G4 (F7)

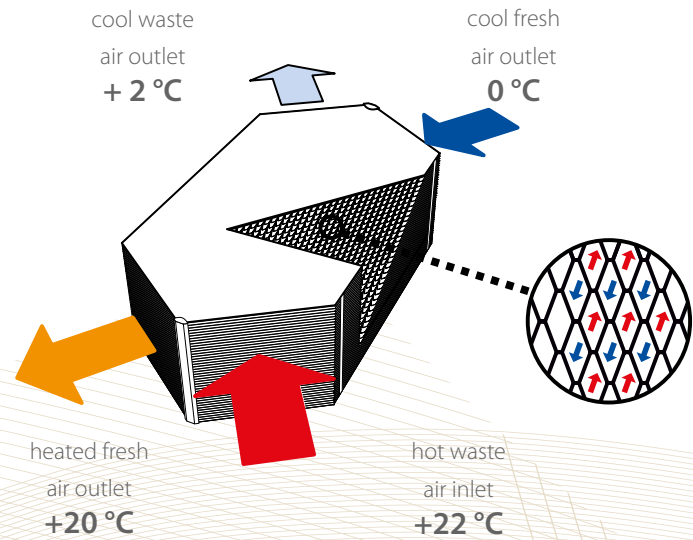
of inlet air and effluent air, the automatically controlled by-pass flap, the control module with an optional control or control via the internet. The ceiling units of the R5 series allow to change outputs of the circulation fan. In case of the RB5 unit, this change can be performed directly on site. Connecting ports are circular for connection to flexible or rigid ducts with suppressed thermal bridging. The unit can be accessed via a door which can be fully opened.



# HEAT RECOVERY

## PRINCIPLE

Heat transfer occurs through separating walls of the heat exchanger – in winter, warmer exhaust air preheats the colder supply air. The same principle also applies in summer for cool recovery. Humidity in waste air condenses during the recovery. This condensate increases the recovery efficiency due to a more intense heat transfer and it is continuously drained into a sewer system.



## TECHNICAL PARAMETERS

- **Unit casing** – A frameless structure with a 30 mm thick mineral wool thermal insulation with external and internal linings and suppression of thermal bridges.
- **Filter G4 / F7 / FTU** – Customers can choose between standard G4 / F7 grade fabric filters or cassette filters with G4 / F7 grade to choose from. In case of the circulation filter (downstream of recovery), it is additionally possible to select a carbon filter cloth FTU that actively restricts smell pervasion upon start of circulation in the house.
- **Connection options** – Standard control system allows for connection with a wide range of external sensors of air quality with switch contact or a 0–10 V outlet, control of closeable and mixing heating valves and thanks to 2+1 temperature and 3 pressure sensors inputs, optimal operation of the unit is ensured in every mode.
- **Easy access** – The door opens fully for easy access into the unit and it makes replacing filters and other servicing after installation easier.
- **Fully closeable bypass** – In case of the digital version, operation of the bypass is automatically controlled depending on set temperatures. When it is open, the recovery exchanger is fully closed.
- **Energy** – The ratio of input power of fans to recovery gain during the ventilation reaches the energy efficiency value 17–25, i.e. up to 25 W of the energy from the exhaust air is recovered from 1 W of the electric energy used for the DUPLEX R5 operation in the ventilation mode. **Effective ratio 1: 25.**
- **Automatic protection against freezing** – It is ensured by balancing the fan speed at air exhaust and air inlet, or by installation of the electric preheater.
- **Constant flow** – Control of the unit output for a constant flow built in as standard.
- **Afterheating and heating** – The built-in hot-water heater or electric heater allows air afterheating for recovery and heating for warm-air heating.

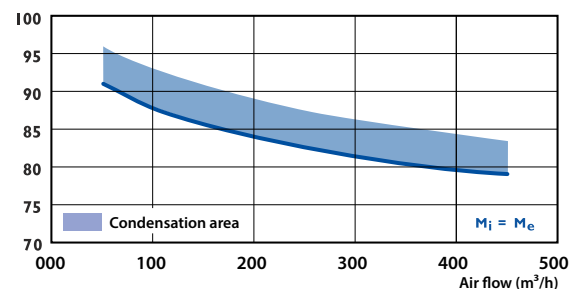
Control system	DUPLEX RA5, RB5, RK5
RD5 +2x external signal	<b>A</b>

**PLEASE NOTE:** All types of control systems in the unit as a standard contain at least two inputs for connecting electrical signals, which are the result of human manipulation with light, or other devices which automatically regulate the unit's performance. These inputs must always be in use or other types of sensors (e.g. CO<sub>2</sub>, VOC, rH etc.) must be used in their place.

### Ceiling-suspended version (RB5) Upright design (RA5, RK5)



### Recovery efficiency (RA5, RB5, RK5)





# CONTROL SYSTEM

## DIGITAL RD5

The digital control system makes it possible to operate the DUPLEX R5 units for all the conceivable requirements for provision of ventilation, air circulation, heating or cooling.

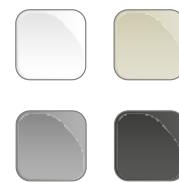


## DIGITAL control system RD5

The units are equipped with the ATREA RD5 control module. This system meets all the conceivable requirements for a modern and user friendly control system.



CP Touch controller



CP Touch colour versions

### RD5 control options:

- **Constant flow function** – In all the operation modes
- **CO<sub>2</sub> sensors, relative humidity sensors, air quality sensors** – Automatic operation of the device using values from the sensors.
- **Universality** – The unit control program as standard includes functions for control of a wide scope of peripheral devices. Selection of functions used is realised by free adjustment with possible subsequent saving and backing up via the internet connection.
- **Modbus TCP** – Universal and open communication with a higher-ranking control system using a defined protocol.
- **Parameter-setting by the user** – Setting weekly programmes for ventilation performance and air heating function. Instant manual setting for higher user comfort, control through external signals when a light is switched on in a bathroom or a toilet.
- **Start and finish delay option** – Setting of external signals.
- **Use of air circulation** – In case of DUPLEX R5 used mostly for ventilation, it is possible to automatically change over air circulation by switching the contact. This is possible e.g. in case of heating in the fireplace or activation of cooling.
- **Combination of afterheating, preheating and cooling** – The control system allows automatic control depending on a set temperature, both at air inlet and in a space. Furthermore, it manages to also control independent circuits (e.g. heating in the bathroom).
- **Zoning** – Option of dividing space into zones and defining their operation.
- **Internet connection as standard** – Easy access via a personal computer, tablet or smart phone.
- **Support of smart households** – a built-in control R5 is supported by renowned manufacturers of intelligent systems for households, e.g.: Teco, Loxone, etc.



# TECHNOLOGY R5



## OPTIONAL ACCESSORIES

supplied separately

### Modifications:

#### T – hot-water heater

Heater with a heat carrier „water“. Used for air heating or air cooling as well.



#### E – electric heater

Heater consisting of low-temperature PTC elements for direct heating.



#### CHW – water cooler / heater

Heater with a heat carrier „water“. This exchanger is used either for cooling or hot-water heating as well. It is available in two versions (3-row and 5-row)

#### CHF – direct evaporator

Direct evaporator with the possibility to be also used as an exchanger of the air-air heat pump. For cooling as well as heating.

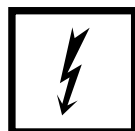
#### Outdoor condensing unit

The outdoor condensing unit with an ATREA inverter for mechanical cooling, there is option of heating in the transition period (air-air heat pump).



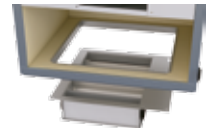
#### Additional control module

Additional control module DMCH – ATW in addition to the basic control module of the unit for control with the ATREA outdoor condensing unit.



#### KEL closing zone flap

Flap to be mounted in the bottom port c<sub>2</sub> for upright RA5/RK5 units. It can only be mounted with the distribution chamber (R111011, R111610).



#### CO<sub>2</sub> or cigarette smoke sensor

Room CO<sub>2</sub> concentration sensor, with a continuous output.



Pipe sensor also with a continuous output.



#### rH sensor

Room relative humidity sensor with a switch contact.



Room relative humidity sensor for continuous control.



#### Filtration cassette

Simple replacement – filtration G4 / F7 for high filtration efficiency.



#### Filtration textile

Simple and economic to replace G4 / F7 / FTU class filtration.





# TECHNOLOGY R5



### RD5 digital controllers



CP Touch controller



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