

# DUOVENT® MODULAR RV



Digireg®



EC-motor



ErP conform



Tight motor



Max. recuperation efficiency



Rotating wheel heat exchanger



VAV-CAV-COP control types

## Technical Parameters

### ■ Cabinet

Patented ISOSTREAM® Cabinet is built out of aluminum profiles to which individual panels are attached by screws. The panels are made out of galvanized sheet metal with wall thickness of 45mm and finished with external grey-white paint, type RAL9002. Optional anti-corrosion surface protection is available upon request. The panels are lined with non-flammable mineral wool core and sandwiched from both sides. All panels are removable and selected panels are equipped with hinges and locks to provide for easy service access. In location where condensation will occur cabinets are fitted with condensate drains outlets.

### ■ Fans

Centrifugal backward-curve blades fans with impeller made out of composite materials. Each fan comes statically and dynamically balanced.

### ■ Motors

Direct drive EC motors. Each motor can be continuously controlled by external 0...10V signal, comes with built-in thermal protection. Motor efficiency class is rated IE4, electric motor insulation protection is IP54.

### ■ RW Heat Exchanger

Rotating Wheel heat exchanger can transfer heat or heat and humidity simultaneously. It is designed for ambient temperatures running between -20°C to +55°C. Wheel is coiled from layers of aluminum foil with standard layer span of 1,6mm. Wheel's casing is supported by galvanized profiles. Brush seal provides a tight seal between rotor and its casing. Where needed labyrinth seal with air leakage rate less than 1.5% can be used. The rotating wheel is driven by electric motor, worm transmission with pulley and belt. Power supply requirement: 1× 230V / 50Hz or 3× 230V / 50Hz. 0 to 10V continuous speed controller comes as an option.

### ■ Filters

Unit's outside air and return air inlets come fitted with either two sets of 48mm compact filter brackets or one set of 96mm filter brackets. Filter classification G4 to F9 is available. Filter access is provided through a set of service doors.

### ■ Dampers

Aluminum control dampers are integrated with outside air and exhaust air inlets. Dampers are installed with Belimo actuators and comply with class 2 leakage rate, EN1751. Optional class 3 leakage rate is available upon request.

### ■ Heating and Cooling

Based on project requirements each unit can be fitted with hot water coil or electric heat strip to provide heating. Chilled water coil or DX coil for cooling. Heat pump can provide primary source of heating and cooling with water coil or electric heat strip serving as a secondary source. All coils are built from copper tubes and aluminum sheets locked inside a galvanized frame. Where better protection is needed optional anti-corrosion coating is available. Electric heat strip comes equipped with a safety thermostat activating at temperature 60°C and emergency thermostat with manual reset and activating at temperature 120°C.

### ■ Power Supply

3× 400V / 50Hz. Control wires and power cables are installed running through plastic penetration inlets pre-drilled in panels and rubber penetration gromets with membrane running on the inside of unit

### ■ Controls

In standard configuration Digireg® control system enclosure comes mounted to the unit's mid panel with all internal wiring completed and with control board preprogrammed based on unit's configuration. Any other mounting location can be done per request. QC running test is performed before each unit leaves the manufacturing plant.

### ■ Installation

Installed in vertical position sitting on a floor or vertical position sitting on building's roof. Unit's inlet and outlet openings must be placed in consideration when installing the unit. Service access must be sufficient in order to open service door and replace filters. Digireg must be accessible for any future service work. Adequate space below the unit must be maintained in order to connect to condensate drain outlets and install drain traps. Condensate drain needs to slope at

1degree towards the condensate discharge. Refrigeration lines are to be connected to prefabricated square neck mounted in panel. Flexible pipe connections and flexible duct connections are recommended in order to eliminate any vibrations coming from the unit.

### ■ Noise

Noise data as listed in acoustic tables represent acoustic output levels at individual inlets/ outlets, including tolerance for weight filter A. The table includes acoustic noise level incorporating casing of the unit and reads noise level when measured 1 m from the service side of the unit, in open field Q=2. The acoustic readings come within ±3 dB tolerance.

### ■ Unit Configuration

Unit's individual configuration and its accessories are identified by a specific code number which is part of model number. Any non-typical, custom unit configuration needs to be consulted prior to ordering unit.

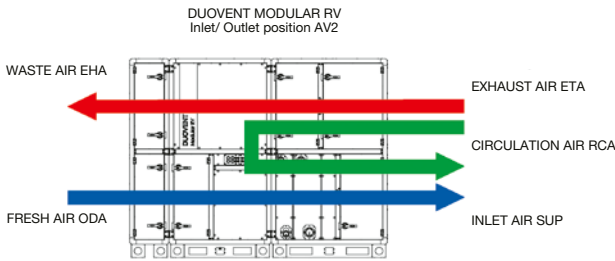
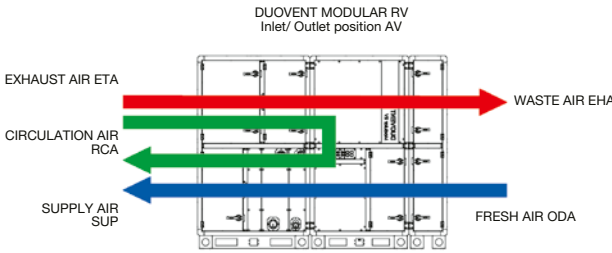
### ■ Warranty Terms

DUOVENT® MODULAR RV equipment, incl. its DVAV, DCAV, DCOP and MVAV systems, must be commissioned by a factory authorized service technician. Failure to provide factory authorized commissioning will lead to termination of rights of the Buyer and will void the unit's warranty.



## Supplemental Illustrations

Options for air flow directions for DUOVENT® MODULAR RV units:



Recuperation

Type	nominal flow [m³/h]	voltage [V/Hz]	fan inlet / outlet		heater		cooler power* [kW]	efficiency* [%]	max. unit air flow** [m³/h]	control system Digireg®	weight *** without MX [kg]	weight *** with MX [kg]
			max. input [W]	power [A]	current* [kW]	power [A]						
8500	7800	3x400V 50Hz	3653/2521	5,3/3,6	-	-	-	75,7	9000	M3-Vx	832 až 917	860 až 951
8500 DCA					61.1	-	-					
8500 DCB					43.1	-	-					
8500 DCA DCC					61.1	-	62.2					
8500 DCA DX					61.1	-	66.2					
8500 DI					30.0	43.3	-					
10100	9300	3x400V 50Hz	4228/3152	6.1/4.6	-	-	-	76.2	11500	M3-Vx	965 až 1072	996 až 1109
10100 DCA					75.7	-	-					
10100 DCB					53.1	-	-					
10100 DCA DCC					75.7	-	77.3					
10100 DCA DX					75.7	-	80.9					
10100 DI					45.0	65.0	-					
12000	11500	3x400V 50Hz	5183/3780	7.5/5.5	-	-	-	75.9	13500	M3-Vx	1176 až 1302	1224 až 1357
12000 DCA					92.2	-	-					
12000 DCB					63.3	-	-					
12000 DCA DCC					92.2	-	95.2					
12000 DCA DX					92.2	-	96.9					
12000 DI					45.0	65.0	-					
14500	13600	3x400V 50Hz	6129/4531	8.9/6.6	-	-	-	75.1	16500	M3-Vx	1389 až 1544	1441 až 1604
14500 DCA					111.0	-	-					
14500 DCB					76.4	-	-					
14500 DCA DCC					111.0	-	115.0					
14500 DCA DX					111.0	-	115.0					
14500 DI					60.0	86.6	-					

\* at nominal air flow,  $t_e = 12^\circ\text{C}/90\%$  r.h.,  $t_e = 22^\circ\text{C}/50\%$  r.h.,  $t_e = 35^\circ\text{C}/35\%$  r.h. (SUMMER), temperature rotor

\*\* for arrangement – inlet: filter F7+RV+DCB, outlet: filter M5+RV

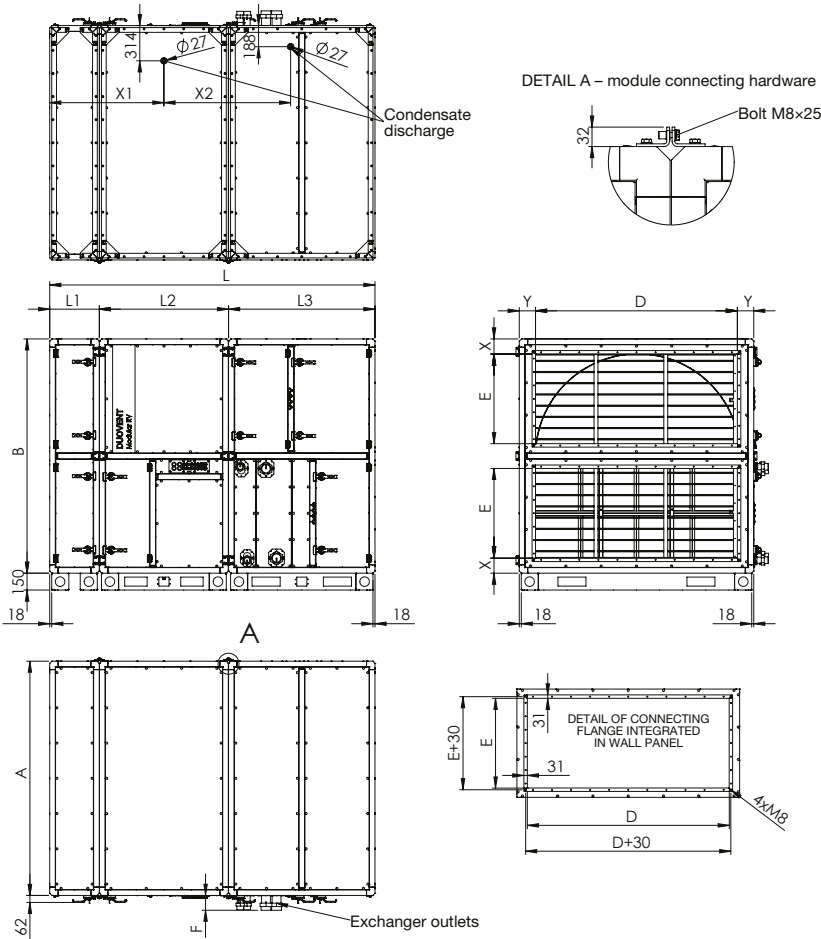
\*\*\* in relation to the unit accessory (without I&C)

Water cooler power DCC for  $t_e = 35^\circ\text{C}/35\%$  r.h.,  $t_w = 6/12^\circ\text{C}$ . Water heater power DCA for  $t_e = 10^\circ\text{C}$ ,  $t_w = 80/60^\circ\text{C}$ .

Water heater power DCB for  $t_e = 10^\circ\text{C}$ ,  $t_w = 45/35^\circ\text{C}$ . Direct evaporating unit power DX for R410A coolant,  $t_e = 35^\circ\text{C} / 35\%$  r.h.,  $t_{wp} = 6^\circ\text{C}$ .

Dimensions

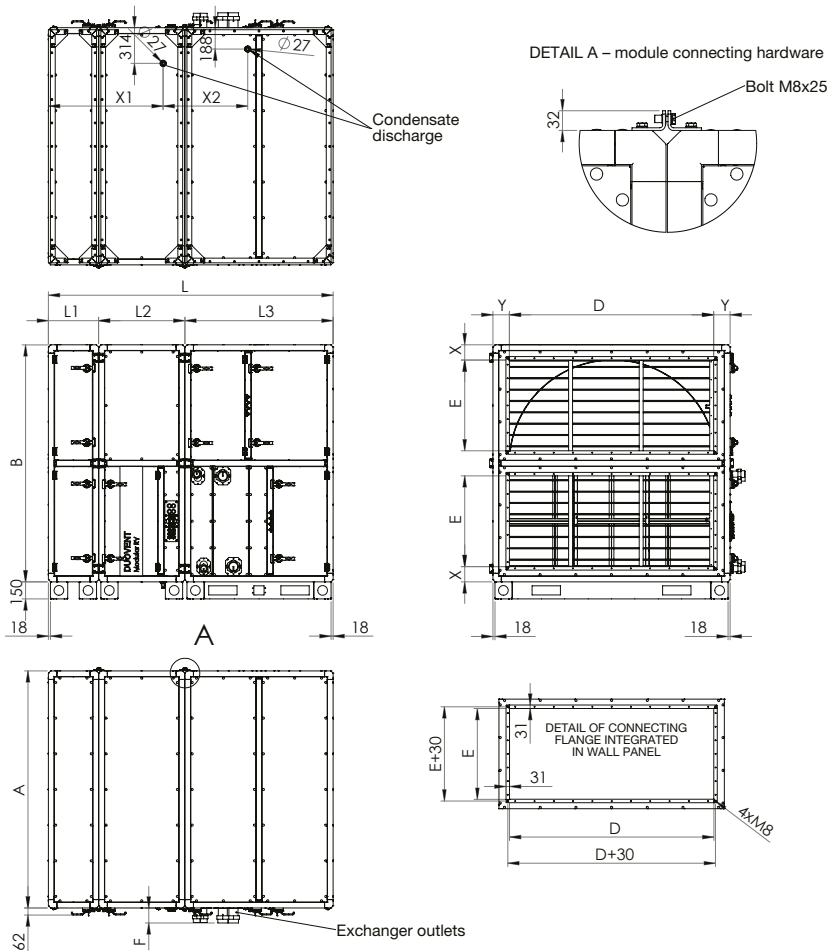
DUOVENT® MODULAR RV 8500 to 14500 – unit with mixing damper (MX or C in model number)



Type	A [mm]	B [mm]	D [mm]	E [mm]	F [mm]	L [mm]	L1 [mm]	L2 [mm]	L3 [mm]	X [mm]	Y [mm]	X1 [mm]	X2 [mm]
RV 8500	1620	1620	1350	600	132	2662	442	1071	1149	118	135	978	1019
RV 10100	1777	1777	1500	650	132	2662	442	1071	1149	132	138.5	978	1019
RV 12000	1934	1934	1650	700	132	2819	442	1149	1228	146	142	1017	1075
RV 14500	2091	2091	1800	800	132	2897	442	1149	1306	135	145.5	1017	1133

## Dimensions

DUOVENT® MODULAR RV 8500 to 14500 – unit without mixing damper (MX or C in model number)



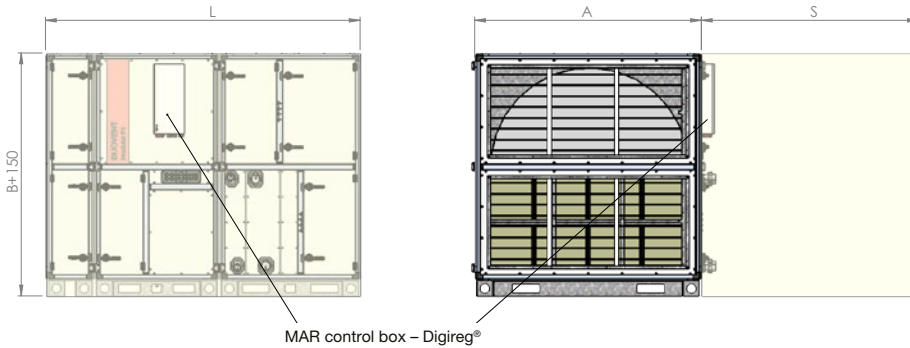
Recuperation

Type	A [mm]	B [mm]	D [mm]	E [mm]	F [mm]	L [mm]	L1 [mm]	L2 [mm]	L3 [mm]	X [mm]	Y [mm]	X1 [mm]	X2 [mm]
RV 8500	1620	1620	1350	600	132	2348	442	757	1149	118	135	1011	671
RV 10100	1777	1777	1500	650	132	2348	442	757	1149	132	138.5	1011	671
RV 12000	1934	1934	1650	700	132	2427	442	757	1228	146	142	1011	688
RV 14500	2091	2091	1800	800	132	2505	442	757	1306	135	145.5	1011	746

**Supplemental Information**

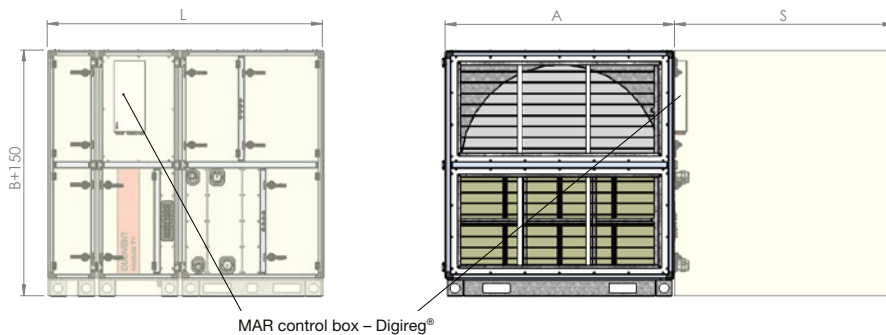
Minimum service clearance – unit with mixing damper (MX or C in the model number)

Size	A [mm]	B [mm]	L [mm]	S [mm]
RV 8500	1620	1620	2662	1700
RV 10100	1777	1777	2662	1800
RV 12000	1934	1934	2819	2000
RV 14500	2091	2091	2897	2150



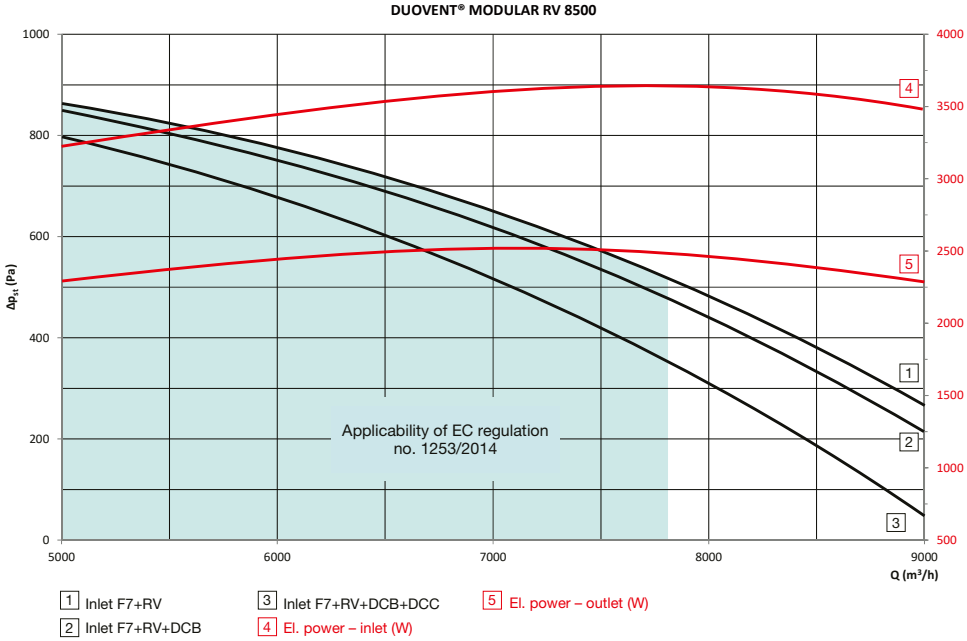
Minimum service clearance – unit model without mixing damper (MX or C in model number)

Size	A [mm]	B [mm]	L [mm]	S [mm]
RV 8500	1620	1620	2348	1700
RV 10100	1777	1777	2348	1800
RV 12000	1934	1934	2427	2000
RV 14500	2091	2091	2505	2150

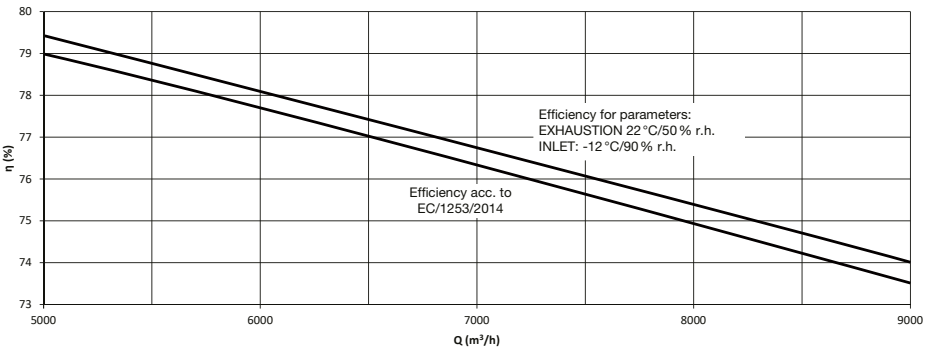

**Characteristics**

- Q air flow (m<sup>3</sup>/h)
  - $\Delta p_s$  unit external static pressure (Pa)
  - P fan electric input power (W)
  - $\eta$  heat recuperation efficiency (%)
- F7+RV+DCB+DCC ... performance curve with maximum pressure loss of inner parts at inlet side (i.e. filter F7 at inlet, regenerator, water heaters 3 lines, water cooler 4 lines, drop eliminator)

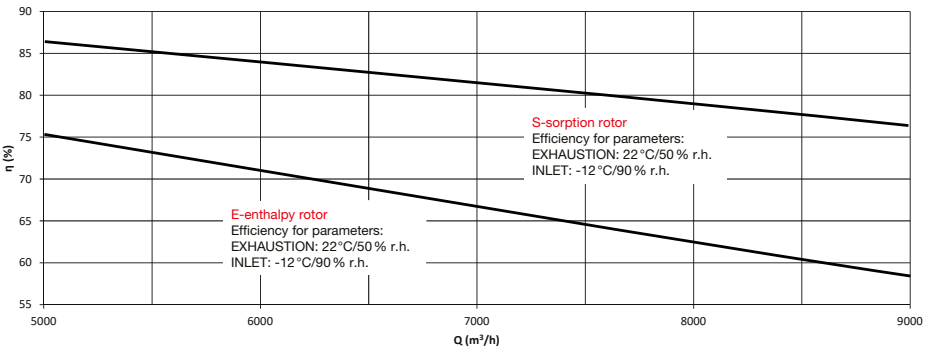
## Characteristics

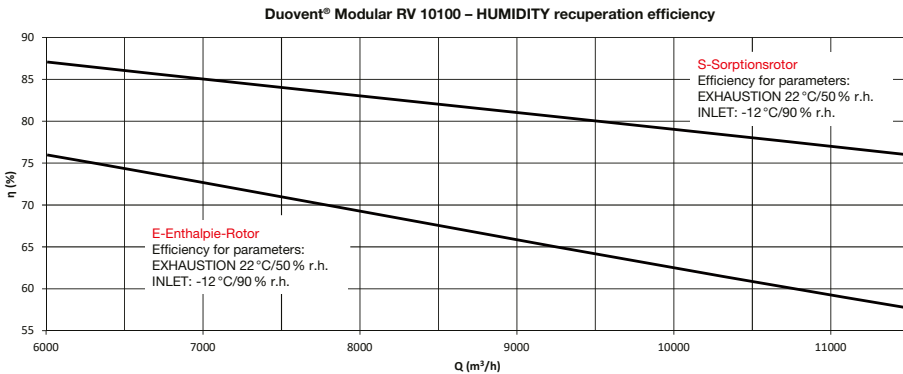
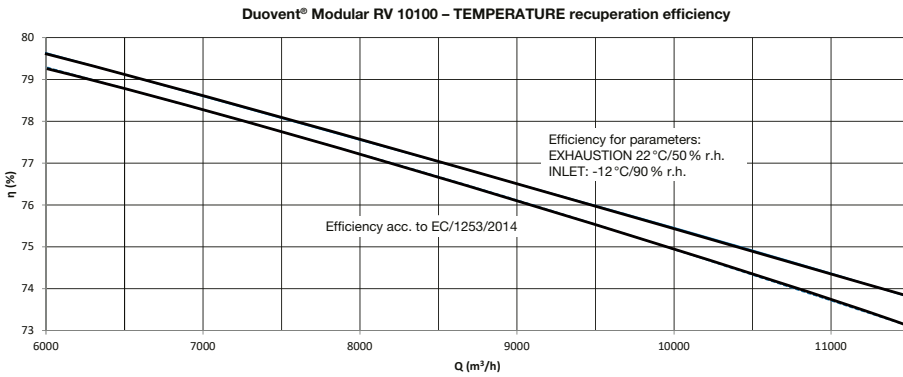
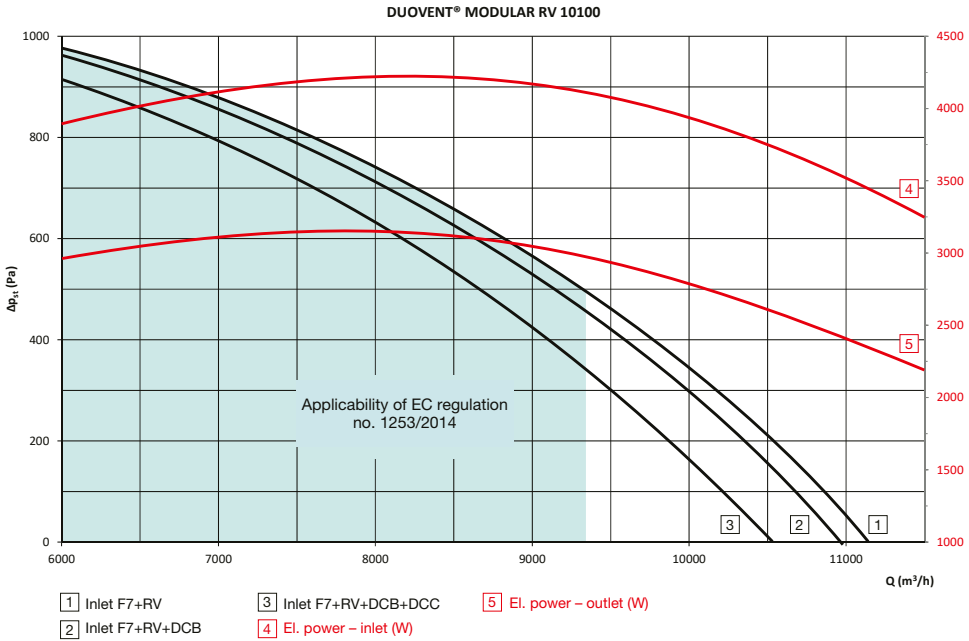


**Duovent® Modular RV 8500 – TEMPERATURE recuperation efficiency**



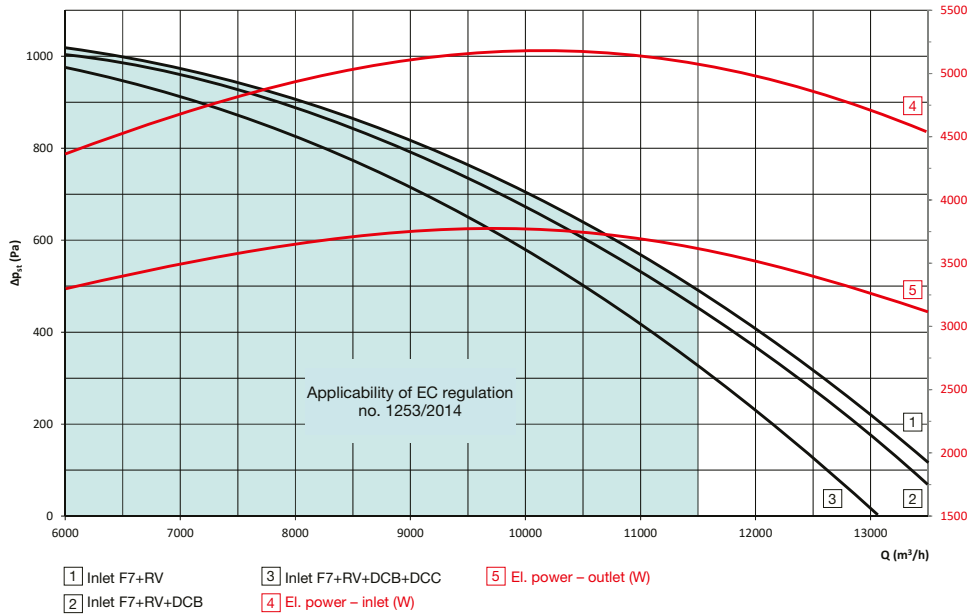
**Duovent® Modular RV 8500 – HUMIDITY recuperation efficiency**



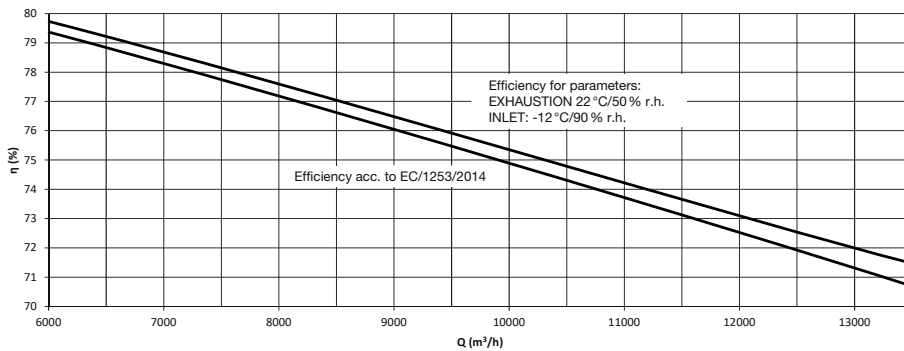




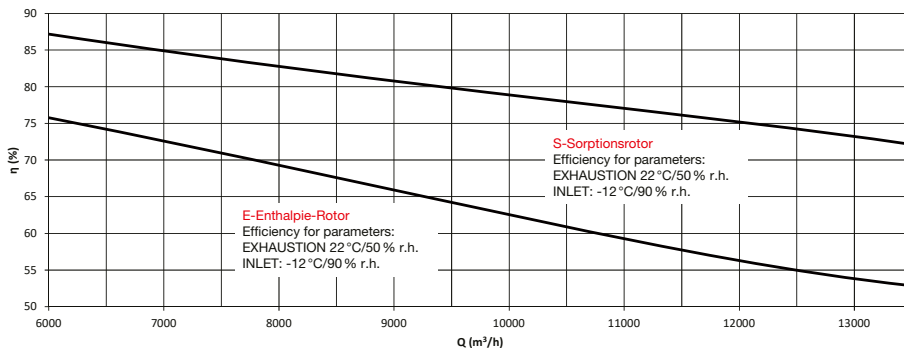
DUOVENT® MODULAR RV 12000

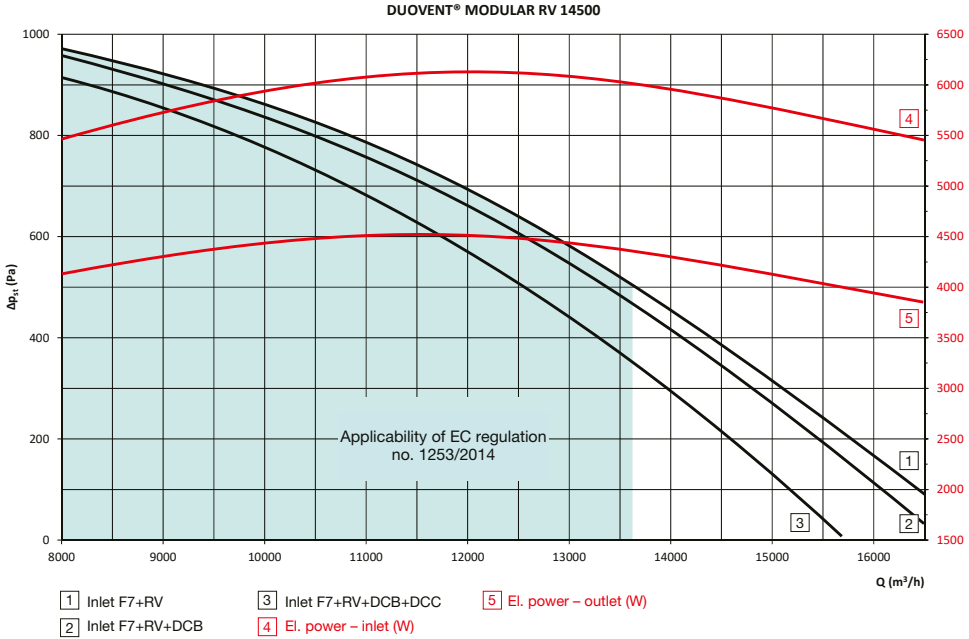


Duovent® Modular RV 12000 – TEMPERATURE recuperation efficiency

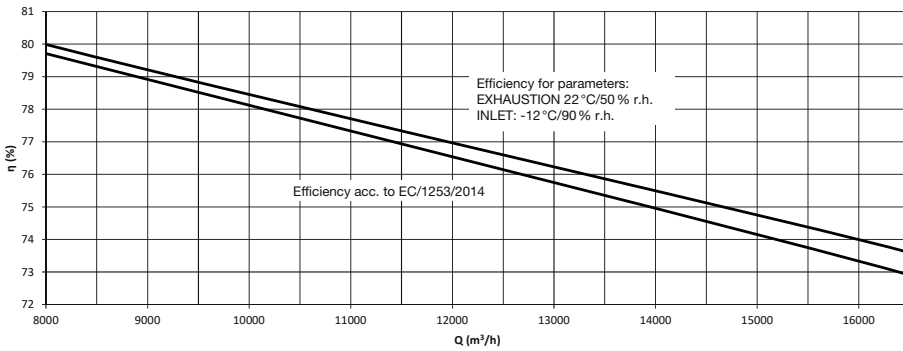


Duovent® Modular RV 12000 – HUMIDITY recuperation efficiency

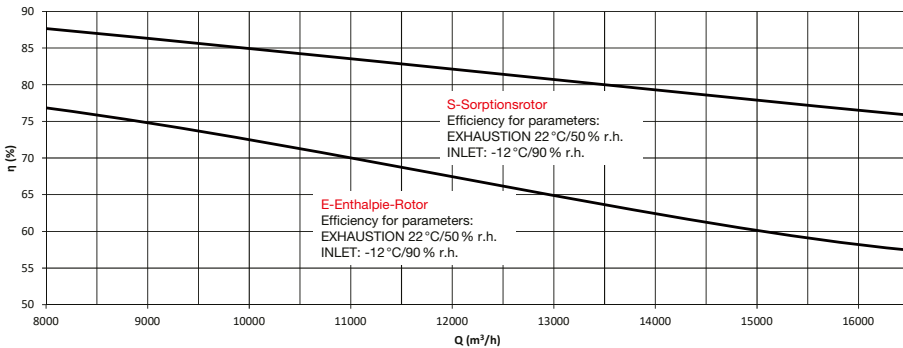




**Duovent® Modular RV 14500 – TEMPERATURE recuperation efficiency**



**Duovent® Modular RV 14500 – HUMIDITY recuperation efficiency**



Schallleistungspegel (Druck) in Oktavbändern [db(A)]\*

DUOVENT® MODULAR RV 8500 (for  $V_{nom} = 7800 \text{ m}^3/\text{h}$ )

Hz	63	125	250	500	1000	2000	4000	8000	$L_{WA}$
fresh	36	43	62	63	59	60	54	49	67
inlet	50	58	74	78	83	82	77	73	87
$L_{WA}$ exhaustion	39	47	66	67	63	65	60	59	72
waste	42	50	68	71	76	74	67	61	79
case**	42	53	68	61	58	51	39	32	69

DUOVENT® MODULAR RV 10100 (for  $V_{nom} = 9300 \text{ m}^3/\text{h}$ )

Hz	63	125	250	500	1000	2000	4000	8000	$L_{WA}$
fresh	36	43	62	65	61	61	54	50	69
inlet	50	58	75	79	85	83	78	75	88
$L_{WA}$ exhaustion	43	50	69	69	66	66	62	64	74
waste	44	53	70	74	79	76	69	65	82
case**	43	55	69	63	60	52	41	34	71

DUOVENT® MODULAR RV 12000 (for  $V_{nom} = 11500 \text{ m}^3/\text{h}$ )

Hz	63	125	250	500	1000	2000	4000	8000	$L_{WA}$
fresh	39	44	65	66	62	62	55	50	70
inlet	53	61	78	81	86	83	77	74	89
$L_{WA}$ exhaustion	42	52	71	70	67	67	62	62	75
waste	46	55	72	76	79	75	68	64	82
case**	45	57	72	65	61	52	40	33	73

DUOVENT® MODULAR RV 14500 (for  $V_{nom} = 13600 \text{ m}^3/\text{h}$ )

Hz	63	125	250	500	1000	2000	4000	8000	$L_{WA}$
fresh	40	49	66	68	64	61	52	48	72
inlet	51	64	80	84	87	87	81	76	92
$L_{WA}$ exhaustion	48	57	71	73	69	67	60	61	77
waste	48	60	74	79	81	80	72	65	85
case**	45	61	74	68	62	56	44	35	75

\* Configuration data (integrated flaps, water cooler DCC, water heater DCA, filtering class F7/M5)

\*\* case damping with  $R_n$  value

Characteristics of recuperation units acc. to 2009/125/EC, EC regulation no. 1253/2014.

unit size	nominal air flow [ $\text{m}^3/\text{h}$ ]	$SFP_{int}$ [ $\text{W}/(\text{m}^3/\text{s})$ ]	recuperation efficiency [%]	$SFP_{int, LIMIT 2018}$ [ $\text{W}/(\text{m}^3/\text{s})$ ]	external pressure [Pa]
RV 8500	7800	868	75.3	868	350
RV 10100	9300	880	75.7	881	350
RV 12000	11500	852	75.5	875	350
RV 14500	13600	864	75.4	872	350

Technical data for water heaters DCA ( $t_w = 80/60^\circ\text{C}$ ) and DCB ( $t_w = 45/35^\circ\text{C}$ )

unit size	temperature gradient [ $^\circ\text{C}/^\circ\text{C}$ ]	power [kW]	nominal air flow [ $\text{m}^3/\text{h}$ ]	inlet air temperature [ $^\circ\text{C}$ ]	outlet air temperature [ $^\circ\text{C}$ ]	pressure loss at water side [kPa]	water flow [ $\text{m}^3/\text{h}$ ]
RV 8500	80/60	61.1	7800	10	33.4	9	2.69
	45/35	43.1			26.5	24	3.74
RV 10100	80/60	75.7	9300	10	34.3	11	3.33
	45/35	53.1			27.1	28	4.61
RV 12000	80/60	92.2	11500	10	33.9	14	4.05
	45/35	63.3			26.4	14	5.49
RV 14500	80/60	111.0	13600	10	34.4	17	4.89
	45/35	76.4			26.8	15	6.63

# DUOVENT® MODULAR RV

Technical data for water coolers DCC ( $t_w = 6/12^\circ\text{C}$ ) and evaporation units DX ( $t_{op} = 6^\circ\text{C}$ , R410A coolant)

unit size	temperature gradient/ evaporation temperature [ $^\circ\text{C}$ ]	power [kW]	nominal air flow [ $\text{m}^3/\text{h}$ ]	inlet air temperature / humidity [ $^\circ\text{C}$ ] / [%]	outlet air temperature [ $^\circ\text{C}$ ]	pressure loss at water/ coolant side [kPa]	water flow [ $\text{m}^3/\text{h}$ ]
RV 8500	6/12	62.2	7800	35 $^\circ\text{C}$ / 35 %	17.9	27	8.88
	6	66.2			17.3	44	-
RV 10100	6/12	77.3	9300	35 $^\circ\text{C}$ / 35 %	17.4	32	11.04
	6	80.9			17.0	53	-
RV 12000	6/12	95.2	11500	35 $^\circ\text{C}$ / 35 %	17.5	44	13.61
	6	96.9			17.4	70	-
RV 14500	6/12	115.0	13600	35 $^\circ\text{C}$ / 35 %	17.2	53	16.49
	6	115.0			17.2	84	-

Technical data for electric heaters (supply voltage 3x 400V / 50 Hz), assignment of control sets

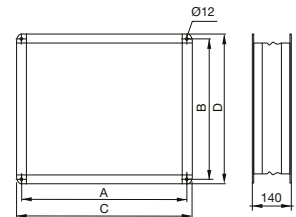
unit size	DI type	power [kW]	No. of sections	Digireg® set
RV 8500	IBE-Duovent® DV8500_30/1	30	1 (30 kW)	M3-E36
RV 10100	IBE-Duovent® DV10100_45/2	45	2 (15+30 kW)	M3-E72
RV 12000	IBE-Duovent® DV12000_45/2	45	2 (15+30 kW)	M3-E72
RV 14500	IBE-Duovent® DV14500_60/2	60	2 (30+30 kW)	M3-E72

Different sizes of electric heaters can be ordered upon demand. Please contact technical department for further information.

## Unit Accessories

### DUO-DV-IAE

- Flexible ductwork connector for unit's outlets and inlets.
- Prevents transfer of vibrations
- Flange width 30 mm

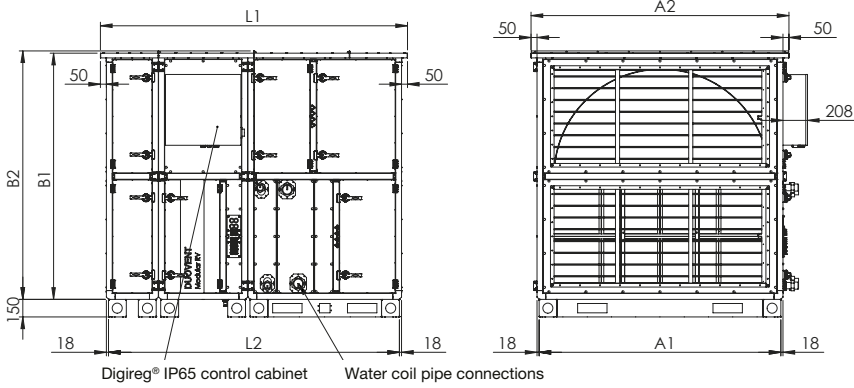


Typ	A [mm]	B [mm]	C [mm]	D [mm]
DUO-DV-IAE-8500-P30	1380	630	1410	660
DUO-DV-IAE-10100-P30	1530	680	1560	710
DUO-DV-IAE-12000-P30	1680	730	1710	760
DUO-DV-IAE-14500-P30	1830	830	1860	860



**Sizes of ROOFPACK-A accessory**

DUOVENT® MODULAR RV 8500 to 14500 – unit model without mixing damper (**MX** or **C** in model number)

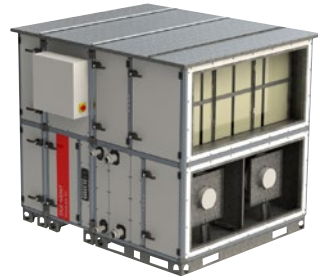


unit size	L1 [mm]	L2 [mm]	A1 [mm]	A2 [mm]	B1 [mm]	B2 [mm]	weight [kg]
RV 8500	2448	2312	1584	1720	1622	1640	46
RV 10100	2448	2312	1741	1877	1779	1797	50
RV 12000	2527	2391	1898	2034	1936	1954	56
RV 14500	2605	2469	2055	2191	2093	2111	62

**Example of ROOFPACKA for units DUOVENT® MODULAR RV**



DUOVENT® MODULAR RV14500 with MX ROOFPACK-A



DUOVENT® MODULAR RV14500 without MX + ROOFPACK-A