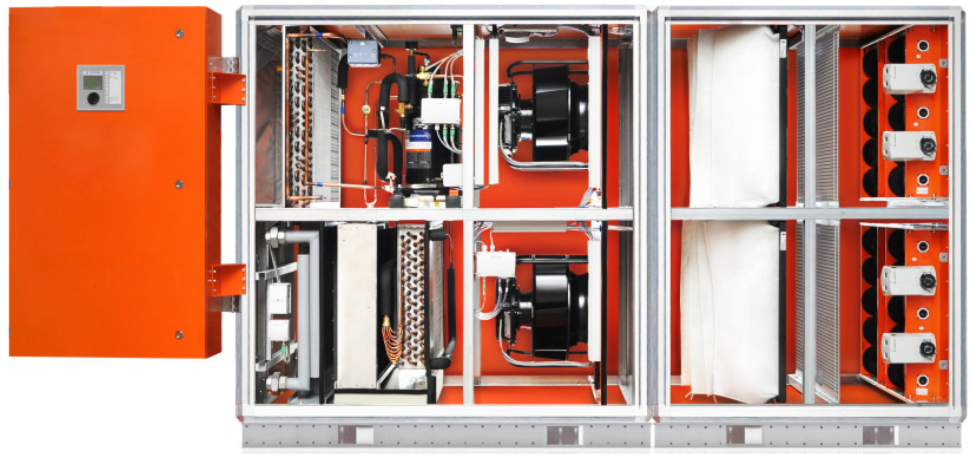


Ventilation unit with compressor refrigeration system for free cooling of rooms with high thermal loading



Frecolair 14 03 01 with supplementary equipment LPHW and additional unit division - simplified illustration



Automatically selects the most economical operating mode!

Frecolair 14

AIR VOLUME FLOW: 2,600 – 27,000 m³/h

At a glance:

- ▶ **For discharging high heat loads**
- ▶ **Advantages of free cooling and recirc mode in a single unit**
- ▶ **Energy-saving EC fans**
- ▶ **Integrated output-regulated compressor refrigeration system**
- ▶ **High electrical efficiency thanks to the lowest possible internal pressure losses**
- ▶ **Low space requirement, no additional construction measures for cooling required**
- ▶ **Integrated control and regulation system, compatible with all conventional building management systems**

Units in the Frecolair 14 series were developed especially for discharging high internal heat loads into the atmosphere from buildings without humidity requirements. In data processing centres and technical facilities, these units ensure reliable operation and precisely regulate

the supply air temperature absolutely spot on. The variability of the operating modes, in combination with first-class components and precise control and regulation systems, guarantees economical operation at all times.

Further performance parameters and options:

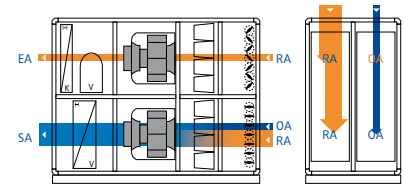
- Focussing on free cooling for maximum savings on operating costs
 - Filtering the air in any operating mode
 - Individually controllable performance parameters
 - Complete unit, ready to connect, contains all structural elements for comfort air conditioning, including all control and regulation fittings
 - Intensive quality inspection with factory test run
- Options
- Two-circuit cooling system to increase redundancy
 - Pumped chilled water cooling coil
 - Pumped hot water heating coil
 - Attenuator
 - Outdoor installation
 - Remote maintenance
 - And many more

Functional description

Cooling at low outside temperatures

In order to avoid excessive drops in room temperature at low outside temperatures, a small proportion of the warm return air is added to the cold out-side air during

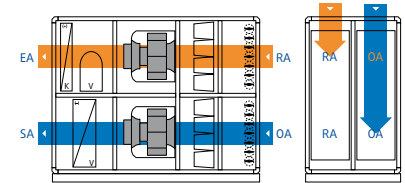
partial recirculation mode. The proportion of outside air is variably controlled.



Free cooling at medium outside temperatures

In free cooling mode, the inside heat load is discharged directly via the return air. The cooling takes place exclu-

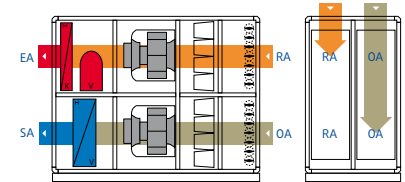
sively through the continuously controllable proportion of outside air.



Cooling with outside air at high outside temperatures

The internal heat load is discharged directly with the return air, while in

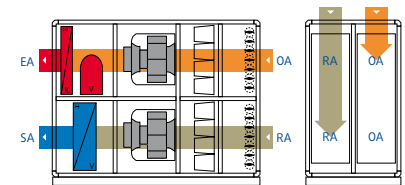
part-load operation the compressor refrigeration system cools the warm outside air to the desired supply air temperature.



Cooling in recirculation mode at very high outside temperatures

If the outside temperature exceeds the return air temperature, the system will automatically switch over into recirculation mode, which is more economical

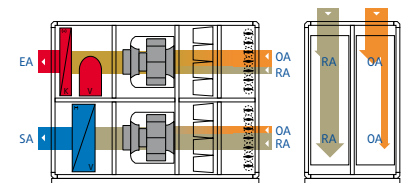
in that case. The return air is cooled to the desired supply air temperature directly by the output-regulated compressor refrigeration system. No addition of warm outside air is necessary.



Cooling with a low proportion of air from outside at high outside temperatures

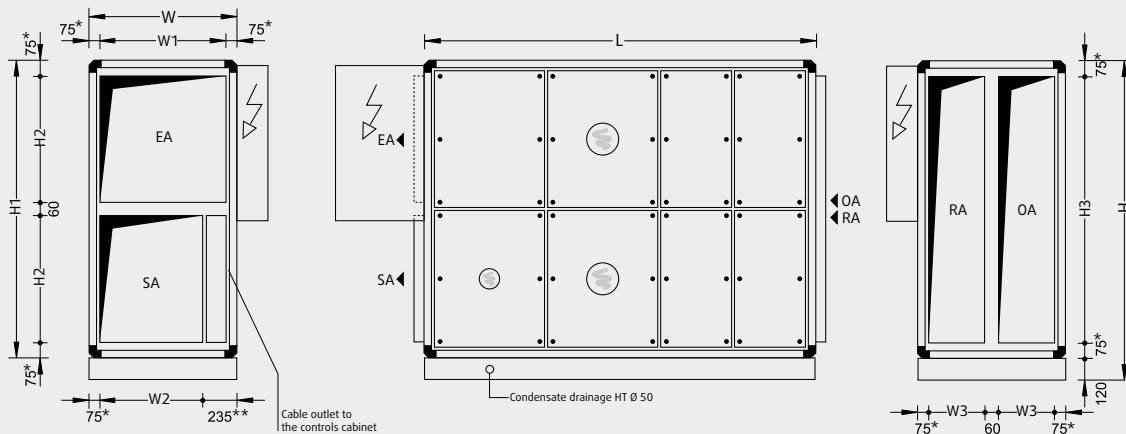
If the outside temperature is higher than the return air temperature and if a proportion of air from outside is required for hygiene reasons, some outside air can be added in a regulated and hence controlled

manner during partial recirculation mode. The return air is cooled to the desired supply air temperature directly by the output-regulated compressor refrigeration system.



Frecolair Type 14

System dimensions and weights



Important! Where a system is operated in parallel, the supply air and return air ducts of the two units have to be brought together.

Where units are run in parallel, each unit has a controls cabinet.

Mirror-image design possible.

- * up to unit type 14 05 01 = 65 mm
- ** up to unit type 14 05 01 = 225 mm

Unit Type	L	W ¹	H ²	W1	W2	W3	H1	H2	H3	Weight
14 03 01	2,330	730	1,490	600	440	280	1,370	600	1,240	660
14 04 01	2,490	890	1,490	760	600	360	1,370	600	1,240	700
14 05 01	2,490	1,050	1,490	920	760	440	1,370	600	1,240	800
14 06 01	2,490	730	2,130	580	420	260	2,010	900	1,860	850
14 10 01	2,650	1,050	2,130	900	740	420	2,010	900	1,860	1,210
14 13 01	2,810	1,370	2,130	1,220	1,060	580	2,010	900	1,860	1,450
14 16 01	2,970	1,690	2,130	1,540	1,380	740	2,010	900	1,860	1,670
14 19 01	2,970	2,010	2,130	1,860	1,700	900	2,010	900	1,860	1,850

Largest transport unit *

Unit Type	L	W	H ²	Weight
14 03 01	2,330	730	1,370	660
14 04 01	2,490	890	1,370	700
14 05 01	2,490	1,050	1,370	800
14 06 01	2,490	730	2,010	850
14 10 01	2,650	1,050	2,010	1,210
14 13 01	2,810	1,370	2,010	1,450
14 16 01	2,970	1,690	2,010	1,670
14 19 01	2,970	2,010	2,010	1,850

Controls cabinet

Unit Type	H x W x D	Position at unit
14 03 01	1120 x 640 x 210	SA/RA side
14 04 01	1120 x 640 x 210	SA/RA side
14 05 01	1120 x 640 x 210	SA/RA side
14 06 01	1280 x 640 x 210	SA/RA side
14 10 01	1280 x 640 x 210	SA/RA side
14 13 01	1280 x 640 x 210	SA/RA side
14 16 01	1280 x 640 x 210	SA/RA side
14 19 01	1280 x 640 x 210	SA/RA side

For service work, a clearance corresponding to dimension W is required on the operating side of the unit. If dimension W is smaller than one metre, please leave a clearance of one metre.

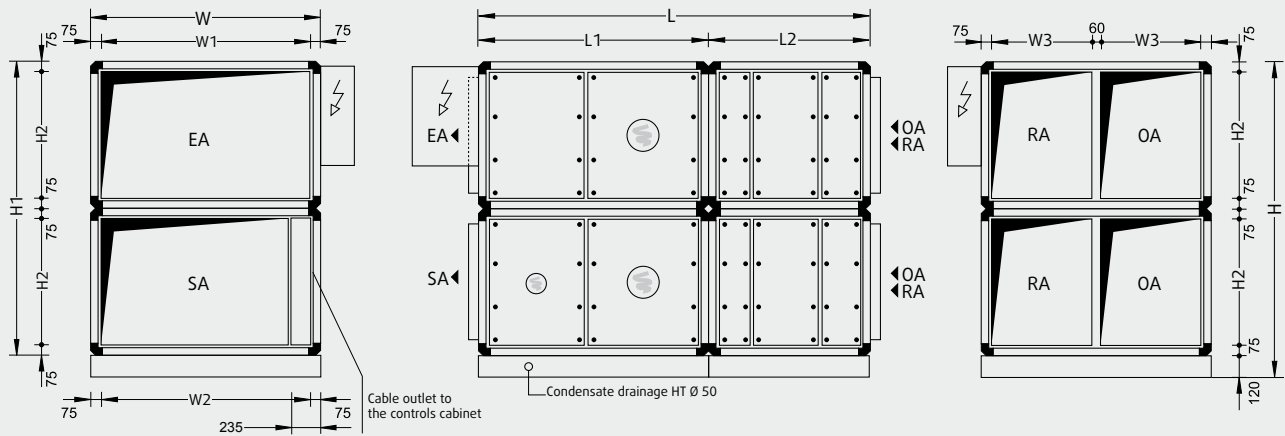
Please comply with the dimensions for body size, air duct connections and electrical switch cabinet.

All lengths are given in mm, weights in kg, weight incl. controls cabinet.

- 1 Door fitting assembly increase unit width by 25 mm each operating side
- 2 incl. 120 mm base frame
- * Further partitioning for smaller apertures possible (at extra cost).

Frecolair Type 14

System dimensions and weights



Important! Where a system is operated in parallel, the supply air and return air ducts of the two units have to be brought together.

Where units are run in parallel, each unit has a controls cabinet.

Mirror-image design possible.

Unit Type	L	W ¹	H ²	L1	L2	W1	W2	W3	H1	H2	Weight
14 25 01	3,220	2,010	2,860	2,010	1,210	1,860	1,700	900	2,740	1,220	2,150
14 32 01	3,540	2,010	3,500	2,330	1,210	1,860	1,700	900	3,380	1,540	2,350
14 36 01	3,540	2,330	3,500	2,330	1,210	2,180	2,020	1,060	3,380	1,540	2,550

Largest transport unit *

Unit Type	L	W	H ²	Weight
14 25 01	2,010	2,010	2,740	1,800
14 32 01	2,330	2,010	3,380	1,950
14 36 01	2,330	2,330	3,380	2,100

Controls cabinet

Unit Type	H x W x D	Position at unit
14 25 01	1,280 x 640 x 210	SA/RA side
14 32 01	1,600 x 640 x 250	SA/RA side
14 36 01	1,600 x 640 x 250	SA/RA side

For service work, a clearance corresponding to dimension W is required on the operating side of the unit. If dimension W is smaller than one metre, please leave a clearance of one metre.

Please comply with the dimensions for body size, air duct connections and electrical switch cabinet.

All lengths are given in mm, weights in kg.

- 1 Door fitting assembly increase unit width by 25 mm each operating side
- 2 inkl. 120 mm base frame
- * Further partitioning for smaller apertures possible (at extra cost).

Technical specifications and services

Unit Type		14 03 01	14 04 01	14 05 01	14 06 01	14 10 01	14 13 01	14 16 01	14 19 01	14 25 01	14 32 01	14 36 01
Optimum flow rate												
Return air/supply air	m ³ /h	2,600	3,300	4,000	4,700	7,100	9,500	11,800	14,200	18,700	24,000	27,000
Outside air/exhaust air	m ³ /h	3,500	4,600	5,300	6,300	9,500	12,600	15,800	19,000	25,000	32,000	36,000
Total electrical power rating ¹	kW	4.6	5.7	6.8	8.2	12.9	14.7	19.5	23.2	30.6	37.8	45.6
Max. current consumption ¹	A	12.2	15.2	18.2	19.7	29.8	34.2	39.1	63.2	80.8	84.8	107.5
Operating voltage		3 / N / PE 400 V 50 Hz										
Compressor refrigeration system²												
Cooling capacity	kW	11.3	14.2	17.5	19.9	30.8	38.7	47.5	58.1	72.6	85.4	99.0
Effective cooling capacity	kW	10.5	13.1	16.2	18.2	28.1	35.2	43.4	52.7	65.7	76.7	88.8
Compressor	kW	2.6	3.3	4.0	4.7	7.6	8.3	10.4	12.1	16.3	19.5	24.8
Refrigeration capacity	EER	4.3	4.3	4.4	4.2	4.1	4.7	4.6	4.8	4.5	4.4	4.0
External pressure loss												
Outside air/exhaust air duct	Pa	300	300	300	300	300	300	400	400	400	400	400
Return air/supply air duct	Pa	300	300	300	300	300	300	400	400	400	400	400
Sound power level³												
RA connection	dB(A)	80	76	76	77	84	80	82	86	84	86	86
EA connection	dB(A)	74	76	79	81	84	81	83	82	86	85	89
Outside air vent	dB(A)	78	73	74	76	83	79	81	82	82	82	83
Supply air vent	dB(A)	77	76	80	82	82	82	84	85	86	86	88
Fan units												
Rated motor input for supply air ⁴	kW	0.86	0.99	1.17	1.41	2.31	2.58	3.80	4.80	5.92	7.95	8.61
Rated motor input for exhaust air ⁴	kW	1.11	1.39	1.61	2.09	3.03	3.83	5.34	6.26	8.37	10.38	12.16
Nominal rating supply air return air	kW	1.7 1.7	1.7 1.7	1.7 3.0	1.7 3.0	3.0 5.5	4.7 4.7	4.7 11.0	9.4 9.4	9.4 16.5	14.1 14.1	14.1 22.0
LPHW (optional)⁵												
Heating capacity ⁶	kW	32.1	41.4	50.4	52	78	105	131	158	211	270	309
Pressure loss LPHW	kPa	8.9	12.6	10.7	11	6	5	5	5	5	7	7
Pressure loss LPHW valve	kPa	12.3	20.0	12.2	12	11	8	12	8	5	9	11
LPHW connection	DN	20	20	25	25	32	40	50	50	65	65	65
LPHW control valve connection	DN	15	15	20	20	25	32	32	40	50	50	50

All technical data relate to the optimum flow rate through heat recovery system and outside air conditions 32° C / 40% r.h., return air conditions 28° C / 40% r.h.

- 1 dependent on configuration of measurement and control system/unit
- 2 recirc air cooling mode, SA ≈ 17° C
- 3 at 250 Hz mid-band frequency
- 4 with average filter contamination
- 5 note higher power consumption of OA fan units
- 6 FL = 70° C; Air on temperature 15° C

Please seek approval of technical data and specifications prior to start of the planning process.