

Comfort air conditioning unit with cross-counterflow-cross heat exchanger



Automatically selects the most economical operating mode!

Trisolair 52 and Trisolair 59

AIR VOLUME FLOW: 1,200 – 5,000 m³/h



Trisolair 59 26 01 - simplified illustration

Trisolair

At a glance:

- ▶ Over 80% temperature efficiency through three-stage recuperative heat recovery
- ▶ Energy efficiency class H1 according to EN 13053:2012
- ▶ Energy-saving EC fans
- ▶ Integrated compressor refrigeration system (59 series)
- ▶ Compact design
- ▶ Integrated defrosting function
- ▶ Integrated control and regulation system, compatible with all conventional building management systems
- ▶ Fulfills the requirements of VDI 6022

Units in the Trisolair 52 and 59 series combine the highest heat recovery efficiency, low pressure drops and compact design. The units already meet the requirements of the second step of ErP 2009/125/EC. Ideal application areas are refurbishments at low to medium air volumes.

A compressor refrigeration system integrated into the 59 series increases the cooling capacity of the overall system at high temperatures and additionally allows dehumidification of the outside air.

Further performance parameters and options:

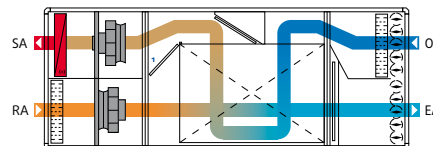
- Filtering the air in any operating mode
 - Corrosion-free heat exchanger made from polypropylene
 - Pumped hot water heating coil
 - Bypass damper
 - Individually controllable performance parameters
 - Complete unit, ready to connect, contains all structural elements for comfort air conditioning, including all control and regulation fittings
 - Intensive quality inspection with factory test run
- Options
- Recirculation air heating damper
 - Pumped chilled water cooling coil
 - Reversible compressor refrigeration system (series 59)
 - Outdoor installation
 - Thermal bridge factor TB1
 - Remote maintenance
 - And many more

Functional description

Trisolair

Heat recovery

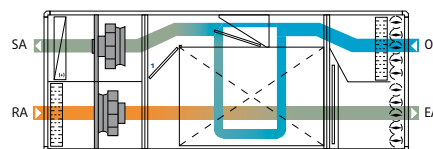
In case of low outside temperatures the system operates completely in heat recovery mode. The cross-counterflow-cross plate heat exchanger enables the recovery of up to 80% of the heat contained in the return air. The standard integrated heating coil compensates for ventilation and transmission heat losses of the building as required.



Reduced heat recovery

If the outside air temperatures rise, the heat recovery requirement is reduced. The bypass dampers, which run along the entire depth of the device, are continuously regulated in order to achieve the desired supply air temperature. If the outside temperatures continue to rise, the heat recovery is completely bypassed. The design of the bypass

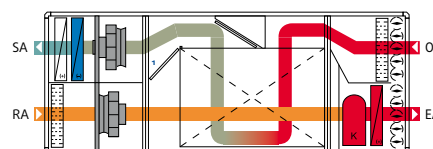
reduces the internal pressure drop on the OA-SA path and hence also significantly reduces the power consumption of the fan motor as it is effective over the entire depth of the unit.



Summertime conditions

If the outside temperature rises above the return temperature, the highly efficient heat exchanger is used as a "cooling recovery system". The warm outside air is cooled by the return air.

recovery). This minimises the electrical capacity required by the integrated compressor refrigeration system, which cools the supply air to the desired temperature and dehumidifies it if required. If unfavourable temperature conditions mean that precooling is not practical, the heat exchanger is bypassed.



Cooling operation type 59:

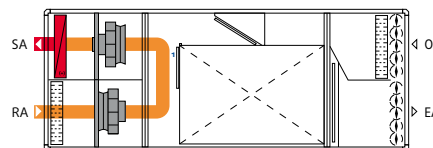
Where outside air temperatures are sufficiently high, the heat exchanger is used for precooling the outside air (cold

Recirculation Air Heating Operation*

In recirculation air mode, the outdoor and exhaust air dampers are closed. The air is heated via the heating coil. Rooms which are not used all of the time, such as

lecture halls or sports halls, can therefore be quickly heated before being used.

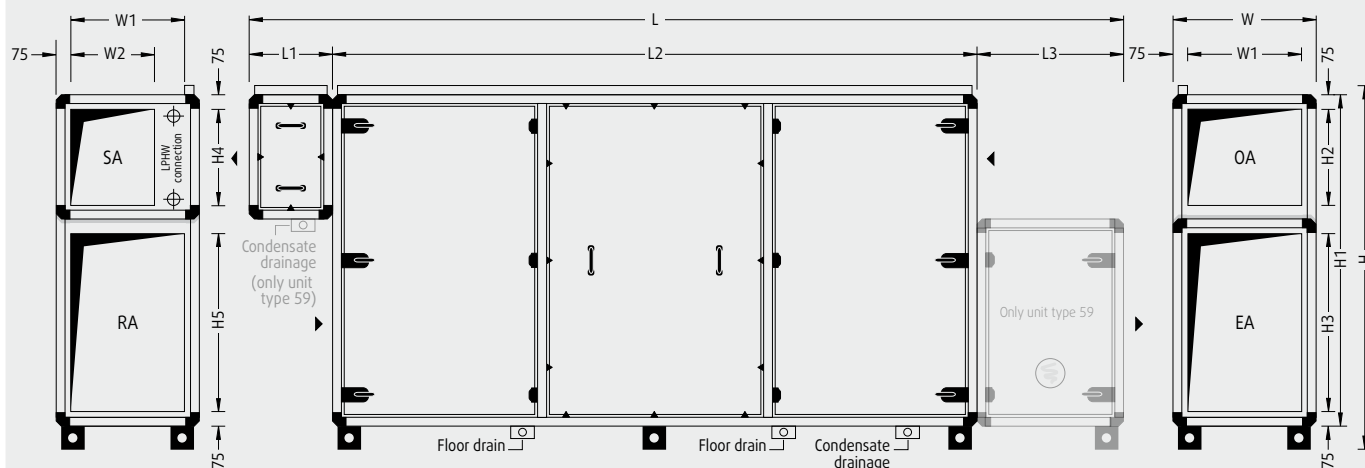
* only possible with optional recirculation air heating damper



1 Recirculation air heating damper (additional equipment)

Trisolair Type 52 and Type 59

System dimensions and weights



Unit feet 100 mm
Optional: adjustable feet
from 100 to 120 mm

Mirror-image design possible.

Trisolair Type 52

Unit Type	L ¹	W ²	H ³	L1 ¹	L2 ¹	W1	W2	H1	H2	H3	H4	H5	Weight ¹
52 12 01	2,580	570	1,210*	410	2,170	420	350	1,050	325	420	420	325	420
52 18 01	3,060	730	1,530*	410	2,650	580	505	1,370	485	580	580	485	560
52 26 01	3,700	730	1,850	410	3,290	580	505	1,690	485	900	580	580	830
52 36 01	3,700	1,050	1,850	410	3,290	900	825	1,690	485	900	580	580	1,050

Controls cabinet

Unit Type	H x W x D ¹	Position at unit
52 12 01	480 x 640 x 210	On top of unit
52 18 01	480 x 640 x 210	On top of unit
52 26 01	900 x 480 x 210	OA/EA side
52 36 01	900 x 480 x 210	OA/EA 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. For service work above the unit, please allow 50 mm working height clearance above the cable duct.

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

Partitioning of unit for smaller apertures possible (at extra cost).

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

- 1 May change depending on chosen option
- 2 Door fitting assembly increase unit width by 25 mm each operating side
- 3 Height incl. 100 mm unit feet and 60 mm cable duct

* Controls cabinet arranged on top of unit, please add controls cabinet height (480 mm).

Trisolair Type 59 with compressor refrigeration system

Unit Type	L ¹	W ²	H ³	L1 ¹	L2 ¹	L3 ¹	W1	W2	H1	H2	H3	H4	H5	Weight ¹
59 18 01	4,110	730	1,530	730	2,650	730	580	505	1,370	485	580	580	485	770
59 26 01	4,750	730	1,850	730	3,290	730	580	505	1,690	485	900	580	580	1,050
59 36 01	4,750	1,050	1,850	730	3,290	730	900	825	1,690	485	900	580	580	1,280

Controls cabinet

Unit Type	H x W x D ¹	Position
59 18 01	1,120 x 640 x 210	Wall mounting
59 26 01	1,120 x 640 x 210	Wall mounting
59 36 01	1,120 x 640 x 210	Wall mounting

Technical specifications and services

Unit Type		52 12 01	52 18 01	52 26 01	52 36 01
Optimum flow rate	m ³ /h	1,200	1,800	2,600	3,600
Max. volume flow rate ¹	m ³ /h	1,600	2,500	3,200	5,000
Coefficient of power efficiency according to EN 13053:2012	%	73	73	76	75
Heat recovery rate according to EN 308	%	75	75	79	77
Total electrical power rating ²	kW	0.69	1.13	1.64	1.91
Max. current consumption ²	A	6.6	13.8	8.0	6.6
Operating voltage		1 / N / PE 230 V 50 Hz		3 / N / PE 400 V 50 Hz	
Ext. pressure loss					
Supply and fresh air channel	Pa	300	300	300	300
Return and exhaust air channel	Pa	300	300	300	300
Sound power level ³					
Supply air vent	dB(A)	65	65	67	65
RA connection	dB(A)	58	60	61	60
Outside air vent	dB(A)	56	54	56	53
EA connection	dB(A)	53	57	59	59
Acoustic pressure at a distance of 1 m from the device ³	dB(A)	46	47	49	48
Fan units					
Rated motor input for supply air ⁴	kW	0.37	0.58	0.87	0.96
Rated motor input for return air ⁴	kW	0.32	0.55	0.77	0.95
SFP category supply air return air		2 2	2 2	3 2	1 2
Nominal rating supply air return air	kW	0.8 0.8	1.4 1.4	2.5 2.5	3.3 3.3
Inner specific fan power (SFP _{int}) ⁵	Ws/m ³	645	772	937	620
Efficiency classes according to EN 13053:2012					
Heat recovery class		H1	H1	H1	H1
Power consumption of fan motors SA RA		P1 P1	P1 P1	P1 P1	P1 P1
Air velocity class		V1	V1	V1	V1
Filtration according to DIN EN 779					
Outside air				F7	
Return Air				M5	
LPHW ⁶					
Heating capacity SA=22° C	kW	2.5	3.5	4.1	6.5
Heating capacity SA=30° C	kW	5.7	8.4	11.1	16.2
Heating capacity Defrost	kW	2.7	3.8	4.4	6.9
Water flow rate and pressure losses					
LPHW	m ³ /h kPa	0.25 4.8	0.51 4.9	0.50 4.8	0.88 5.4
LPHW (pump warm water) valve	m ³ /h kPa	0.15 5.9	0.22 4.9	0.31 9.3	0.42 6.9
Connections					
LPHW connection	DN	32	32	32	32
LPHW control valve connection	DN	10	10	10	10
Floor drains	DN	20	20	20	20
LPCW (optional) ⁷					
Cooling capacity SA ≈ 18° C	kW	5.5	7.6	10.7	15.8
Additional power consumption for supply air	W	60	50	120	170
LPCW connection	DN	32	32	32	32
LPCW control valve-connection	DN	15	20	25	25
Water flow rate and pressure losses					
LPCW	m ³ /h kPa	0.68 3.2	1.03 0.9	1.37 1.1	1.62 2.3
LPCW valve	m ³ /h kPa	0.68 7.3	1.03 17.0	1.37 11.7	1.62 16.3

Specifications of technical data relate to the optimum flow rate and return air condition 30° C / 54% r.h., outside air condition 15° C / 84% r.h. and standard density (1.204 kg/m³), unless otherwise specified.

1 May require alteration of the technical equipment
2 Depends on configuration of measurement and control system/unit

3 at 250 Hz mid-band frequency
4 with average filter contamination
5 According EU guideline No. 1253/2014 [Ecodesign guideline]

6 FL = 50° C
7 note additional power consumption for supply air
8 FL = 6° C

Please seek approval of technical data and specifications prior to start of the planning process. With every single selection we do to your individual requirements our certified selection software automatically checks the Ecodesign compliance level 1 and 2.

Technical specifications and services

Unit Type		59 18 01	59 26 01	59 36 01
Optimum flow rate	m ³ /h	1,800	2,600	3,600
Max. volume flow rate ¹	m ³ /h	2,500	3,200	5,000
Coefficient of power efficiency according to EN 13053:2012	%	73	76	75
Heat recovery rate according to EN 308	%	75	79	77
Total electrical power rating ²	kW	3.77	5.96	7.45
Max. current consumption ²	A	20.8	18.0	21.6
Operating voltage		3 / N / PE 400 V 50 Hz		
Ext. pressure loss				
Supply and fresh air channel	Pa	300	300	300
Return and exhaust air channel	Pa	300	300	300
Sound power level ³				
Supply air vent	dB(A)	63	66	63
RA connection	dB(A)	60	61	60
Outside air vent	dB(A)	55	58	54
EA connection	dB(A)	57	59	59
Acoustic pressure at a distance of 1 m from the device ³	dB(A)	48	51	49
Fan units				
Rated motor input for supply air ⁴	kW	0.62	0.97	1.07
Rated motor input for return air ⁴	kW	0.55	0.79	0.98
SFP category supply air return air		3 2	3 2	2 2
Nominal rating supply air return air	kW	1.4 1.4	2.5 2.5	2.0 2.0
Inner specific fan power (SFP _{int}) ⁵	Ws/m ³	772	939	621
Compressor refrigeration system ⁶				
Filling volume for refrigerant type R410A	kg	3.0	3.0	4.0
Rated compressor input	kW	2.6	4.2	5.4
Mechanical cooling capacity	kW	8.7	12.8	17.9
Refrigeration capacity	EER	3.3	3.0	3.3
Efficiency classes according to EN 13053:2012				
Heat recovery class		H1	H1	H1
Power consumption of fan motors SA RA		P1 P1	P1 P1	P1 P1
Air velocity class		V1	V1	V1
Filtration according to DIN EN 779				
Outside air			F7	
Return Air			M5	
LPHW ⁷				
Heating capacity SA=22° C	kW	3.5	4.0	6.5
Heating capacity SA=30° C	kW	8.4	11.1	16.1
Heating capacity Defrost	kW	3.6	5.1	7.3
Water flow rate and pressure losses				
LPHW	m ³ /h kPa	0.51 4.9	0.50 4.8	0.50 6.5
LPHW (pump warm water) valve	m ³ /h kPa	0.22 12.3	0.30 9.2	0.38 14.1
Connections				
LPHW connection	DN	32	32	32
LPHW control valve connection	DN	10	10	10
Floor drains	DN	20	20	20

Specifications of technical data relate to the optimum flow rate and return air condition 30° C / 54% r.h., outside air condition 15° C / 84% r.h. and standard density (1.204 kg/m³), unless otherwise specified.

¹ May require alteration of the technical equipment
² Depends on configuration of measurement and control system/unit

³ at 250 Hz mid-band frequency

⁴ with average filter contamination

⁵ According EU guideline No. 1253/2014 [Ecodesign guideline]

⁶ At RA = 26° C/55 % r.h., OA = 32° C/40% r.h. and standard density, SA = 17° C

⁷ FL = 70° C

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