Heating and Cooling with Refrigerants

Overview

KAMPMANN
Genau mein Klima.

Contents

Functions

Heating

Cooling

Ventilation

Kampmann.eu/cooling

Heating and Cooling with Refrigerants

Discover the diversity of its options

Kampmann GmbH is facing up to the global challenge to act and conduct business sustainably. For this reason, we offer our well-known products in a range of designs for the heating, air conditioning and ventilation of buildings.

This brochure outlines Kampmann products for use with refrigerants. They include almost all conventional refrigerants.

For a more sustainable approach, Kampmann GmbH supports the trend towards using refrigerants with low greenhouse potential, which is why these products can also be operated using the natural cooling agent CO_2.

To achieve this, the heat exchanger features significantly thicker wall thicknesses, thereby providing for both cooling and heating.

These products are available as "direct evaporation" models and have already been used for many years for the recovery of heat from chiller plants. The systems can also be connected to VRF systems.

The products are also available with water-operated heat exchangers. This model provides the option of reducing the volume of refrigerant needed in the pipework and requires a heat carrier, such as a plate heat exchanger, to provide the transition from refrigerant to water.

The products listed here feature other energy-saving features, such as EC fans and Tandem technology, as well as being suitable for heat recovery and designed for maximum energy efficiency.

Overview

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1. Ultra Ceiling Unit
2. Venkon Fan Coil
3. Tandem 385 Door Air Curtain
4. Airblock FG Air Handling Unit
5. Airblock KG Air Handling Unit

Products with Refrigerants

Overview

Ultra

Article Group 1.54

Unit Heater Ceiling Unit

Casing
- contemporary plastic casing
- with 6-sided air outlets, each with six pre-set defined adjustment angles

Fan
- axial fans, sickle blade, 1- or 2-stage continuously variable speed control
- EC fans

Heat exchanger
- circular design for maximum output from minimal dimensions
- conventional refrigerant
- CO_2
- suitable for LPHW/CHW

Installation options
- ceiling installation

Equipment
- all units in the range come complete with fitted bracket set

Applications
- supermarkets, retail stores or exhibitions
- for recirculating and mixed air operation in heating or cooling mode with an identical appearance

Venkon

Article Group 1.48

Fan Coil

- decentralised façade ventilation units for heating and cooling
- for new build or for refurbishments
- whisper-quiet design

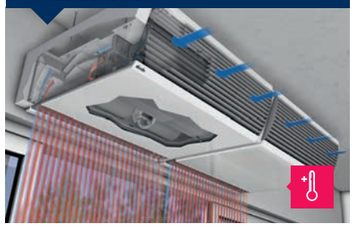
Fan
- large-size, slow-running radial fans
- continuously variable EC fans
- IP44 rated

Heat exchanger
- conventional refrigerant
- LPHW/CHW

Installation options
- wall-mounted
- ceiling installation
- free-standing installation

Equipment
- air filter (M5/F7) optional
- complies with VDI 6022 hygiene regulations

Tandem 385



Article Group 2.52

Door Air Curtain

- an additional fan group generates an unheated ambient air stream, for more energy-saving screening of cold air (approx. 38% energy-savings)

Fan
- large-size radial fans

Max. discharge height
- 3.5 – 4.0 m

Heat exchanger
- conventional refrigerant
- CO_2
- LPHW

Installation options
- ceiling installation

Equipment
- separate unheated ambient air stream for screening
- attractive casing

Airblock FG

Article Group 1.50

Air Handling Unit

- slim-line unit for heating, cooling, ventilation and filtering
- for use with fresh, mixed or recirculating air, heating or cooling mode

Fan
- direct-driven radial fan with backward-curved impeller
- continuously variable EC fans

Heat exchanger
- cooling or heating with copper/aluminium element suitable for use with refrigerant
- LPHW/CHW

Installation options
- indoor installation
- for installation in suspended ceilings

Equipment
- extensive accessories, modular system:
  - air filter (F7/H13)
  - mixed air systems
  - heat recovery module with counterflow plate heat exchanger for over 90% heat recovery
  - sound absorber

Applications
- for use as overpressure systems for meat counters

Airblock KG

Article Group 1.70

Compact Air Handling Unit

- compact ventilation unit with heat recovery and bypass function

Fan
- direct-driven radial fan with backward-curved impeller,
- continuously variable EC fans

Heat exchanger
- evaporator/condenser

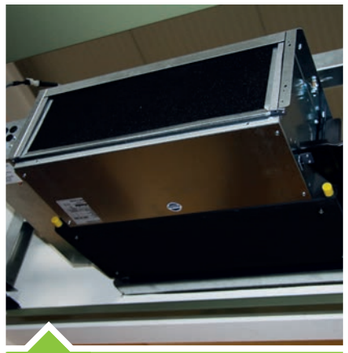
Heat recovery
- rotation heat exchanger with excellent heat recovery of up to 90 %
- diagonal plate heat exchange for the complete separation of the air routes with polluted exhaust air

Installation options
- indoor installation
- outdoor installation
- air discharge on left/right, freely selectable

Equipment
- air filter (F7/H13)
- effective pressure measurement for digital volume flow display
- filter monitoring with digital display
- complies with VDI 6022 hygiene regulations

Products with Refrigerants

At a glance



Venkon

Fan coils, recirculating air. Heating, cooling and filtering with maximum comfort.

Ultra

Ceiling unit for heating, cooling, ventilation within architectural interiors. Meets the most exacting demands in terms of design and comfort.

Airblock KG

Compact air handling unit with heat recovery.

Tandem 385

Door air curtains with Tandem technology. Ambient and warm air stream for effective cold air screening.

Airblock FG

Air handling unit for heating, cooling, ventilation and filtering. For installation in suspended ceilings, with heat recovery.

Ultra

Product Information

Product Features

- minimal height due to circular heat exchanger
- design reliability thanks to standardised accessories
- hexagonal housing design for optimum air distribution with heating and cooling

Features

Installation ▸ ceiling-mounted, under-ceiling unit
Air flow ▸ recirculating air

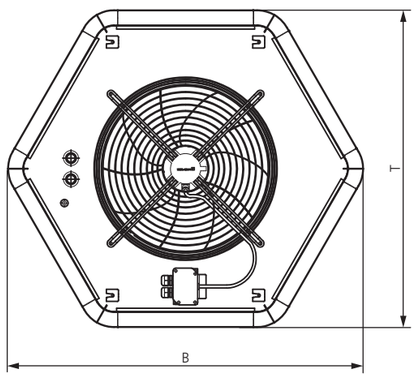
Technical Data

Heat output [1]
8.1 – 14.0 kW
Cooling output [2]
8.0 – 11.9 kW

Sound pressure level [3]
44 – 52 dB(A)
Sound power level
53 – 61 dB(A)

Heat exchanger
- conventional refrigerant
- CO_2
- LPHW / CHW

Technical drawing



Top view (Example)

Product versions

	Height	Width	Depth
Series 85	330	1004	900
Series 96	330	1117	1050

Dimensions [mm]

[1] Liquefaction temperature: 43 °C undercooling 2 K, refrigerant R410 A, entering air temperature 20 °C / CO_2: Gas On / Off 110 °C / 40 °C
[2] Evaporation temperature: 10 °C, overheating 6 K, refrigerant R410 A, entering air temperature 27 °C / 48 %
[3] Sound pressure level taken in a highly sound-absorbent room at a distance of 3 m

Ultra

Ceiling unit for heating, cooling, ventilation in architectural interiors.

	Model	Heat output [1]	Cooling output [2]	Air volume	Sound pressure level [3]	Voltage supply	Fan speed stages	Power consumption	Max. mounting height	Throw	Weight	Article no.
		[kW]	[kW]	[m³/h]	[dB(A)]	[V]		[W]	[m]	[m]	[kg]	
1.54	**Heat exchanger for conventional refrigerant heating/cooling (combined exchanger)**											
	85	10,0/8,1	9,6/8,0	2750/1990	52/45	400	2	140/80	3,3/3,0	5,5/4,6	37	154000853836*
	85	10	9,6	2750	52	230	1	130	3,3	5,5	37	154000853816*
	96	12,6/10,2	11,9/9,9	3520/2520	51/44	400	2	170/100	3,6/3,2	6,0/5,0	47	154000963838*
	96	2,3 – 12,6	2,2 – 11,9	560 – 3610	12 – 50	230	EC-stufenlos	---	3,6/3,2	6,0/5,0	48	154000963833
1.54	**Heat exchanger for conventional refrigerant , heating only (liquefier)**											
	96	14/11,2	---	3520/2520	51/44	400	2	170/100	3,6/3,2	6,0/5,0	48	154000963638*
	96	2,5 – 14	---	560 – 3610	12 – 50	230	EC-stufenlos	---	3,6/3,2	6,0/5,0	48	154000963633
1.54	**Heat exchanger for CO_2 heating/cooling (combined exchanger)**											
	96	3,8 – 20,6	1,6 – 9,5	560 – 3610	12 – 50	230	EC-stufenlos	---	3,6/3,2	6,0/5,0	48	154000963534
1.54	**Heat exchanger for CO_2, heating only (liquefier)**											
	96	4,2 – 22,1	---	560 – 3610	12 – 50	230	EC-stufenlos	---	3,6/3,2	6,0/5,0	48	154000963334

1.54	**Control accessories (fitted)**	
	Evaporation temperature limit thermostat	*T
	Evaporation temperature limit thermostat and repair switch	*TR

Available direct evaporation heat exchanger (heating / cooling)				
R410A	**CO_2**	**R134A**	**R404A**	**R407C**
•	•	•	•	•

Performance data other than for R410A and CO_2 on request. Information for water heat exchangers is available in conventional Kampmann product literature

Max. pressure rating for conventional refrigerant: 48 bar
Max. pressure rating for CO_2: 120 bar

Venkon

Product Information

Product features

- hygiene-certified in line with VDI 6022
- EC fans
- whisper-quiet motors.
- optionally with condensate pump fitted
- available without casing

Venkon | Ceiling casing

Venkon | Wall-standing casing

Features

Installation ▸ wall- or ceiling-mounted

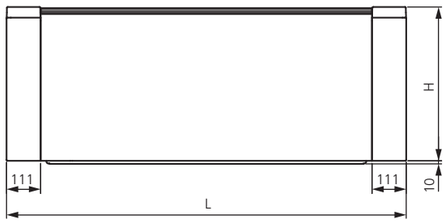
Technical Data

Heat output [1)]
1.0 – 7.2 kW
Cooling output [2)]
0.67 – 6.3 kW

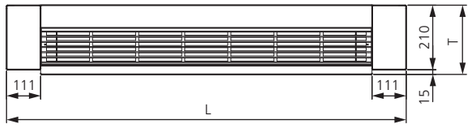
Sound pressure level [3)]
21 – 42 dB(A)
Sound power level
27 – 58 dB(A)

Heat exchanger
- conventional refrigerant
- CO_2
- LPHW / CHW

Technical drawing



Front view, wall-hanging casing (example)



Front view of ceiling casing (example)

Product versions

Models	Lengths (L)
1	850
2	1000
3	1150
4	1300
5	1450
6	1600
7	2000

Depth (D)

Wall-mounted	Ceiling-mounted
225	235

Height (H)

- 510 Wall-hanging
- 650 Wall-mounted / free-standing
- 670 Ceiling

Dimensions [mm]

[1)] Liquefaction temperature: 43 °C undercooling 2 K, refrigerant R410 A, entering air temperature 20°C / CO_2: Gas On / Off 110 °C / 40 °C
[2)] Evaporation temperature: 10 °C, overheating 6 K, refrigerant R410 A, entering air temperature 27 °C / 48 %
[3)] The sound pressure levels were calculated with assumed room insulation of 8 dB(A).
This corresponds to a distance of 2 m, a room volume of 100 m³ and a reverberation time of 0.5 s (in accordance with VDI 2081).

Venkon

Fan coils, recirculating air. Heating, cooling and filtering with maximum comfort.

	Model	Heat output [1)]	Cooling output [2)]	Air volume	Sound pressure level [3)]	Sound power level	Voltage supply	Fan speed stages	Power consumption	Current consumption	Weight (with / without casing)	Article no.
		[kW]	[kW]	[m³/h]	[dB(A)]	[dB(A)]	[V]		[W]	[A]	[kg]	
1.48	**Heat exchanger for conventional refrigerant heating/cooling (combined exchanger)**											
	1	1020 – 2070	670 – 1270	150 – 370	21 – 41	27 – 57			13 – 62	0,13 – 0,27	26,5 / 18,5	14851UL0B12FEC
	2	1230 – 2470	830 – 1560	180 – 420	21 – 41	26 – 55			13 – 64	0,13 – 0,28	30,0 / 21,0	14851UL0B22FEC
	3	1570 – 3020	1600 – 3020	240 – 560	21 – 39	28 – 55			12 – 68	0,15 – 0,34	34,0 / 24,0	14851UL0B32FEC
	4	1730 – 3450	1770 – 3430	260 – 620	21 – 39	27 – 54	230	EC-stufenlos	13 – 73	0,15 – 0,36	41,0 / 27,0	14851UL0B42FEC
	5	1950 – 3980	1930 – 3710	280 – 650	21 – 39	26 – 53			13 – 73	0,15 – 0,36	48,0 / 32,0	14851UL0B52FEC
	6	2850 – 5700	2760 – 5140	420 – 990	24 – 43	33 – 58			26 – 129	0,28 – 0,59	57,0 / 36,0	14851UL0B62FEC
	7	3400 – 7240	3330 – 6370	500 – 1230	24 – 42	34 – 58			26 – 145	0,30 – 0,71	69,0 / 46,0	14851UL0B72FEC
1.48	**Heat exchanger for CO_2 refrigerant heating/cooling (combined exchanger)**											
	1	1900 – 3800	550 – 1300	150 – 370	21 – 41	27 – 57			13 – 62	0,13 – 0,27	26,5 / 18,5	14851UL0B12CEC
	2	2500 – 4800	650 – 1470	180 – 420	21 – 41	26 – 55			13 – 64	0,13 – 0,28	30,0 / 21,0	14851UL0B22CEC
	3	3100 – 5800	860 – 1970	240 – 560	21 – 39	28 – 55			12 – 68	0,15 – 0,34	34,0 / 24,0	14851UL0B32CEC
	4	3500 – 6800	940 – 2180	260 – 620	21 – 39	27 – 54	230	EC-stufenlos	13 – 73	0,15 – 0,36	41,0 / 27,0	14851UL0B42CEC
	5	3940 – 7460	1000 – 2290	280 – 650	21 – 39	26 – 53			13 – 73	0,15 – 0,36	48,0 / 32,0	14851UL0B52CEC
	6	5600 – 10400	1560 – 3400	420 – 990	24 – 43	33 – 58			26 – 129	0,28 – 0,59	57,0 / 36,0	14851UL0B62CEC
	7	6600 – 11140	1860 – 4200	500 – 1230	24 – 42	34 – 58			26 – 145	0,30 – 0,71	69,0 / 46,0	14851UL0B72CEC

1.48 Accessories

Model	1	2	3	4	5	6	7
Wall-hanging casing	14832UB0W102	14832UB0W202	14832UB0W302	14832UB0W402	14832UB0W502	14832UB0W602	14832UB0W702
Wall-standing casing	14832UB1W102	14832UB1W202	14832UB1W302	14832UB1W402	14832UB1W502	14832UB1W602	14832UB1W702
Free-standing casing	14832UB0S102	14832UB0S202	14832UB0S302	14832UB0S402	14832UB0S502	14832UB0S602	14832UB0S702
Ceiling casing	14832UB1D102	14832UB1D202	14832UB1D302	14832UB1D402	14832UB1D502	14832UB1D602	14832UB1D702
Round pipe connection unit	14835BB0B105	14835BB0B205	14835BB0B305	14835BB0B405	14835BB0B505	14835BB0B605	14835BB0B705
Condensate tray, injection valve, wall-mounted	14834AL0W001						
Condensate tray, injection valve, ceiling-mounted	14834AL0D001						
Condensation pump	14834AB0B002						

Available direct evaporation heat exchanger (heating / cooling)			
R410A	**R134A**	**R404A**	**R407C**
•	•	•	•

Performance data other than for R410A and CO_2 on request. Information for water heat exchangers is available in conventional Kampmann product literature.

max. pressure rating for conventional refrigerant: 48 bar

Tandem 385

Product Information

Product features

- 38 % energy savings using Tandem technology
- minimal heating requirement with the same screening effect

Features

Installation
- wall or ceiling-mounted horizontal/vertical
- installation within a suspended ceiling

Construction
- basic unit and accessories/ unit casing (modular construction is possible)

Door air curtains
- ambient and warm air stream

Technical Data

Heat output [1)]
5.0 – 16.7 kW

Air volume
840 – 8180 m³/h

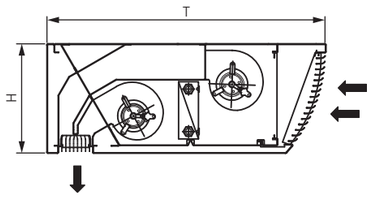
Sound pressure level [2)]
40 – 64 dB(A)

Sound power level
55 – 79 dB(A)

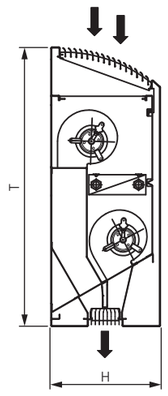
Max. discharge height
3.5 – 4.0 m

Heat exchanger
- conventional refrigerant
- CO_2
- LPHW

Technical drawing



Cross-section, horizontal (Ex.)



Cross-section, vertical (Ex.)

Product versions

Tandem 385

Models	Lengths
15	1500
20	2000
25	2500

Depth (D): 985
Height (H): 385

Dimensions [mm]

[1)] Liquefaction temperature: 43 °C undercooling 2 K, refrigerant R410 A, entering air temperature 20 °C / CO_2: Gas On / Off 110 °C / 40 °C
[2)] The sound pressure levels was calculated based on an assumed room insulation of 15 dB(A).
This corresponds to a distance of 3 m, a room volume of 1350 m³ and a reverberation time of 1.0 s (in accordance with VDI 2081)

Tandem 385

Door air curtains with Tandem technology.

	Model	Heat output [1)]	Cooling output	Air volume	Sound pressure level [2)]	Voltage supply	Fan speed stages	Power consumption	max. mounting height	max. door width	Weight (with casing)	Article no.
		[kW]	[kW]	[m³/h]	[dB(A)]	[V]		[W]	[m]	[m]	[kg]	
2.52	Heat exchanger for conventional refrigerant , heating only (liquefier)											
	15	5,0 – 8,9	---	1890 – 4360	40 – 62	230	5	328 – 1146	3,5 – 4,0	1,5	141	252000215380
	20	6,7 – 12,1	---	2460 – 5770	43 – 63			430 – 1508		2	183	252000220380
	25	9,1 – 16,7	---	3370 – 8180	44 – 64			610 – 2182		2,5	233	252000225380
2.52	Heat exchanger for CO_2, heating only (liquefier)											
	15	8,9 – 14,4	---	1890 – 4360	40 – 62	230	5	328 – 1146	3,5 – 4,0	1,5	141	252000215350
	20	11,5 – 18,8	---	2460 – 5770	43 – 63			430 – 1508		2	183	252000220350
	25	15,8 – 27,8	---	3370 – 8180	44 – 64			610 – 2182		2,5	233	252000225350

2.52	Accessories		
Model	15	20	25
Casing for basic unit RAL 9016	252000215800	252000220800	252000225800
Wall bracket RAL 9016	252000200890	252000200890	252000200890
Ceiling bracket RAL 9016	252000200895	252000200895	252000200895

Available direct evaporation heat exchanger (heating / cooling)				
R410A	**CO_2**	**R134A**	**R404A**	**R407C**
•	•	•	•	•

Performance data other than for R410A and CO_2 on request. Information for water heat exchangers is available in conventional Kampmann product literature.

max. pressure rating for conventional refrigerant: 48 bar
max. pressure rating for CO_2: 120 bar

Airblock FG

Product Information

Product features

- slim-line construction
- air filter options for every application (e.g. particle filters)
- EC fans

Features

Installation ▸ indoor installation, for installation in suspended ceilings

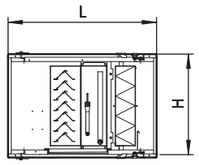
Technical Data

Air volume unit combination
Exhaust air and chiller module
330 – 6100 m³/h

Heat exchanger
- conventional refrigerant
- CO_2
- LPHW / CHW

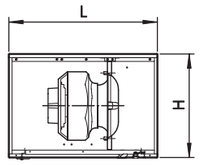
Technical Drawing

Cross-section



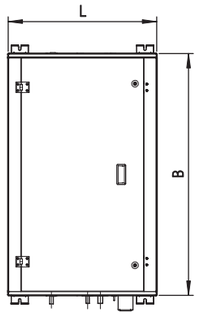
Chiller module

Cross-section

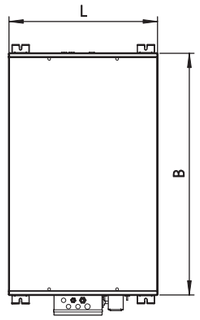


Fan unit

Plan view



Plan view



Product versions

Models	Lengths (L) Chiller module Direct evaporator	Lengths (L) Fan unit	Width (W)	Height (H)
6	700	600	740	390
7	700	600	940	390
8	700	700	940	490
9	700	700	1140	490

Dimensions [mm]

Airblock FG

Slim-line units for heating, cooling, ventilation and filtering.

	Model	Cooling output[1]	Heat output[2]	Air volume[3]	Filter class[4]	Voltage supply	Fan speed stages	Max. power consumption	Exhaust air type
		[kW]	[kW]	[m³/h]		[V]		[W]	
1.50	**Heat exchanger for conventional refrigerant heating / cooling (combined exchanger)**								
	6	1,4 – 3,0	1,9 – 4,4	330 – 1250	F7	230	EC-stufenlos	165	150006300600*
	7	2,3 – 4,9	3,1 – 7,2	550 – 2250				340	150007300600*
	8	3,7 – 7,1	5,0 – 10,7	950 – 3550				700	150008300600*
	9	5,2 – 10,3	7,2 – 15,2	1500 – 6100				1470	150009300600*
1.50	**Heat exchanger for CO_2 heating / cooling (combined exchanger)**								
	6	1,1 – 2,9	3,0 – 6,3	330 – 1250	F7	230	EC-stufenlos	165	150006300600*
	7	1,8 – 4,9	5,0 – 10,4	550 – 2250				340	150007300600*
	8	3,0 – 7,2	7,6 – 15,4	950 – 3550				700	150008300600*
	9	4,4 – 10,9	11,2 – 21,5	1500 – 6100				1470	150009300600*

[1] Evaporation temperature: 10 °C, overheating 6K, refrigerant R410 A, entering air temperature 27°C / 48%, accessories: direct evaporation element needed
[2] Liquefaction temperature: 43°C, undercooling 2K, refrigerant R41 0 A, entering air temperature 20°C / CO_2: Gas On / Off 110°C / 40°C
[3] Including chiller module with F7 filter (accessory) and droplet separator (accessory)
[4] Accessories

Control accessories (additional to the unit type)
*P00 effective pressure display, digital
*V00 volumetric flow control via effective pressure

1.50	**Accessories**				
	Model	6	7	8	9
	Chiller module as direct evaporator[5]	150006302230*	150007302230*	150008302230*	150009302230*
	Droplet separator	150006002010	150007002010	150008002010	150009002010
	Compact filter F7	150006013270	150007013270	150008013270	150009013270
	Bag filter module F7	150006303170*	150007303170*	150008303170*	150009303170*
	Particle filter module H13	---	150007303130*	150008303130*	150009303130*
	Heat recovery module	150006301700*	150007301700*	150008301700*	150009301700*

[5] including mounting options for compact filter and droplet separation
*00D analogue filter pressure display
*00P Filter pressure display, digital

Available direct evaporation heat exchangers (heating / cooling)			
R410A	**R134A**	**R404A**	**R407C**
•	•	•	•

Performance data other than for R410A and CO_2 on request. Information on water heat exchangers is available in conventional Kampmann product literature.

max. pressure rating for conventional refrigerant: 48 bar

Airblock KG

Product Information

Product features

- short delivery times
- pre-configured unit series in six sizes
- also available with mixed air baffle
- separable design to fit into narrower openings

Features

Installation ▸ indoor or outdoor installation

Technical Data

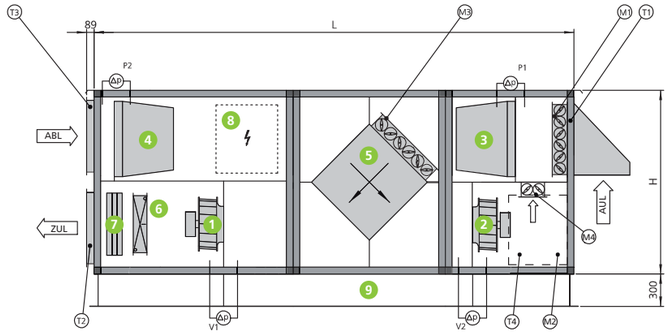
Air volume
Plate heat exchanger design
700 – 12500 m³/h
Air volume
Rotor heat exchanger design
1500 – 13800 m³/h

Return thermal coefficient
Plate heat exchanger design
58.5 – 91.7 %
Return thermal coefficient
Rotor heat exchanger design
78.8 – 90.2

Heat exchanger
- conventional refrigerant
- CO_2
- LPHW / CHW

Ex. of schematic diagram showing design of rotor heat recovery and control

Example: outdoor installation



1. Supply air fan
2. Extract air fan
3. Outside air filter
4. Exhaust air filter
5. Heat recovery unit
6. Cooling and heating elementr
7. Droplet separator
8. KaControl
9. Base frame (accessory)

T1 - Outside air temperature sensor
T2 - Supply air temperature sensor
T3 - Exhaust air temperature sensor
T4 - Extract air temperature sensor
V1 - Supply air flow sensor
V2 - Exhaust air flow sensor
P1 - Outside air filter differential pressure sensor
P2 - Extract air filter differential pressure sensor
M1 - Outside air baffle servomotor
M2 - Extract air baffle servomotor
M3 - Bypass baffle servomotor
M4 - Recirculating / mixed air baffle servomotor

Product versions

The Airblock FG is available in different sizes.
Detailed information on dimensions and weights on request.

Airblock KG

Compact ventilation unit with heat recovery.

Model	Air volume	Air velocity	Return thermal coefficient	Return thermal coefficient in accordance with DIN EN308	Heat recovery class	Supply air power consumption	Exhaust air power consumption	SFP class, total	Indoor installation design		Outdoor installation design	
	[m³/h]	[m/s]	[%]	[%]		[W]	[W]		single-section	multi-section	single-section	multi-section
1.70	**Fan coil with plate heat exchanger**											
10	700 – 1500	0,7 – 1,5	91,7 – 89,1	82,8 – 79,1	H1	250 – 550	260 – 560	SFP3	•	•	•	
20	1100 – 2600	0,7 – 1,7	75,6 – 68,6	66,4 – 60,1	H2 – H3	290 – 790	300 – 790	SFP3	•	•	•	
40	1500 – 5000	0,7 – 2,4	77,0 – 67,5	66,4 – 59,2	H2 – H3	440 – 1690	430 – 1640	SFP3	•	•	•	
60	2200 – 7000	0,8 – 2,5	77,7 – 68,7	66,9 – 60,1	H2 – H3	590 – 2410	580 – 2340	SFP3	•	•	•	
80	3200 – 8200	0,8 – 2,1	80,4 – 73,6	68,9 – 63,8	H2 – H3	770 – 3060	770 – 3040	SFP3-SFP4	•	•	•	
100	3800 – 11200	0,8 – 2,4	75,2 – 74,6	64,4 – 63,9	H3	930 – 3930	930 – 3890	SFP3-SFP4		•		•
120	4600 – 12500	0,8 – 2,2	68,2 – 67,2	59,2 – 58,5	H3	1110 – 3940	1090 – 3830	SFP3		•		•
1.70	**Fan coil with efficient rotary heat exchanger**											
20	1500 – 2600	1,0 – 1,7	87,8 – 81,1	87,8 – 81,1	H1	430 – 870	430 – 870	SFP2-SFP3	•	•	•	
40	2800 – 5600	1,0 – 2,0	88,8 – 80,5	88,8 – 80,5	H1	830 – 1930	830 – 1930	SFP3	•	•	•	
60	4000 – 7300	1,0 – 1,8	88,4 – 81,3	88,4 – 81,3	H1	1080 – 2670	1080 – 2670	SFP2-SFP3	•	•	•	
80	5000 – 8700	1,3 – 2,2	86,1 – 78,8	86,1 – 78,8	H1	1460 – 2960	1460 – 2960	SFP2-SFP3	•	•	•	
100	6000 – 11200	1,1 – 2,0	89,5 – 82,6	89,5 – 82,6	H1	1550 – 3940	1550 – 3940	SFP2-SFP3		•		•
120	6500 – 13800	1,0 – 2,1	90,2 – 82,0	90,2 – 82,0	H1	1740 – 4960	1740 – 4960	SFP2-SFP3		•		•

Available direct evaporation heat exchanger (heating / cooling)			
R410A	**R134A**	**R404A**	**R407C**
•	•	•	•

The heat exchangers are configured and designed for each project.

max. pressure rating of the exchangers for conventional refrigerant: 48 bar

The KaControl controller design, permits the control of a customer-provided direct evaporation outdoor unit.
Power control is via 0 – 10 V signal from the KaControl to the outdoor unit.
All other functions, such as temperature control, fan and baffle control, filter monitoring, are provided by the integrated KaControl.

Kampmann

Kampmann.
Genau mein Klima.

With over 720 employees at 14 locations around the world, Kampmann is one of the major players in the construction and building services industries. Kampmann systems for heating, cooling and ventilation are at the forefront of different market segments today.

Innovation and the ultimate quality standards in all divisions reinforce this success for the future as well.

Our customers attach importance to working with reliable partners rather than with interchangeable suppliers. We can state clearly and succinctly why Kampmann is such a reliable partner: **Genau mein Klima - "Precisely my kind of climate"**

Precisely:
The precision with which Kampmann adapts its solutions to customers' requirements.

My:
The individual approach Kampmann offers its customers.

Kind of climate:
The partnership-based atmosphere that customers and suppliers alike experience with Kampmann.

Consistently there.

Kampmann.
Genau mein Klima.

Wherever our customers and partners need us: we are there. Around the corner. Around the globe. On the web. We are there transforming today's challenges into tomorrow's solutions. We are there when the standards and norms of the future are defined. Down-to-earth, attentive, available at any time. And always ready to go the extra mile

Consistently cooperative.

Kampmann.
Genau mein Klima.

We believe that fairness is the best foundation for sustainable success. That a handshake can mean more than a 100-page contract. And that mutual respect comes from seeing eye-to-eye. This is the way we are – and this is how we interact, with our customers, with our suppliers, with each other: a cordial and sincere invitation to genuine partnership.

Consistently sophisticated.

Kampmann.
Genau mein Klima.

We leave nothing to chance. Including the future. We check and recheck. We enhance and optimise. And we don't let go until we are thoroughly satisfied. With a love for detail that is only rivalled by our passion for thinking in systems, we maintain and nurture our spirit of discovery and invention that drives us from good ideas to useful products.

Consistently solution-focused.

Kampmann.
Genau mein Klima.

A hotel needs a different climate than a retail outlet. And when the southern side of an office block needs to be cooled down, the north may still need warming up. Our customers' requirements are highly specific. So are our solutions. Which means that even the trickiest challenges have a predictable (and most satisfying) outcome: We turn complexity into clarity – and create the perfect climate.

Kampmann as a Family Company

One person – one product: Kampmann GmbH has continuously evolved since the company was set up in 1972.

With its vision and keen insight into future markets, Kampmann GmbH grew to become one of the leading international specialists in heating, cooling, ventilation and integrated building automation. The company is still family-owned and, now in its second generation, is managed by Hendrik Kampmann.

The company focuses on customer satisfaction. Some 56 external sales representatives are out on the road in Germany and across the globe for our customers. Together with staff in the 14 (inter-) national representative offices, they provide customers with qualified professional advice on site.

Our customer service team in the Lingen Service Centre supports customers with 16 internal employees. There is a further employee in our Munich and Graefenhainichen (Saxony-Anhalt) Service offices handling any problems that might arise. Germany-wide, we also maintain 50 Service Centres and, internationally, our customers can call upon Kampmann Customer Service at 28 Service Centres in twelve countries.

Company founder Heinrich Kampmann and the present Managing Director Hendrik Kampmann.

Kampmann

Corporate Group

Kampmann GmbH head office in Lingen (Ems)
- development, production, final assembly and sale of virtually all product groups
- Research & Development Centre
- approx. 62,000 m² production area

Traditionally, Kampmann's expertise has focused on series production with an extraordinary variety of options, as well as on visually attractive, custom-made, project-based solutions.

Outstandingly well-trained, skilled personnel in our three factories produce Kampmann-quality products for customers around the world. In addition to the company's headquarters in Lingen/Lower Saxony, housing administration and production, Kampmann GmbH has two further production sites in Saxony-Anhalt and in Łęczyca, Poland.

In the spring of 2011, Kampmann acquired a majority stake in NOVA Apparate GmbH, Donaueschingen. NOVA serves ventilation manufacturers with centralised units, while Kampmann serves heating contractors with decentralised units. Centralised and decentralised air conditioning and ventilation technology grow together.

Kampmann UK Ltd., established in 2013, is responsible for the sale and distribution of Kampmann HVAC products in the United Kingdom, Ireland, Australia, New Zealand, the USA and Canada.

Kampmann Eingangsmatten GmbH
- production of entrance matting and roll-up and linear grilles
- approx. 5,000 m² production area

KAMPMANN Polska Sp. z o. o.
- production of unfinished and finished products for heating, cooling and ventilation systems
- in addition to finished products for the regional market, a large proportion of the production output is sent to the German main factory in Lingen for further processing
- approx. 8,300 m² production area

Kampmann

Research & Development Centre

The company's own Research & Development Centre is one of the most modern of its kind.

The R & D Centre (FEC) enables the company to

- develop new standard products
- continually improve its products
- undertake applied research
- provide detailed analysis of the units to be tested
- undertake standard tests.

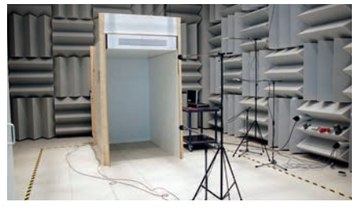
Major investment requires performance that can be tested. That is what we offer our customers in our in-house R & D Centre (FEC) adjacent to our headquarters in Lingen. Built in June 2008, with an investment of approx. € 4 million, it is one of the most modern facilities of its type in Europe.

The multifunctional design of the building with a floor area of approx. 1,200 m² houses an air flow laboratory, a multi-purpose laboratory and a sound chamber.

The technically state of the art fit-out of the laboratory, which also houses a test chamber, two climate simulation units and a climate chamber, is designed to meet customers' ever-changing demands:

- functional demonstration and presentation of products
- product testing in real installation situations
- reliable technical data and proof of outputs
- continuous new developments and product enhancements.

We work closely with leading scientific research institutions, universities and test laboratories. The focus of our work is on sustainable products that operate energy-efficiently and have a long service life, with adaptable operation and manufactured using recyclable materials.



The company's own Research & Development Centre (FEC) at its headquarters in Lingen (Ems), Germany.

Kampmann

Project Report on Poli Supermarket

Use of waste heat and air conditioning in a supermarket as part of a CO_2 composite system as direct evaporation

The retailer has been relying on environmentally-friendly air conditioning and refrigeration technology for many years. CO_2 chillers offer supermarkets major potential for climate-friendly optimisation. On the one hand, natural refrigerants carry minimal greenhouse gas potential. On the other hand, energy is saved through the utilisation of waste heat. The volumes of waste heat are sufficient to cover a large part of the building's heating load, without using large volumes of refrigerant with high GWP.

Matching terminal units for the utilisation of waste heat

Freezer chests and cabinets in retail chains can be operated using CO_2 as a refrigerant. However, by contrast, there is often a lack of suitable terminal units when air conditioning the building. The solution of transferring to a water-based system is therefore selected.

With its Ultra air heater and Tandem door air curtain, Kampmann GmbH offers suitable terminal units for the utilisation of waste heat and for cooling for direct connection to the CO_2 composite system. Thanks to their pressure rating of 120 bar, these products are ideal for direct evaporation using CO_2 as the refrigerant.

Successful collaboration with the Poli supermarket chain in Italy

Poli, the Italian supermarket chain, also relies on environmentally-friendly and efficient air conditioning technology. Kampmann GmbH has therefore already equipped several Poli supermarkets with its Ultra CO_2 air heaters and Tandem CO_2 door air curtains.

Poli also uses Enex srl CO_2 chillers, which, among other things, also supply the freezer chests and cabinets, as well as the Ultra and Tandem terminal units. Equipped with energy-saving EC fans, Ultra air heaters and Tandem door air curtains are regualted by the higher-level control for the chiller.

Due to this higher-level control, the cooling and heat energy is retained in the supermarket and is displaced, as required. In summer, for example, the system air conditions the entire supermarket and operates the freezer chests and cabinets, thanks to a Booster stage. There is thus no need for additional heating or cooling energy generators, such as boilers or chillers.

Apart from the energy savings achieved by utilising waste heat, the door air curtains are also equipped with Tandem technology, with up to 38% energy being saved compared with conventional door air curtains.

Poli has confirmed that, together with the Enex srl CO_2 chiller and the Kampmann GmbH CO_2 terminal units, it has saved approx. 30 % operating costs compared to conventional systems.

Discover more about the natural refrigerant CO_2 at **Kampmann.eu/cooling.**

Contact

Do you still have questions or would like a personal consultation? Simply get in touch with us.
Kampmann.eu/contact

Kampmann International

Professional advice - worldwide

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Kampmann Online

You will find the best solutions and best support for your everyday business at Kampmann.eu.

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  A wealth of filter options quickly and easily limits the Kampmann product range. In addition to the extensive product information, the product configurator provides for configuration even with limited available data, from the product group to final article number.

- **Solutions**
  Differentiated by building and type of use, designers obtain tailor-made solutions and planning-relevant information, such as technical documentation or current guidelines.

- **Service**
  Kampmann is always on hand in an advisory capacity to ensure that your project runs seamlessly throughout all stages of your project – from efficiency calculations on green building projects to on-site support.

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- **Twitter.com/kampmanngmbh**
- **Facebook.com/kampmann.de**
- **Youtube.com/user/kampmannlingen**

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