



► **Ultra**
unit heaters


Ultra

Ceiling unit for heating, cooling, ventilation
in large, high-end interiors.

► **Technical Catalogue**

Contents

01 ▶ Product information	6
▶ Overview	7
▶ Product data	8
▶ Selection guide: overview of models	9
▶ Ultra at a glance	10
02 ▶ Technical data	12
▶ General	13
▶ Ultra EC, Heating	14
▶ Ultra EC, Cooling or heating	22
▶ Ultra AC, Heating	30
▶ Ultra AC, Cooling or heating	38
03 ▶ Design information	44
▶ Information on planning and design	45
▶ Hybrid ECO System	52
▶ Suggested combination: two Ultra units with KaCompact air handling unit	53
04 ▶ Controls	54
▶ Speed controller/stage switch for 230 V EC, 230 V AC and 400 V AC motors	55
▶ Control accessories for EC recirculating air units *00	56
▶ Wiring diagram for EC recirculating air units *00	57
▶ KaControl – The all-inclusive solution for 230 V AC and EC motors	58
▶ 2-stage three-phase motor	66
▶ 1-stage single-phase motor	67
05 ▶ Ordering information	68
▶ Ultra	68
▶ Accessories	70

A photograph of a modern interior space featuring a staircase with glass railings and a ceiling unit. The staircase is made of metal and glass, with a dark metal frame and glass railings. The ceiling is white with a grid pattern, and a ceiling unit is visible. The floor is dark grey tile. The background shows a large window with a view of the outdoors.

Ultra: Ceiling unit for heating, cooling, ventilation in large, high-end interiors. Meets the most exacting demands in terms of design and comfort.



Ultra: Ceiling unit for heating, cooling, ventilation in large, high-end interiors. Meets the most exacting demands in terms of design and comfort.

01 ▶ Product information



Ultra – For greater energy efficiency and comfort in large spaces

Kampmann Ultra or Ultra EC units are high-performance, energy-saving and ErP-compliant.

The Ultra EC is now equipped with the most energy-efficient drive concept, through the use of EC technology, and can now be used wherever energy needs to be saved over the long term.

Ultra are used as ceiling units, either in heating and/or cooling configuration, for recirculating air or primary air operation in:

- ▶ retail chains
- ▶ showrooms and shop floors
- ▶ entrance halls
- ▶ retail stores with add-on accessories for installation in raised ceilings and acoustic grid ceilings 625 x 625 mm (600 x 600 mm on request)
- ▶ spaces with a ceiling height of between 2.3 m and 4.0 m.

The Ultra product range includes 4 models for heating and 3 models for heating/cooling. The height of every model is only 330 mm.

Different heat exchangers and fans are fitted (refer to “Overview of models” on page 9) depending on the model (73, 84, 85, 96), the configuration (heating or heating/cooling) and control options (AC or EC).

How it works

Air is drawn in through the axial fan and is blown through the circular heat exchanger into the room.

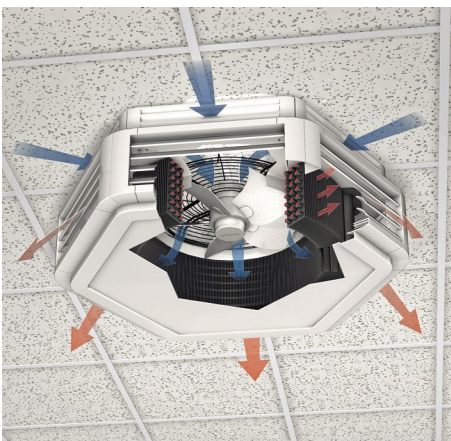
The heated or cooled air is guided into the room on-demand through the pre(settable) louvre slats.

Models with large heat exchanger capacity are ideal for use with low water temperatures.

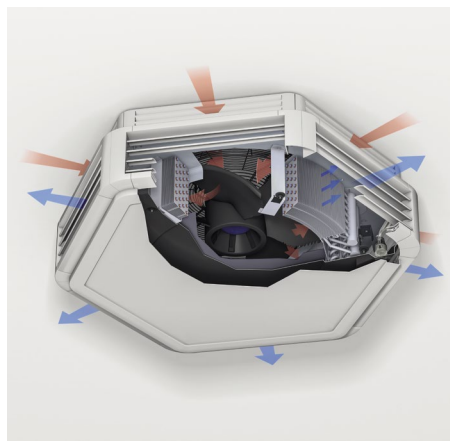
Scope of delivery

- ▶ intake crown for air intake supplied as standard for ease of fitting on site; brackets are fitted
- ▶ 6-sided air outlet, slats can be pre-set at six defined angles

Heating example



Cooling example



Product data



Product advantages

- ▶ high-performance, energy-saving
- ▶ contemporary housing design
- ▶ extremely shallow design
- ▶ long-term low operating costs through the use of EC technology
- ▶ suitable for low water temperatures
- ▶ extensive range of accessories
- ▶ ideal for use in the Kampmann Hybrid-ECO system
- ▶ all housing parts are plastic, therefore more lightweight, traffic white RAL 9016 (can be painted)
- ▶ hygiene-certified to VDI 6022



Features

- ▶ plastic housing in RAL 9016
- ▶ air guidance slats can be slotted into six positions
- ▶ circular heat
- ▶ AC or EC fan
- ▶ extensive range of control accessories
- ▶ supplied as standard with intake crown

Heating

Cooling

Installation

Airflow

Heat exchanger

KaControl

- ▶ LPHW
- ▶ CHW (direct evaporation (also CO₂) on request)
- ▶ under-ceiling installation
- ▶ recirculating, primary or mixed air (on request)
- ▶ copper/aluminium
- ▶ optional

Performance data

Heat output¹⁾ [kW]

- ▶ 5.0–47.4

Cooling output²⁾ [kW]

- ▶ 2.5–14.9

Operating limits

- ▶ max. operating pressure: 16 bar
- ▶ min. entering water temperature: 5 °C
- ▶ max. entering water temperature: 90 °C
- ▶ min. entering air temperature: 5 °C
- ▶ max. entering air temperature: 40 °C
- ▶ relative humidity: 20 – 60%
- ▶ max. height with ceiling installation: approx. 4 m (Model 96)

Uses

Buildings of all kinds, which need to be ideally heated and ventilated with centralised or decentralised control.



Warehouses
and logistics
buildings



Sports halls



Retail chains



Commercial
and industrial
buildings

¹⁾ With LPHW 75 / 65 °C, $t_{L1} = 20$ °C.

²⁾ With CHW 7/12 °C, $t_{L1} = 27$ °C, 48% relative humidity.

Selection guide: Overview of models

Heating

Model	Motor design	Heat output ¹⁾	Air volume		Further information
		Q_H [kW]	V [m³/h]		
73	AC, 400 V	7.4 – 11.5	880 – 1180		► Page 31
	AC, 230 V	9.0 – 11.5	1150 – 1180		► Page 31
84	EC, 230 V	5.0 – 17.5	470 – 1880		► Page 14
	AC, 400 V	10.9 – 15.8	1350 – 1650		► Page 32
	AC, 230 V	12.2 – 15.8	1580 – 1650		► Page 32
85	EC, 230 V	7.6 – 29.6	680 – 2950		► Page 16
	AC, 400 V	15.4 – 29.0	1850 – 2860		► Page 34
	AC, 230 V	19.0 – 29.0	2560 – 2860		► Page 34
96	EC, 230 V	6.4 – 47.4	480 – 5580		► Page 18
	AC, 400 V	23.1 – 45.2	2960 – 5130		► Page 36
	AC, 230 V	29.8 – 45.2	4460 – 5130		► Page 36

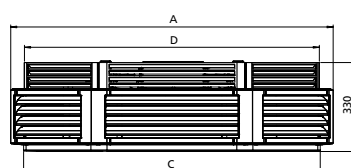
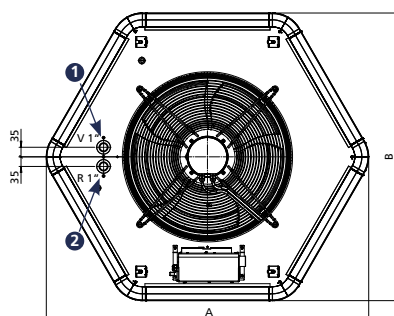
Heating or cooling

Model	Motor design	Heat output ¹⁾	Air volume, heating	Cooling output ²⁾	Air volume, cooling	Further information
		Q_H [kW]	V [m³/h]	Q_K [kW]	V [m³/h]	
84	EC, 230 V	6.1 – 17.5	470 – 1820	2.6 – 6.7	470 – 1820	► Page 22
	AC, 400 V	14.0 – 15.8	1350 – 1580	5.6 – 6.2	1350 – 1580	► Page 38
	AC, 230 V	15.8	1580	6.2	1580	► Page 38
85	EC, 230 V	9.3 – 31.2	730 – 2830	3.9 – 12.6	530 – 2830	► Page 24
	AC, 400 V	20.0 – 30.4	1990 – 2750	7.7 – 12.3	1990 – 2750	► Page 40
	AC, 230 V	30.4	2750	12.3	2750	► Page 40
96	EC, 230 V	7.4 – 49.5	530 – 5260	3.2 – 14.9	320 – 3610	► Page 26
	AC, 400 V	30.4 – 47.1	3270 – 4920	5.7 – 9.0 ³⁾	2580 – 4920	► Page 42
	AC, 230 V	47.1	4920	9.0 ³⁾	4920	► Page 42

Dimensions (unit shown with KaControl control box)

Top view

Front view



- ① Water inlet
② Water outlet

Ultra series	A	B	C	D
73	840	750	739	729
84/85	1004	900	912	904
96	1177	1050	1085	1077

¹⁾ With LPHW 75 / 65 °C, $t_{L1} = 20$ °C.

²⁾ Total cooling output at CHW 7/12 °C, $t_L = 27$ °C, 48% relative humidity (exception: model 96).

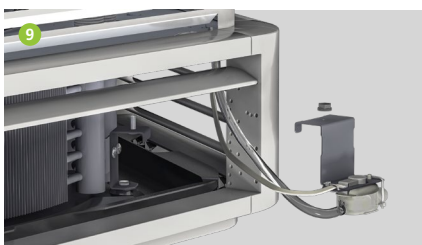
³⁾ Model 96 with AC motor: only dry cooling possible. Details with CHW 16/18 °C and $t_{L1} = 27$ °C, 48% relative humidity.

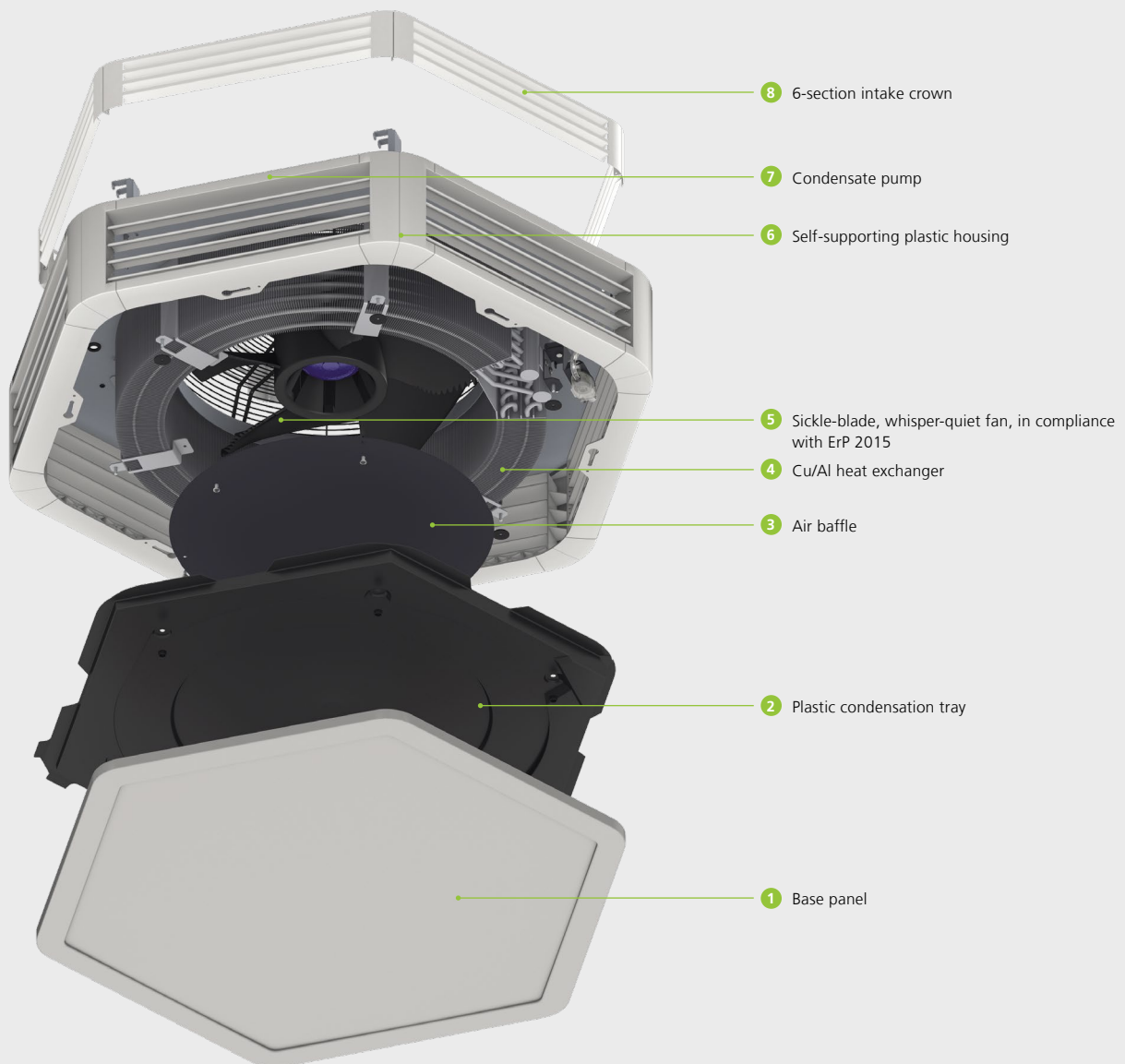
Ultra at a glance



VDI 6022
Conformity
confirmed

Features



**1 Base panel**

- ▶ easily removable for maintenance

2 Plastic condensation tray

- ▶ maintenance-friendly, thanks to external pump sump with outlet spigots
- ▶ which can simply be dismantled by means of plug-in quick fixing mechanism

3 Air baffle

- ▶ for optimum flow through heat exchanger

4 Heat exchanger

- ▶ consisting of round copper tubes in a circular design with aluminium fins bonded by expansion
- ▶ steel collector and manifold, corrosion-proof, suitable for LPHW up to 90 °C and 16 bar continuous operating pressure
- ▶ connections routed upwards
- ▶ suitable for low water temperature heating systems

5 Sickle-blade, whisper-quiet fan, in compliance with ErP 2015:

- ▶ continuously variable EC single-phase, 2-stage three-phase or 1-stage single-phase sickle-blade, whisper-quiet fan
- ▶ high-efficiency due to the aerodynamic design of the blade geometry
- ▶ electrical thermal class F
- ▶ motor protection: IP 54
- ▶ balancing at 2 levels; balancing quality according to G 6, DIN ISO 1940 part 1
- ▶ fan characteristic line coordinated to the unit housing enables the speed to be controlled by voltage reduction
- ▶ external rotor motor integrated in the fan impeller
- ▶ complies with ErP Directive (EU) 327/2011 ("LOT 11")

6 Self-supporting plastic housing

- ▶ traffic white RAL 9016
- ▶ with 6-sided air outlet
- ▶ 45 mm wide air flow fins, pre-adjustable to 6 defined setting angles

7 Condensate pump

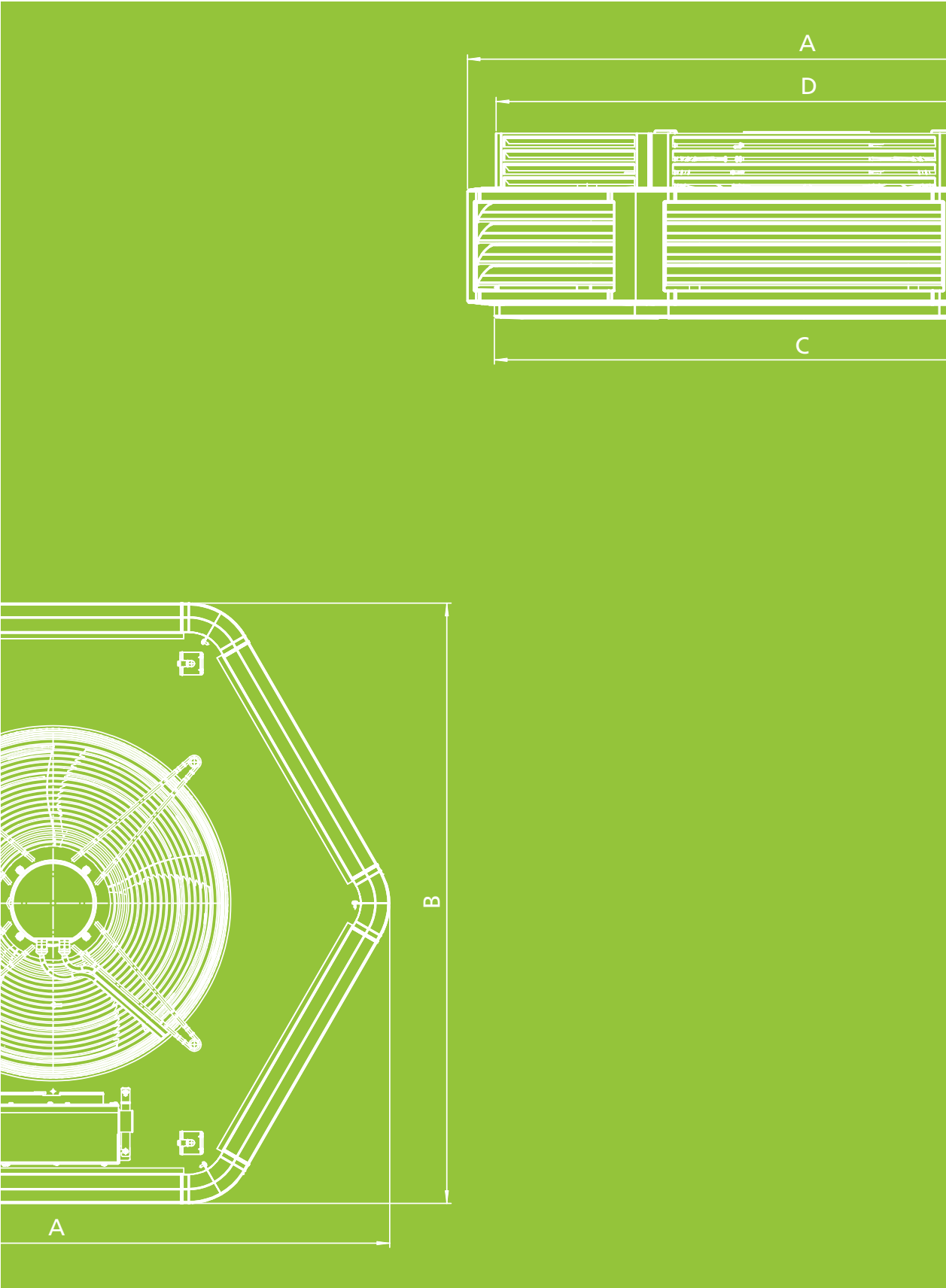
- ▶ factory-preassembled with the heating/cooling model

8 6-section intake crown

- ▶ easy to fit

9 Pump sump with float switch, which can be easily accessed through the outlet grille

02 ▶ Technical data



General

EU Directive 2009/125/EU

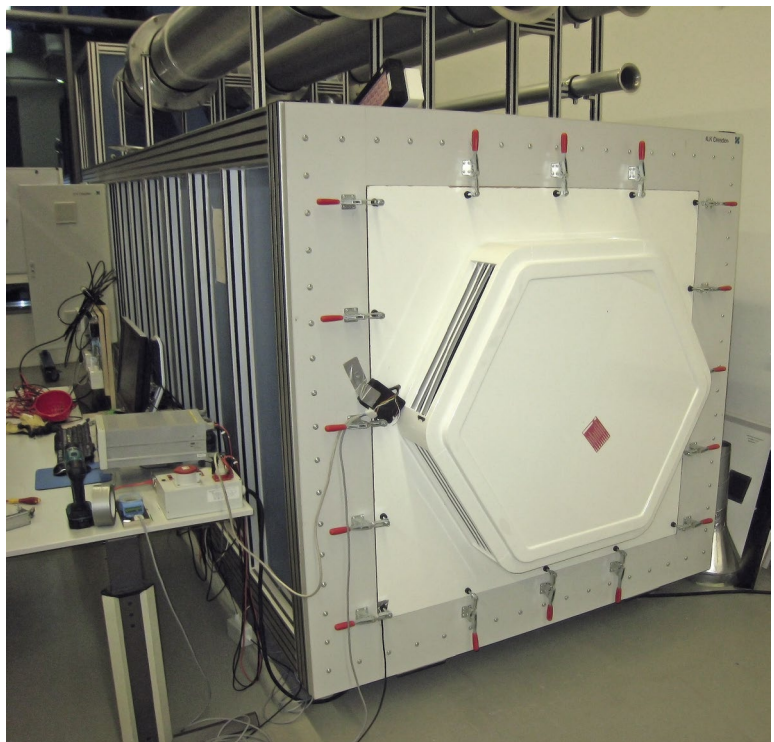
Compliance with the Energy-related Products Directive 2015

The European Commission Energy related Products (ErP) Directive assesses and modifies the requirements governing technical products in different energy-related sectors.

According to the Directive (EU) 327/2011 ("LOT 11"), the efficiency requirements have become more stringent on fans with an electric drive output of 125 watts to 500 kilowatts. A number of fans can no longer be marketed since the second stage entered into force on 1st January 2015.

The inlet nozzle used in the unit has to be taken into account along with the fan in terms of energy. The Ultra range of unit heaters is solely fitted with ErP-compliant fans. The conformity of the Ultra range has been laboratory-tested and proved. The measurements can be provided on request.

The Ultra range and the components used with it are produced and tested in line with the applicable state of the art. The requirements of the applicable norms, e.g. Machinery Directive, EN60335 (Safety of Electrical Equipment) and EMC are all met.



Test chamber for air performance measurements according to DIN EN ISO 5801, Kampmann R & D Centre (FEC)

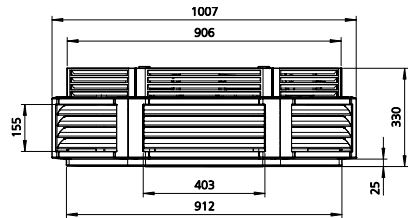
Ultra EC, heating

Model 84

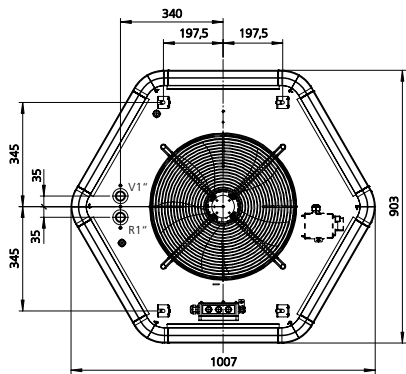
EC fan (motor code 33)

Technical drawings (dimensions in mm)

Front view



Top view



(Electromechanical design)

Specifications

Weights

Type	Weight	Water content
	[kg]	[l]
842033	40	1.6
843033	43	2.3

Connection

1"

Make use of our online calculation programs to calculate your heat outputs and further technical data with a couple of clicks!

► [Kampmanngroup.com/ultra](https://kampmanngroup.com/ultra)

Water resistance

Type 8420_ _ *



Type 8430_ _ *



m = Volumetric flow [m³/h]
ΔPw = Water resistance [kPa]

* These figures apply to a mean water temperature of 70 °C but can also be used for other heating media temperatures because of the low dependence on the water temperature.

Technical data for heating mode



Type	Entering air temperature	Control voltage	Heat outputs				Air volume	Speed ¹⁾	Power consumption ¹⁾	Sound pressure level ²⁾	Sound power level	Throw	Max. mounting height
			with LPHW 75/65 °C		with LPHW 55/45 °C								
	t _{L1} [°C]	[V]	Q _H [kW]	t _{L2} [°C]	Q _H [kW]	t _{L2} [°C]	V [m³/h]	[min ⁻¹]	[W]	[dB(A)]	[dB(A)]	[m]	[m]
842033	10	10	16.2	34.5	10.5	25.9	1880	1070	72	48	64	5.0	3.0
		8	14.9	35.6	9.7	26.5	1670	950	50	45	61	4.5	2.8
		6	12.4	37.6	8	27.9	1280	730	24	38	54	3.5	2.5
		4	9.2	41	6	30.1	850	490	9	28	44	2.4	2.4
		2	6.1	45.4	3.9	32.9	490	280	2	14	30	1.6	2.3
	15	10	14.7	37.7	9	28.9	1880	1070	72	48	64	5.0	3.0
		8	13.8	38.6	8.3	29.5	1670	950	50	45	61	4.5	2.8
		6	11.3	40.6	6.9	30.7	1280	730	24	38	54	3.5	2.5
		4	8.4	43.7	5.2	32.6	850	490	9	28	44	2.4	2.4
		2	5.5	47.7	3.4	35.1	490	280	2	14	30	1.6	2.3
	20	10	13.3	40.8	7.6	31.9	1880	1070	72	48	64	5.0	3.0
		8	12.3	41.7	7	32.4	1670	950	50	45	61	4.5	2.8
		6	10.2	43.4	5.8	33.4	1280	730	24	38	54	3.5	2.5
		4	7.6	46.3	4.3	35	850	490	9	28	44	2.4	2.4
		2	5	50	2.9	37.1	490	280	2	14	30	1.6	2.3
843033	10	10	21.3	43.4	13.8	31.6	1820	1070	72	48	64	4.8	2.9
		8	19.6	44.5	12.7	32.2	1620	950	50	45	61	4.4	2.7
		6	15.9	46.7	10.3	33.7	1240	730	24	38	54	3.4	2.4
		4	11.5	50.2	7.5	36	820	490	9	28	44	2.4	2.4
		2	7.4	55	4.8	39.1	470	280	2	14	30	1.5	2.3
	15	10	19.4	45.9	11.9	33.9	1820	1070	72	48	64	4.8	2.9
		8	17.8	46.9	10.9	34.5	1620	950	50	45	61	4.4	2.7
		6	14.5	48.9	8.9	35.8	1240	730	24	38	54	3.4	2.4
		4	10.5	52.2	6.4	37.8	820	490	9	28	44	2.4	2.4
		2	6.8	56.7	4.1	40.5	470	280	2	14	30	1.5	2.3
	20	10	17.5	48.3	10.0	36.2	1820	1070	72	48	64	4.8	2.9
		8	16.1	49.2	9.2	36.7	1620	950	50	45	61	4.4	2.7
		6	13.1	51.1	7.5	37.8	1240	730	24	38	54	3.4	2.4
		4	9.5	54.1	5.4	39.5	820	490	9	28	44	2.4	2.4
		2	6.1	58.2	3.5	41.8	470	280	2	14	30	1.5	2.3

V [m³/h] = air volume, free-blowing; Q_H [kW] = heat output; t_{L1} [°C] = entering air temperature; t_{L2} [°C] = leaving air temperature

¹⁾ Measured in the Ultra with heat exchanger code 20.

²⁾ The sound pressure level was calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 3 m, a room volume of 2000 m³ and a reverberation time of 1.0 s (in accordance with VDI 2081).

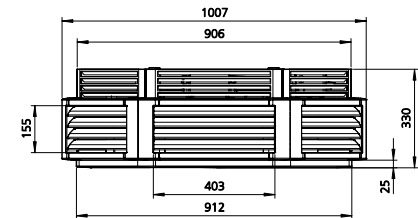
Ultra EC, heating

Model 85

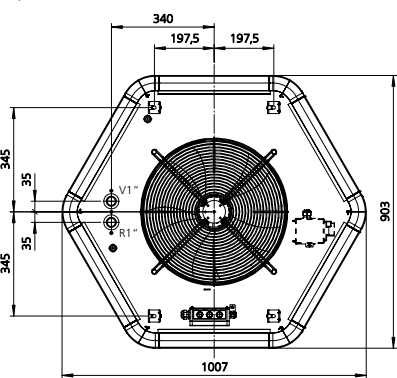
EC fan (motor code 33)

Technical drawings (dimensions in mm)

Front view



Top view



(Electromechanical design)

Specifications

Weights

Type	Weight	Water content
	[kg]	[l]
852033	41	2.0
853033	43	2.9
854033	45	3.8

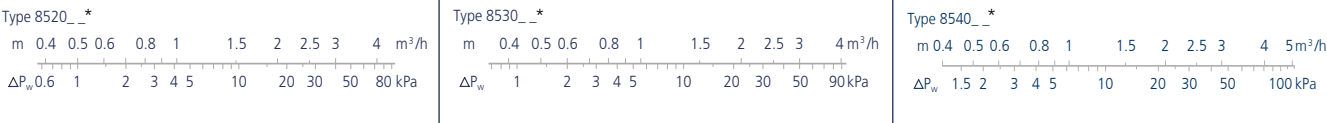
Connection

1"

Make use of our online calculation programs to calculate your heat outputs and further technical data with a couple of clicks!

► [Kampmanngroup.com/ultra](https://kampmanngroup.com/ultra)

Water resistance



m = Volumetric flow [m³/h]
ΔPw = Water resistance [kPa]

* These figures apply to a mean water temperature of 70 °C but can also be used for other heating media temperatures because of the low dependence on the water temperature.

Technical data for heating mode



Type	Entering air temperature	Control voltage	Heat outputs				Air volume	Speed ¹⁾	Power consumption ¹⁾	Sound pressure level ²⁾	Sound power level	Throw	Max. mounting height
			with LPHW 75/65 °C		with LPHW 55/45 °C								
	t _{L1} [°C]	[V]	Q _H [kW]	t _{L2} [°C]	Q _H [kW]	t _{L2} [°C]	V [m³/h]	[min ⁻¹]	[W]	[dB(A)]	[dB(A)]	[m]	[m]
852033	10	10	23.6	32.8	15.2	24.8	2950	1000	167	54	70	5.7	3.4
		8	21.9	33.8	14.1	25.4	2620	890	114	51	67	5.3	3.3
		6	18.7	35.7	12.1	26.6	2080	700	56	45	61	4.7	3.0
		4	14.8	39.6	9.6	29.2	1430	480	21	35	51	3.9	2.7
		2	9.2	44.7	6	32.4	760	260	6	18	34	3.2	2.4
	15	10	21.5	36.1	13.2	27.9	2950	1000	167	54	70	5.7	3.4
		8	19.9	37	12.2	28.5	2620	890	114	51	67	5.3	3.3
		6	17.1	38.8	10.5	29.6	2080	700	56	45	61	4.7	3.0
		4	13.5	42.4	8.3	31.8	1430	480	21	35	51	3.9	2.7
		2	8.4	47.1	5.2	34.7	760	260	6	18	34	3.2	2.4
	20	10	19.4	39.3	11.1	31.1	2950	1000	167	54	70	5.7	3.4
		8	18	40.2	10.3	31.5	2620	890	114	51	67	5.3	3.3
		6	15.4	41.8	8.8	32.4	2080	700	56	45	61	4.7	3.0
		4	12.2	45.1	7	34.3	1430	480	21	35	51	3.9	2.7
		2	7.6	49.4	4.3	36.8	760	260	6	18	34	3.2	2.4
853033	10	10	31.1	41.4	20.1	30.3	2830	1000	167	54	70	5.6	3.4
		8	28.7	42.6	18.5	31.1	2510	890	114	51	67	5.2	3.2
		6	24.4	44.9	15.8	32.6	2000	700	56	45	61	4.6	3.0
		4	18.7	49	12.1	35.2	1370	480	21	35	51	3.9	2.7
		2	11.3	54.2	7.3	38.6	730	260	6	18	34	3.1	2.4
	15	10	28.3	44	17.4	32.8	2830	1000	167	54	70	5.6	3.4
		8	26.1	45.2	16	33.5	2510	890	114	51	67	5.2	3.2
		6	22.3	47.3	13.6	34.8	2000	700	56	45	61	4.6	3.0
		4	17.1	51.1	10.5	37.1	1370	480	21	35	51	3.9	2.7
		2	10.3	55.9	6.3	40.1	730	260	6	18	34	3.1	2.4
	20	10	25.6	46.6	14.6	35.2	2830	1000	167	54	70	5.6	3.4
		8	23.6	47.7	13.5	35.8	2510	890	114	51	67	5.2	3.2
		6	20.1	49.6	11.5	36.9	2000	700	56	45	61	4.6	3.0
		4	15.4	53.1	8.8	38.9	1370	480	21	35	51	3.9	2.7
		2	9.3	57.5	5.3	41.4	730	260	6	18	34	3.1	2.4
854033 Suitable for low water temperatures	10	10	35.3	48.5	24.5	36.7	2630	1000	167	54	70	5.3	3.3
		8	32.3	49.6	22.4	37.5	2340	890	114	51	67	5.0	3.1
		6	27.2	51.9	18.8	39	1860	700	56	45	61	4.4	2.9
		4	20.4	55.8	14.1	41.5	1280	480	21	35	51	3.8	2.7
		2	12	60.5	8.2	44.5	680	260	6	18	34	3.1	2.4
	15	10	32.6	51.1	21.4	38.7	2630	1000	167	54	70	5.3	3.3
		8	29.8	52.2	19.6	39.4	2340	890	114	51	67	5.0	3.1
		6	25	54.3	16.4	40.7	1860	700	56	45	61	4.4	2.9
		4	18.8	57.8	12.1	42.6	1280	480	21	35	51	3.8	2.7
		2	11	62	7.1	45.4	680	260	6	18	34	3.1	2.4
	20	10	29.6	53.4	18.1	40.5	2630	1000	167	54	70	5.3	3.3
		8	27.1	54.3	16.6	41	2340	890	114	51	67	5.0	3.1
		6	22.7	56.2	13.9	42.1	1860	700	56	45	61	4.4	2.9
		4	17	59.4	10.3	43.8	1280	480	21	35	51	3.8	2.7
		2	10	63.1	5.9	46.1	680	260	6	18	34	3.1	2.4

V [m³/h] = air volume, free-blowing; Q_H [kW] = heat output; t_{L1} [°C] = entering air temperature; t_{L2} [°C] = leaving air temperature

¹⁾ Measured in the Ultra with heat exchanger code 20.

²⁾ The sound pressure level was calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 3 m, a room volume of 2000 m³ and a reverberation time of 1.0 s (in accordance with VDI 2081).

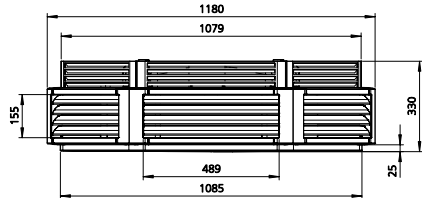
Ultra EC, heating

Model 96

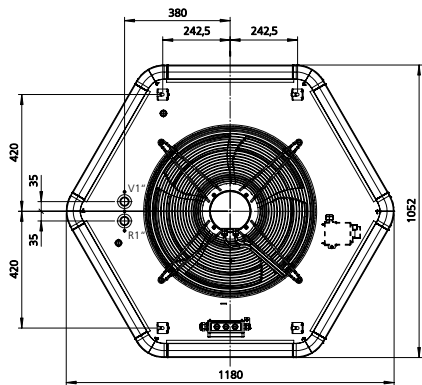
EC fan with high and low speed (motor code 33 and 34)

Technical drawings (dimensions in mm)

Front view



Top view



(Electromechanical design)

Specifications

Weights

Type	Weight	Water content
	[kg]	[l]
962033	45	2.2
963033	48	3.3
964033	51	4.4
962034	45	2.2
963034	48	3.3
964034	51	4.4

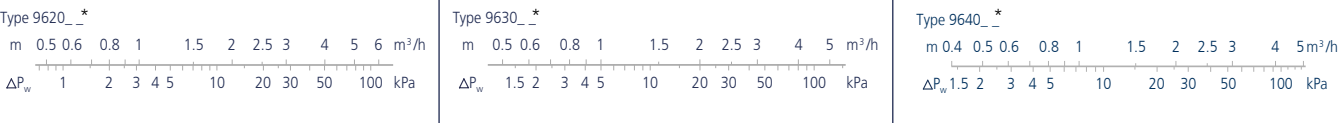
Connection

1"

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► [Kampmanngroup.com/ultra](https://kampmanngroup.com/ultra)

Water resistance



m = Volumetric flow [m³/h]
ΔPw = Water resistance [kPa]

* These figures apply to a mean water temperature of 70 °C but can also be used for other heating media temperatures because of the low dependence on the water temperature.

Technical data for heating mode



Type	Entering air temperature	Control voltage	Heat outputs				Air volume	Speed ¹⁾	Power consumption ¹⁾	Sound pressure level ²⁾	Sound power level	Throw	Max. mounting height
			with LPHW 75/65 °C		with LPHW 55/45 °C								
	t _{L1} [°C]	[V]	Q _H [kW]	t _{L2} [°C]	Q _H [kW]	t _{L2} [°C]	V [m³/h]	[min ⁻¹]	[W]	[dB(A)]	[dB(A)]	[m]	[m]
962033	10	10	38	29.5	24.6	22.6	5580	1000	426	60	76	7.4	4.2
		8	33.3	31.2	21.5	23.7	4480	800	222	54	70	6.5	3.9
		6	27.1	34	17.5	25.5	3230	580	92	46	62	5.4	3.5
		4	20.4	37.8	13.2	28	2100	370	30	34	50	4.4	3.2
		2	11.7	45.1	7.5	32.7	950	170	3	14	30	3.3	2.8
	15	10	34.7	33	21.2	26	5580	1000	426	60	76	7.4	4.2
		8	30.3	34.6	18.6	27	4480	800	222	54	70	6.5	3.9
		6	24.7	37.2	15.1	28.6	3230	580	92	46	62	5.4	3.5
		4	18.6	40.7	11.4	30.7	2100	370	30	34	50	4.4	3.2
		2	10.6	47.4	6.5	34.9	950	170	3	14	30	3.3	2.8
	20	10	31.3	36.5	17.9	29.4	5580	1000	426	60	76	7.4	4.2
		8	27.4	38	15.7	30.3	4480	800	222	54	70	6.5	3.9
		6	22.3	40.3	12.7	31.6	3230	580	92	46	62	5.4	3.5
		4	16.8	43.5	9.6	33.4	2100	370	30	34	50	4.4	3.2
		2	9.6	49.7	5.5	37	950	170	3	14	30	3.3	2.8
963033	10	10	50.8	37.6	32.8	27.8	5260	1000	426	60	76	7.2	4.1
		8	44	39.8	28.4	29.3	4220	800	222	54	70	6.2	3.8
		6	35.2	43	22.8	31.3	3050	580	92	46	62	5.2	3.5
		4	25.6	47.2	16.6	34	1970	370	30	34	50	4.2	3.2
		2	14	54.3	9	38.7	900	170	3	14	30	3.3	2.8
	15	10	42.3	40.5	28.4	30.6	5260	1000	426	60	76	7.2	4.1
		8	40.1	42.5	24.6	31.9	4220	800	222	54	70	6.2	3.8
		6	32.1	45.5	19.7	33.7	3050	580	92	46	62	5.2	3.5
		4	23.4	49.4	14.3	36.1	1970	370	30	34	50	4.2	3.2
		2	12.7	56	7.8	40.1	900	170	3	14	30	3.3	2.8
	20	10	41.8	43.4	23.9	33.4	5260	1000	426	60	76	7.2	4.1
		8	36.2	45.2	20.7	34.4	4220	800	222	54	70	6.2	3.8
		6	29	48	16.6	36	3050	580	92	46	62	5.2	3.5
		4	21.1	51.5	12.1	38	1970	370	30	34	50	4.2	3.2
		2	11.5	57.6	6.6	41.5	900	170	3	14	30	3.3	2.8
Suitable for low water temperatures 964033	10	10	56.3	43.8	39.3	33.6	4770	1000	426	60	76	6.7	4.0
		8	47.7	46.3	33.2	35.3	3770	800	222	54	70	5.8	3.7
		6	38	49.5	26.4	37.4	2760	580	92	46	62	4.9	3.4
		4	27.2	54.3	18.6	40.3	1760	370	30	34	50	4.1	3.1
		2	13.5	60.8	9.2	44.7	760	170	3	14	30	3.2	2.8
	15	10	52.1	46.9	34.4	36	4770	1000	426	60	76	6.7	4.0
		8	44.1	49.2	29.1	37.5	3770	800	222	54	70	5.8	3.7
		6	35.1	52.1	23.1	39.4	2760	580	92	46	62	4.9	3.4
		4	24.8	56	16.2	41.8	1760	370	30	34	50	4.1	3.1
		2	12.3	62.3	8	45.6	760	170	3	14	30	3.2	2.8
	20	10	47.4	49.5	29.2	38.2	4770	1000	426	60	76	6.7	4.0
		8	40.1	51.6	24.7	39.4	3770	800	222	54	70	5.8	3.7
		6	31.8	54.2	19.6	41	2760	580	92	46	62	4.9	3.4
		4	22.4	57.8	13.7	43.1	1760	370	30	34	50	4.1	3.1
		2	11.1	63.3	6.7	46.3	760	170	3	14	30	3.2	2.8

V [m³/h] = air volume, free-blowing; Q_H [kW] = heat output; t_{L1} [°C] = entering air temperature; t_{L2} [°C] = leaving air temperature

¹⁾ Measured in the Ultra with heat exchanger code 20.

²⁾ The sound pressure level was calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 3 m, a room volume of 2000 m³ and a reverberation time of 1.0 s (in accordance with VDI 2081).

Technical data for heating mode



Type	Entering air temperature	Control voltage	Heat outputs				Air volume	Speed ¹⁾	Power consumption ¹⁾	Sound pressure level ²⁾	Sound power level	Throw	Max. mounting height
			with LPHW 75/65 °C		with LPHW 55/45 °C								
	t _{L1} [°C]	[V]	Q _H [kW]	t _{L2} [°C]	Q _H [kW]	t _{L2} [°C]	V [m³/h]	[min ⁻¹]	[W]	[dB(A)]	[dB(A)]	[m]	[m]
962034	10	10	30.2	32.6	19.6	24.6	3830	680	143	50	66	5.9	3.7
		8	26.2	34.5	17	25.8	3060	550	75	44	60	5.2	3.5
		6	21.7	37	14.1	27.5	2300	410	32	37	53	4.5	3.3
		4	16.6	41.1	10.8	30.1	1530	270	10	26	42	3.8	3.0
		2	7.8	49.7	5	35.7	560	100	6	12	28	3.0	2.7
	15	10	27.6	35.9	16.9	27.8	3830	680	143	50	66	5.9	3.7
		8	23.9	37.7	14.7	38.9	3060	550	75	44	60	5.2	3.5
		6	19.8	40	12.1	30.3	2300	410	32	37	53	4.5	3.3
		4	15.2	43.7	9.3	32.6	1530	270	10	26	42	3.8	3.0
		2	7.1	41.7	4.3	37.5	560	100	6	12	28	3.0	2.7
	20	10	24.9	39.1	14.2	30.9	3830	680	143	50	66	5.9	3.7
		8	21.6	40.8	12.3	31.9	3060	550	75	44	60	5.2	3.5
		6	17.9	42.9	10.2	33.1	2300	410	32	37	53	4.5	3.3
		4	13.7	46.3	7.8	35	1530	270	10	26	42	3.8	3.0
		2	6.4	53.6	3.7	39.2	560	100	6	12	28	3.0	2.7
963034	10	10	39.6	41.3	25.6	30.3	3610	680	143	50	66	5.7	3.6
		8	33.9	43.5	21.9	31.7	2890	550	75	44	60	5.1	3.4
		6	27.6	46.3	17.8	33.5	2170	410	32	37	53	4.4	3.2
		4	20.6	50.7	13.4	36.3	1450	270	10	26	42	3.8	3.0
		2	9	58.4	5.8	41.3	530	100	6	12	28	3.0	2.7
	15	10	34.1	44	22.1	32.8	3610	680	143	50	66	5.7	3.6
		8	30.9	46	18.9	34	2890	550	75	44	60	5.1	3.4
		6	25.1	48.6	15.4	35.6	2170	410	32	37	53	4.4	3.2
		4	18.8	52.6	11.5	38.1	1450	270	10	26	42	3.8	3.0
		2	8.2	59.8	5	42.5	530	100	6	12	28	3.0	2.7
	20	10	32.6	46.6	18.6	35.2	3610	680	143	50	66	5.7	3.6
		8	27.9	48.4	15.9	36.2	2890	550	75	44	60	5.1	3.4
		6	22.7	50.8	13	37.6	2170	410	32	37	53	4.4	3.2
		4	17	54.5	9.7	39.7	1450	270	10	26	42	3.8	3.0
		2	7.4	61.1	4.2	43.5	530	100	6	12	28	3.0	2.7
Suitable for low water temperatures 964034	10	10	42.8	47.9	29.7	36.3	3240	680	143	50	66	5.4	3.5
		8	35.8	50.3	24.8	37.9	2550	550	75	44	60	4.8	3.3
		6	28.2	53.3	19.5	39.9	1870	410	32	37	53	4.2	3.1
		4	19.7	57.5	13.6	42.7	1190	270	10	26	42	3.5	2.9
		2	9.5	63.3	6.4	46.2	510	100	6	12	28	2.9	2.6
	15	10	39.5	50.6	26	38.4	3240	680	143	50	66	5.4	3.5
		8	33	52.8	21.7	39.8	2550	550	75	44	60	4.8	3.3
		6	26	55.5	17	41.5	1870	410	32	37	53	4.2	3.1
		4	18.1	59.4	11.8	44	1190	270	10	26	42	3.5	2.9
		2	8.6	64.5	5.6	46.9	510	100	6	12	28	2.9	2.6
	20	10	35.9	52.9	22.1	40.2	3240	680	143	50	66	5.4	3.5
		8	29.9	54.9	18.4	41.4	2550	550	75	44	60	4.8	3.3
		6	23.5	57.4	14.4	42.9	1870	410	32	37	53	4.2	3.1
		4	16.4	60.8	10	44.9	1190	270	10	26	42	3.5	2.9
		2	7.8	65.3	4.7	47.3	510	100	6	12	28	2.9	2.6

V [m³/h] = air volume, free-blowing; Q_H [kW] = heat output; t_{L1} [°C] = entering air temperature; t_{L2} [°C] = leaving air temperature

¹⁾ Measured in the Ultra with heat exchanger code 20.

²⁾ The sound pressure level was calculated based on an assumed room insulation of 16 dB(A).

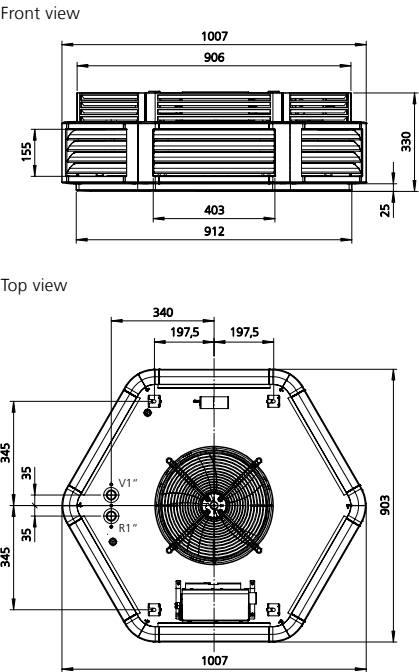
This corresponds to a distance of 3 m, a room volume of 2000 m³ and a reverberation time of 1.0 s (in accordance with VDI 2081).

Ultra EC, cooling or heating

Model 84

EC fan (motor code 33)

Technical drawings (dimensions in mm)



(KaControl design)

Specifications

Weights

Type	Weight	Water content
	[kg]	[l]
843133	47	2.9

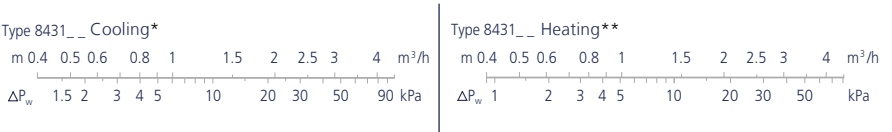
Connection

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Water resistance



m = Volumetric flow [m³/h]
ΔP_w = Water resistance [kPa]

* These figures apply to a mean water temperature of 10 °C but can also be used for other heating media temperatures because of the low dependence on the water temperature.

** These figures apply to a mean water temperature of 70 °C but can also be used for other heating media temperatures because of the low dependence on the water temperature.

Technical data for cooling mode



Type	Control voltage	Cooling output				Air volume	Speed ²⁾	Power consumption ²⁾	Sound pressure level ³⁾	Sound power level
		with CHW 16/18 °C ¹⁾		with CHW 7/12 °C ¹⁾						
	[V]	Q _K [kW]	t _{L2} [°C]	Q _K [kW]	t _{L2} [°C]	V [m³/h]	[min ⁻¹]	[W]	[dB(A)]	[dB(A)]
843133	10	3.3	21.5	6.7	18.1	1820	1070	72	48	64
	8	3.1	21.3	6.3	17.8	1620	950	50	45	61
	6	2.5	20.9	5.3	17	1240	730	24	38	54
	4	1.8	20.3	3.9	15.9	820	490	9	28	44
	2	1.2	19.5	2.6	14.4	470	280	3	14	30

V [m³/h] = air volume, free-blowing; Q_K [kW] = cooling output; t_{L1} [°C] = entering air temperature; t_{L2} [°C] = leaving air temperature

Technical data for heating mode



Type	Entering air temperature	Control voltage	Heat outputs				Air volume	Speed ²⁾	Power consumption ²⁾	Sound pressure level ³⁾	Sound power level	Throw	Max. mounting height
			with LPHW 75/65 °C		with LPHW 55/45 °C								
	t _{L1} [°C]	[V]	Q _H [kW]	t _{L2} [°C]	Q _H [kW]	t _{L2} [°C]	V [m³/h]	[min ⁻¹]	[W]	[dB(A)]	[dB(A)]	[m]	[m]
843133	10	10	21.3	43.4	13.8	31.6	1820	1070	72	48	64	4.8	3.0
		8	19.6	44.5	12.7	32.2	1620	950	50	45	61	4.4	2.9
		6	15.9	46.7	10.3	33.7	1240	730	24	38	54	3.4	2.7
		4	11.5	50.2	7.5	36	820	490	9	28	44	2.4	2.4
		2	7.4	55	4.8	39.1	470	280	2	14	30	1.5	2.3
	15	10	19.4	45.9	11.9	33.9	1820	1070	72	48	64	4.8	3.0
		8	17.8	46.9	10.9	34.5	1620	950	50	45	61	4.4	2.9
		6	14.5	48.9	8.9	35.8	1240	730	24	38	54	3.4	2.7
		4	10.5	52.2	6.4	37.8	820	490	9	28	44	2.4	2.4
		2	6.8	56.7	4.1	40.5	470	280	2	14	30	1.5	2.3
	20	10	17.5	48.3	10.0	36.2	1820	1070	72	48	64	4.8	2.9
		8	16.1	49.2	9.2	36.7	1620	950	50	45	61	4.4	2.7
		6	13.1	51.1	7.5	37.8	1240	730	24	38	54	3.4	2.4
		4	9.5	54.1	5.4	39.5	820	490	9	28	44	2.4	2.4
		2	6.1	58.2	3.5	41.8	470	280	2	14	30	1.5	2.3

V [m³/h] = air volume, free-blowing; Q_H [kW] = heat output; t_{L1} [°C] = entering air temperature; t_{L2} [°C] = leaving air temperature

¹⁾ Total, at t_{L1} = 27 °C, 48 % rel. humidity

²⁾ Measured in the Ultra with heat exchanger code 20.

³⁾ The sound pressure level was calculated based on an assumed room insulation of 16 dB(A).

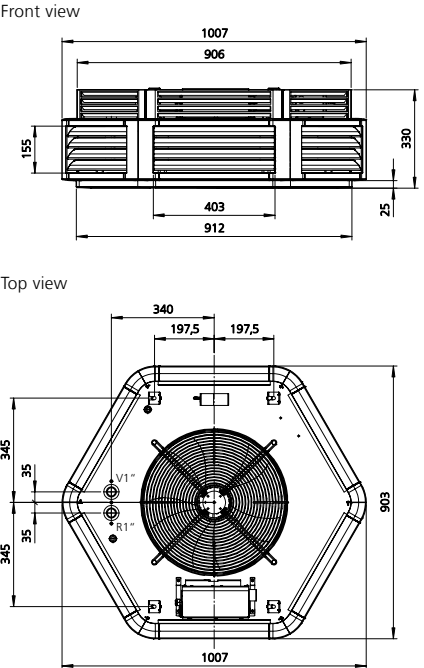
This corresponds to a distance of 3 m, a room volume of 2000 m³ and a reverberation time of 1.0 s (in accordance with VDI 2081).

Ultra EC, cooling or heating

Model 85

EC fan (motor code 33)

Technical drawings (dimensions in mm)



(KaControl design)

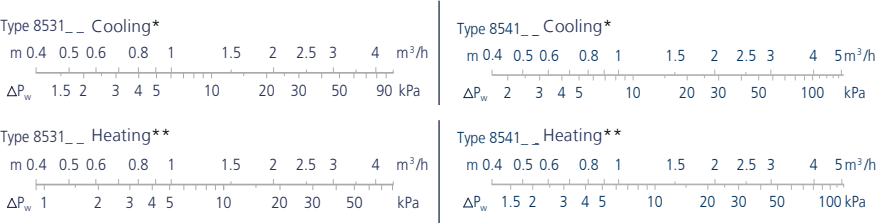
Specifications

Weights			Connection 1"
Type	Weight	Water content	
	[kg]	[l]	
853133	47	2.9	
854133	49	3.8	

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Water resistance



m = Volumetric flow [m³/h]
ΔPw = Water resistance [kPa]

* These figures apply to a mean water temperature of 10 °C but can also be used for other heating media temperatures because of the low dependence on the water temperature.

** These figures apply to a mean water temperature of 70 °C but can also be used for other heating media temperatures because of the low dependence on the water temperature.

Technical data for cooling mode



Type	Control voltage	Cooling output				Air volume	Speed ²⁾	Power consumption ²⁾	Sound pressure level ³⁾	Sound power level
		with CHW 16/18 °C ¹⁾		with CHW 7/12 °C ¹⁾						
	[V]	Q _K [kW]	t _{L2} [°C]	Q _K [kW]	t _{L2} [°C]	V [m³/h]	[min ⁻¹]	[W]	[dB(A)]	[dB(A)]
853133	10	4.9	21.8	9.5	18.5	2830	1000	167	54	70
	8	4.5	21.6	8.9	18.2	2510	890	114	51	67
	6	3.8	21.2	7.7	17.5	2000	700	56	45	61
	4	2.9	20.5	6	16.5	1370	480	21	35	51
	2	1.8	19.6	3.9	14.8	730	260	6	18	34
854133	10	6	19.2	12.6	14.2	2320	1000	167	54	70
	8	5.4	19	11.6	13.8	2060	890	114	51	67
	6	4.4	18.6	9.7	13.2	1610	700	56	45	61
	4	3.2	18.1	7.2	12.3	1090	480	21	35	51
	2	1.7	17.5	3.9	11.1	530	260	6	18	34

V [m³/h] = air volume, free-blowing; Q_K [kW] = cooling output; t_{L1} [°C] = entering air temperature; t_{L2} [°C] = leaving air temperature

Technical data for heating mode



Type	Entering air temperature	Control voltage	Heat outputs				Air volume	Speed ²⁾	Power consumption ²⁾	Sound pressure level ³⁾	Sound power level	Throw	Max. mounting height
			with LPHW 75/65 °C		with LPHW 55/45 °C								
	t _{L1} [°C]	[V]	Q _H [kW]	t _{L2} [°C]	Q _H [kW]	t _{L2} [°C]	V [m³/h]	[min ⁻¹]	[W]	[dB(A)]	[dB(A)]	[m]	[m]
853133	10	10	31.1	41.4	20.1	30.3	2830	1000	167	54	70	5.6	3.4
		8	28.7	42.6	18.5	31.1	2510	890	114	51	67	5.2	3.3
		6	24.4	44.9	15.8	32.6	2000	700	56	45	61	4.6	3.1
		4	18.7	49	12.1	35.2	1370	480	21	35	51	3.9	2.8
		2	11.3	54.2	7.3	38.6	730	260	6	18	34	3.1	2.3
	15	10	28.3	44	17.4	32.8	2830	1000	167	54	70	5.6	3.4
		8	26.1	45.2	16	33.5	2510	890	114	51	67	5.2	3.3
		6	22.3	47.3	13.6	34.8	2000	700	56	45	61	4.6	3.1
		4	17.1	51.1	10.5	37.1	1370	480	21	35	51	3.9	2.8
		2	10.3	55.9	6.3	40.1	730	260	6	18	34	3.1	2.3
	20	10	25.6	46.6	14.6	35.2	2830	1000	167	54	70	5.6	3.4
		8	23.6	47.7	13.5	35.8	2510	890	114	51	67	5.2	3.3
		6	20.1	49.6	11.5	36.9	2000	700	56	45	61	4.6	3.1
		4	15.4	53.1	8.8	38.9	1370	480	21	35	51	3.9	2.8
		2	9.3	57.5	5.3	41.4	730	260	6	18	34	3.1	2.3
Suitable for low water temperatures	10	10	38.5	57.6	25.1	41	2320	1000	167	54	70	5.0	3.1
		8	35.1	58.8	22.9	41.8	2060	890	114	51	67	4.7	3.0
		6	28.6	61	18.7	43.3	1610	700	56	45	61	4.2	2.8
		4	20.5	63.9	13.4	45.3	1090	480	21	35	51	3.5	2.6
		2	10.6	67.6	7	47.9	530	260	6	18	34	2.9	2.3
	15	10	34.8	58.8	21.6	42.1	2320	1000	167	54	70	5.0	3.1
		8	31.7	59.8	19.6	42.8	2060	890	114	51	67	4.7	3.0
		6	25.8	61.8	16.1	44.1	1610	700	56	45	61	4.2	2.8
		4	18.5	64.4	11.5	45.8	1090	480	21	35	51	3.5	2.6
		2	9.6	67.8	6	48.1	530	260	6	18	34	2.9	2.3
	20	10	31.2	59.9	18.1	43.1	2320	1000	167	54	70	5.0	3.1
		8	28.3	60.8	16.5	43.7	2060	890	114	51	67	4.7	3.0
		6	23.1	62.6	13.5	44.8	1610	700	56	45	61	4.2	2.8
		4	16.5	65	9.7	46.3	1090	480	21	35	51	3.5	2.6
		2	8.6	68	5.1	48.3	530	260	6	18	34	2.9	2.3

V [m³/h] = air volume, free-blowing; Q_H [kW] = heat output; t_{L1} [°C] = entering air temperature; t_{L2} [°C] = leaving air temperature

¹⁾ Total, at t_{L1} = 27 °C, 48 % rel. humidity

²⁾ Measured in the Ultra with heat exchanger code 20.

³⁾ The sound pressure level was calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 3 m, a room volume of 2000 m³ and a reverberation time of 1.0 s (in accordance with VDI 2081).

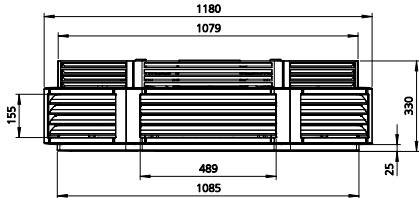
Ultra EC, cooling or heating

Model 96

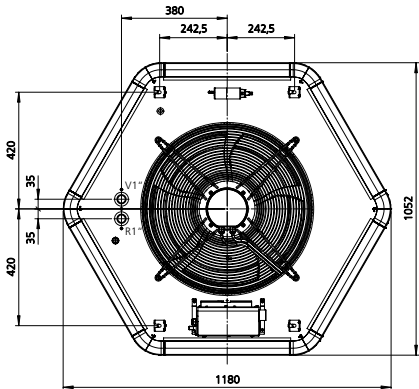
EC fan with high and low speed (motor code 33 and 34)

Technical drawings (dimensions in mm)

Front view



Top view



(KaControl design)

Specifications

Weights

Type	Weight	Water content
	[kg]	[l]
963133	52	3.3
963134	52	3.3
964133	55	4.4
964134	55	4.4

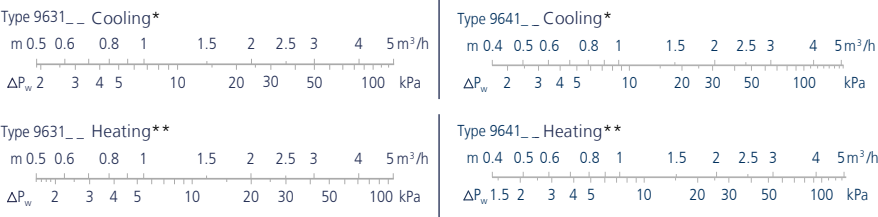
Connection

1½"

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Water resistance



m = Volumetric flow [m³/h]

ΔP_w = Water resistance [kPa]

* These figures apply to a mean water temperature of 10 °C but can also be used for other heating media temperatures because of the low dependence on the water temperature.

**These figures apply to a mean water temperature of 70 °C but can also be used for other heating media temperatures because of the low dependence on the water temperature.

Technical data for cooling mode



Type	Control voltage	Cooling output				Air volume	Speed ²⁾	Power consumption ²⁾	Sound pressure level ³⁾	Sound power level
		with CHW 16/18 °C ¹⁾		with CHW 7/12 °C ¹⁾						
		Q _K [kW]	t _{L2} [°C]	Q _K [kW]	t _{L2} [°C]					
	[V]					V [m³/h]	[min ⁻¹]	[W]	[dB(A)]	[dB(A)]
963133	10	8	22.4	... ⁴⁾	... ⁴⁾	5260	1000	426	60	76
	8	6.9	22	... ⁴⁾	... ⁴⁾	4220	800	222	54	70
	6	5.5	21.5	11	18	3050	580	92	46	62
	4	4	20.8	8.4	16.8	1970	370	30	34	50
	2	2.2	19.5	4.9	14.7	900	170	3	14	30
963134	10	6.2	21.8	12.1	18.5	3610	680	143	50	66
	8	5.3	21.4	10.7	17.9	2890	550	75	44	60
	6	4.3	20.9	8.9	17.1	2170	410	32	37	53
	4	3.2	20.2	6.8	16	1450	270	10	26	42
	2	1.4	18.9	3.2	13.4	530	100	6	12	28
964133	10	9.5	20.2	... ⁴⁾	... ⁴⁾	4260	1000	426	60	76
	8	7.9	19.8	... ⁴⁾	... ⁴⁾	3330	800	222	54	70
	6	6.2	19.2	13.3	14.2	2410	580	92	46	62
	4	4.1	18.5	9.3	12.9	1480	370	30	34	50
	2	1.7	17.6	4.1	11.1	560	170	3	14	30
964134	10	7	19.5	14.9	14.7	2840	680	143	50	66
	8	5.8	19.1	12.5	13.9	2210	550	75	44	60
	6	4.4	18.6	9.8	13	1580	410	32	37	53
	4	2.8	18	6.5	11.9	950	270	10	26	42
	2	1.0	17.3	2.5	10.5	320	100	6	12	28

V [m³/h] = air volume, free-blowing; Q_K [kW] = cooling output; t_{L1} [°C] = entering air temperature; t_{L2} [°C] = leaving air temperature

¹⁾ Total, at t_{L1} = 27 °C, 48 % rel. humidity

²⁾ Measured in the Ultra with heat exchanger code 20.

³⁾ The sound pressure level was calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 3 m, a room volume of 2000 m³ and a reverberation time of 1.0 s (in accordance with VDI 2081).

⁴⁾ Unit type 963133 and type 964133 operated at higher fans speeds only suitable for dry cooling.

Technical data for heating mode



Type	Entering air temperature	Control voltage	Heat outputs				Air volume	Speed ¹⁾	Power consumption ¹⁾	Sound pressure level ²⁾	Sound power level	Throw	Max. mounting height
			with LPHW 75/65 °C		with LPHW 55/45 °C								
	t _{L1} [°C]	[V]	Q _H [kW]	t _{L2} [°C]	Q _H [kW]	t _{L2} [°C]	V [m³/h]	[min ⁻¹]	[W]	[dB(A)]	[dB(A)]	[m]	[m]
963133	10	10	50.8	37.6	32.8	27.8	5260	1000	426	60	76	7.2	4.1
		8	44	39.8	28.4	29.3	4220	800	222	54	70	6.2	3.8
		6	35.2	43	22.8	31.3	3050	580	92	46	62	5.2	3.5
		4	25.6	47.2	16.6	34	1970	370	30	34	50	4.2	3.2
		2	14	54.3	9	38.7	900	170	3	14	30	3.3	2.8
	15	10	46.3	40.5	28.4	30.6	5260	1000	426	60	76	7.2	4.1
		8	40.1	42.5	24.6	31.9	4220	800	222	54	70	6.2	3.8
		6	32.1	45.5	19.7	33.7	3050	580	92	46	62	5.2	3.5
		4	23.4	49.4	14.3	36.1	1970	370	30	34	50	4.2	3.2
		2	12.7	56	7.8	40.1	900	170	3	14	30	3.3	2.8
	20	10	41.8	43.4	23.9	33.4	5260	1000	426	60	76	7.2	4.1
		8	36.2	45.2	20.7	34.4	4220	800	222	54	70	6.2	3.8
		6	29	48	16.6	36	3050	580	92	46	62	5.2	3.5
		4	21.1	51.5	12.1	38	1970	370	30	34	50	4.2	3.2
		2	11.5	57.6	6.6	41.5	900	170	3	14	30	3.3	2.8
963134	10	10	39.6	41.3	25.6	30.3	3610	680	143	50	66	5.7	3.6
		8	33.9	43.5	21.9	31.7	2890	550	75	44	60	5.1	3.4
		6	27.6	46.3	17.8	33.5	2170	410	32	37	53	4.4	3.2
		4	20.6	50.7	13.4	36.3	1450	270	10	26	42	3.8	3.0
		2	9	58.4	5.8	41.3	530	100	6	12	28	3.0	2.7
	15	10	34.1	44	22.1	32.8	3610	680	143	50	66	5.7	3.6
		8	30.9	46	18.9	34	2890	550	75	44	60	5.1	3.4
		6	25.1	48.6	15.4	35.6	2170	410	32	37	53	4.4	3.2
		4	18.8	52.6	11.5	38.1	1450	270	10	26	42	3.8	3.0
		2	8.2	59.8	5	42.5	530	100	6	12	28	3.0	2.7
	20	10	32.6	46.6	18.6	35.2	3610	680	143	50	66	5.7	3.6
		8	27.9	48.4	15.9	36.2	2890	550	75	44	60	5.1	3.4
		6	22.7	50.8	13	37.6	2170	410	32	37	53	4.4	3.2
		4	17	54.5	9.7	39.7	1450	270	10	26	42	3.8	3.0
		2	7.4	61.1	4.2	43.5	530	100	6	12	28	3.0	2.7

V [m³/h] = air volume, free-blowing; Q_H [kW] = heat output; t_{L1} [°C] = entering air temperature; t_{L2} [°C] = leaving air temperature

¹⁾ Measured in the Ultra with heat exchanger code 20.

²⁾ The sound pressure level was calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 3 m, a room volume of 2000 m³ and a reverberation time of 1.0 s (in accordance with VDI 2081).

Technical data for heating mode



Type	Entering air temperature	Control voltage	Heat outputs				Air volume	Speed ¹⁾	Power consumption ¹⁾	Sound pressure level ²⁾	Sound power level	Throw	Max. mounting height
			with LPHW 75/65 °C		with LPHW 55/45 °C								
	t _{L1} [°C]	[V]	Q _H [kW]	t _{L2} [°C]	Q _H [kW]	t _{L2} [°C]	V [m³/h]	[min ⁻¹]	[W]	[dB(A)]	[dB(A)]	[m]	[m]
Suitable for low water temperatures 964133	10	10	61.0	50.9	39.7	36.6	4260	1000	426	60	76	6.3	3.8
		8	50.9	53.7	33.2	38.5	3330	800	222	54	70	5.4	3.6
		6	39.7	57.1	25.9	40.7	2410	580	92	46	62	4.6	3.3
		4	26.6	61.4	17.4	43.6	1480	370	30	34	50	3.8	3.0
		2	11.2	67.0	7.4	47.6	560	170	3	14	30	3.0	2.7
	15	10	55.2	52.5	34.1	38.2	4260	1000	426	60	76	6.3	3.8
		8	46.0	55.1	28.5	39.8	3330	800	222	54	70	5.4	3.6
		6	35.9	58.2	22.2	41.8	2410	580	92	46	62	4.6	3.3
		4	24.0	62.0	15.0	44.3	1480	370	30	34	50	3.8	3.0
		2	10.1	67.1	6.3	47.7	560	170	3	14	30	3.0	2.7
	20	10	49.5	54.2	28.7	39.8	4260	1000	426	60	76	6.3	3.8
		8	41.3	56.5	23.9	41.2	3330	800	222	54	70	5.4	3.6
		6	32.1	59.2	18.7	42.8	2410	580	92	46	62	4.6	3.3
		4	21.5	62.7	12.6	45.0	1480	370	30	34	50	3.8	3.0
		2	9.0	67.3	5.3	47.9	560	170	3	14	30	3.0	2.7
Suitable for low water temperatures 964134	10	10	45.1	55.4	29.4	39.6	2840	680	143	50	66	5.0	3.4
		8	37.1	57.9	24.2	41.3	2210	550	75	44	60	4.5	3.2
		6	28.1	60.9	18.4	43.3	1580	410	32	37	53	3.9	3.0
		4	18.1	64.4	11.9	45.7	950	270	10	26	42	3.3	2.8
		2	6.5	68.4	4.3	48.6	320	100	6	12	28	2.8	2.7
	15	10	40.8	56.6	25.3	40.8	2840	680	143	50	66	5.0	3.4
		8	33.5	58.9	20.8	42.3	2210	550	75	44	60	4.5	3.2
		6	25.4	61.6	15.8	44.0	1580	410	32	37	53	3.9	3.0
		4	16.3	64.8	10.2	46.1	950	270	10	26	42	3.3	2.8
		2	5.9	68.4	3.7	48.6	320	100	6	12	28	2.8	2.7
	20	10	36.6	57.9	21.2	42.0	2840	680	143	50	66	5.0	3.4
		8	30	59.9	17.5	43.2	2210	550	75	44	60	4.5	3.2
		6	22.7	62.3	13.3	44.7	1580	410	32	37	53	3.9	3.0
		4	14.6	65.2	8.6	46.5	950	270	10	26	42	3.3	2.8
		2	5.3	68.4	3.1	48.7	320	100	6	12	28	2.8	2.7

V [m³/h] = air volume, free-blowing; Q_H [kW] = heat output; t_{L1} [°C] = entering air temperature; t_{L2} [°C] = leaving air temperature

¹⁾ Measured in the Ultra with heat exchanger code 20.

²⁾ The sound pressure level was calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 3 m, a room volume of 2000 m³ and a reverberation time of 1.0 s (in accordance with VDI 2081).

Technical data for heating mode



Type	Entering air temperature	Switching stage	Heat outputs				Air volume	Speed ¹⁾	2-stage, 400 V three-phase, motor code 36	1-stage, 230 V three-phase, motor code 16 ²⁾	Sound pressure level ³⁾	Sound power level	Throw	Max. mounting height
			with LPHW 75/65 °C		with LPHW 55/45 °C				Power consumption ¹⁾	Power consumption ¹⁾				
			Q _H [kW]	t _{L2} [°C]	Q _H [kW]	t _{L2} [°C]								
	t _{L1} [°C]		Q _H [kW]	t _{L2} [°C]	Q _H [kW]	t _{L2} [°C]	V [m³/h]	[min ⁻¹]	[W]	[W]	[dB(A)]	[dB(A)]	[m]	[m]
7320_	10	2	10.9	36.5	7.1	24.2	1180	920	35	38	43	59	3.8	2.4
		1	9	38.8	5.8	25.9	890	740	22	-	38	54	3.2	2.3
	15	2	10	39.5	6.1	30	1180	920	35	38	43	59	3.8	2.4
		1	8.2	41.7	5	31.4	890	740	22	-	38	54	3.2	2.3
	20	2	9	42.5	5.1	32.8	1180	920	35	38	43	59	3.8	2.4
		1	7.4	44.5	4.2	34	890	740	22	-	38	54	3.2	2.3
7330_	10	2	14	44.7	9	32.4	1150	920	35	38	43	59	3.7	2.4
		1	11.4	47.1	7.4	34	880	740	22	-	38	54	3.2	2.3
	15	2	12.7	47.1	7.8	36	1150	920	35	38	43	59	3.7	2.4
		1	10.4	49.3	6.4	37.2	880	740	22	-	38	54	3.2	2.3
	20	2	11.5	49.4	6.6	36.6	1150	920	35	38	43	59	3.7	2.4
		1	9.4	51.4	5.4	38	880	740	22	-	38	54	3.2	2.3

V [m³/h] = air volume, free-blowing; Q_H [kW] = heat output; t_{L1} [°C] = entering air temperature; t_{L2} [°C] = leaving air temperature

¹⁾ Measured in the Ultra with heat exchanger code 20.

²⁾ Speed may differ from the stated speed.

³⁾ The sound pressure level was calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 3 m, a room volume of 2000 m³ and a reverberation time of 1.0 s (in accordance with VDI 2081).

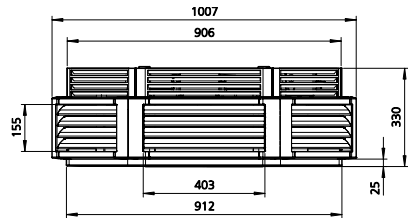
Ultra AC, Heating

Model 84

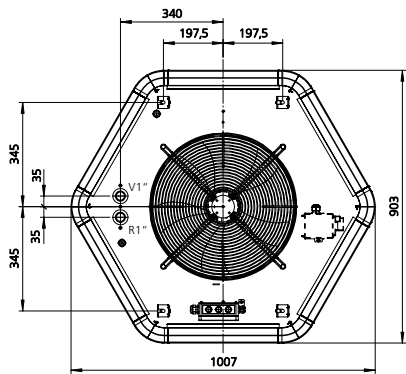
AC fan (motor code 16 and 36)

Technical drawings (dimensions in mm)

Front view



Top view



(Electromechanical design)

Specifications

Weights

Type	Weight	Water content
	[kg]	[l]
842016	34	2.0
843016	36	2.9
842036	37	2.0
843036	39	2.9

Connection

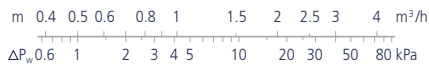
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Water resistance

Type 8420_ _ *



Type 8430_ _ *



m = Volumetric flow [m³/h]
ΔPw = Water resistance [kPa]

* These figures apply to a mean water temperature of 70 °C but can also be used for other heating media temperatures because of the low dependence on the water temperature.

Technical data for heating mode



Type	Entering air temperature	Switching stage	Heat outputs				Air volume	Speed ¹⁾	2-stage, 400 V three-phase, motor code 36	1-stage, 230 V three-phase, motor code 16 ²⁾	Sound pressure level ³⁾	Sound power level	Throw	Max. mounting height
			with LPHW 75/65 °C	with LPHW 55/45 °C					Power consumption ¹⁾	Power consumption ¹⁾				
	t _{L1} [°C]		Q _H [kW]	t _{L2} [°C]	Q _H [kW]	t _{L2} [°C]	V [m³/h]	[min ⁻¹]	[W]	[W]	[dB(A)]	[dB(A)]	[m]	[m]
8420_	10	2	14.8	35.7	9.6	26.6	1650	950	56	83	50	66	4.4	2.8
		1	13.2	36.8	8.6	27.4	1410	830	37	-	44	60	3.8	2.6
	15	2	13.5	38.7	8.3	29.5	1650	950	56	83	50	66	4.4	2.8
		1	12.1	39.8	7.4	30.2	1410	830	37	-	44	60	3.8	2.6
	20	2	12.2	41.7	7	32.4	1650	950	56	83	50	66	4.4	2.8
		1	10.9	42.7	6.2	33	1410	830	37	-	44	60	3.8	2.6
8430_	10	2	19.2	44.7	12.4	32.4	1580	950	56	83	50	66	4.3	2.8
		1	17	46	11	33.3	1350	830	37	-	44	60	3.7	2.5
	15	2	17.5	47.1	10.7	34.7	1580	950	56	83	50	66	4.3	2.8
		1	15.5	48.3	9.5	35.4	1350	830	37	-	44	60	3.7	2.5
	20	2	15.8	49.4	9	36.8	1580	950	56	83	50	66	4.3	2.8
		1	14	50.5	8	37.4	1350	830	37	-	44	60	3.7	2.5

V [m³/h] = air volume, free-blowing; Q_H [kW] = heat output; t_{L1} [°C] = entering air temperature; t_{L2} [°C] = leaving air temperature

¹⁾ Measured in the Ultra with heat exchanger code 20.

²⁾ Speed may differ from the stated speed.

³⁾ The sound pressure level was calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 3 m, a room volume of 2000 m³ and a reverberation time of 1.0 s (in accordance with VDI 2081).

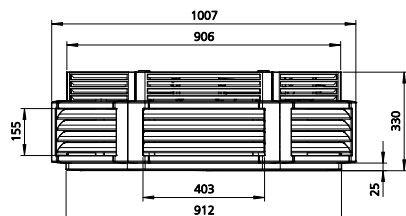
Ultra AC, Heating

Model 85

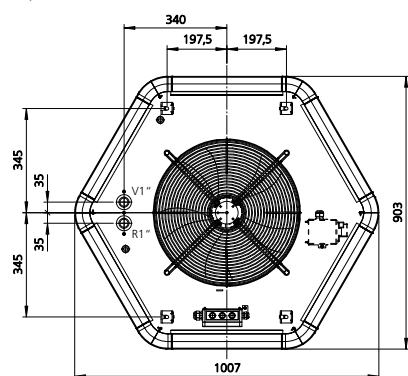
AC fan (motor code 16 and 36)

Technical drawings (dimensions in mm)

Front view



Top view



(Electromechanical design)

Specifications

Weights

Type	Weight [kg]	Water content [l]
852016	34	2.0
853016	36	2.9
854016	38	3.8
852036	36	2.0
853036	37	2.9
854036	39	3.8

Connection

1"

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Water resistance

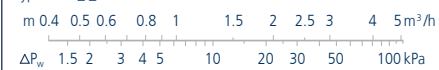
Type 8520_*



Type 8530_*



Type 8540_*



m = Volumetric flow [m³/h]
 ΔP_w = Water resistance [kPa]

* These figures apply to a mean water temperature of 70 °C but can also be used for other heating media temperatures because of the low dependence on the water temperature.

Technical data for heating mode



Type	Entering air temperature	Switching stage	Heat outputs				Air volume	Speed ¹⁾	2-stage, 400 V three-phase, motor code 36	1-stage, 230 V three-phase, motor code 16 ²⁾	Sound pressure level ³⁾	Sound power level	Throw	Max. mounting height
			with LPHW 75/65 °C	with LPHW 55/45 °C					Power consumption ¹⁾	Power consumption ¹⁾				
	t _{L1} [°C]		Q _H [kW]	t _{L2} [°C]	Q _H [kW]	t _{L2} [°C]	V [m³/h]	[min ⁻¹]	[W]	[W]	[dB(A)]	[dB(A)]	[m]	[m]
8520__	10	2	23.1	33	14.9	24.9	2860	850	127	122	52	68	5.6	3.4
		1	18.7	35.7	12.1	26.6	2080	570	73	-	45	61	4.7	3
	15	2	21	36.3	12.9	28.1	2860	850	127	122	52	68	5.6	3.4
		1	17.1	38.8	10.4	29.6	2080	570	73	-	45	61	4.7	3
	20	2	19	39.5	10.9	31.2	2860	850	127	122	52	68	5.6	3.4
		1	15.4	41.8	8.8	32.4	2080	570	73	-	45	61	4.7	3
8530__	10	2	30.5	41.7	19.7	30.5	2750	850	127	122	52	68	5.5	3.3
		1	24.3	44.9	15.7	32.6	1990	570	73	-	45	61	4.6	3
	15	2	27.8	45.8	17	33	2750	850	127	122	52	68	5.5	3.3
		1	22.1	48.6	13.6	34.8	1990	570	73	-	45	61	4.6	3
	20	2	25.1	46.8	14.3	35.3	2750	850	127	122	52	68	5.5	3.3
		1	20	49.6	11.4	36.9	1990	570	73	-	45	61	4.6	3
8540__*	10	2	34.6	48.7	23.9	36.9	2560	850	127	122	52	68	5.4	3.2
		1	27.1	52	18.7	39	1850	570	73	-	45	61	4.5	3
	15	2	31.2	51.4	20.9	38.9	2560	850	127	122	52	68	5.4	3.2
		1	24.9	54.3	16.3	40.7	1850	570	73	-	45	61	4.5	3
	20	2	29	53.6	17.7	40.6	2560	850	127	122	52	68	5.4	3.2
		1	22.6	56.2	13.8	42.2	1850	570	73	-	45	61	4.5	3

*Suitable for low water temperatures

V [m³/h] = air volume, free-blowing; Q_H [kW] = heat output; t_{L1} [°C] = entering air temperature; t_{L2} [°C] = leaving air temperature¹⁾ Measured in the Ultra with heat exchanger code 20.²⁾ Speed may differ from the stated speed.³⁾ The sound pressure level was calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 3 m, a room volume of 2000 m³ and a reverberation time of 1.0 s (in accordance with VDI 2081).

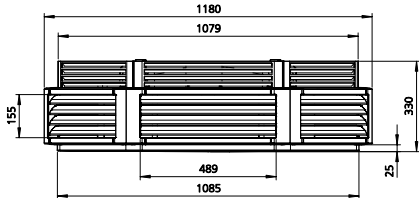
Ultra AC, Heating

Model 96

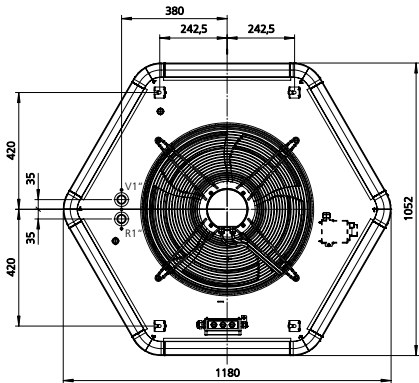
AC fan (motor code 16 and 36)

Technical drawings (dimensions in mm)

Front view



Top view



(Electromechanical design)

Specifications

Weights

Type	Weight	Water content
	[kg]	[l]
962016	45	2.2
963016	48	3.3
964016	51	4.4
962036	46	2.2
963036	49	3.3
964036	52	4.4

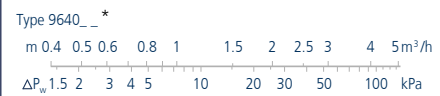
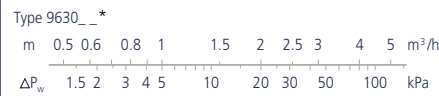
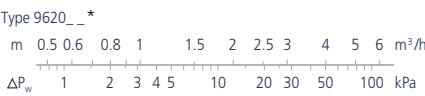
Connection

1"

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Water resistance



m = Volumetric flow [m³/h]
ΔPw = Water resistance [kPa]

* These figures apply to a mean water temperature of 70 °C but can also be used for other heating media temperatures because of the low dependence on the water temperature.

Technical data for heating mode



Type	Entering air temperature	Switching stage	Heat outputs				Air volume	Speed ¹⁾	2-stage, 400 V three-phase, motor code 36	1-stage, 230 V three-phase, motor code 16 ²⁾	Sound pressure level ³⁾	Sound power level	Throw	Max. mounting height
			with LPHW 75/65 °C	with LPHW 55/45 °C					Power consumption ¹⁾	Power consumption ¹⁾				
	t _{L1} [°C]		Q _H [kW]	t _{L2} [°C]	Q _H [kW]	t _{L2} [°C]	V [m³/h]	[min ⁻¹]	[W]	[W]	[dB(A)]	[dB(A)]	[m]	[m]
9620__	10	2	36.2	30.2	23.4	23	5130	880	366	339	60	76	7	3.9
		1	28.1	33.5	18.1	25	3410	670	255	-	50	66	5.5	3.5
	15	2	33	33.6	20.2	26.4	5130	880	366	339	60	76	7	3.9
		1	25.6	36.7	15.7	28.3	3410	670	255	-	50	66	5.5	3.5
	20	2	29.8	37.1	17	29.8	5130	880	366	339	60	76	7	3.9
		1	23.1	39.9	13.2	31.4	3410	670	255	-	50	66	5.5	3.5
9630__	10	2	48.6	38.2	31.4	28.3	4920	880	366	339	60	76	6.9	3.9
		1	36.9	42.3	23.9	30.9	3270	670	255	-	50	66	5.4	3.4
	15	2	44.3	41.1	31	32.6	4920	880	366	339	60	76	6.9	3.9
		1	33.7	44.8	33.3	34.7	3270	670	255	-	50	66	5.4	3.4
	20	2	40	43.9	33.7	33.7	4920	880	366	339	60	76	6.9	3.9
		1	30.4	47.3	35.6	36.5	3270	670	255	-	50	66	5.4	3.4
9640__*	10	2	53.7	44.5	37.5	34.1	4460	880	366	339	60	76	6.8	3.9
		1	40	48.8	27.8	37	2960	670	255	-	50	66	5.3	3.3
	15	2	49.7	47.5	32.8	36.5	4460	880	366	339	60	76	6.8	3.9
		1	37	51.4	24.3	39	2960	670	255	-	50	66	5.3	3.3
	20	2	45.2	50.1	27.9	38.5	4460	880	366	339	60	76	6.8	3.9
		1	33.6	53.6	20.6	40.7	2960	670	255	-	50	66	5.3	3.3

*Suitable for low water temperatures

V [m³/h] = air volume, free-blowing; Q_H [kW] = heat output; t_{L1} [°C] = entering air temperature; t_{L2} [°C] = leaving air temperature¹⁾ Measured in the Ultra with heat exchanger code 20.²⁾ Speed may differ from the stated speed.³⁾ The sound pressure level was calculated based on an assumed room insulation of 16 dB(A).

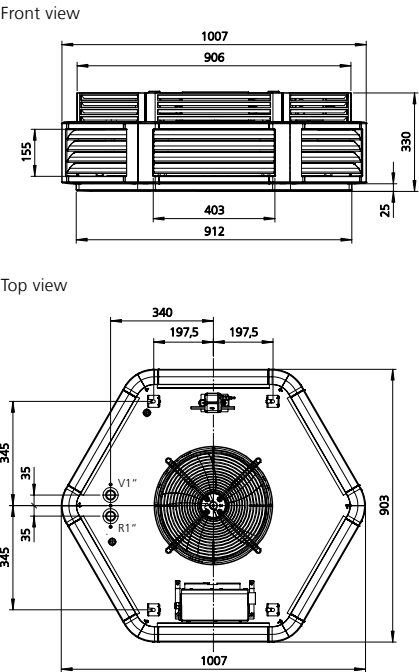
This corresponds to a distance of 3 m, a room volume of 2000 m³ and a reverberation time of 1.0 s (in accordance with VDI 2081).

Ultra AC, Cooling or heating

Model 84

AC fan (motor code 16 and 36)

Technical drawings (dimensions in mm)



(KaControl design)

Specifications

Weights

Type	Weight	Water content
	[kg]	[l]
843116	40	2.9
843136	39	2.9

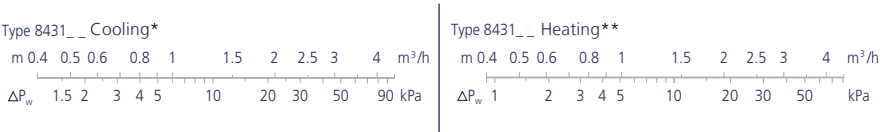
Connection

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Water resistance



m = Volumetric flow [m³/h]
ΔP_w = Water resistance [kPa]

* These figures apply to a mean water temperature of 10 °C but can also be used for other heating media temperatures because of the low dependence on the water temperature.

** These figures apply to a mean water temperature of 70 °C but can also be used for other heating media temperatures because of the low dependence on the water temperature.

Technical data for cooling mode



Type	Switching stage	Cooling output				Air volume	Speed ²⁾	2-stage, 400 V three-phase, motor code 36	1-stage, 230 V three-phase, motor code 16 ³⁾	Sound pressure level ⁴⁾	Sound power level
		with CHW 16/18 °C ¹⁾		with CHW 7/12 °C ¹⁾				Power consumption ²⁾	Power consumption ²⁾		
		Q _K [kW]	t _{L2} [°C]	Q _K [kW]	t _{L2} [°C]						
						V [m³/h]	[min ⁻¹]	[W]	[W]	[dB(A)]	[dB(A)]
8431_	2	3	21.2	6.15	17.7	1580	950	56	83	50	66
	1	2.7	21	5.55	17.3	1350	830	37	-	44	60

V [m³/h] = air volume, free-blowing; Q_K [kW] = cooling output; t_{L1} [°C] = entering air temperature; t_{L2} [°C] = leaving air temperature

Technical data for heating mode



Type	Entering air temperature	Switching stage	Heat outputs				Air volume	Speed ²⁾	2-stage, 400 V three-phase, motor code 36	1-stage, 230 V three-phase, motor code 16 ³⁾	Sound pressure level ⁴⁾	Sound power level	Throw	Max. mounting height
			with LPHW 75/65 °C		with LPHW 55/45 °C				Power consumption ²⁾	Power consumption ²⁾				
			Q _H [kW]	t _{L2} [°C]	Q _H [kW]	t _{L2} [°C]								
	t _{L1} [°C]		Q _H [kW]	t _{L2} [°C]	Q _H [kW]	t _{L2} [°C]	V [m³/h]	[min ⁻¹]	[W]	[W]	[dB(A)]	[dB(A)]	[m]	[m]
8431_—	10	2	19.2	44.7	12.4	32.4	1580	950	56	83	50	66	4.3	2.8
		1	17	46	11	33.3	1350	830	37	-	44	60	3.7	2.5
	15	2	17.5	47.1	10.7	34.7	1580	950	56	83	50	66	4.3	2.8
		1	15.5	48.3	9.5	35.4	1350	830	37	-	44	60	3.7	2.5
	20	2	15.8	49.4	9	36.8	1580	950	56	83	50	66	4.3	2.8
		1	14	50.5	8	37.4	1350	830	37	-	44	60	3.7	2.5

V [m³/h] = air volume, free-blowing; Q_H [kW] = heat output; t_{L1} [°C] = entering air temperature; t_{L2} [°C] = leaving air temperature

¹⁾ Total, at t_{L1} = 27 °C, 48 % rel. humidity

²⁾ Measured in the Ultra with heat exchanger code 20.

³⁾ Speed may differ from the stated speed.

⁴⁾ The sound pressure level was calculated based on an assumed room insulation of 16 dB(A).

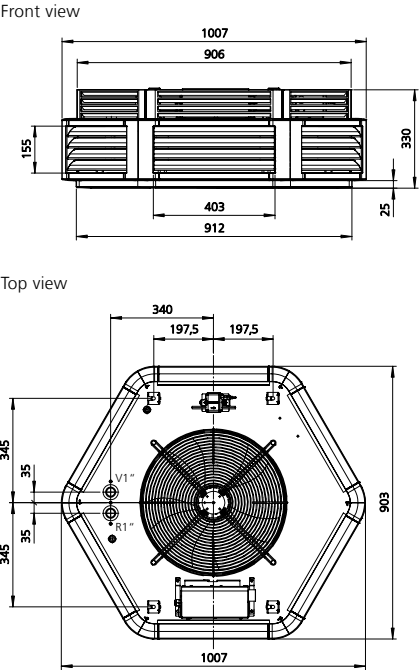
This corresponds to a distance of 3 m, a room volume of 2000 m³ and a reverberation time of 1.0 s (in accordance with VDI 2081).

Ultra AC, Cooling or heating

Model 85

AC fan (motor code 16 and 36)

Technical drawings (dimensions in mm)



(KaControl design)

Specifications

Weights

Type	Weight	Water content
	[kg]	[l]
853116	41	2.9
853136	46	2.9
854116	43	3.8
854136	48	3.8

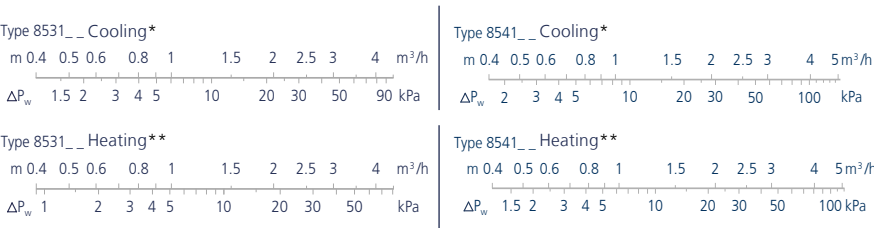
Connection

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Water resistance



m = Volumetric flow [m³/h]
ΔPw = Water resistance [kPa]

* These figures apply to a mean water temperature of 10 °C but can also be used for other heating media temperatures because of the low dependence on the water temperature.

** These figures apply to a mean water temperature of 70 °C but can also be used for other heating media temperatures because of the low dependence on the water temperature.

Technical data for cooling mode



Type	Switching stage	Cooling output				Air volume	Speed ²⁾	2-stage, 400 V three-phase, motor code 36	1-stage, 230 V three-phase, motor code 16 ³⁾	Sound pressure level ⁴⁾	Sound power level
		with CHW 16/18 °C ¹⁾		with CHW 7/12 °C ¹⁾				Power consumption ²⁾	Power consumption ²⁾		
		Q _K [kW]	t _{L2} [°C]	Q _K [kW]	t _{L2} [°C]						
		Q _K [kW]	t _{L2} [°C]	Q _K [kW]	t _{L2} [°C]	V [m³/h]	[min ⁻¹]	[W]	[W]	[dB(A)]	[dB(A)]
8531__	2	4.8	21.7	9.36	18.4	2750	850	127	122	52	68
	1	3.8	21.2	7.7	17.5	1990	570	73	-	45	61
8541__	2	5.8	19.1	12.30	14.1	2250	850	127	122	52	68
	1	4.4	18.6	9.7	13.2	1600	570	73	-	45	61

V [m³/h] = air volume, free-blowing; Q_K [kW] = cooling output; t_{L1} [°C] = entering air temperature; t_{L2} [°C] = leaving air temperature

Technical data for heating mode



Type	Entering air temperature	Switching stage	Heat outputs				Air volume	Speed ²⁾	2-stage, 400 V three-phase, motor code 36	1-stage, 230 V three-phase, motor code 16 ³⁾	Sound pressure level ⁴⁾	Sound power level	Throw	Max. mounting height
			with LPHW 75/65 °C		with LPHW 55/45 °C				Power consumption ²⁾	Power consumption ²⁾				
	t _{L1} [°C]	[V]	Q _H [kW]	t _{L2} [°C]	Q _H [kW]	t _{L2} [°C]	V [m³/h]	[min ⁻¹]	[W]	[W]	[dB(A)]	[dB(A)]	[m]	[m]
8531__	10	2	30.5	41.7	19.7	30.5	2750	850	127	122	52	68	5.5	3.3
		1	24.3	44.9	15.7	32.6	1990	570	73	-	45	61	4.6	3.0
	15	2	27.8	45.8	17	33	2750	850	127	122	52	68	5.5	3.3
		1	22.1	48.6	13.6	34.8	1990	570	73	-	45	61	4.6	3.0
	20	2	25.1	46.8	14.3	35.3	2750	850	127	122	52	68	5.5	3.3
		1	20	49.6	11.4	36.9	1990	570	73	-	45	61	4.6	3.0
8541__*	10	2	37.6	58	24.5	41.2	2250	850	127	122	52	68	4.9	3.1
		1	28.5	61.1	18.6	43.4	1600	570	73	-	45	61	4.1	2.8
	15	2	34	59.1	21	42.3	2250	850	127	122	52	68	4.9	3.1
		1	25.7	61.9	16	44.1	1600	570	73	-	45	61	4.1	2.8
	20	2	30.4	60.1	17.7	43.3	2250	850	127	122	52	68	4.9	3.1
		1	23	62.7	13.4	44.8	1600	570	73	-	45	61	4.1	2.8

*Suitable for low water temperatures

V [m³/h] = air volume, free-blowing; Q_H [kW] = heat output; t_{L1} [°C] = entering air temperature; t_{L2} [°C] = leaving air temperature

¹⁾ Total, at t_{L1} = 27 °C, 48 % rel. humidity

²⁾ Measured in the Ultra with heat exchanger code 20.

³⁾ Speed may differ from the stated speed.

⁴⁾ The sound pressure level was calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 3 m, a room volume of 2000 m³ and a reverberation time of 1.0 s (in accordance with VDI 2081).

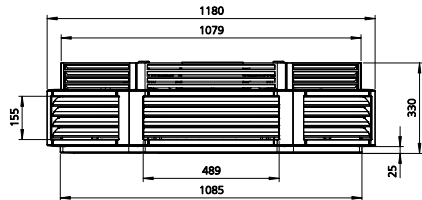
Ultra AC, Cooling or heating

Model 96

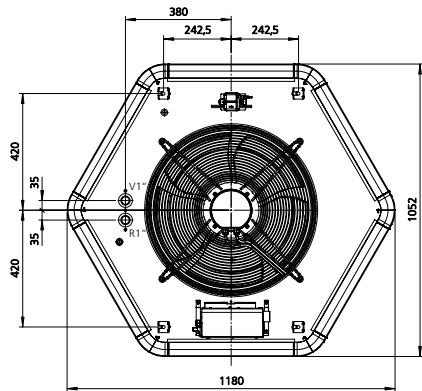
AC fan (motor code 16 and 36)

Technical drawings (dimensions in mm)

Front view



Top view



(KaControl design)

Specifications

Weights

Type	Weight	Water content
	[kg]	[l]
963116	52	3.3
963136	51	3.3
964116	55	4.4
964136	54	4.4

Connection

1"

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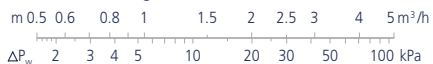
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Water resistance

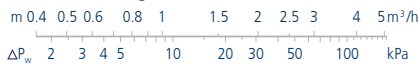
Type 9631__ Cooling*



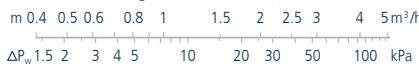
Type 9631__ Heating**



Type 9641__ Cooling*



Type 9641__ Heating**



m = Volumetric flow [m³/h]
ΔP_w = Water resistance [kPa]

* These figures apply to a mean water temperature of 10 °C but can also be used for other heating media temperatures because of the low dependence on the water temperature.
** These figures apply to a mean water temperature of 70 °C but can also be used for other heating media temperatures because of the low dependence on the water temperature.

Technical data for cooling mode



Type	Switching stage	Cooling output				Air volume	Speed ²⁾	2-stage, 400 V three-phase, motor code 36	1-stage, 230 V three-phase, motor code 16 ³⁾	Sound pressure level ⁴⁾	Sound power level
		with CHW 16/18 °C ¹⁾		with CHW 7/12 °C ¹⁾				Power consumption ²⁾	Power consumption ²⁾		
		Q _K [kW]	t _{L2} [°C]	Q _K [kW]	t _{L2} [°C]						
	[V]					V [m³/h]	[min ⁻¹]	[W]	[W]	[dB(A)]	[dB(A)]
9631 __	2	7.6	22.3	-- ⁵⁾	-- ⁵⁾	4920	880	366	339	60	76
	1	5.7	21.6	11.5	18.2	3270	670	255	-	50	66
9641 __	2	9.0	20.1	-- ⁵⁾	-- ⁵⁾	3980	880	366	339	60	76
	1	6.5	19.3	13.9	14.4	2580	670	255	-	50	66

V [m³/h] = air volume, free-blowing; Q_K [kW] = cooling output; t_{L1} [°C] = entering air temperature; t_{L2} [°C] = leaving air temperature

Technical data for heating mode



Type	Entering air temperature	Switching stage	Heat outputs				Air volume	Speed ²⁾	2-stage, 400 V three-phase, motor code 36	1-stage, 230 V three-phase, motor code 16 ³⁾	Sound pressure level ⁴⁾	Sound power level	Throw	Max. mounting height
			with LPHW 75/65 °C		with LPHW 55/45 °C									
	t _{L1} [°C]		Q _H [kW]	t _{L2} [°C]	Q _H [kW]	t _{L2} [°C]	V [m³/h]	[min ⁻¹]	[W]	[W]	[dB(A)]	[dB(A)]	[m]	[m]
9631__	10	2	48.6	38.2	31.4	28.3	4920	880	366	339	60	76	6.9	3.9
		1	36.9	42.3	23.9	30.9	3270	670	255	-	50	66	5.4	3.4
	15	2	44.3	41.1	31	32.6	4920	880	366	339	60	76	6.9	3.9
		1	33.7	44.8	33.3	34.7	3270	670	255	-	50	66	5.4	3.4
	20	2	40	43.9	33.7	33.7	4920	880	366	339	60	76	6.9	3.9
		1	30.4	47.3	35.6	36.5	3270	670	255	-	50	66	5.4	3.4
9641__*	10	2	58.1	51.9	37.8	37.2	3980	880	366	339	60	76	6.0	3.8
		1	41.9	56.6	27.3	40.4	2580	670	255	-	50	66	4.8	3.0
	15	2	52.5	53.5	32.5	38.8	3980	880	366	339	60	76	6.0	3.8
		1	37.8	57.8	23.5	41.6	2580	670	255	-	50	66	4.8	3.0
	20	2	47.1	55.1	27.3	40.4	3980	880	366	339	60	76	6.0	3.8
		1	33.9	59	19.7	42.7	2580	670	255	-	50	66	4.8	3.0

*Suitable for low water temperatures

V [m³/h] = air volume, free-blowing; Q_H [kW] = heat output; t_{L1} [°C] = entering air temperature; t_{L2} [°C] = leaving air temperature

¹⁾ Total, at t_{L1} = 27 °C, 48 % rel. humidity

²⁾ Measured in the Ultra with heat exchanger code 20.

³⁾ Speed may differ from the stated speed.

⁴⁾ The sound pressure level was calculated based on an assumed room insulation of 16 dB(A).

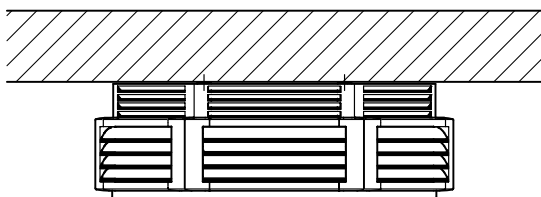
This corresponds to a distance of 3 m, a room volume of 2000 m³ and a reverberation time of 1.0 s (in accordance with VDI 2081).

⁵⁾ Unit type 9631** and type 9641** operated at high fan speed, only suitable for dry cooling, note figures at CHW 16/18 °C.

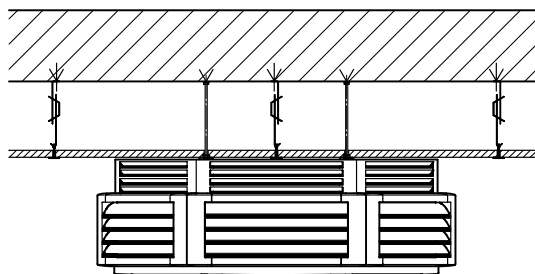
03 ▶ Design information



Types of installation – Recirculating air installation



Recirculating air unit with a solid ceiling

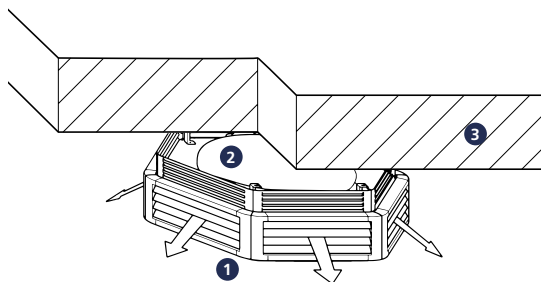


Recirculating air unit with a raised ceiling

Suggested installations – Recirculating air

Example 1: Ultra with recirculating air filter hood with a solid ceiling

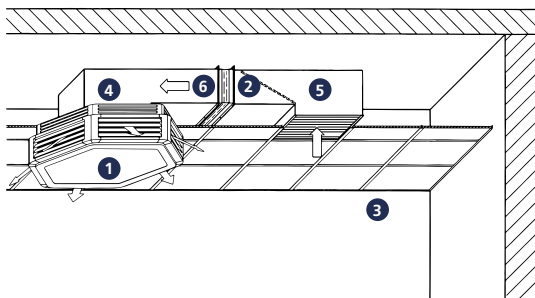
Ultra fitted below a solid ceiling, recirculating air filter hood, arranged above the unit, air intake through intake crown



- ① Ultra
- ② filter hood, recirculating air, type **050
- ③ Solid ceiling

Example 2: Ultra with recirculating air components for installation in suspended ceilings

Ultra installed below a suspended ceiling, intake air filtered through filter insert in 90° air intake bend, air intake through square recirculating air intake grille, fits acoustic ceiling grids 625 x 625 mm with visible installation rail



- ① Ultra
- ② Filter insert with ISO Coarse 45 % filter, type 60126
- ③ Acoustic ceiling grid, 625 x 625 mm¹⁾, with visible installation rail
- ④ Reducing bend 90°, type 60104
- ⑤ 90° air intake bend with intake grille, type 60105
- ⑥ Flexible connection, type 6*034

* Insert figure for unit size.

** Insert Ultra series.

¹⁾ Design for ceiling grid 600 x 600 mm on request.

Unit design

The units required are determined using the usual standards and guidelines. Operating a dynamic air handling system with Ultra units is ideal for non-steady state operation, although we would recommend allowing a margin to provide a heating system adapted to the conditions of use.

Number of units

Calculating the number, size and design stage of Ultra units is based on the:

- ▶ calculated heat output
- ▶ max. mounting height
- ▶ necessary air circulation
- ▶ sound level to be adhered to
- ▶ structural conditions, such as staff recreation areas, installation points, furniture

In practice, designing Ultra AC units to operate at stage 1 with 2-stage operation or medium speed with 5- or 7-stage operation has proved to be ideal in practice. We recommend designing Ultra EC units to operate with a control voltage of 6 V. This allows for reserves to heat a room up after the units have been switched off for some time and also ensures maximum energy efficiency.

Suspended ceiling installation with acoustic ceilings

Detailed description with examples see page 46.

Air circulation

Designing the Ultra based on the air circulation has proved to be very practical to obtain a simplified and reliable unit selection and uniform air distribution. The right gaps between unit heaters can be obtained taking into consideration the maximum mounting height without the need for additional calculations.

$$\text{Air circ. [1/h]} = \frac{V_{L, \text{eff}} \cdot n}{V}$$

Air circ. [1/h] = air circulation at the design stage
 $V_{L, \text{eff}}$ [m³/h] = effective air volume of the unit at the design stage

V [m³] = room volume

n [–] = number of Ultra units

Air circulation	
	[1/h]
minimum	1.5
better	2.0
good	2.5 – 3.0
very good	3.5 – 4.0

Leaving air temperatures

Leaving air temperatures can be taken from the tables on pages 14 – 43 or calculated using the following formula, e.g.

- ▶ if the use of additional components results in a reduced air volume and thus a lower heat output,
- ▶ if a temperature difference Δt between the mean water temperature and the entering air temperature has been selected which is not listed in the performance tables.

$$t_{L2} = t_{L1} + \frac{Q_{\text{eff}} \cdot 1000}{V_{L, \text{eff}} \cdot C}$$

t_{L1} [°C] = entering air temperature

t_{L2} [°C] = leaving air temperature

Q_{eff} [KW] = eff. heat output of the Ultra

$V_{L, \text{eff}}$ [m³/h] = effective air volume of the air stream (taking into account accessory components)

C [Wh/m³ K] = multiplier for leaving air temperature calculation

t_{L1}	C	t_{L1}	C
[°C]	[Wh/m ³ K]	[°C]	[Wh/m ³ K]
+ 20	0.34	± 0	0.36
+ 10	0.35	– 10	0.37

Guideline values for leaving air temperature:

- ▶ min. 30 – 35 °C (only go below at high fan speed)
- ▶ max. 50 – 55 °C

If a leaving air temperature of 35 °C cannot be reached due to low flow temperatures, adjust the leaving air slats so that the primary air stream does not point directly at zones where people spend time. Areas at ground floor where people spend time will therefore be heated by secondary vortices.

Maximum installation height - throw width

The maximum installation height and especially the throw width are directly dependent on

- ▶ the room geometry
- ▶ the excess temperature of the air flow
- ▶ the configuration of the room
- ▶ the air volume
- ▶ the outlet louvre position

The throw width of the Ultra is defined as the maximum penetration depth of the primary air stream under ideal conditions. All the maximum

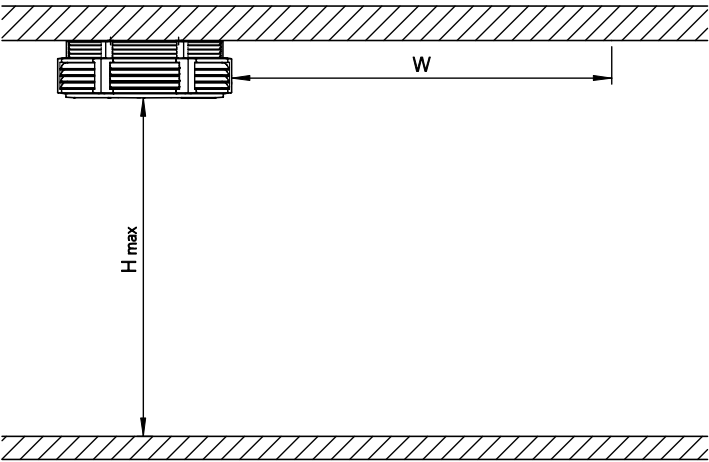
mounting heights and throw widths given in the tables only apply to entering air temperatures of up to 20 K above room temperature.

These values should only be viewed as guideline values, in view of the significant dependency of the throw width on the room geometry, equipment and up-current caused by higher outlet temperatures. Higher room depths are indirectly involved and heated in the air exchange by the secondary vortex.

Maximum installation height – throw widths (for more detailed information, refer to the technical data from page 15 onwards)

		EC model																			
Ultra series		84_ _33					85_ _33					96_ _33					96_ _34				
Voltage	[V]	10	8	6	4	2	10	8	6	4	2	10	8	6	4	2	10	8	6	4	2
Approx. speed	[rpm]	1070	950	730	490	280	1000	890	700	480	260	1000	800	580	370	170	680	550	410	270	100
Max. installation height H_{max}	[m]	2.9	2.7	2.4	2.4	2.3	3.4	3.2	3.0	2.7	2.4	4.1	3.8	3.5	3.2	2.8	3.6	3.4	3.2	3.0	2.7
Throw width W	[m]	4.8	4.4	3.4	2.4	1.5	5.6	5.2	4.6	3.9	3.1	7.2	6.2	5.2	4.2	3.3	5.7	5.1	4.4	3.8	3.0

		Three-phase model								Single-phase model			
Ultra series		73_ _36		84_ _36		85_ _36		96_ _36		73_ _16	84_ _16	85_ _16	96_ _16
Switching stage		2	1	2	1	2	1	2	1	1	1	1	1
Approx. speed	[rpm]	920	740	950	830	850	570	880	670	920	950	850	880
Max. installation height H_{max}	[m]	2.4	2.3	2.8	2.5	3.3	3.0	3.9	3.4	2.4	2.8	3.3	3.9
Throw width W	[m]	3.7	3.2	4.3	3.7	5.5	4.6	6.9	5.4	3.7	4.3	5.5	6.9



Maximum installation height (H_{max}) and throw (W)

Model for cooling mode

This special model is suitable for heating operation with LPHW as well as for cooling operation using CHW. A condensation tray is also integrated in the underside of the unit below the heat exchanger. A collection tray for condensation and a float module are arranged in the middle of the tray in the area of the connections and accessible from outside. Only 2 pipes, flow and return, are routed to the Ultra (2-pipe system). A chiller for CHW is required depending on the system. Heating/cooling changeover is provided centrally (e.g. in the plant room). At this changeover point, the pipework for heating mode is switched to hot water and for cooling mode is switched to cold water. The pipes and fittings must be isolated and laid in accordance with the guidelines for refrigerant lines.

Due to its generously dimensioned basic construction and low basic fan speeds, the cooling model is fundamentally also suitable for air dehumidification.

Nevertheless, specific operating modes and settings need to be taken into account for cooling mode:

- ▶ Never move the louvre slats into the end positions, e.g. to shut off a discharge opening. At high fan speeds, there is otherwise a risk that water droplets could be carried into the other air outlet fields by inadmissibly high air speeds.
- ▶ Only operate the following units at a maximum fan speed of 700 rpm or only with dry cooling:
EC design: Type 963133 / Type 964133
Three-phase: Type 963136 / Type 964136
Single-phase model: Type 963116 / Type 964116
- ▶ To prevent impermissibly severe cooling down of the housing when the fan is at a standstill, we would recommend the use of valves (e.g. thermoelectric shut-off valve with recirculating mode).

This counteracts the outer parts of the housing experiencing condensation, especially with extreme conditions involving very high levels of humidity.

Condensation pump

The self-priming condensation pump is fixed to the hose connector for the on-site condensation pressurised line.

This ultra-quiet, electromagnetically operating pump is mounted on the upper side of the unit.

Max. delivery height:	8 m with max. 4.5 l/h flow rate and a hose length of 10 m
Max. pump volume:	approx. 18 l/h with 0.5 m delivery height and a hose length of 2 m
Supply voltage:	230 V/50 Hz (separate power line needed)
Power consumption:	14 W
Condensation pressure line:	DN 6 mm (hose connection)
Signal contact for condensation overflow	NC contact, potential-free switch capacity 250 V/5A

Condensation pump limits

The achievable flow volume of the condensation pump used depends on the volume of condensation produced in the Ultra and the length of condensation hose connected. The volume of condensation rises and the possible delivery height of the pump falls with extreme air humidity and/or very low system temperatures. Particularly when operating larger Ultra models (Series 96), the volume of humidity produced can exceed the permitted pump volume under extreme conditions.

Therefore set up the alarm contact on the float switch so that dehumidification is stopped (e.g. by closing the cooling valve).

Note the following limits of use of the condensation pump for the max. permitted cooling conditions (CHW 6/10 °C with entering air temp. 27 °C / 60% rel. humidity):

Ultra series 85: max. permitted delivery height with
5 m hose length: 3 m
Ultra series 96: max. permitted delivery height with
5 m hose length: 2 m

Higher-performance pumps are available on request if higher condensation volumes than the maximum permissible have to be discharged.

Conversion to other fan speeds with AC models

2-stage three-phase motors can be fixed to basic fan speed 2 or 1 with 5-stage three-phase controllers. The output voltage is reduced. Very low noise levels can be achieved (Table 1).

In the same way, 1-stage single-phase motors can be operated with 7-stage, single-phase controllers (Table 2).

$$V_{Leff} = V_L \cdot f_{L2}$$

$$Q_{eff} = Q \cdot f_{Q2}$$

Symbols

V_{Leff} [m³/h] = effective air volume

V_L [m³/h] = nominal air volumetric flow* of the unit

f_{Q2} [/] = heat output correction factor (speed)

f_{L2} [/] = air volume correction factor (speed)

Table 1: Correction factor when operating with 5-stage three-phase speed controller (Type 30751, Type 30752, Type 30754)

Basic fan stage		2 (Delta connection)					1 (Y-connection)				
Unit series	5-stage switch position	5	4	3	2	1	5	4	3	2	1
73 _ _ 36/84 _ _ 36 85 _ _ 36/96 _ _ 36	f_{L2}	1.0	0.89	0.81	0.67	0.54	1.0	0.79	0.66	0.51	0.40
	f_{Q2}	1.0	0.92	0.87	0.76	0.66	1.0	0.85	0.75	0.63	0.53
73 _ _ 36	L_{PA}/L_{WA} [dB(A)]	43/59	40/56	38/54	34/50	30/46	38/54	33/49	29/45**	24/40**	18/34**
84 _ _ 36	L_{PA}/L_{WA} [dB(A)]	50/66	47/63	45/61	41/57	37/53	44/60	39/55	35/51	30/46**	24/40**
85 _ _ 36	L_{PA}/L_{WA} [dB(A)]	52/68	49/65	47/63	43/59	39/55	45/61	40/56	36/52	31/47	25/41**
96 _ _ 36	L_{PA}/L_{WA} [dB(A)]	60/76	57/73	55/71	51/67	47/63	50/66	45/61	41/57	36/52	30/46**

L_{PA} [dB(A)] = sound pressure level, L_{WA} [dB(A)] = sound power level

Table 2: Correction factor when operating with 7-stage single-phase speed controller (Type 30771, Type 30772)

Unit series	7-stage switch position	7	6	5	4	3	2	1
73 _ _ 16/84 _ _ 16 85 _ _ 16/96 _ _ 16	f_{L2}	1.0	0.86	0.71	0.56	0.41	0.32	0.24
	f_{Q2}	1.0	0.90	0.79	0.67	0.54	0.46	0.38
73 _ _ 16	L_{PA}/L_{WA} [dB(A)]	43/59	40/56	36/52	30/46**	24/40**	18/34**	12/28**
84 _ _ 16	L_{PA}/L_{WA} [dB(A)]	50/66	47/63	43/59	37/53	31/47	25/41**	19/35**
85 _ _ 16	L_{PA}/L_{WA} [dB(A)]	52/68	49/65	45/61	39/55	33/49	27/43**	21/37**
96 _ _ 16	L_{PA}/L_{WA} [dB(A)]	60/76	57/73	53/69	47/63	41/57	35/51	29/45**

L_{PA} [dB(A)] = sound pressure level, L_{WA} [dB(A)] = sound power level

* See technical data on pages 30-43

** Mathematically calculated values, cannot be instrumentally measured

Sound power levels – Sound power levels

The large-sized fans with low basic speeds permit extremely low noise levels.

Nevertheless, take into account the permissible noise levels in the design. Troublesome noises can occur specifically at higher fan speeds. Determine the design fan speed depending on the type of room. We recommend checking the building approval regulations governing maximum permitted sound levels before commencing the design. Frequently reference is also made in this respect to other standards and regulations, e.g. DIN EN 15251, DIN EN 13779, Workplace Directive, VDI 2082 etc. The base sound level in a room plays a major role in the subjective perception of the source of the sound or the increased sound level. We would therefore recommend first measuring the base sound level to determine the permitted sound pressure level of the Ultra. If the sound pressure level of the unit lies below the room level, then the overall sound level will change only imperceptibly.

However, if only very low sound levels are permitted, we would recommend designing the units so that the required output can be achieved at lower fan speeds. Information on the A-rated total sound levels and sound pressure levels are given in the technical data tables.

The sound power level needed to determine the differential sound level was calculated using the enveloping surface method as per DIN 45635 employing a comparison method.

The sound pressure level data based on the measurements of the sound power level applies to a low-reflection room with average sound absorption at a distance of 3 m and taken at an angle of 45° from the air outlet without a duct connection.

As the actual sound pressure level in the room is heavily dependent on the acoustic properties of the space, reflections, duct connections etc., the stated value can differ in practice.

Calculation data

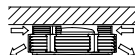
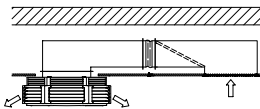
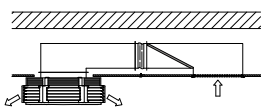
Ultra Type	Speed [rpm]	Voltage [V] / Frequency [Hz]	Power consumption [kW]	Current consumption [A]
84**33	1040	230 / 50/60	0.073	0.65
85**33	980	230 / 50/60	0.163	1.34
96**33	990	230 / 50/60	0.46	2.00
96**34	990	230 / 50/60	0.46	2.00
73**16	880	230 / 50	0.05	0.23
84**16	940	230 / 50	0.08	0.42
85**16	800	230 / 50	0.11	0.50
96**16	910	230 / 50	0.36	1.65
73**36	890/680	400 / 50	0.03/0.02	0.07/0.04
84**36	930/800	400 / 50	0.06/0.04	0.18/0.08
85**36	820/560	400 / 50	0.13/0.07	0.26/0.13
96**36	880/680	400 / 50	0.36/0.25	0.67/0.40

** Heat exchanger model

Air resistance coefficient Z

Add-on components		Z	
Description	Type	Model 5	Model 6
Recirculation air intake grille, square, 625 x 625 mm	60988	3.0 ¹⁾	3.0 ¹⁾
ISO Coarse 45 % recirculation air filter hood	**050	4.0 ¹⁾	4.0 ¹⁾
Connecting frame, square	6*002	0.1 ¹⁾	0.1 ¹⁾
Reducing bend 90°, extended	6*104	1.1	1.1
Air intake bend 90°, with intake grille	60105	2.4 ¹⁾	3.4 ¹⁾
Filter insert ISO Coarse 45 %	60126	10.0 ¹⁾	14.0 ¹⁾
Rectangular air duct section	6*030	0.1/m	0.1/m
Rectangular air duct section, 1250 mm long	6*130	0.1	0.1
Flexible connection, rectangular	6*034	0.1	0.1

Heating and air volume correction factors for normal use

Ultra series 73-96														
			Ultra with recirculating air filter element				Ultra with connecting frame, reducing bend, flexible connecting section and air intake bend with intake grille, without filter insert				Ultra with connecting frame, reducing bend, flexible connecting section and air intake bend with intake grille, with filter insert			
Air resistance coefficients			Total Z = 4				Type series		Total Z		Type series		Total Z	
							85__		3.7		85__		13.7	
							96__		4.7		96__		18.7	
Motor design			Air volume		Heat output		Air volume		Heat output		Air volume		Heat output	
EC 230 V/1~	2-stage three-phase motor 400 V/3~	1-stage single-phase 230 V/1~	f _{L3}		f _{Q3}		f _{L3}		f _{Q3}		f _{L3}		f _{Q3}	
			Fan speed stage ²⁾		Fan speed stage ²⁾		Fan speed stage ²⁾		Fan speed stage ²⁾		Fan speed stage ²⁾		Fan speed stage ²⁾	
Type		Type	10 V / St2	6 V / St1	10 V / St2	6 V / St1	10 V / St2	6 V / St1	10 V / St2	6 V / St1	10 V / St2	6 V / St1	10 V / St2	6 V / St1
842033	842036	842016	0.84	0.81	0.89	0.86	On request							
0.84			0.81	0.89	0.86									
0.84			-	0.89	-									
843033	843036	843016	0.84	0.82	0.89	0.87								
0.84			0.82	0.89	0.87									
0.84			-	0.89	-									
852033	852036	852016	0.80	0.77	0.86	0.83	0.81	0.78	0.86	0.84	0.60	0.59	0.70	0.69
0.80			0.77	0.86	0.83	0.81	0.78	0.86	0.84	0.60	0.59	0.70	0.69	
0.80			-	0.86	-	0.81	-	0.86	-	0.60	-	0.70	-	
853033	853036	853016	0.80	0.78	0.86	0.84	0.81	0.79	0.86	0.85	0.61	0.60	0.71	0.70
0.80			0.78	0.86	0.84	0.81	0.79	0.86	0.85	0.61	0.60	0.71	0.70	
0.80			-	0.86	-	0.81	-	0.86	-	0.61	-	0.71	-	
854033	854036	854016	0.81	0.79	0.86	0.85	0.82	0.80	0.87	0.86	0.62	0.61	0.72	0.71
0.81			0.79	0.86	0.85	0.82	0.80	0.87	0.86	0.62	0.61	0.72	0.71	
0.81			-	0.86	-	0.82	-	0.87	-	0.62	-	0.72	-	
962033	962036	962016	0.73	0.71	0.80	0.79	0.72	0.70	0.80	0.78	0.49	0.49	0.61	0.61
0.77			0.75	0.83	0.82	0.76	0.74	0.83	0.81	0.53	0.51	0.65	0.63	
0.73			0.71	0.80	0.79	0.72	0.70	0.80	0.78	0.49	0.49	0.61	0.61	
			0.73	-	0.80	-	0.72	-	0.80	-	0.49	-	0.61	-
963033			0.74	0.72	0.81	0.80	0.73	0.71	0.80	0.79	0.50	0.49	0.62	0.61
963034	963036	963016	0.79	0.77	0.85	0.83	0.77	0.75	0.83	0.82	0.54	0.52	0.65	0.64
0.74			0.72	0.81	0.80	0.73	0.71	0.80	0.79	0.50	0.49	0.62	0.61	
0.74			-	0.81	-	0.73	-	0.80	-	0.50	-	0.62	-	
964033			0.75	0.73	0.82	0.80	0.74	0.72	0.81	0.80	0.51	0.50	0.63	0.62
964034	964036	964016	0.80	0.78	0.86	0.84	0.79	0.77	0.85	0.83	0.55	0.53	0.66	0.65
0.75			0.73	0.82	0.80	0.74	0.72	0.81	0.80	0.51	0.50	0.63	0.62	
0.75			-	0.82	-	0.74	-	0.81	-	0.51	-	0.63	-	

* Insert unit size.

** Insert unit series.

¹⁾ Air resistance coefficients based on air speed in a rectangular duct cross-section.²⁾ Fan speed:

10 V / St2 = maximum fan speed for EC models (10 V) and AC model (Stage 2 with three-phase and maximum speed with single-phase)

6 V / St1 = medium speed for EC model (6 V) and low speed for AC model (Stage 1)

Correction factors also for Ultra type 73_____ can be used

Hybrid ECO System

Air exchange separate from temperature adjustment for comfort and efficiency

Public premises, workshops and retail stores are now not only heated and air conditioned by unit heaters, but can also be supplied with outside air. In this configuration, the extract air is discharged out of the building by means of natural overflow in accordance with the ErP Regulation (EU) 1253/2014 without previously recovering the heat contained in it. High energy costs are the result.

Unlike simple ventilators that supply fresh air to a building, ventilation units with heat recovery offer the benefit of recovering heat from the extract air into the supply air in accordance with the ErP Regulation (EU) 1253/2014.

If these units have an integral heating and cooling function, their many attachments and long lengths of ductwork mean that they have to overcome high air-side resistance. What is more, the fans need a lot of energy. The surfaces of the air ducts are significantly larger and poorly insulated than pipes transporting water to generate energy. Too much energy is lost here as well.

Ultra units and the KaCompact ventilation unit, for example, have been designed to fulfil these two tasks, ventilation and temperature regulation, separately but need to recover heat.

The KaCompact feeds filtered outside air into the building and removes exhaust air out of the building, like a conventional centralised ventilation unit. In addition, a rotation heat exchanger transfers heat from the exhaust air to the outside air/supply air and recovers a large proportion of the thermal energy that would otherwise be lost.

It deliberately avoids the need for the equipment needed with large centralised ventilation units, like chillers, heaters and long lengths of ductwork. The temperature of the air is not adjusted (heating/cooling) in the ventilation unit, but rather outside in the Ultra unit.

One of the major benefits of this separation is that the ventilation unit only needs to be operated with the required exchange of air. Only ultra-efficient Ultra units are operated at times when only heating or cooling is needed.

The energy-saving principle of the separation of functions is known as the **“Hybrid ECO system”** at Kampmann and has been used by many customers over many years.

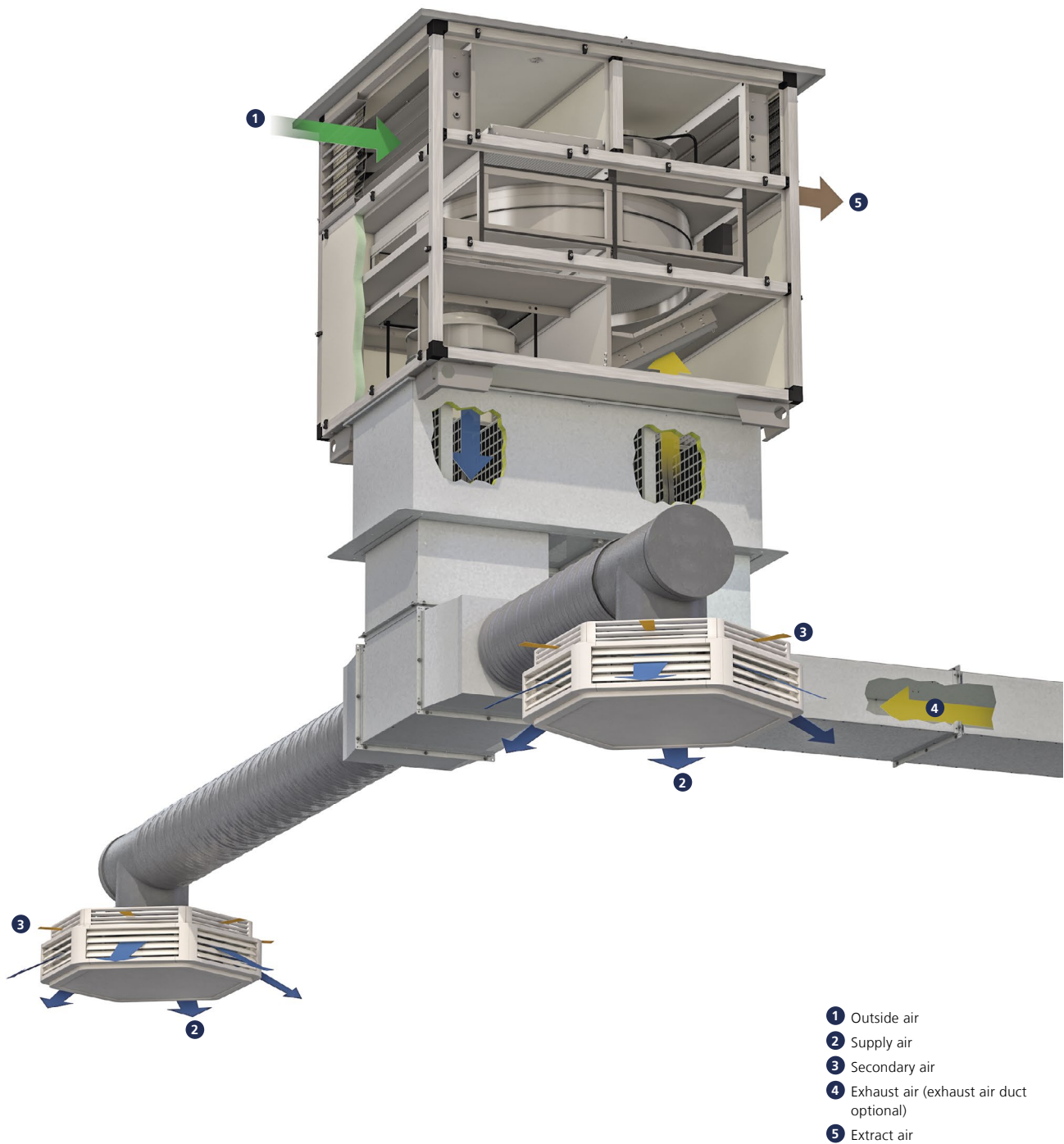
The air handling units are extremely important in this system and are designated as “fresh air units” if they meet the following criteria:

- ▶ heat recovery by means of a rotation heat exchanger or counterflow plate heat exchanger
- ▶ energy-saving continuously variable EC fans for precise adjustment of the air volume
- ▶ KaControl outside air control panel for control of air handling units and Ultra units

Possible air handling units for combination with Ultra units include:

- ▶ Airblock FG
- ▶ Airblock KG
- ▶ KaCompact

Suggested combination: Two Ultra units with KaCompact air handling unit



04 ▶ Controls



Speed controller/stage switch for 230 V EC, 230 V AC and 400 V AC motors

Kampmann offers an extensive range of control accessories for each required function:

Model with EC motors

- ▶ manual continuously variable speed controller combined with thermostat
- ▶ EC thermostats for direct operation of one or two units
- ▶ speed controllers continuously variable, with automatic fan mode, for energy-efficient operation, individually or in groups, with extensive control functions

Motor protection:

All EC Ultra have built-in motor monitoring, which switches off the motor in the event of motor overloading. This fault can also be externally evaluated, depending on the model.*
The entire group or individual units will be shut down in the event of a motor fault, depending on the control solution.

* External fault alert evaluation only available with models 96**33 and 96**34

Model with AC motors

- ▶ 2-stage, 5-stage/7-stage speed controllers
- ▶ continuously variable speed control; for maximum efficiency
- ▶ thermostats and temperature controls; optionally with timer program
- ▶ valves + valve actuators
- ▶ repair switch

Motor protection

Thermal contacts (temperature monitors) are embedded in the motor windings, which open when the maximum winding temperature of 155 °C is exceeded.

Thermal contacts meet the conditions for protecting against overloading of equipment with electric motor drive VDE 0730. Commercial motor protection switch or bi-metal trips are not suitable as motor protection with multi-stage operated motors.

With group circuits

- ▶ Thermal contacts are connected in series. This configuration secures as many motors as needed by the motor protection device.
- ▶ Total power for the connected units should not exceed the maximum rating of the switch. In the event of a fault (e.g. 2-phase, mechanical obstruction, bearing failure), ensure that the units cannot automatically restart. All Kampmann speed controls are fitted with a switch-on lock in the event of a fault.
- ▶ Switched on again by turning the stage switch to zero.
- ▶ Automatic restart after power failure with switches connected to a room thermostat.

Control accessories for EC recirculating air *00

Brief description of speed controller, Type 30510

Continuously variable speed controller for combination with a thermostat for room temperature-dependent two-point control of heating or cooling units in closed rooms. The fan speed is set manually on the speed controller at between 0 and 100%. The thermostats activate the ventilation units at the pre-set speed depending on the temperature. It is possible to automatically switch between day and night mode using solutions with timer programs (30056; 30076).

Brief description of room thermostat, Type 30155

The control for EC recirculating air 30155 permits the operation and temperature control of heating/cooling recirculating air units in 2- or 4-pipe mode. The room temperature can be set on a rotary dial. The temperature is controlled by means of a fan and valve. In principle, the ventilation unit is switched on and off depending on the temperature, and at the same time the valve is open/closed. The fan can be operated manually at 3 stages or continuously variable in automatic mode. The control is also equipped with a frost protection function.

Brief description of clock thermostat, Type 30256

The control for EC recirculating air 30256 enables the operation and temperature control of heating/cooling recirculating air units in 2- or 4-pipe mode. The room temperature can be set using the functional keys. The temperature is controlled by means of a fan and valve. In principle, the ventilation unit is switched on and off depending on the temperature, and at the same time the valve is open/closed. The fan can be controlled at 10 stages, both in automatic mode as well as in manual mode. The control is also equipped with an automatic summer/winter changeover and a frost protection function. The built-in timer program also allows day or week programs to be set.

Brief description of speed controller, Type 30515

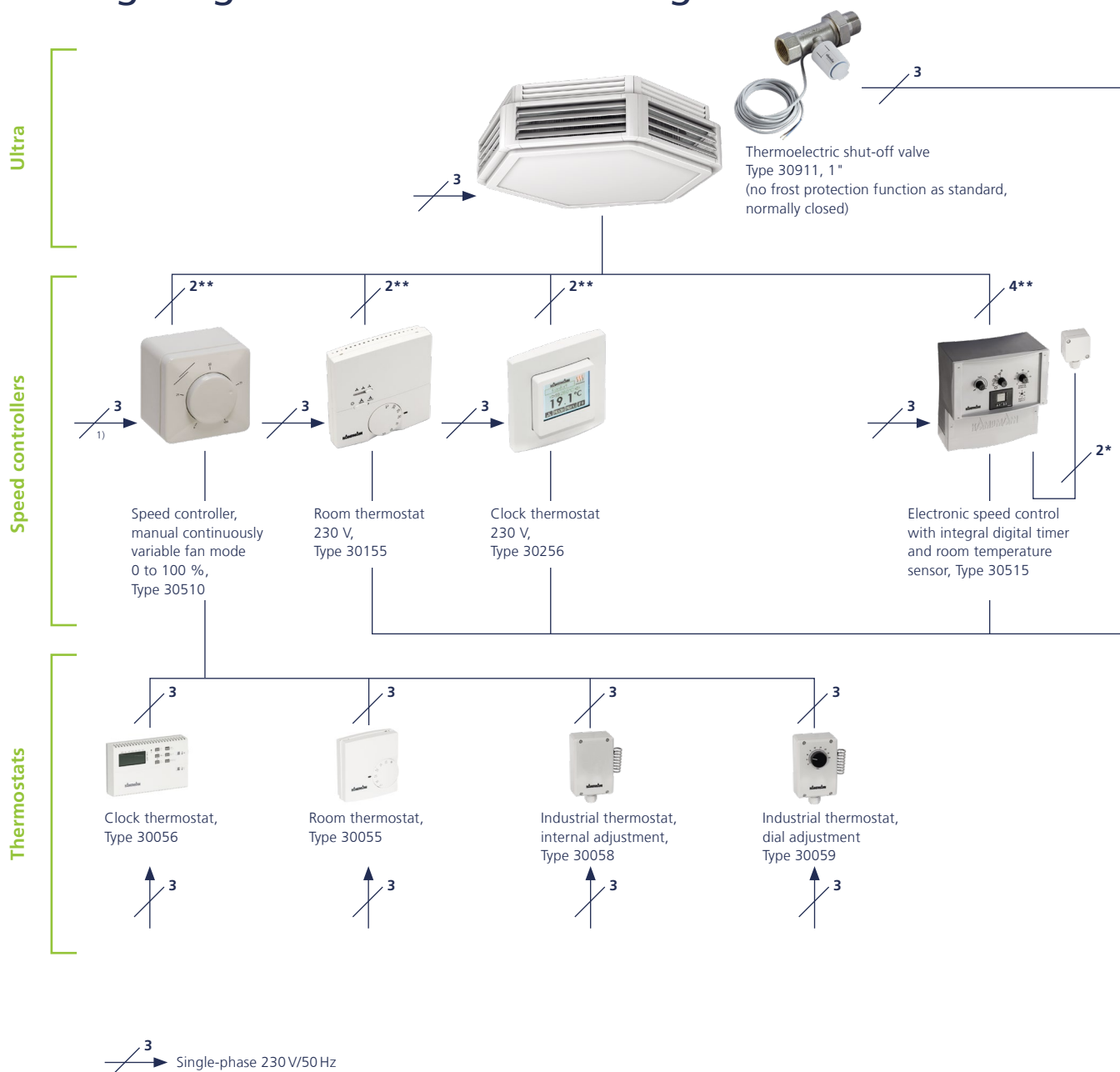
The continuously variable electronic compact controller is designed for the operation of up to 10 recirculating air units (2-pipe heating/cooling) with EC fans, to heat and cool rooms. The controller has a temperature control, which works with a fan and shut-off valve. The temperature setpoint for day and night mode can be set. A digital timer including day, night and week program is also included. The enclosed room sensor is installed separately. Optionally, a mean value can be formed using 2 or 4 room sensors. Apart from continuously variable speed control, the fan speed can also be manually adjusted. Otherwise the control has a frost protection function, a room cool-down prevention function, an external enable switch and a potential-free operating and collective fault alert. If required, the fan can be used in continuous mode, in heating or cooling mode or for pure air circulation without heating or cooling mode.

230 V EC motor

Maximum number of connectible Ultra with EC fan per speed control

Speed control			
Type 30510	Type 30155	Type 30256	Type 30515
[Quantity]	[Quantity]	[Quantity]	[Quantity]
10	2	2	10

Wiring diagram for EC recirculating air *00



¹⁾ When operating without a thermostat.

^{*)} Lay shielded cables (e.g. J-Y(ST)Y, 0.8 mm), max. 100 m, separately from high-voltage cables!

^{**)} Lay shielded cables (e.g. J-Y(ST)Y, 0.8 mm), separately from high-voltage cables. Max. 100 m, 20 m cable length, shield on the side of the ventilation unit (PE).

KaControl – The all-inclusive solution for 230 V AC and EC motors

Ultra units configured for operation with KaControl are supplied wired and factory-fitted with all electrical parts ready for connection (with the exception of optional accessories). A high-performance parametrised microprocessor is designed to carry out all necessary functions. Each Ultra is thus equipped with its own “intelligence” and can be operated in groups via Kampmann-T-LAN or CAN bus networks.

Building automation system

Ultra units with KaControl can be equipped with plug-in communication interfaces for linking into higher-order control systems. Each basic unit can also be linked into a technical building management system.

Available interfaces:

- KNX
- Modbus
- Can bus
- LON
- BACnet IP (Ethernet)

Electrical wiring

All electrical cables are connected to the Ultra. In most cases, this is merely a mains cable and bus/communication cables. As a result, the installation costs can be kept to a minimum.

Commissioning

Every Ultra unit with KaControl is supplied factory-fitted with a basic program and wired ready for operation with factory presettings for all control parameters. If required, the parameters can be accessed via the operating unit (KaController) on site and changed as needed.

Control functions of KaControl for Ultra

The parametrisable KaControl offers a wide range of functions:

- ▶ 5-speed fan control and infinitely variable automatic function
- ▶ automatic adjustment of the fan speed depending on the room temperature
- ▶ valve control for 2-pipe applications (heating/cooling) for thermoelectric actuators Open/Close 24 V DC
- ▶ integrated timer program for programming day and week switching functions in the KaController unit

KaController – Type 3214002**KaController – Type 3210002****KaController operating unit**

The "face" of the KaControl building automation system: the KaController operating unit.

The KaController provides maximum convenience with its large display and one-touch operation. With the basic principle, "as little as possible, as much as required", even untrained users can intuitively get to grips with the control options.

The basic functions for comfortable interior temperatures are set in a user-friendly way using the KaController.

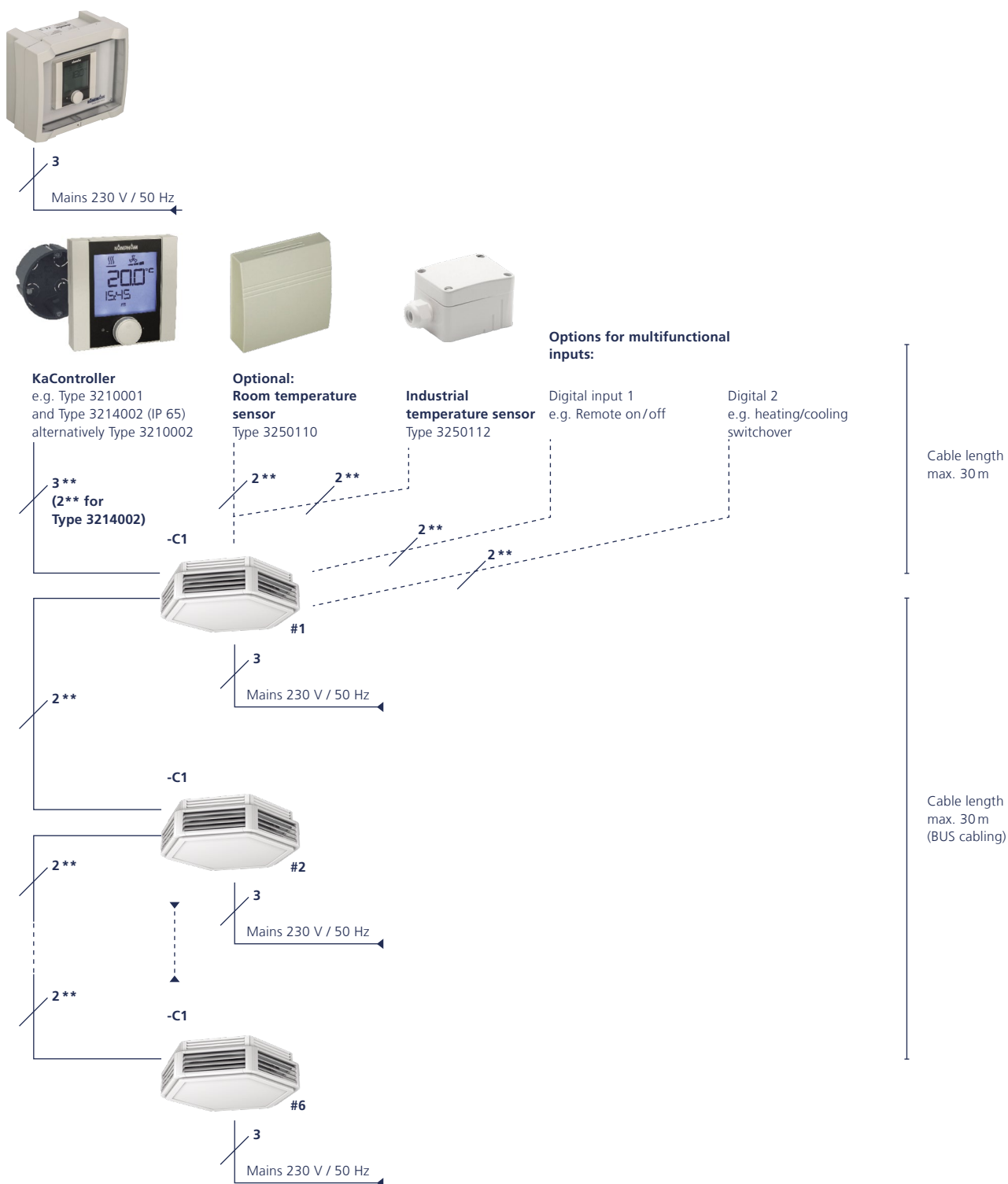
Product features

- ▶ high-quality designed wall-mounted room operating units
- ▶ plastic housing, colour similar to RAL 9010
- ▶ large LCD multifunctional display with energy-saving, automatic LED background lighting
- ▶ integral temperature sensor
- Caution!** The model in an industrial housing always needs a separate room temperature sensor
- ▶ press/push navigator dial with endless turn/lock function, individually adjustable basic display
- ▶ built-in weekly switching program
- ▶ password-protected parameter level
- ▶ side function keys for quick access (only with type 3210002)

Turn: Simplest room temperature setting method**Press:** Fan stage setting

Single-circuit control

Configuration for up to six Ultra-C1

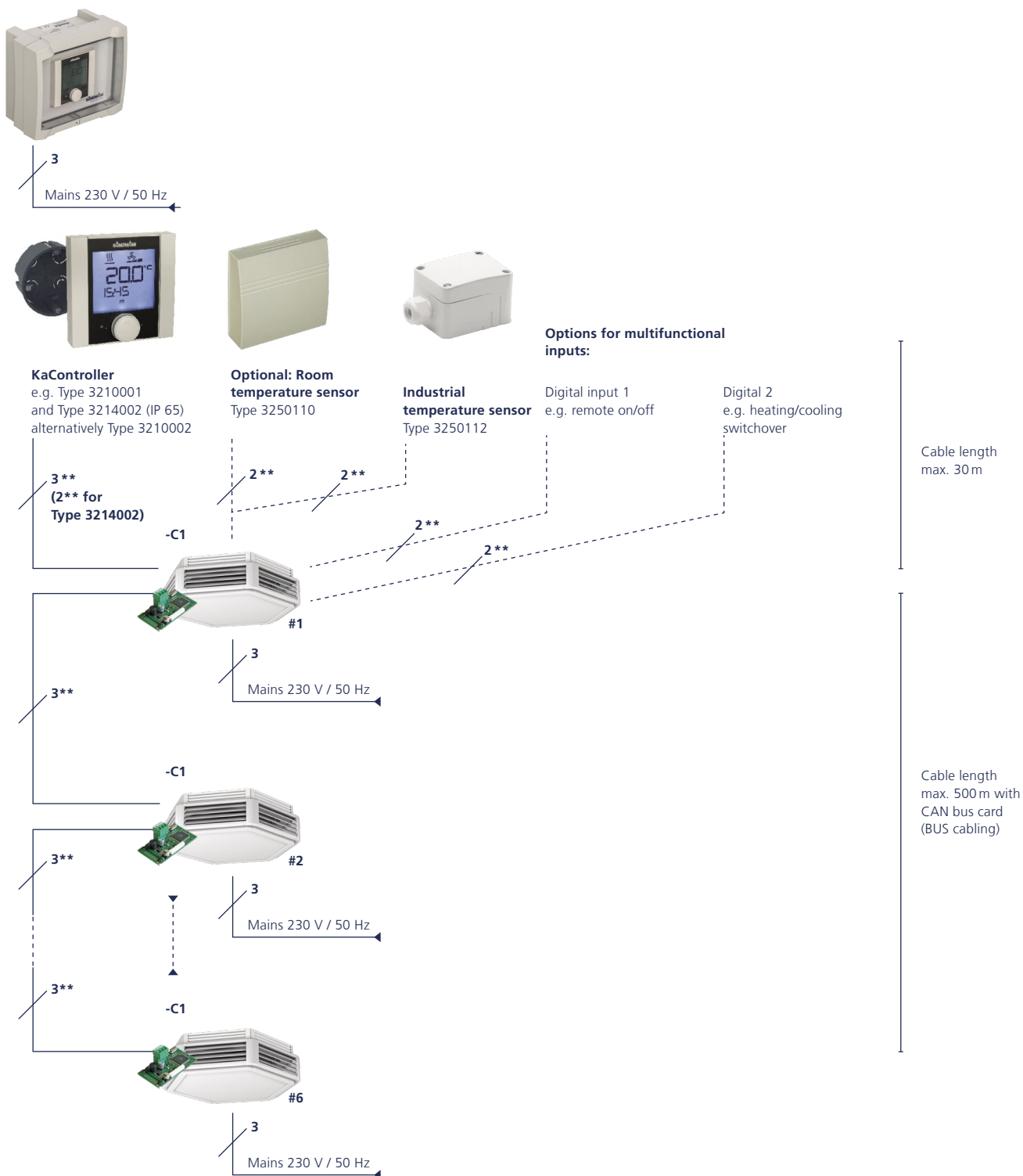


** Only use CAT5 (AWG 23 or similar) cable connections.

Important: Wire all BUS connections in a linear manner – star-shaped cabling is not permitted

Single-circuit control

Configuration for more than six Ultra-C1

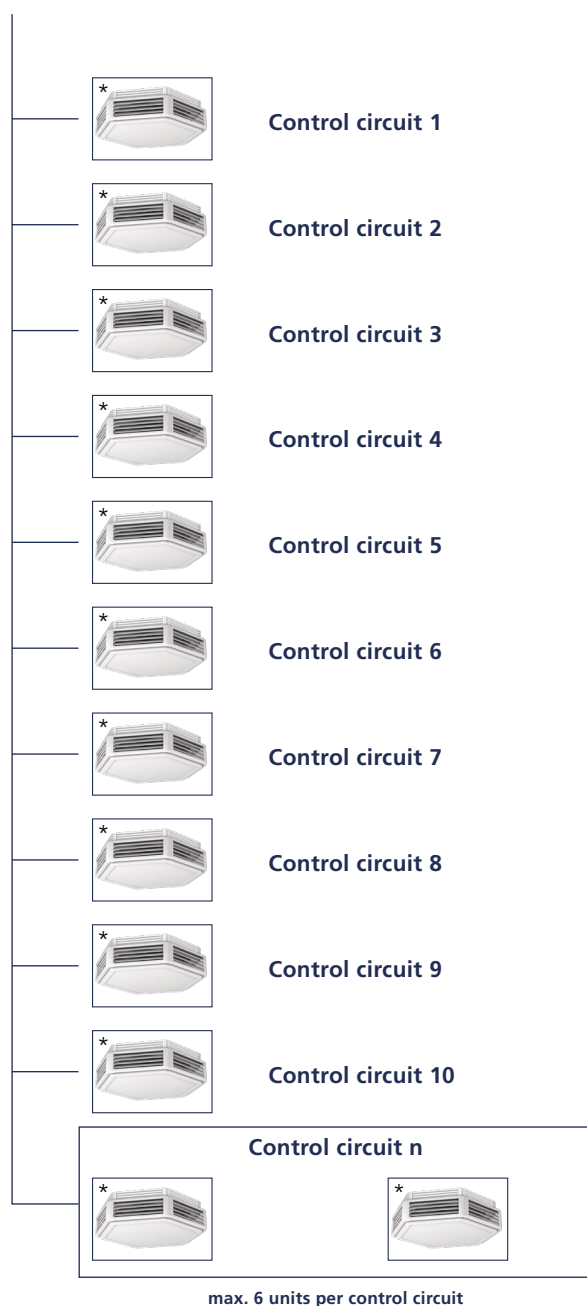


** Only use CAT5 (AWG 23 or similar) cable connections.

Important: Wire all BUS connections in a linear manner – star-shaped cabling is not permitted!

Modbus

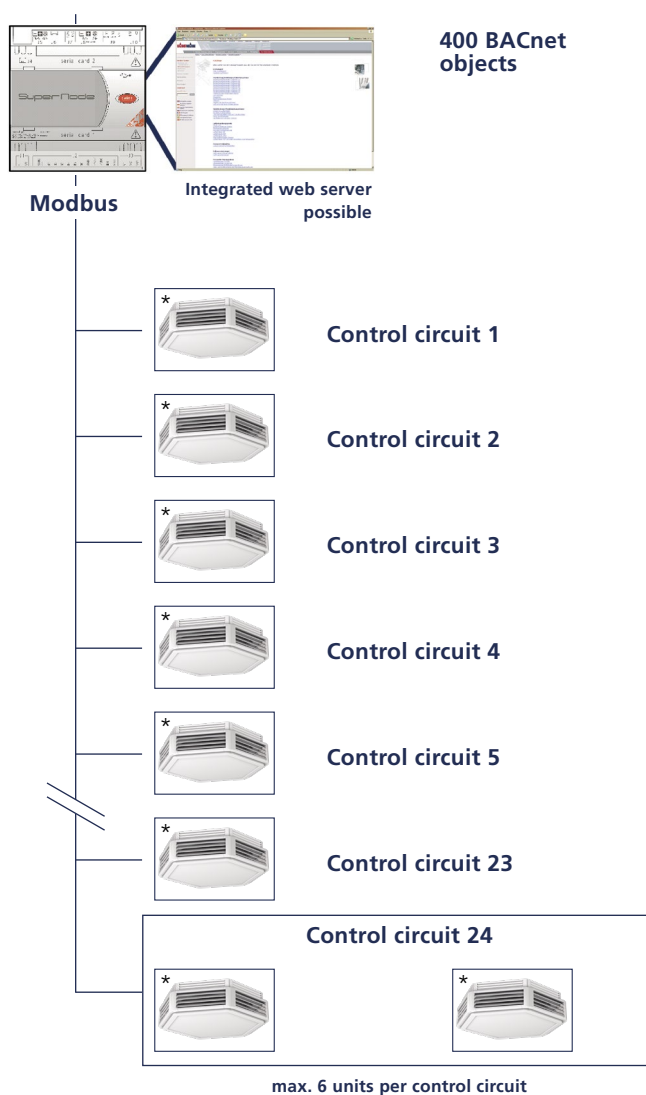
RS485



* RS485 Modbus interface card

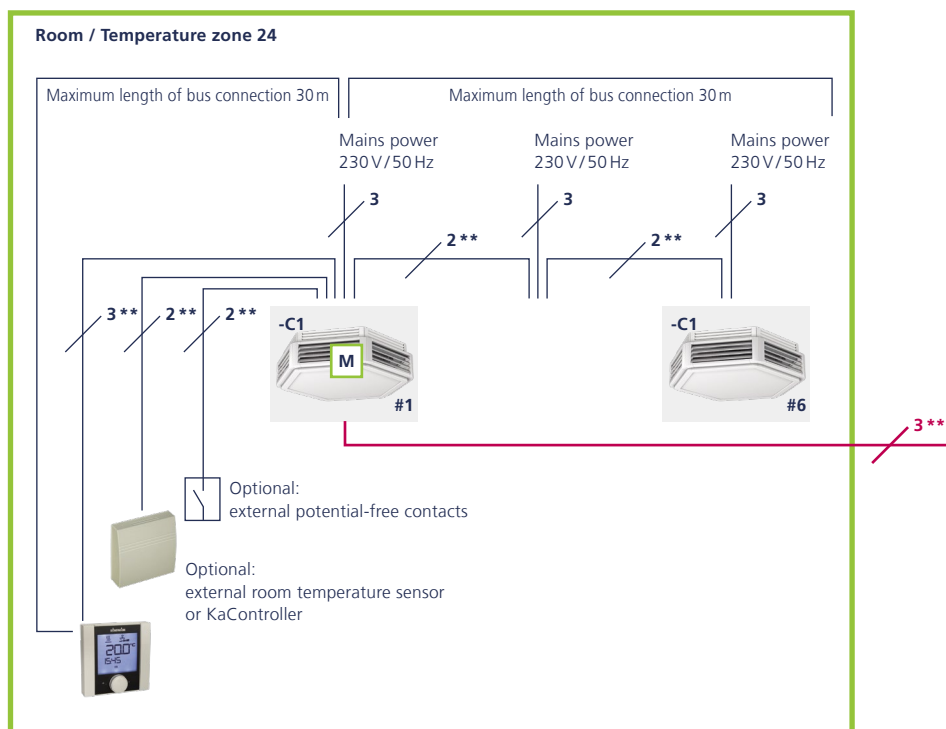
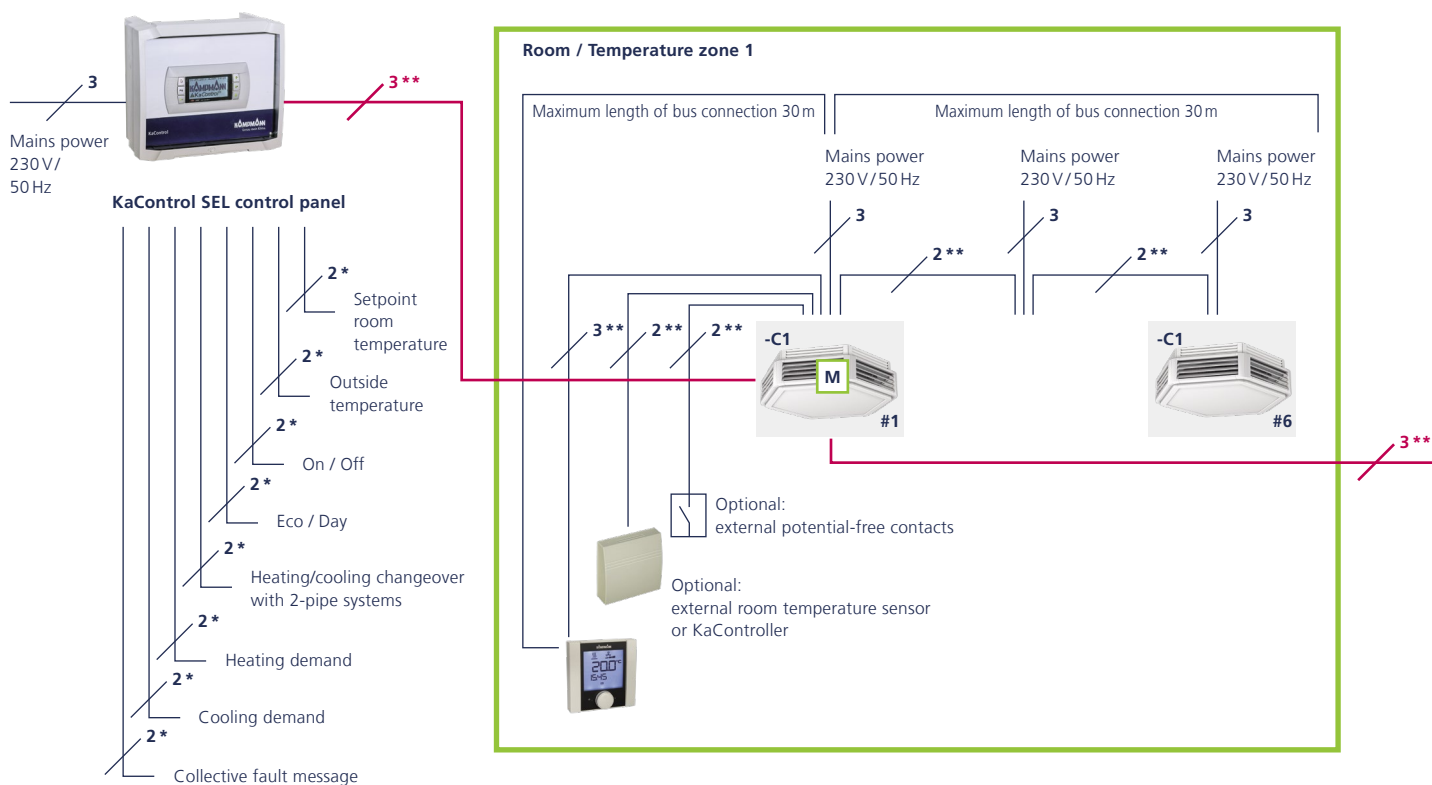
BACnet IP

RS485



* RS485 Modbus interface card

KaControl system controller



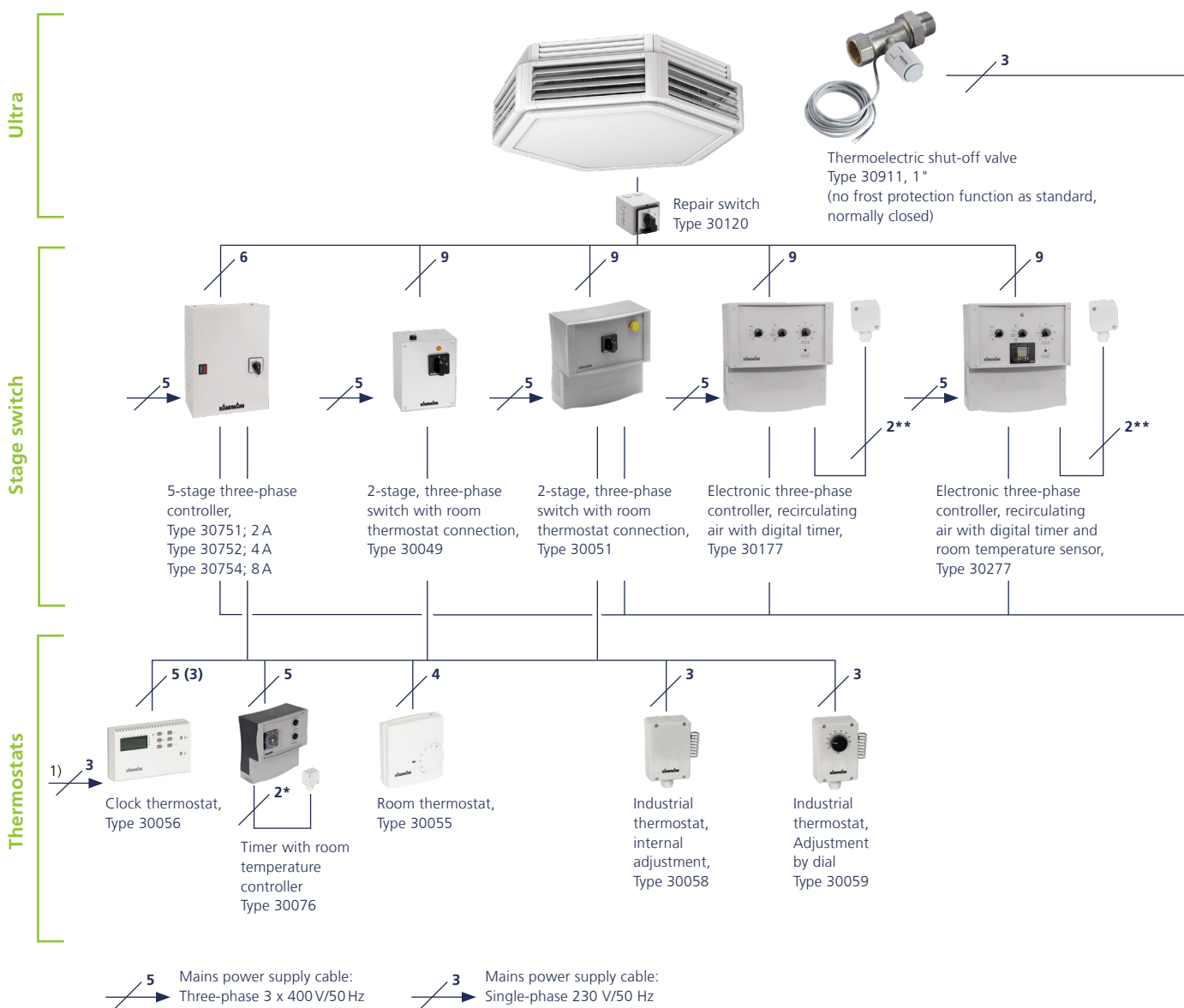
M Modbus card

The number of wires including fuse is given for each individual control unit.

2-stage three-phase motor

Maximum connectible unit heaters per switch

Ultra with 2-stage, three-phase motor	Switch					
	30751	30752	30754	2-stage, three-phase switch with room thermostat connection, Type 30049/30051	Electronic 2-stage, three-phase controller, recirculating air, Type 30177	Electronic 2-stage, three-phase controller, recirculating air with digital timer, Type 30277
[Series]	[Quantity]	[Quantity]	[Quantity]	[Quantity]		
73	20	30	30	30		
84	10	20	30	30		
85	7	14	28	28		
96	2	5	10	10		



() When operating with 2-stage three-phase switch type 30049

¹⁾ When operating with 2-stage three-phase switch type 30049

^{*)} Sensor connection cable 1.5 mm² e.g. J-Y(ST)Y, 4 x 2 x 0.8 mm, max. 100 m, lay separately from high-voltage cables!

^{**)} Shielded cable (e.g. J-Y(ST)Y, 0.8 mm), max. 100 m, lay separately from high-voltage cables!

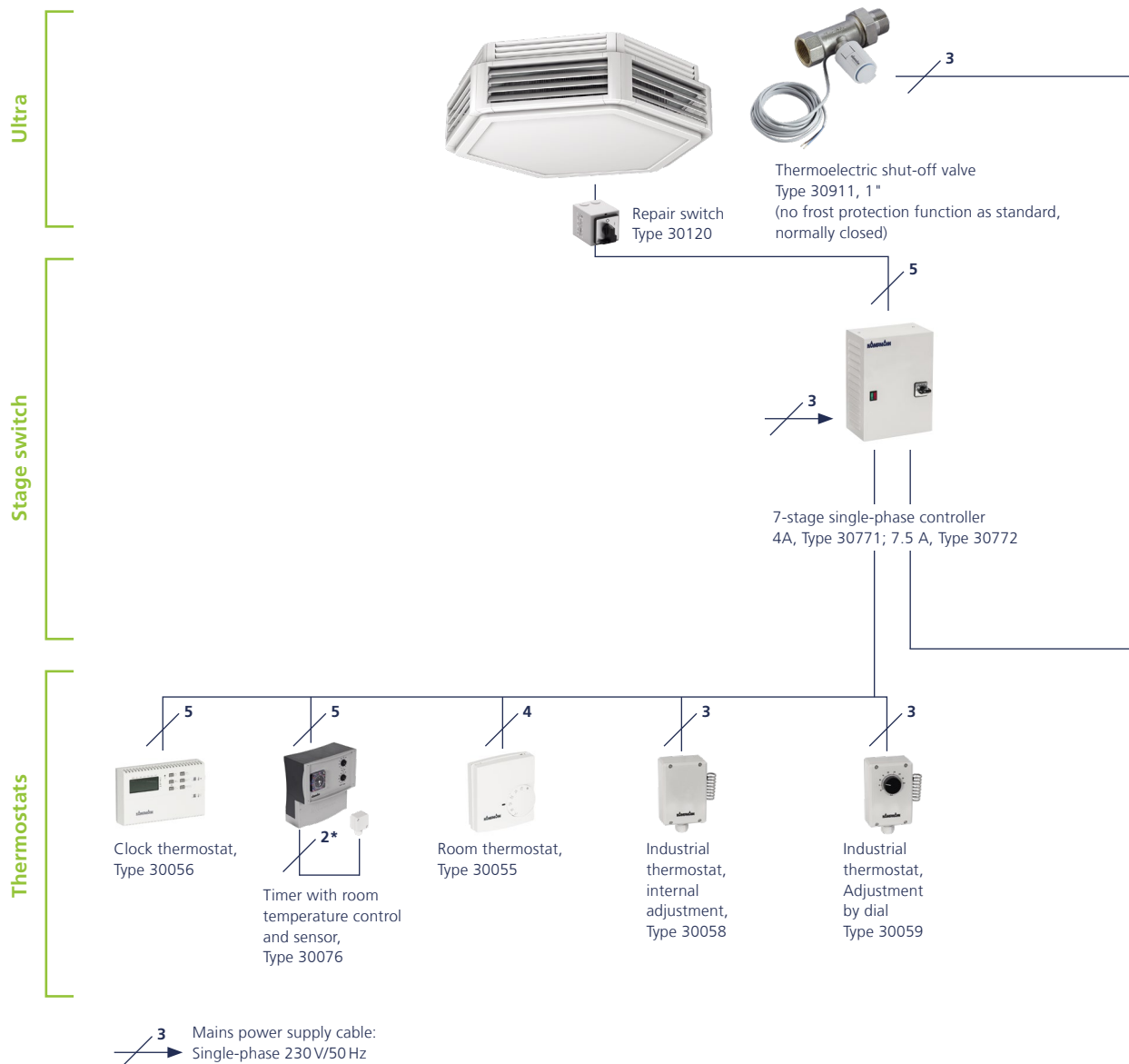
The number of connecting wires required including fuses is given on the individual control units.

Electrical supply: Observe the technical connection requirements laid down by utility companies!

1-stage single-phase motor

Maximum connectible unit heaters per switch

Ultra heater with 1-stage single-phase motor	7-stage 3-phase control with room thermostat connection	
	Type 30771	Type 30772
[Series]	[Quantity]	[Quantity]
73	16	30
84	9	17
85	7	14
96	2	4



*) Sensor connection cable 1.5 mm² e.g. J-Y(ST)Y, 4 x 2 x 0.8 mm, max. 100 m, lay separately from high-voltage cables!

**) Shielded cable (e.g. J-Y(ST)Y, 0.8 mm), max. 100 m, lay separately from high-voltage cables!

***) Shielded motor cable from a length of 2.5 m!

The number of connecting wires required including fuses is given on the individual control units.

Electrical supply: Observe the technical connection requirements laid down by utility companies!

05 ▶ Ordering information

Ultra

Series	Motor	Heat output ¹⁾	Cooling output ²⁾	Air volume	Max. mounting height	Control option	Art. no.
		[kW]		[m³/h]	[m]		
Heating and cooling							
7320	2-stage three-phase	7.4–9.0	---	890–1180	2.3–2.4	electro-mechanical	154000732036
	1-stage single-phase	9.0	---	1180	2.4		154000732016
7330	2-stage three-phase	9.4–11.5	---	880–1150	2.3–2.4	electro-mechanical	154000733036
	1-stage single-phase	11.5	---	1150	2.4		154000733016
8420	2-stage three-phase	10.9–12.2	---	1410–1650	2.6–2.8	electro-mechanical	154000842036
	1-stage single-phase	12.2	---	1650	2.8	electro-mechanical	154000842016
	EC	5–13.3	---	490–1880	2.3–3.0	electro-mechanical	154000842033
						KaControl	154000842033C1
8430	2-stage three-phase	14.0–15.8	---	1350–1580	2.5–2.8	electro-mechanical	154000843036
	1-stage single-phase	15.8	---	1580	2.8	electro-mechanical	154000843016
	EC	6.1–17.5	---	470–1820	2.3–2.9	electro-mechanical	154000843033
						KaControl	154000843033C1
8520	2-stage three-phase	15.4–19.0	---	2080–2860	3.0–3.4	electro-mechanical	154000852036
	1-stage single-phase	19.0	---	2860	3.4	electro-mechanical	154000852016
	EC	7.6–19.4	---	760–2950	2.4–3.4	electro-mechanical	154000852033
						KaControl	154000852033C1
8530	2-stage three-phase	20.0–25.1	---	1990–2750	3.0–3.3	electro-mechanical	154000853036
	1-stage single-phase	25.1	---	2750	3.3	electro-mechanical	154000853016
	EC	9.3–25.6	---	730–2830	2.4–3.4	electro-mechanical	154000853033
						KaControl	154000853033C1
8540	2-stage three-phase	22.6–29.0	---	1850–2560	3.0–3.2	electro-mechanical	154000854036
	1-stage single-phase	29.0	---	2560	3.2	electro-mechanical	154000854016
	EC	10.0–29.6	---	680–2630	2.4–3.3	electro-mechanical	154000854033
						KaControl	154000854033C1
9620	2-stage three-phase	23.1–29.8	---	3410–5130	3.5–3.9	electro-mechanical	154000962036
	1-stage single-phase	29.8	---	5130	3.9	electro-mechanical	154000962016
	EC	9.6–31.3	---	950–5580	2.8–4.2	electro-mechanical	154000962033
						KaControl	154000962033C1
		6.4–24.9	---	560–3830	2.7–3.7	electro-mechanical	154000962034
						KaControl	154000962034C1
9630	2-stage three-phase	30.4–40.0	---	3270–4920	3.4–3.9	electro-mechanical	154000963036
	1-stage single-phase	40.0	---	4920	3.9	electro-mechanical	154000963016
	EC	11.5–41.8	---	900–5260	2.8–4.1	electro-mechanical	154000963033
						KaControl	154000963033C1
		7.4–32.6	---	530–3610	2.7–3.6	electro-mechanical	154000963034
						KaControl	154000963034C1

¹⁾ With LPHW 75 / 65 °C, t_{L1} = 20 °C.

²⁾ With CHW 7/12 °C, t_{L1} = 27 °C, 48% relative humidity.

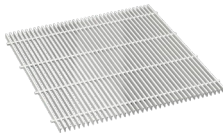


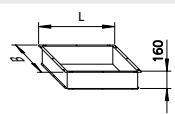
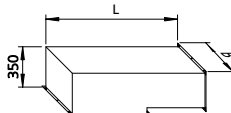
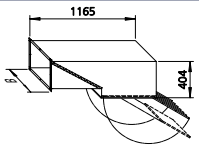

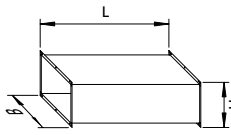
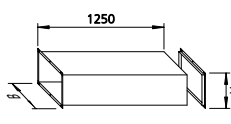
Series	Motor	Heat output ¹⁾	Cooling output ²⁾	Air volume	Max. mounting height	Control option	Art. no.
		[kW]		[m ³ /h]	[m]		
Heating or cooling							
9640	2-stage three-phase	33.6–45.2	---	2960–4460	3.3–3.9	electro-mechanical	154000964036
	1-stage single-phase	45.2	---	4460	3.9	electro-mechanical	154000964016
	EC	11.1–47.4	---	760–4470	2.8–4.0	electro-mechanical	154000964033
						KaControl	154000964033C1
		7.8–35.9	---	510–3240	2.6–3.5	electro-mechanical	154000964034
						KaControl	154000964034C1
8431	2-stage three-phase	14.0–15.8	5.6–6.2	1350–1580	2.5–2.8	electro-mechanical	154000843136
	1-stage single-phase	15.8	6.2	1580	2.8	electro-mechanical	154000843116
	EC	6.1–17.5	2.6–6.7	470–1820	2.3–2.9	electro-mechanical	154000843133
						KaControl	154000843133C1
8531	2-stage three-phase	20.0–25.1	7.7–9.4	1990–2750	3.0–3.3	electro-mechanical	154000853136
	1-stage single-phase	25.1	9.4	2750	3.3	electro-mechanical	154000853116
	EC	9.3–25.6	3.9–9.5	730–2830	2.3–3.4	electro-mechanical	154000853133
						KaControl	154000853133C1
8541	2-stage three-phase	20.0–25.1	7.7–9.4	1600–2250	3.0–3.2	electro-mechanical	154000854136
	1-stage single-phase	25.1	9.4	2250	3.3	electro-mechanical	154000854116
	EC	8.6–31.2	3.9–12.6	530–2320	2.3–3.1	electro-mechanical	154000854133
						KaControl	154000854133C1
9631	2-stage three-phase	30.4–40.0	5.7–7.6 ³⁾	3270–4920	3.4–3.9	electro-mechanical	154000963136
	1-stage single-phase	40.0	7.6 ³⁾	4920	3.9	electro-mechanical	154000963116
	EC	41.8	2.2–8.0 ³⁾	900–5260	2.8–4.1	electro-mechanical	154000963133
						KaControl	154000963133C1
		7.4–32.6	3.2–12.1	530–3610	2.7–3.6	electro-mechanical	154000963134
						KaControl	154000963134C1
9641	2-stage three-phase	30.4–47.1	6.5–9.0 ³⁾	2520–3980	3.0–3.8	electro-mechanical	154000964136
	1-stage single-phase	47.1	9.0 ³⁾	3980	3.8	electro-mechanical	154000964116
	EC	9.0–49.5	1.7–9.5 ³⁾	560–4260	2.7–3.8	electro-mechanical	154000964133
						KaControl	154000964133C1
		5.3–36.6	1.0–7.0 ³⁾	320–2840	2.7–3.4	electro-mechanical	154000964134
						KaControl	154000964134C1

¹⁾ With LPHW 75 / 65 °C, t_{L1} = 20 °C.

²⁾ With CHW 7/12 °C, t_{L1} = 27 °C, 48% relative humidity.

³⁾ Unit series 9631** operated at high fan speed, only suitable for dry cooling, note figures at CHW 16/18 °C.

Accessories

Figure	Article	Properties	Suitable for	Art. no.			
Recirculating air accessories							
	Air intake grille, square	permits concealed air intake from the suspended ceiling, provide a minimum of one grille per unit		198000060988			
	Filter hood, recirculating air	for direct fitting to the air intake with recirculating air models without the need for a duct, filter ISO Coarse 45 % fixed directly to the upper side of the fan motor guard when the Ultra is installed visibly or in the suspended ceiling	Fan characteristic size 3	198000073050			
			Fan characteristic size 4	198000084050			
			Fan characteristic size 5	198000085050			
			Fan characteristic size 6	198000096050			
	Replacement filter hood	for recirculating filter hood, filter class ISO Coarse 45 %	suitable for 198000073050 Fan characteristic size 3	198000073051			
			suitable for 198000084050 Fan characteristic size 4	198000084051			
			suitable for 198000085050 Fan characteristic size 5	198000085051			
			suitable for 198000096050 Fan characteristic size 6	198000096051			
Components for installation in acoustic grid suspended ceilings 625 x 625 mm							
			L mm	B mm	H mm		
	Connecting frame, square	for transition to continuing duct system	600	600	160	Fan characteristic size 5	198000065002
			700	700	160	Fan characteristic size 6	198000066002
	Reducing bend 90° extended	flat bend acting as transition from square to rectangular components, both sides with duct connection profiles	1145	600	350	Fan characteristic size 5	198000065104
			1195	700	350	Fan characteristic size 6	198000066104
	90° air intake bend with intake grille	for air intake with acoustic grid ceilings, with mounting for filter insert, aluminium intake grille RAL 90160	1165	600	404	Fan characteristic size 5	198000060105
			1165	700	404	Fan characteristic size 6	
	Filter insert	with ISO Coarse 45 % filter	fits air intake bend 198000060105			198000060126	
	Air duct, rectangular	with duct connection profiles on both sides (minimum calculation length 0.5 m)	Please specify when ordering	600	350	Fan characteristic size 5	198000065030
				700	350	Fan characteristic size 6	198000066030
	Air duct element, rectangular	with loose duct connection profile on one side, can be used to extend and adjust length	1250	600	350	Fan characteristic size 5	198000065130
				700	350	Fan characteristic size 6	198000066130


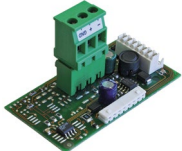




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Figure	Article	Properties	Suitable for			Art. no.
			L mm	B mm	H mm	
	Flexible connection, rectangular	with duct connection profiles on both sides and flexible canvas connection for structure-borne noise decoupling and length compensation	120 – 160	600	350	Fan characteristic size 5 198000065034
				700	350	Fan characteristic size 6 198000066034
Stage switch for speed control AC						
	7-stage single-phase controller	4 A, Type 30771 Protection class IP20 Dimensions W x H x D: 260 x 340 x 150 mm	Motor code 31			196000030771
		7.5 A, Type 30772 Protection class IP20 Dimensions W x H x D: 260 x 340 x 150 mm				196000030772
	2-stage three-phase switch 4 KW/10 A	Type 30049 without connection option for valve actuator, Protection class IP43 Dimensions W x H x D: 127 x 160 x 100 mm	Motor code 36			196000030049
		Type 30051 with connection option for valve actuator Degree of protection IP54 Dimensions W x H x D: 262 x 277 x 153 mm				196000030051
	5-stage three-phase controller	2 A, Type 30751 Protection class IP20 Dimensions W x H x D: 260 x 340 x 150 mm	Motor code 36			196000030751
		4 A, Type 30752 Protection class IP20 Dimensions W x H x D: 260 x 340 x 150 mm				196000030752
		8 A, Type 30754 Protection class IP20 Dimensions W x H x D: 330 x 380 x 170 mm				196000030754
Compact controls for speed control with integral room temperature control AC						
	Electronic 2-stage, 3-phase controller 4 KW / 10 A	Type 30277 With integral digital timer with day, night, week programme, room temperature control and room temperature sensor in a separate housing with protection class IP40 Dimensions W x H x D: 262 x 277 x 153 mm	Motor code 36			196000030277
		Type 30177 With room temperature sensor in a separate housing in protection class IP40, day/night switch-over via external potential-free contact (e.g. timer), protection class IP40 Dimensions W x H x D: 262 x 277 x 153 mm				196000030177

more »

Figure	Article	Properties	Suitable for	Art. no.
KaControl recirculation air controller				
	KaController with single-button operation	Type 3210001 Room control unit with large LCD multifunctional display and single-button operation, only for control option -C1 Housing: wall-mounted (surface-mounted) Housing colour: white, similar to RAL 9010 Voltage: 24 V DC Temperature adjustment range max.: 8 °C – 35 °C Protection class: IP30, Display dimensions H x W: 48 x 51 mm, Housing dimensions H x W x D: 86 x 86 x 29 mm Wall installation height (+29 mm flush installation)	Control option C1	196003210001
	KaController operating unit with side operating keys	Type 3210002 For quick access to fan settings, operating modes, Eco mode, time and timer program, otherwise as type 3210001, only for control option -C1 Housing: wall-mounted (surface-mounted), Housing colour: white, similar to RAL 9010, Voltage: 24 V DC, Temperature adjustment range max.: 8 °C – 35 °C Protection class: IP30, Display dimensions H x W: 48 x 51 mm, Housing dimensions H x W x D: 86 x 86 x 29 mm Wall installation height (+29 mm flush installation)	Control option C1	196003210002
	KaController with side function keys IP65	Type 3214002 For quick access to fan settings, operating modes, Eco mode, time and timer program, otherwise as type 3210001, only for control option -C1 Housing: wall-mounted (surface-mounted) Housing: white, similar to RAL 9010 Voltage: 230 V AC Temperature adjustment range max.: 8 °C – 35 °C Protection class: IP65 Display dimensions H x W: 48 x 51 mm Housing dimensions H x W x D: 179 x 199 x 106.5 mm	Control option C1	196003214002
	Room temperature sensor	Type 3250110 Room temperature sensor can be used, if required, when the KaController cannot measure the temperature due to its location. Housing: wall-mounted, Housing colour: white, Protection class: IP30 Dimensions H x W x D: 84.5 x 84.5 x 25 mm	Control option C1	196003250110
	Industrial temperature sensor	Type 3250112 The industrial temperature sensor can be used, if required, when the KaController cannot measure the temperature due to its location. Housing: wall-mounted, Housing colour: white, Protection class: IP65, Dimensions H x W x D: 65 x 50 x 44.5 mm	Control option C1	196003250112
	Pipe clip-on sensor	Type 3250115 For decentralised heating/cooling switch-over with 2-pipe applications, includes strap, cable length 3 m	Control option C1	196003250115
	Thermoelectric shut-off valve	Type 30931 As an angled valve body, double nipple and thermoelectric actuator Connection: 1" Operating voltage: 24 V AC/DC Power consumption: approx. 3W Cable length: approx. 3 m	Control option C1	196000030931

more »

Figure	Article	Properties	Suitable for	Art. no.
	CAN bus card	Type 3260301 For increasing the number of units in a single-circuit system to a maximum of 30 units, 1 required per Ultra unit	Control option C1	196003260301
	Serial Modbus card	Type 3260101 For connection to BMS and automation units	Control option C1	196003260101
EC control accessories without KaControl				
	Continuously variable speed controller	Type 30510 Continuously variable speed controller (0-10 V/5 mA) for up to 10 units. Continuously variable range can be pre-set. On/off via room thermostat fitted in mains supply line. Operating voltage: 230 V / 50-60 Hz Protection class: IP 54 Dimensions W x H x D: 82 x 82 x 68 mm	Motor code 33 + 34	196000030510
	Continuously variable electronic compact control unit	Type 30515 Electronic speed controller, recirculating air, 2-pipe heating/cooling with digital timer, operating mode selection switch, speed controller, speed control limiter, room- temperature-dependent speed control, external room temperature sensor, Ultra frost protection function, re-start lock after motor fault, automatic switch-on after power failure. max. current for Ultra and valve actuators: 4 A Temperature setting range: 5-35 °C Speed signal: 0-10 VDC/10 mA Operating voltage: 230 V/50 Hz Max. power consumption: 5 A Protection class: IP40 Dimensions W x H x D: 262 x 277 x 153 mm	Motor code 33 + 34	196000030515
	Temperature sensor	housing made of impact-resistant plastic, grey, wall-mounted, sensor type NTC 10K, protection class IP54, Dimensions W x H x D: 50 x 50 x 35 mm	Control unit Type 30515	196001035642
	EC climate controller	Type 30155 Heating/cooling climate controller 2 / 4-pipe systems. Operating modes AUTO / MAN / OFF. Fan speed can be set using 3-stage switch (parametrisable). Room frost protection function, internal temperature sensor, DIP switch for function selection. Plastic housing, pure white, similar to RAL 9010, surface-mounted Three inputs for: external flow sensor (47 kOhm) / heating/cooling changeover contact, external room temperature sensor (47 kOhm), ECO/Day or On/Off changeover Three outputs for: speed (0-10 V DC/5 mA), fan actuators (230 V AC/5(1) A) Control range: 5-30 °C Operating voltage: 230 V AC/50 Hz/<2 VA Protection class IP30 Dimensions W x H x D: 110 x 111 x 26 mm	Motor code 33 + 34	196000030155

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Figure	Article	Properties	Suitable for	Art. no.
	EC climate controller with clock	<p>Type 30256</p> <p>Climate controller for heating / cooling systems in 2-/4-pipe configuration with timer program.</p> <p>Summer/winter time changeover, mode switch (with room frost protection monitoring), manual 10-stage speed switch. Flush-mounted, pure white, similar to RAL 9010.</p> <p>Two inputs for: external dewpoint sensor, external flow sensor, external room temperature sensor, heating/cooling, ECO/Day or On/Off changeover</p> <p>Analogue output: 0-10 V/5 mA</p> <p>2 switching contacts per 230 V/3 (0.5) A</p> <p>Control range: 5-30 °C heating and 18...40 °C cooling</p> <p>Power reserve: approx. 3 days</p> <p>Operating voltage: 230 V/50 Hz/<2.2 VA</p> <p>Protection class: IP 30</p> <p>Dimensions W x H x D: 81 x 85 x 18 mm (wall installation height, +29 mm flush installation)</p>	Motor code 33 + 34	196000030256
Thermostats AC/EC				
	Clock thermostat	<p>Type 30056</p> <p>Attractive combined clock/room thermostat with electronic 2-point room temperature control</p> <p>2-pipe heating cooling and digital weekly timer, 4 hours of power reserve, party circuit, switching status display and Auto / Day / Night / Off operating mode switch.</p> <p>Temperature adjustment range 5 - 40 °C.</p> <p>Night setback or increase of 2 - 10 K</p> <p>Adjustable switching differential</p> <p>Switch capacity 230 V AC, 50 Hz, 10 (4) A</p> <p>Housing: plastic, white, surface-mounted</p> <p>Protection class: IP20</p> <p>Dimensions W x H x D: 132 x 82 x 32 mm</p>	All series	196000030056
	Industrial thermostat with setpoint adjustment by tool	<p>Housing made of impact-resistant plastic, setpoint adjustment only after removal of the housing cover using a screwdriver.</p> <p>Protection class: IP54,</p> <p>Temperature setting range: 0 – 40 °C</p> <p>Switching capacity: 250 V AC, 50 Hz</p> <p>Heating: 16 (4) A</p> <p>Cooling: 8 (4) A</p>	All series	196000030058
	Industrial thermostat with dial-operated setpoint adjustment	<p>Housing made of impact-resistant plastic, setpoint adjustment using dial.</p> <p>Protection class: IP54</p> <p>Temperature setting range: 0 – 40 °C</p> <p>Switch capacity 250 V AC, 50 Hz</p> <p>Heating: 16 (4) A</p> <p>Cooling 8 (4) A</p>	All series	196000030059
	Room thermostat with thermal feedback	<p>In a flat housing, white, with thermal setback</p> <p>Temperature setting range: 5–30 °C,</p> <p>Range restriction is possible.</p> <p>Protection class: IP30</p> <p>Switching capacity: 250 V AC, 50 Hz, 10 (4) A</p> <p>Dimensions (W x H x D): 74 x 74 x 27 mm</p>	All series	196000030055
Timers				
	Timer with electronic room temperature control and room temperature sensor	<p>Type 30076</p> <p>Electronic 2-point controller for the remote adjustment of the room temperature centrally</p> <p>with two separately settable setpoint potentiometers for day and night room temperature</p> <p>Timer with 100 hours of power reserve, day, night, week programme, with pins</p> <p>with room temperature sensors in a separate housing</p> <p>Housing: polystyrene, wall-mounted</p> <p>Temperature setting range: 0 - 40 °C</p> <p>Switching capacity: 230 V; 8 (3) A</p> <p>Degree of protection timer: IP20; sensor: IP54</p> <p>Dimensions of timer W x H x D: 262 x 277 x 153 mm</p> <p>Dimensions of sensor W x H x D: 50 x 50 x 30 mm</p>	All series	196000030076

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Figure	Article	Properties	Suitable for	Art. no.
Repair switch				
	Repair switch	Type 30160 For EC motors, supplied loose; enables individual Ultra units in a switching group to be decommissioned by voltage disconnection. The fault signal contacts are bridged in advance, and subsequently opened on the motor side so that the other ProtecTor door air curtains in the group can continue to operate without interruption. Degree of protection IP55; max. switching current 25 A	Motor code 33 and 34	196000030160
	Repair switch	Type 30120 For 1-stage single-phase or 2-stage three-phase motors, supplied loose; enables individual heaters in a switching group to be decommissioned by voltage disconnection. The thermal contacts are bridged in advance, and subsequently opened on the motor side so that the other Ultra units in the group can continue to operate without interruption. Degree of protection IP55; max. switching current 25 A	Motor code 31 and 36	196000030120
Other accessories				
	Outlet temperature limit valve	Type 30966 Angle valve body with thermostatic head and remote sensor with capillary tube to regulate the outlet air temperature with a constant value. The fixing material to fit the sensor in the air flow is provided. Connection: 1" Temperature setting range: 20-50 °C Capillary tube length: 2.0 m	All series	196000030966
	Thermoelectric shut-off valve	Type 30911 For use as an angled valve body, double nipple and thermoelectric actuator Connection: 1" Operating voltage: 230 V~/50 Hz Power consumption: approx. 3 W Connecting cable length approx. 3 m	All series	196000030911

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