



► **TOP**  
Unit Heaters

# TOP

Wall and Ceiling Unit Heaters

► **Technical Catalogue**



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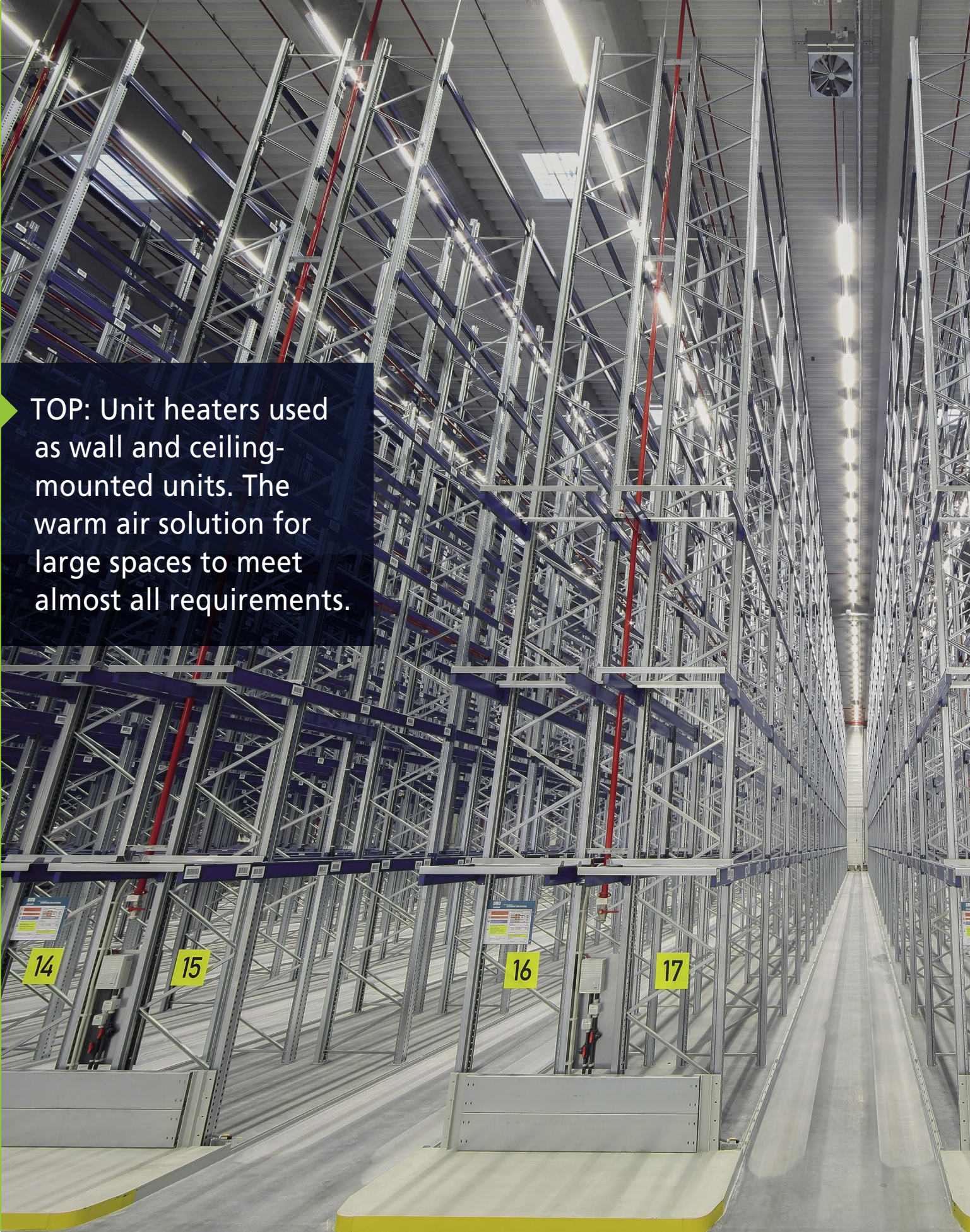
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TOP: Unit heaters used as wall and ceiling-mounted units. The warm air solution for large spaces to meet almost all requirements.

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TOP unit heaters for a good indoor climate in high-rack warehouses and in the loading area, Spedition Metzger, Neu-Kupfer, Germany.



# 01 ▶ Product Information

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## TOP – Temperature-adjusted air. As much as you need.

TOP unit heaters – “TOP” in terms of price and performance – largely meet the demand for economical and controllable air handling. TOP unit heaters are all-purpose units that can be installed on the wall or ceiling.

A comprehensive range of accessories for the modular system enable it to be adapted to technical requirements, as well as to different applications and room conditions. The visually attractive self-supporting housing is sendzimir galvanised and can be powder coated on request.

For optimum decentralised heating and ventilation of

- ▶ production halls,
- ▶ warehouses,
- ▶ industrial or commercial workshops,
- ▶ sports halls,
- ▶ showrooms,
- ▶ greenhouses,
- ▶ buildings with connection to district heating systems or with high temperature differences (barracks, etc.),
- ▶ premises at risk from explosion,
- ▶ buildings with steam heating systems.

With a housing made of sendzimir galvanised sheet steel with brackets fitted as standard, TOP unit heaters are ideal for wall-mounting as well as ceiling-mounting. Standard equipment also includes single-row louvre and motor guard.

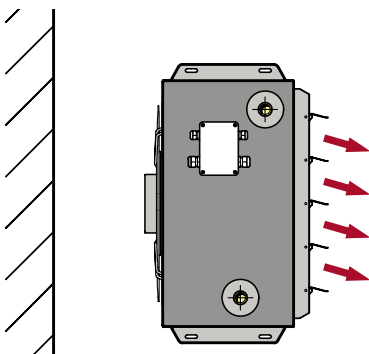
### Operating principle

Air is drawn in through the sickle-blade silently-operating fan and is blown through the heat exchanger into the room. The models with large heat exchanger capacity are ideal for use with low water temperatures.

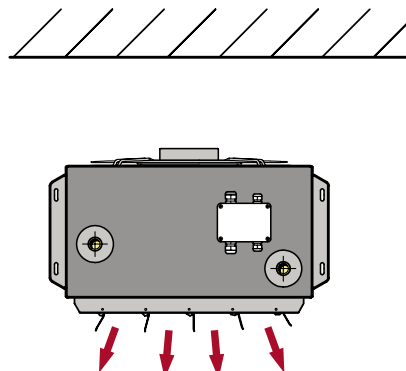
### Air guidance

TOP unit heaters are supplied as standard with single-row louvre. The air can optionally be discharged through a double-row louvre or other air diffuser, which are available as accessories.

**Heating example, wall-mounted**



**Heating example, ceiling-mounted**



# Product Data



## Product Features

- ▶ extensive accessories available
- ▶ range of heat exchangers available: copper/aluminium, galvanised steel or cross-counterflow
- ▶ low-noise sickle-shaped fan and optimised full nozzle
- ▶ the copper/aluminium heat exchanger version with 2-stage three-phase motor is available at short notice
- ▶ can be used with the Kampmann Hybrid-Eco system



## Features

- ▶ continuously variable EC motor, 2-stage three-phase or 1-stage single-phase motor (Ex-e protected version on request)
- ▶ different air outlets are available
- ▶ primary air version is available
- ▶ unit and casing can both be powder coated in any RAL colour
- ▶ extensive range of control accessories

### Heating

### Installation

### Air flow

### Heat exchanger

### KaControl

- ▶ LPHW (steam on request)
- ▶ wall- or ceiling-mounted
- ▶ recirculating air, mixed air or primary air
- ▶ copper/aluminium, galvanised steel or cross-counterflow
- ▶ optional

## Performance data

### Heat output <sup>1)</sup> [kW]

- ▶ 4,1–77,2

### Operating limits

- ▶ max. operating pressure: 16 bar
- ▶ max. entering water temperature: 120 °C
- ▶ max. entering air temperature: 40 °C
- ▶ models for higher operating conditions available on request

## Applications

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



Warehouses  
and logistics  
buildings



Sports halls



Retail  
chains



Commercial  
and industrial  
buildings

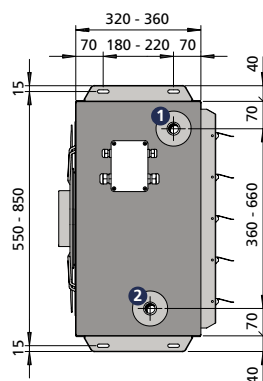
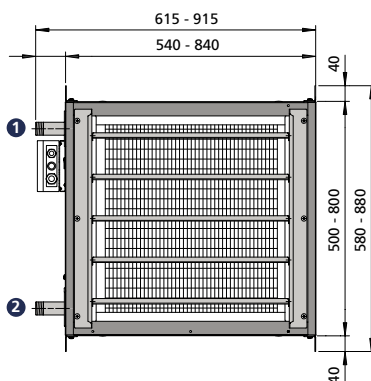
<sup>1)</sup> at LPHW 75/65,  $t_{l1} = 20\text{ °C}$



## Selection Guide: Overview of models

Model	Heat exchanger	Heat exchanger code	Motor design	Motor code	Heat output	Air volume	More information
					Q [kW]	V [m³/h]	
<b>44</b>	Copper/aluminium	20 + 30 + 40	EC, 230V	33 + 34	5,1 – 20,3 <sup>1)</sup>	410 – 2820	► Page 14
			AC, 400V	36	11,1 – 18,0 <sup>1)</sup>	1480 – 2360	► Page 50
			AC, 230V	31	12,5 – 18,0 <sup>1)</sup>	1890 – 2360	► Page 50
	Galvanised steel	21 + 31 + 41	EC, 230V	33 + 34	4,1 – 19,1 <sup>1)</sup>	410 – 2820	► Page 26
			AC, 400V	36	10,0 – 16,8 <sup>1)</sup>	1480 – 2360	► Page 54
			AC, 230V	31	11,7 – 16,8 <sup>1)</sup>	1890 – 2360	► Page 54
	Galvanised steel, cross-flow	33 + 43	EC, 230V	33 + 34	3,8 – 13,5 <sup>2)</sup>	410 – 2820	► Page 38
			AC, 400V	36	9,6 – 11,9 <sup>2)</sup>	1480 – 2360	► Page 58
			AC, 230V	31	10,7 – 11,9 <sup>2)</sup>	1890 – 2360	► Page 58
<b>45</b>	Copper/aluminium	20 + 30 + 40	EC, 230V	33 + 34	7,1 – 32,4 <sup>1)</sup>	620 – 4390	► Page 18
			AC, 400V	36	17,7 – 30,9 <sup>1)</sup>	2700 – 4140	► Page 50
			AC, 230V	31	19,8 – 30,9 <sup>1)</sup>	3430 – 4140	► Page 50
	Galvanised steel	21 + 31 + 41	EC, 230V	33 + 34	6,0 – 31,5 <sup>1)</sup>	620 – 4390	► Page 30
			AC, 400V	36	16,9 – 29,8 <sup>1)</sup>	2700 – 4140	► Page 54
			AC, 230V	31	19,6 – 29,8 <sup>1)</sup>	3430 – 4140	► Page 54
	Galvanised steel, cross-flow	33 + 43	EC, 230V	33 + 34	5,8 – 21,4 <sup>2)</sup>	620 – 4390	► Page 42
			AC, 400V	36	17,1 – 20,3 <sup>2)</sup>	2700 – 4140	► Page 58
			AC, 230V	31	19,0 – 20,3 <sup>2)</sup>	3430 – 4140	► Page 58
<b>46</b>	Copper/aluminium	20 + 30 + 40	EC, 230V	33	8,5 – 48,9 <sup>1)</sup>	600 – 6450	► Page 22
			AC, 400V	36	27,3 – 47,9 <sup>1)</sup>	3720 – 5680	► Page 52
			AC, 230V	31	30,9 – 47,9 <sup>1)</sup>	4750 – 5680	► Page 52
	Galvanised steel	21 + 31 + 41	EC, 230V	33	7,3 – 44,0 <sup>1)</sup>	600 – 6450	► Page 34
			AC, 400V	36	25,5 – 43,1 <sup>1)</sup>	3720 – 5680	► Page 56
			AC, 230V	31	30,0 – 43,1 <sup>1)</sup>	4750 – 5680	► Page 56
	Galvanised steel, cross-flow	33 + 43	EC, 230V	33	6,5 – 31,4 <sup>2)</sup>	600 – 6450	► Page 46
			AC, 400V	36	23,8 – 30,7 <sup>2)</sup>	3720 – 5680	► Page 60
			AC, 230V	31	26,8 – 30,7 <sup>2)</sup>	4750 – 5680	► Page 60
<b>47</b>	Copper/aluminium	20 + 30 + 40	EC, 230V	33	18,9 – 69,5 <sup>1)</sup>	1500 – 8390	► Page 24
			AC, 400V	36	43,4 – 77,2 <sup>1)</sup>	6150 – 8770	► Page 52
			AC, 230V	31	47,7 – 77,2 <sup>1)</sup>	7960 – 8770	► Page 52
	Galvanised steel	21 + 31 + 41	EC, 230V	33	17,4 – 63,6 <sup>1)</sup>	1500 – 8390	► Page 36
			AC, 400V	36	44,5 – 76,3 <sup>1)</sup>	6150 – 8770	► Page 56
			AC, 230V	31	50,4 – 76,3 <sup>1)</sup>	7960 – 8770	► Page 56
	Galvanised steel, cross-flow	33 + 43	EC, 230V	33	16,2 – 48,6 <sup>2)</sup>	1500 – 8390	► Page 48
			AC, 400V	36	42,7 – 54,6 <sup>2)</sup>	6150 – 8770	► Page 60
			AC, 230V	31	47,0 – 54,6 <sup>2)</sup>	7960 – 8770	► Page 60

### Dimensions

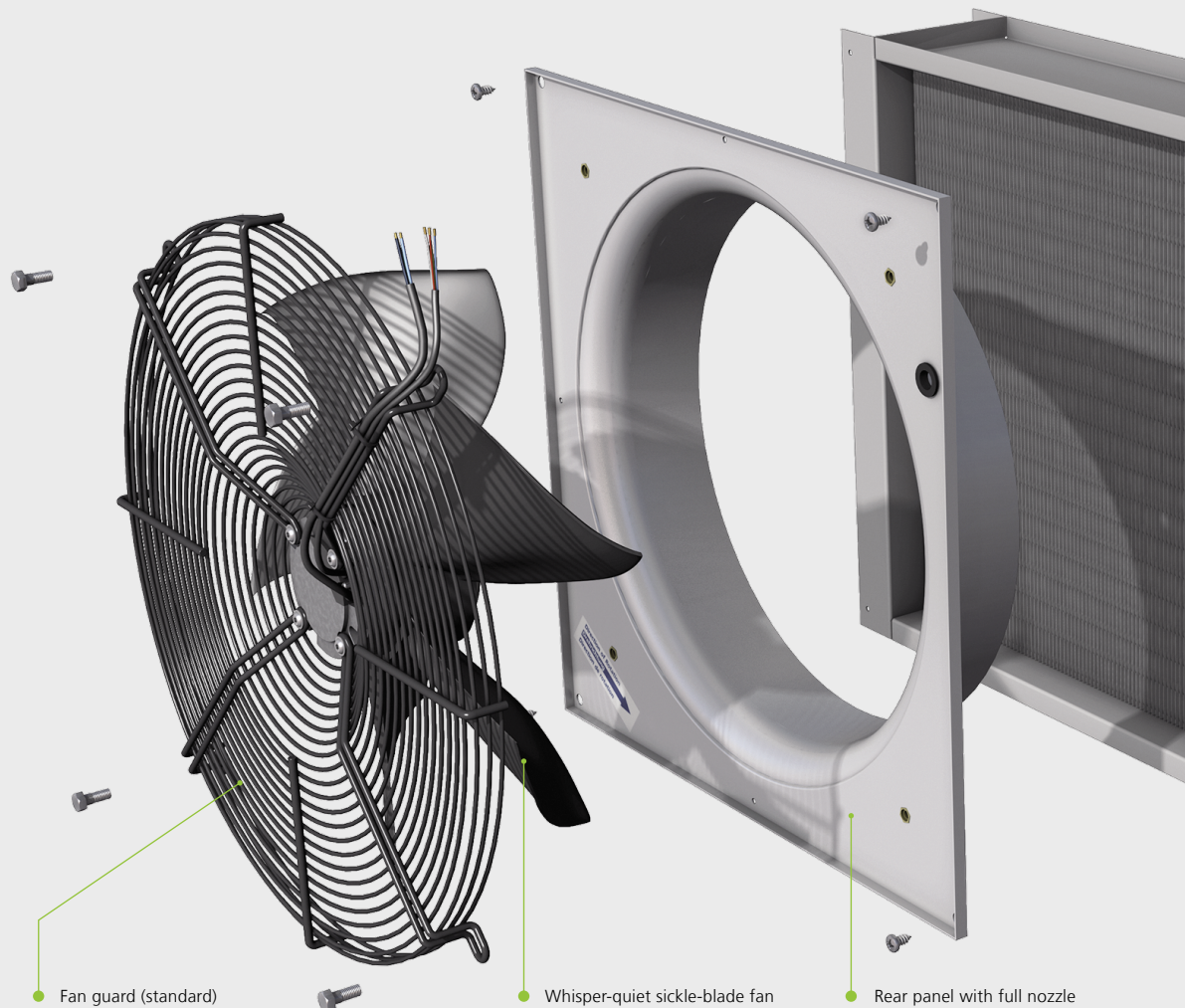


- 1 Hot water inlet  
2 Hot water outlet

<sup>1)</sup> at LPHW 75/65,  $t_{L1} = 20\text{ °C}$

<sup>2)</sup> at LPHW 80/40,  $t_{L1} = 20\text{ °C}$

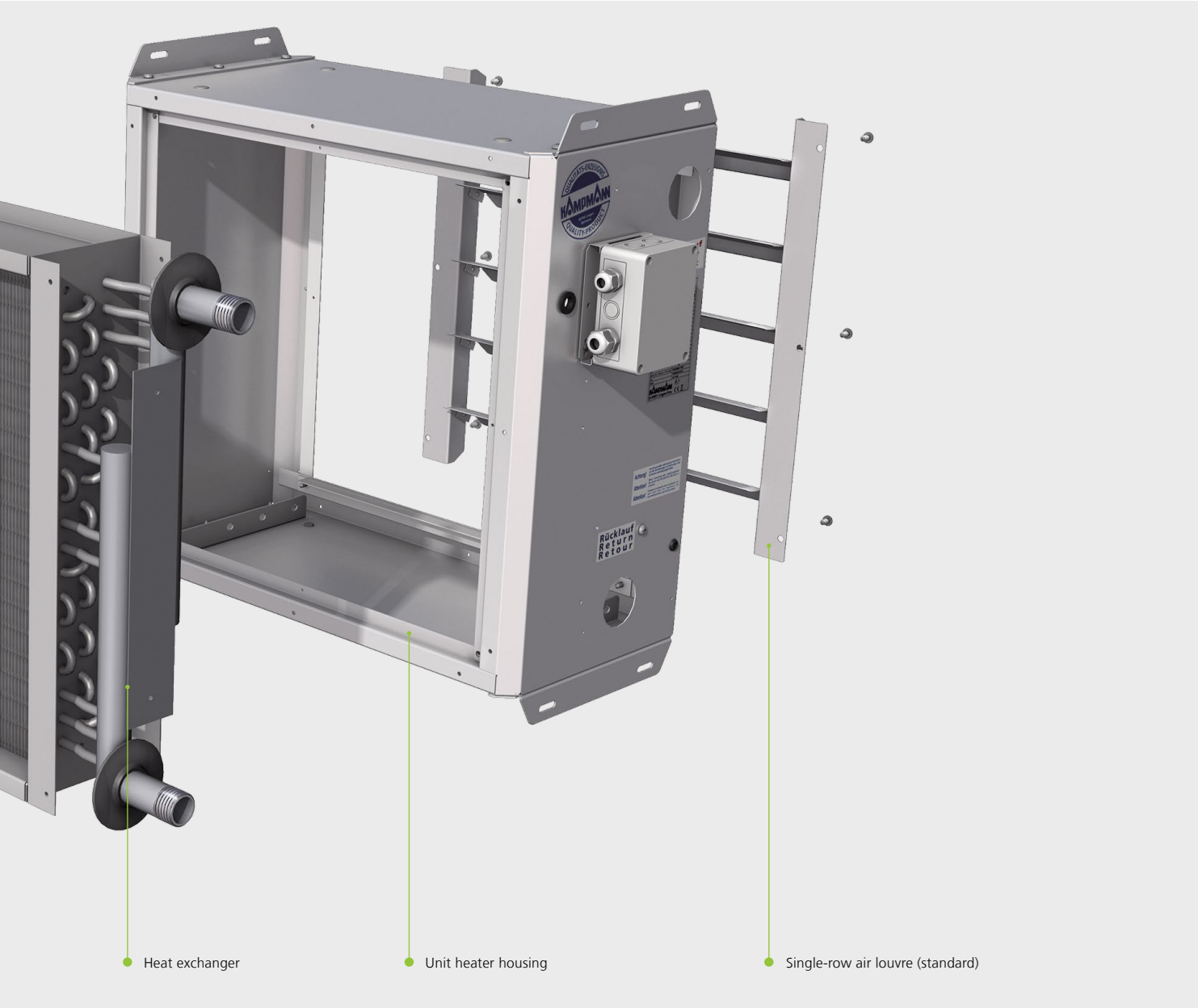
## TOP at a Glance



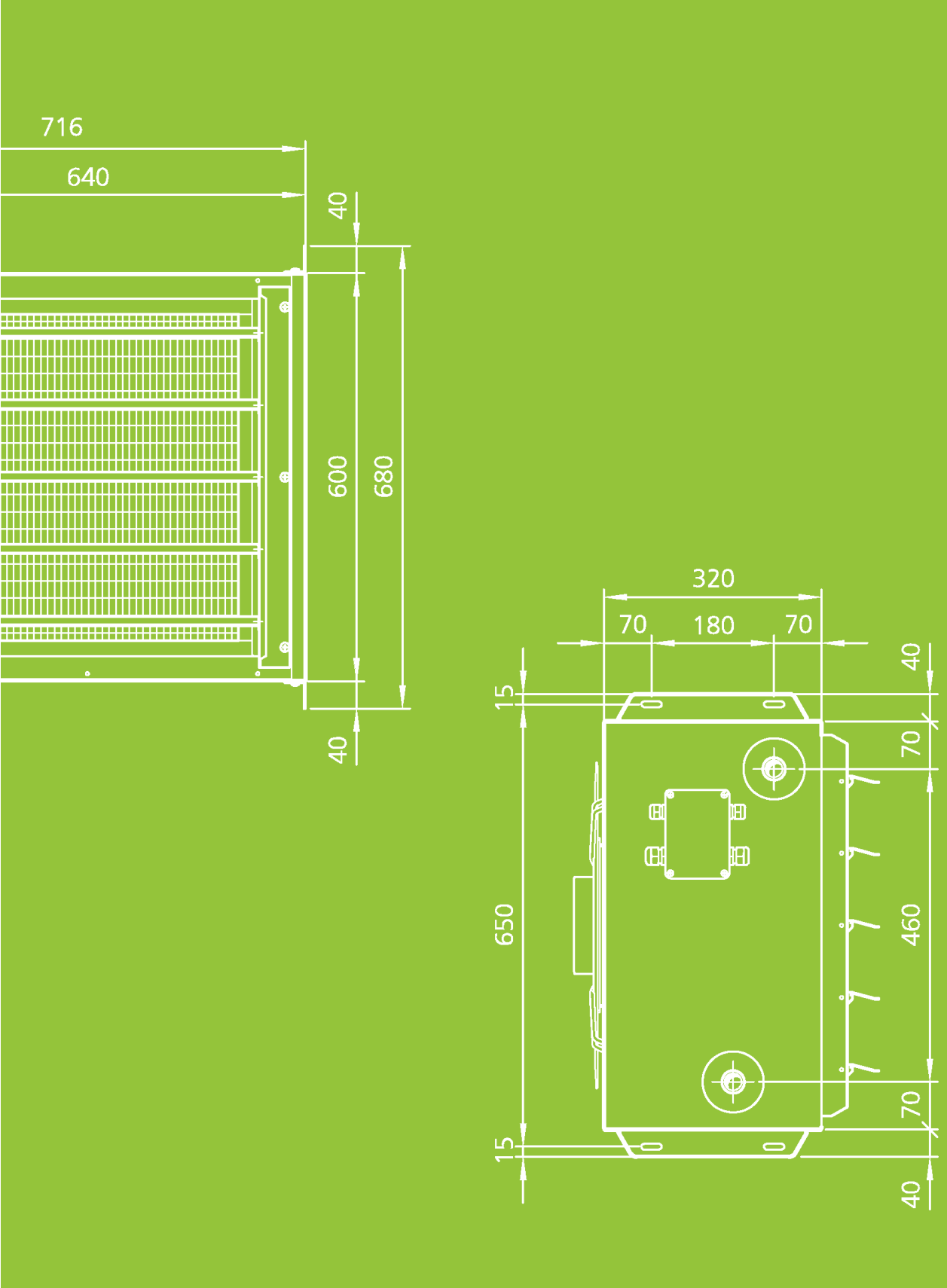
## Features

- 1 **Fan guard (standard):**
  - ▶ fitted as standard with whisper-quiet sickle-blade fan
- 2 **Whisper-quiet sickle-blade fan, in line with ErP 2015:**
  - ▶ continuously variable EC single-phase, 2-stage, three-phase or 1-stage, single-phase sickle-blade whisper-quiet fan
  - ▶ excellent efficiency through aerodynamic shape of rotor housing
  - ▶ electrical thermal class F
  - ▶ Motor protection: IP 54
  - ▶ balancing at 2 levels; balancing quality
- 3 **Rear panel with full nozzle:**
  - ▶ fan characteristic curve based on the unit design permits speed control by means of voltage reduction
  - ▶ external rotor motor integrated in the fan hub
  - ▶ complies with the requirements of the Directive (EU) 327/2011 ("LOT 11")
- 4 **Unit heater housing:**
  - ▶ self-supporting, made of galvanised sheet steel
  - ▶ brackets fitted as standard for wall or ceiling-mounting
  - ▶ resistant to damage
- 5 **Heat exchanger:**
  - ▶ shallow depth, suitable for simple attachment of discharge-side accessories
  - ▶ copper/aluminium heat exchanger, extremely lightweight, with high heat outputs from low dimensions
  - ▶ galvanised steel
  - ▶ galvanised steel, cross-flow
  - ▶ suitable for low water temperature heating systems and LPHW heating systems
  - ▶ steel distributor and collector
- 6 **Single-row louvre (as standard):**
  - ▶ for wall or ceiling-mounting
  - ▶ achieves excellent throw





# 02 ▶ Technical Data





## General

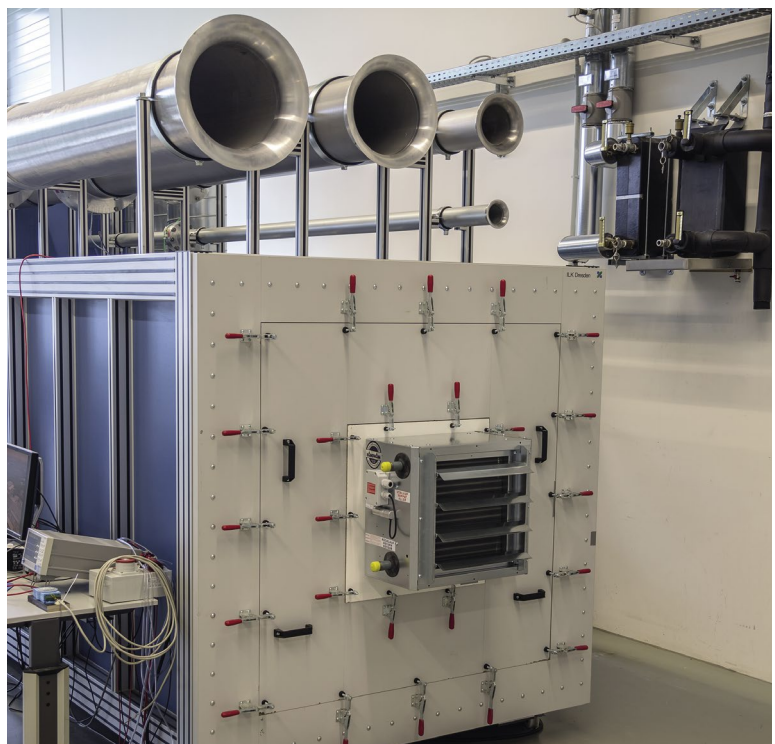
### EU Directive 2009/125/EU

#### Energy-related Products Directive 2015-compliant

The European Commission's ErP Directive ("Energy-related Products") evaluates and modifies the requirements of technical products in energy-related applications. According to the ERP Directive (EU) 327/2011 ("LOT 11"), the efficiency requirements have heightened 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 TOP range of unit heaters is solely fitted with ErP-compliant fans. The conformity of the TOP range has been laboratory-tested and proved. The measurements can be provided on request.

The TOP unit heater range and the components used 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 EN ISO 3745 (formerly DIN 24163);  
Kampmann R&D Centre

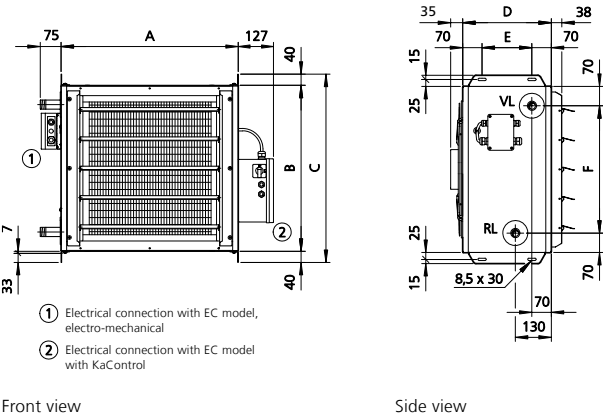
TOP EC

Copper / aluminium heat exchanger

Model 44

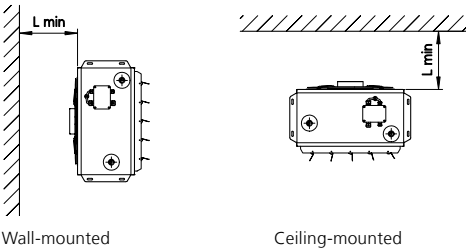
EC fan with high speed (motor code 33)

Technical Drawings (Dimensions in mm)



Front view

Side view



Wall-mounted

Ceiling-mounted

Type	A	B	C	D	E	F	L <sub>min</sub>
Model 44	540	500	580	320	180	360	160

Specifications

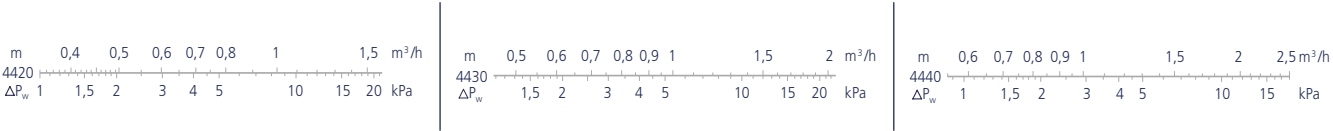
Weights			Connection 1"
Type	Weight [kg]	Water content [l]	
442033	26	1,6	
443033	27	2,1	
444033	28	2,6	

Take advantage of our online calculation programmes to simply calculate heat outputs and other technical information in a couple of clicks!

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

► [Kampmann.co.uk/top](https://www.kampmann.co.uk/top)

Water resistance



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.

m = Water volumetric flow [m³/h]  
ΔP<sub>w</sub> = Water resistance [kPa]

## Outputs Series 44\*\*33 EC



Type	Intake air temperature	Control voltage	Heat outputs				Air volume	Speed <sup>1)</sup>	Power consumption <sup>1)</sup>	Throw (Wall-mounted)	Maximum installation height when ceiling-mounted					Sound pressure level <sup>2)</sup>	Sound power level
			with LPHW 75/65 °C		with LPHW 82/71 °C						Louvre	Air diffuser	Outlet nozzle	Induction louvre	KaMAX, vertical		
	t <sub>L1</sub> [°C]	[V]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	V [m³/h]	n [min <sup>-1</sup> ]	P [W]	[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]	
442033	10	10	16.6	26.9	18.5	28.7	2820	1520	162	22	6.2	3.9	8.5	8.5	9.9	56	72
		8	15.1	28.4	16.7	30.4	2340	1260	95	18	5.5	3.5	7.5	7.5	8.7	52	68
		6	13.2	30.7	14.7	33.0	1830	980	48	14	4.7	3.0	6.4	6.4	7.4	45	61
		4	10.7	34.6	11.9	37.3	1240	670	18	10	3.7	2.4	4.9	4.9	5.6	35	51
		2	7.2	41.0	8.0	44.5	660	360	6	5	2.5	--	3.3	3.3	3.7	19	35
	15	10	15.2	30.6	17.0	32.5	2820	1520	162	22	6.2	3.9	8.5	8.5	9.9	56	72
		8	13.7	32.0	15.4	34.1	2340	1260	95	18	5.5	3.5	7.5	7.5	8.7	52	68
		6	12.1	34.1	13.5	36.4	1830	980	48	14	4.7	3.0	6.4	6.4	7.4	45	61
		4	9.7	37.8	10.9	40.5	1240	670	18	10	3.7	2.4	4.9	4.9	5.6	35	51
		2	6.5	43.7	7.3	47.2	660	360	6	5	2.5	--	3.3	3.3	3.7	19	35
	20	10	13.7	34.3	15.5	36.2	2820	1520	162	22	6.2	3.9	8.5	8.5	9.9	56	72
		8	12.4	35.6	14.1	37.7	2340	1260	95	18	5.5	3.5	7.5	7.5	8.7	52	68
		6	10.9	37.5	12.4	39.9	1830	980	48	14	4.7	3.0	6.4	6.4	7.4	45	61
		4	8.8	40.9	10.0	43.7	1240	670	18	10	3.7	2.4	4.9	4.9	5.6	35	51
		2	5.9	46.3	6.7	49.8	660	360	6	5	2.5	--	3.3	3.3	3.7	19	35
443033	10	10	21.1	34.0	23.5	36.6	2520	1520	162	20	5.8	3.6	7.9	7.9	9.2	56	72
		8	19.1	36.1	21.2	38.9	2090	1260	95	16	5.1	3.3	7.0	7.0	8.1	52	68
		6	16.5	38.9	18.3	42.2	1630	980	48	13	4.4	2.8	5.9	5.9	6.8	45	61
		4	13.0	43.4	14.4	47.1	1110	670	18	9	3.4	2.3	4.5	4.5	5.2	35	51
		2	8.4	50.6	9.3	55.1	590	360	6	4	2.3	--	3.1	3.1	3.4	19	35
	15	10	19.3	37.2	21.6	39.9	2520	1520	162	20	5.8	3.6	7.9	7.9	9.2	56	72
		8	17.4	39.1	19.5	42.0	2090	1260	95	16	5.1	3.3	7.0	7.0	8.1	52	68
		6	15.1	41.8	16.9	45.0	1630	980	48	13	4.4	2.8	5.9	5.9	6.8	45	61
		4	11.8	45.9	13.3	49.7	1110	670	18	9	3.4	2.3	4.5	4.5	5.2	35	51
		2	7.6	52.5	8.6	57.1	590	360	6	4	2.3	--	3.1	3.1	3.4	19	35
	20	10	17.4	40.3	19.7	43.0	2520	1520	162	20	5.8	3.6	7.9	7.9	9.2	56	72
		8	15.7	42.1	17.8	45.1	2090	1260	95	16	5.1	3.3	7.0	7.0	8.1	52	68
		6	13.6	44.5	15.4	47.8	1630	980	48	13	4.4	2.8	5.9	5.9	6.8	45	61
		4	10.7	48.4	12.1	52.2	1110	670	18	9	3.4	2.3	4.5	4.5	5.2	35	51
		2	6.9	54.4	7.8	59.0	590	360	6	4	2.3	--	3.1	3.1	3.4	19	35
Suitable for low water temperatures 444033	10	10	24.7	40.9	27.4	44.3	2280	1520	162	18	5.4	3.5	7.5	7.5	8.7	56	72
		8	22.0	43.1	24.4	46.7	1900	1260	95	15	4.8	3.1	6.6	6.6	7.7	52	68
		6	18.7	46.1	20.8	50.1	1480	980	48	11	4.1	2.7	5.6	5.6	6.4	45	61
		4	14.5	50.9	16.1	55.4	1010	670	18	8	3.2	--	4.3	4.3	4.9	35	51
		2	8.9	57.8	9.8	63.1	530	360	6	4	--	--	2.8	2.8	3.2	19	35
	15	10	22.5	43.6	25.2	47.0	2280	1520	162	18	5.4	3.5	7.5	7.5	8.7	56	72
		8	20.0	45.6	22.5	49.3	1900	1260	95	15	4.8	3.1	6.6	6.6	7.7	52	68
		6	17.1	48.4	19.1	52.4	1480	980	48	11	4.1	2.7	5.6	5.6	6.4	45	61
		4	13.2	52.8	14.8	57.4	1010	670	18	8	3.2	--	4.3	4.3	4.9	35	51
		2	8.1	59.2	9.1	64.6	530	360	6	4	--	--	2.8	2.8	3.2	19	35
	20	10	20.3	46.2	23.0	49.7	2280	1520	162	18	5.4	3.5	7.5	7.5	8.7	56	72
		8	18.1	48.0	20.5	51.8	1900	1260	95	15	4.8	3.1	6.6	6.6	7.7	52	68
		6	15.4	50.6	17.5	54.7	1480	980	48	11	4.1	2.7	5.6	5.6	6.4	45	61
		4	11.9	54.7	13.5	59.3	1010	670	18	8	3.2	--	4.3	4.3	4.9	35	51
		2	7.3	60.5	8.3	66.0	530	360	6	4	--	--	2.8	2.8	3.2	19	35

V [m³/h] = air volume, free-blowing; Q<sub>H</sub> [kW] = heat output; t<sub>L1</sub> [°C] = air inlet temperature; t<sub>L2</sub> [°C] = air outlet temperature

<sup>1)</sup> Measured in a TOP with heat exchanger code 33.

<sup>2)</sup> The sound pressure levels were calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).



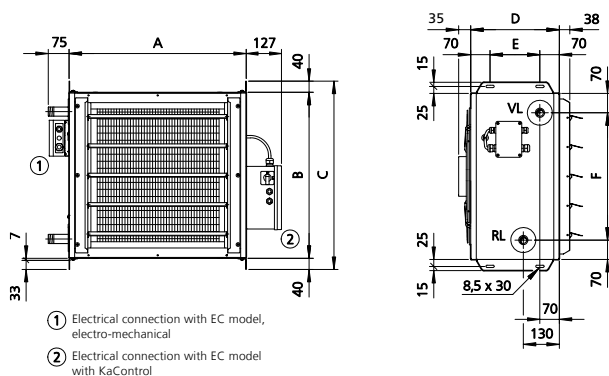
TOP EC

## Copper / aluminium heat exchanger

## Model 44

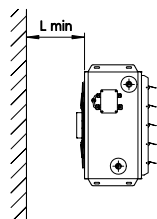
EC fan with low speed (motor code 34)

### Technical Drawings (Dimensions in mm)

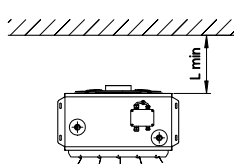


Front view

Side view



Wall-mounted



Ceiling-mounted

Type	A	B	C	D	E	F	L <sub>min</sub>
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
<b>Model 44</b>	540	500	580	320	180	360	160

## Specifications

## Weights

Type	Weight	Water content
	[kg]	[l]
442034	26	1,6
443034	27	2,1
444034	28	2,6

## Connection

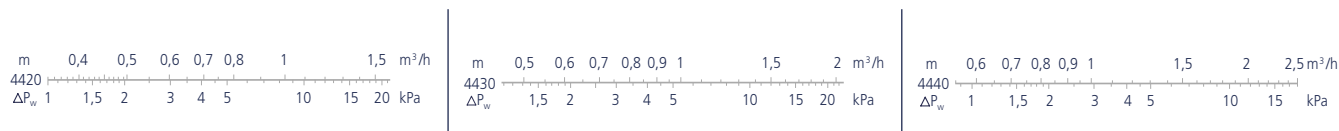
1"

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## Water resistance



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.

$m$  = Water volumetric flow [ $\text{m}^3/\text{h}$ ]

 $\Delta P_w$  = Water resistance [kPa]

## Outputs Series 44\*\*34 EC



Type	Intake air temperature	Control voltage	Heat outputs				Air volume	Speed <sup>1)</sup>	Power consumption <sup>1)</sup>	Throw (Wall-mounted)	Maximum installation height when ceiling-mounted					Sound pressure level <sup>2)</sup>	Sound power level
			with LPHW 75/65 °C		with LPHW 82/71 °C						Louvre	Air diffuser	Outlet nozzle	Induction louvre	KaMAX, vertical		
	t <sub>L1</sub> [°C]	[V]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	V [m³/h]	n [min <sup>-1</sup> ]	P [W]	[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]	
442034	10	10	14.0	29.8	15.5	31.9	2020	1090	72	16	5.0	3.2	6.8	6.8	7.9	49	65
		8	13.1	30.8	14.6	33.1	1800	970	52	14	4.7	3.0	6.3	6.3	7.3	46	62
		6	11.4	33.3	12.7	35.9	1400	750	26	11	4.0	2.6	5.4	5.4	6.2	39	55
		4	9.0	37.3	10.0	40.3	940	510	9	7	3.1	--	4.1	4.1	4.7	29	45
		2	6.2	44.0	6.9	47.8	520	280	4	4	--	--	2.8	2.8	3.1	13	29
	15	10	12.7	33.3	14.3	35.5	2020	1090	72	16	5.0	3.2	6.8	6.8	7.9	49	65
		8	12.0	34.3	13.4	36.6	1800	970	52	14	4.7	3.0	6.3	6.3	7.3	46	62
		6	10.4	36.5	11.7	39.2	1400	750	26	11	4.0	2.6	5.4	5.4	6.2	39	55
		4	8.2	40.3	9.2	43.3	940	510	9	7	3.1	--	4.1	4.1	4.7	29	45
		2	5.6	46.5	6.3	50.3	520	280	4	4	--	--	2.8	2.8	3.1	13	29
	20	10	11.5	36.7	13.0	39.0	2020	1090	72	16	5.0	3.2	6.8	6.8	7.9	49	65
		8	10.8	37.6	12.3	40.0	1800	970	52	14	4.7	3.0	6.3	6.3	7.3	46	62
		6	9.4	39.7	10.7	42.4	1400	750	26	11	4.0	2.6	5.4	5.4	6.2	39	55
		4	7.4	43.2	8.4	46.3	940	510	9	7	3.1	--	4.1	4.1	4.7	29	45
		2	5.1	48.8	5.8	52.7	520	280	4	4	--	--	2.8	2.8	3.1	13	29
443034	10	10	17.4	37.7	19.3	40.8	1790	1090	72	14	4.7	3.0	6.3	6.3	7.2	49	65
		8	16.3	39.2	18.1	42.5	1590	970	52	12	4.3	2.8	5.8	5.8	6.7	46	62
		6	13.8	41.9	15.4	45.4	1240	750	26	10	3.7	2.5	5.0	5.0	5.7	39	55
		4	10.7	46.8	11.9	50.9	830	510	9	6	2.9	--	3.8	3.8	4.3	29	45
		2	7.0	53.7	7.8	58.6	460	280	4	3	--	--	2.6	2.6	2.9	13	29
	15	10	15.8	40.6	17.8	43.8	1790	1090	72	14	4.7	3.0	6.3	6.3	7.2	49	65
		8	14.8	42.0	16.6	45.3	1590	970	52	12	4.3	2.8	5.8	5.8	6.7	46	62
		6	12.6	44.5	14.2	48.1	1240	750	26	10	3.7	2.5	5.0	5.0	5.7	39	55
		4	9.7	49.0	10.9	53.2	830	510	9	6	2.9	--	3.8	3.8	4.3	29	45
		2	6.4	55.5	7.2	60.4	460	280	4	3	--	--	2.6	2.6	2.9	13	29
	20	10	14.3	43.5	16.2	46.7	1790	1090	72	14	4.7	3.0	6.3	6.3	7.2	49	65
		8	13.4	44.8	15.2	48.1	1590	970	52	12	4.3	2.8	5.8	5.8	6.7	46	62
		6	11.4	47.0	12.9	50.7	1240	750	26	10	3.7	2.5	5.0	5.0	5.7	39	55
		4	8.8	51.2	10.0	55.4	830	510	9	6	2.9	--	3.8	3.8	4.3	29	45
		2	5.8	57.1	6.6	62.1	460	280	4	3	--	--	2.6	2.6	2.9	13	29
Suitable for low water temperatures 444034	10	10	19.8	45.1	22.0	49.0	1610	1090	72	12	4.3	2.8	5.9	5.9	6.8	49	65
		8	18.3	46.6	20.4	50.7	1430	970	52	11	4.0	2.7	5.5	5.5	6.3	46	62
		6	15.4	49.7	17.1	54.1	1110	750	26	9	3.4	2.3	4.6	4.6	5.3	39	55
		4	11.7	54.4	12.9	59.3	750	510	9	6	2.7	--	3.6	3.6	4.0	29	45
		2	7.3	60.8	8.1	66.4	410	280	4	3	--	--	2.4	2.4	2.6	13	29
	15	10	18.0	47.5	20.2	51.4	1610	1090	72	12	4.3	2.8	5.9	5.9	6.8	49	65
		8	16.7	48.9	18.7	53.0	1430	970	52	11	4.0	2.7	5.5	5.5	6.3	46	62
		6	14.1	51.7	15.8	56.2	1110	750	26	9	3.4	2.3	4.6	4.6	5.3	39	55
		4	10.6	56.1	11.9	61.1	750	510	9	6	2.7	--	3.6	3.6	4.0	29	45
		2	6.6	62.0	7.5	67.7	410	280	4	3	--	--	2.4	2.4	2.6	13	29
	20	10	16.3	49.8	18.5	53.8	1610	1090	72	12	4.3	2.8	5.9	5.9	6.8	49	65
		8	15.1	51.1	17.1	55.2	1430	970	52	11	4.0	2.7	5.5	5.5	6.3	46	62
		6	12.7	53.7	14.4	58.2	1110	750	26	9	3.4	2.3	4.6	4.6	5.3	39	55
		4	9.6	57.6	10.9	62.7	750	510	9	6	2.7	--	3.6	3.6	4.0	29	45
		2	6.0	63.0	6.8	68.8	410	280	4	3	--	--	2.4	2.4	2.6	13	29

V [m³/h] = air volume, free-blowing; Q<sub>H</sub> [kW] = heat output; t<sub>L1</sub> [°C] = air inlet temperature; t<sub>L2</sub> [°C] = air outlet temperature

<sup>1)</sup> Measured in a TOP with heat exchanger code 33.

<sup>2)</sup> The sound pressure levels were calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

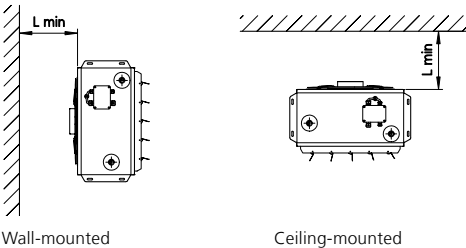
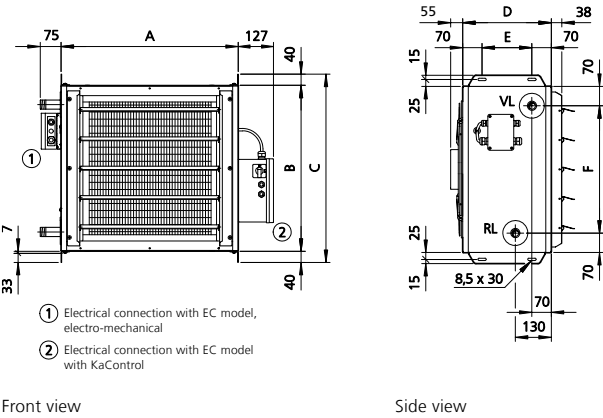
TOP EC

Copper / aluminium heat exchanger

Model 45

EC fan with high speed (motor code 33)

Technical Drawings (Dimensions in mm)



Type	A	B	C	D	E	F	L <sub>min</sub>
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
Model 45	640	600	680	320	180	460	180

Specifications

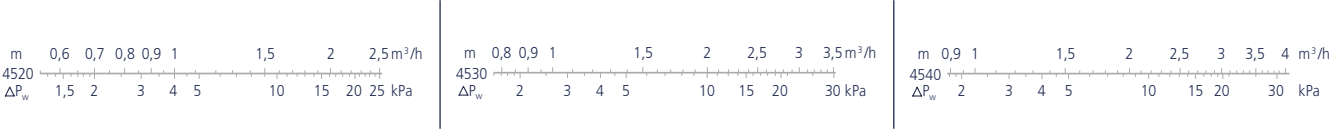
Weights			Connection 1"
Type	Weight [kg]	Water content [l]	
452033	36	2,2	
453033	37	3,0	
454033	38	3,8	

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Water resistance



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.

m = Water volumetric flow [m³/h]  
ΔP<sub>w</sub> = Water resistance [kPa]



## Outputs Series 45\*\*33 EC



Type	Intake air temperature	Control voltage	Heat outputs				Air volume	Speed <sup>1)</sup>	Power consumption <sup>1)</sup>	Throw (Wall-mounted)	Maximum installation height when ceiling-mounted					Sound pressure level <sup>2)</sup>	Sound power level
			with LPHW 75/65 °C		with LPHW 82/71 °C						Louvre	Air diffuser	Outlet nozzle	Induction louvre	KaMAX. vertical		
	t <sub>L1</sub> [°C]	[V]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	V [m³/h]	n	P [W]	[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]	
452033	10	10	24.8	26.1	27.5	27.9	4390	1600	325	24	6.8	4.2	9.5	9.5	11.8	64	80
		8	22.1	28.0	24.5	30.0	3500	1280	171	19	5.9	3.7	8.2	8.2	10.1	58	74
		6	18.3	31.1	20.4	33.5	2480	910	75	13	4.8	3.1	6.5	6.5	8.0	49	65
		4	13.7	34.4	15.2	37.0	1510	550	27	8	3.5	2.3	4.7	4.7	5.7	36	52
		2	8.6	43.3	9.6	47.0	740	270	2	3	2.3	--	3.0	3.0	3.6	17	33
	15	10	22.6	29.9	25.3	31.7	4390	1600	325	24	6.8	4.2	9.5	9.5	11.8	64	80
		8	20.2	31.7	22.6	33.7	3500	1280	171	19	5.9	3.7	8.2	8.2	10.1	58	74
		6	16.7	34.5	18.7	36.9	2480	910	75	13	4.8	3.1	6.5	6.5	8.0	49	65
		4	12.5	37.5	14.0	40.3	1510	550	27	8	3.5	2.3	4.7	4.7	5.7	36	52
		2	7.9	45.8	8.8	49.5	740	270	2	3	2.3	--	3.0	3.0	3.6	17	33
	20	10	20.4	33.7	23.1	35.5	4390	1600	325	24	6.8	4.2	9.5	9.5	11.8	64	80
		8	18.2	35.3	20.6	37.4	3500	1280	171	19	5.9	3.7	8.2	8.2	10.1	58	74
		6	15.1	37.9	17.1	40.3	2480	910	75	13	4.8	3.1	6.5	6.5	8.0	49	65
		4	11.3	40.6	12.8	43.4	1510	550	27	8	3.5	2.3	4.7	4.7	5.7	36	52
		2	7.1	48.2	8.1	52.0	740	270	2	3	2.3	--	3.0	3.0	3.6	17	33
453033	10	10	34.2	34.3	38.0	37.0	4020	1600	325	22	6.4	4.0	9.0	9.0	11.2	64	80
		8	30.1	36.8	33.5	39.8	3210	1280	171	17	5.6	3.6	7.7	7.7	9.6	58	74
		6	24.5	40.7	27.2	44.1	2280	910	75	12	4.5	2.9	6.1	6.1	7.5	49	65
		4	17.7	46.7	19.7	50.8	1380	550	27	7	3.3	--	4.4	4.4	5.3	36	52
		2	10.6	55.1	11.7	60.0	670	270	2	3	--	--	2.8	2.8	3.4	17	33
	15	10	31.2	37.5	35.0	40.2	4020	1600	325	22	6.4	4.0	9.0	9.0	11.2	64	80
		8	27.5	39.8	30.8	42.8	3210	1280	171	17	5.6	3.6	7.7	7.7	9.6	58	74
		6	22.4	43.4	25.1	46.9	2280	910	75	12	4.5	2.9	6.1	6.1	7.5	49	65
		4	16.2	49.0	18.1	53.1	1380	550	27	7	3.3	--	4.4	4.4	5.3	36	52
		2	9.6	56.7	10.8	61.7	670	270	2	3	--	--	2.8	2.8	3.4	17	33
	20	10	28.2	40.6	32.0	43.4	4020	1600	325	22	6.4	4.0	9.0	9.0	11.2	64	80
		8	24.8	42.7	28.1	45.8	3210	1280	171	17	5.6	3.6	7.7	7.7	9.6	58	74
		6	20.2	46.1	22.9	49.6	2280	910	75	12	4.5	2.9	6.1	6.1	7.5	49	65
		4	14.6	51.1	16.6	55.3	1380	550	27	7	3.3	--	4.4	4.4	5.3	36	52
		2	8.7	58.2	9.9	63.3	670	270	2	3	--	--	2.8	2.8	3.4	17	33
Suitable for low water temperatures 454033	10	10	39.3	40.3	43.7	43.7	3710	1600	325	20	6.1	3.9	8.6	8.6	10.6	64	80
		8	34.2	43.1	38.0	46.7	2960	1280	171	16	5.3	3.4	7.4	7.4	9.1	58	74
		6	27.4	47.3	30.5	51.5	2100	910	75	11	4.3	2.8	5.8	5.8	7.1	49	65
		4	19.3	53.1	21.4	57.9	1280	550	27	6	3.2	--	4.2	4.2	5.1	36	52
		2	11.1	60.9	12.3	66.6	620	270	2	3	--	--	2.7	2.7	3.2	17	33
	15	10	35.9	43.0	40.2	46.4	3710	1600	325	20	6.1	3.9	8.6	8.6	10.6	64	80
		8	31.2	45.6	35.0	49.3	2960	1280	171	16	5.3	3.4	7.4	7.4	9.1	58	74
		6	25.0	49.5	28.1	53.7	2100	910	75	11	4.3	2.8	5.8	5.8	7.1	49	65
		4	17.6	54.9	19.7	59.7	1280	550	27	6	3.2	--	4.2	4.2	5.1	36	52
		2	10.1	62.1	11.3	67.8	620	270	2	3	--	--	2.7	2.7	3.2	17	33
	20	10	32.4	45.7	36.8	49.1	3710	1600	325	20	6.1	3.9	8.6	8.6	10.6	64	80
		8	28.2	48.0	32.0	51.8	2960	1280	171	16	5.3	3.4	7.4	7.4	9.1	58	74
		6	22.6	51.7	25.6	55.9	2100	910	75	11	4.3	2.8	5.8	5.8	7.1	49	65
		4	15.9	56.5	18.0	61.5	1280	550	27	6	3.2	--	4.2	4.2	5.1	36	52
		2	9.1	63.2	10.3	69.0	620	270	2	3	--	--	2.7	2.7	3.2	17	33

V [m³/h] = air volume, free-blowing; Q<sub>H</sub> [kW] = heat output; t<sub>L1</sub> [°C] = air inlet temperature; t<sub>L2</sub> [°C] = air outlet temperature

<sup>1)</sup> Measured in a TOP with heat exchanger code 33.

<sup>2)</sup> The sound pressure levels were calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

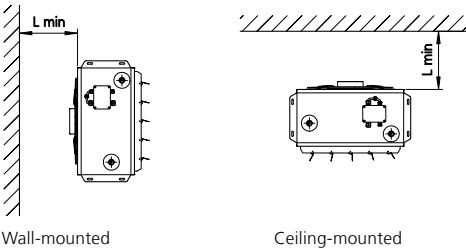
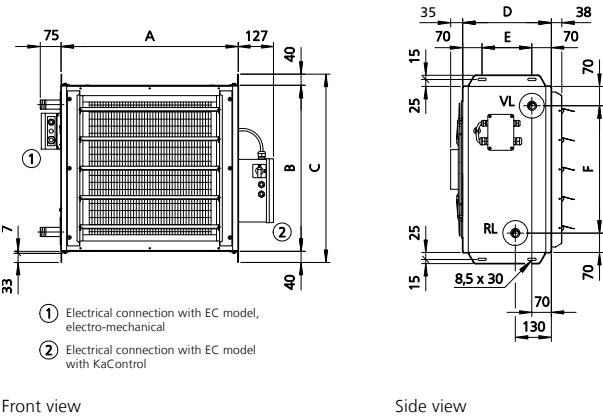
TOP EC

Copper / aluminium heat exchanger

Model 45

EC fan with low speed (motor code 34)

Technical Drawings (Dimensions in mm)



Type	A	B	C	D	E	F	L <sub>min</sub>
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
Model 45	640	600	680	320	180	460	180

Specifications

Weights

Type	Weight	Water content
	[kg]	[l]
452034	34	2,2
453034	36	3,0
454034	38	3,8

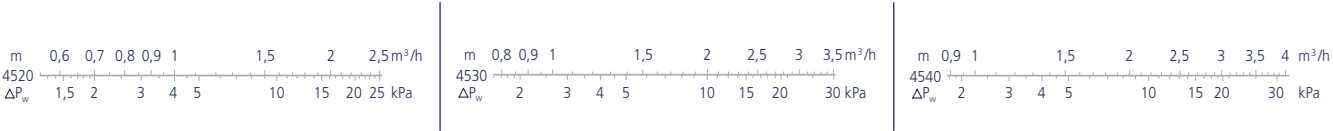
Connection

1"

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Water resistance



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.

m = Water volumetric flow [m³/h]  
ΔP<sub>w</sub> = Water resistance [kPa]



## Outputs Series 45\*\*34 EC



Type	Intake air temperature	Control voltage	Heat outputs				Air volume	Speed <sup>1)</sup>	Power consumption <sup>1)</sup>	Throw (Wall-mounted)	Maximum installation height when ceiling-mounted					Sound pressure level <sup>2)</sup>	Sound power level
			with LPHW 75/65 °C		with LPHW 82/71 °C						Louvre	Air diffuser	Outlet nozzle	Induction louvre	KaMAX. vertical		
	t <sub>L1</sub> [°C]	[V]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	V [m³/h]	n [min <sup>-1</sup> ]	P [W]		[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]
452034	10	10	22.0	28.0	24.4	30.0	3480	1130	165	19	5.9	3.7	8.2	8.2	10.0	56	72
		8	19.9	29.7	22.1	31.9	2890	940	101	15	5.2	3.4	7.2	7.2	8.8	51	67
		6	17.4	32.0	19.3	34.4	2260	730	47	12	4.5	3.0	6.2	6.2	7.6	44	60
		4	14.0	35.7	15.5	38.6	1550	500	18	8	3.6	2.4	4.9	4.9	5.9	35	51
		2	11.8	38.8	13.1	42.0	1170	380	10	6	3.0	--	4.1	4.1	4.9	19	35
	15	10	20.0	31.7	22.5	33.7	3480	1130	165	19	5.9	3.7	8.2	8.2	10.0	56	72
		8	18.2	33.2	20.4	35.4	2890	940	101	15	5.2	3.4	7.2	7.2	8.8	51	67
		6	15.8	35.3	17.8	37.8	2260	730	47	12	4.5	3.0	6.2	6.2	7.6	44	60
		4	12.7	38.8	14.3	41.7	1550	500	18	8	3.6	2.4	4.9	4.9	5.9	35	51
		2	10.7	41.6	12.0	44.8	1170	380	10	6	3.0	--	4.1	4.1	4.9	19	35
	20	10	18.1	35.3	20.5	37.4	3480	1130	165	19	5.9	3.7	8.2	8.2	10.0	56	72
		8	16.4	36.7	18.6	38.9	2890	940	101	15	5.2	3.4	7.2	7.2	8.8	51	67
		6	14.3	38.6	16.2	41.1	2260	730	47	12	4.5	3.0	6.2	6.2	7.6	44	60
		4	11.5	41.8	13.0	44.8	1550	500	18	8	3.6	2.4	4.9	4.9	5.9	35	51
		2	9.7	44.4	11.0	47.7	1170	380	10	6	3.0	--	4.1	4.1	4.9	19	35
453034	10	10	29.6	37.2	32.9	40.2	3110	1130	165	17	5.5	3.5	7.5	7.5	9.2	56	72
		8	26.5	39.3	29.4	42.6	2580	940	101	14	4.9	3.1	6.6	6.6	8.1	51	67
		6	22.7	42.1	25.2	45.7	2020	730	47	11	4.2	2.8	5.8	5.8	7.0	44	60
		4	17.7	46.7	19.7	50.8	1380	500	18	7	3.3	2.3	4.5	4.5	5.4	35	51
		2	14.7	50.0	16.3	54.4	1050	380	10	5	2.8	--	3.9	3.9	4.6	19	35
	15	10	27.0	40.2	30.3	43.2	3110	1130	165	17	5.5	3.5	7.5	7.5	9.2	56	72
		8	24.1	42.1	27.1	45.4	2580	940	101	14	4.9	3.1	6.6	6.6	8.1	51	67
		6	20.7	44.7	23.2	48.3	2020	730	47	11	4.2	2.8	5.8	5.8	7.0	44	60
		4	16.2	49.0	18.1	53.1	1380	500	18	7	3.3	2.3	4.5	4.5	5.4	35	51
		2	13.4	52.0	15.0	56.5	1050	380	10	5	2.8	--	3.9	3.9	4.6	19	35
	20	10	24.4	43.1	27.7	46.2	3110	1130	165	17	5.5	3.5	7.5	7.5	9.2	56	72
		8	21.8	44.9	24.7	48.2	2580	940	101	14	4.9	3.1	6.6	6.6	8.1	51	67
		6	18.7	47.2	21.2	50.9	2020	730	47	11	4.2	2.8	5.8	5.8	7.0	44	60
		4	14.6	51.1	16.6	55.3	1380	500	18	7	3.3	2.3	4.5	4.5	5.4	35	51
		2	12.1	53.9	13.7	58.5	1050	380	10	5	2.8	--	3.9	3.9	4.6	19	35
Suitable for low water temperatures 454034	10	10	33.4	43.6	37.1	47.3	2840	1130	165	15	5.2	3.3	7.1	7.1	8.7	56	72
		8	29.5	45.9	32.8	49.9	2350	940	101	12	4.6	3.0	6.3	6.3	7.7	51	67
		6	25.0	48.8	27.8	53.1	1840	730	47	10	4.0	2.6	5.4	5.4	6.6	44	60
		4	19.1	53.2	21.2	58.0	1260	500	18	6	3.2	--	4.2	4.2	5.1	35	51
		2	15.5	56.3	17.3	61.4	960	380	10	5	2.7	--	3.6	3.6	4.3	19	35
	15	10	30.4	46.1	34.1	49.9	2840	1130	165	15	5.2	3.3	7.1	7.1	8.7	56	72
		8	26.9	48.2	30.2	52.2	2350	940	101	12	4.6	3.0	6.3	6.3	7.7	51	67
		6	22.8	50.9	25.6	55.3	1840	730	47	10	4.0	2.6	5.4	5.4	6.6	44	60
		4	17.4	55.0	19.5	59.8	1260	500	18	6	3.2	--	4.2	4.2	5.1	35	51
		2	14.2	57.8	15.9	63.0	960	380	10	5	2.7	--	3.6	3.6	4.3	19	35
	20	10	27.5	48.5	31.2	52.3	2840	1130	165	15	5.2	3.3	7.1	7.1	8.7	56	72
		8	24.3	50.4	27.6	54.5	2350	940	101	12	4.6	3.0	6.3	6.3	7.7	51	67
		6	20.6	52.9	23.4	57.4	1840	730	47	10	4.0	2.6	5.4	5.4	6.6	44	60
		4	15.7	56.6	17.8	61.6	1260	500	18	6	3.2	--	4.2	4.2	5.1	35	51
		2	12.8	59.2	14.5	64.5	960	380	10	5	2.7	--	3.6	3.6	4.3	19	35

V [m³/h] = air volume, free-blowing; Q<sub>H</sub> [kW] = heat output; t<sub>L1</sub> [°C] = air inlet temperature; t<sub>L2</sub> [°C] = air outlet temperature

<sup>1)</sup> Measured in a TOP with heat exchanger code 33.

<sup>2)</sup> The sound pressure levels were calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

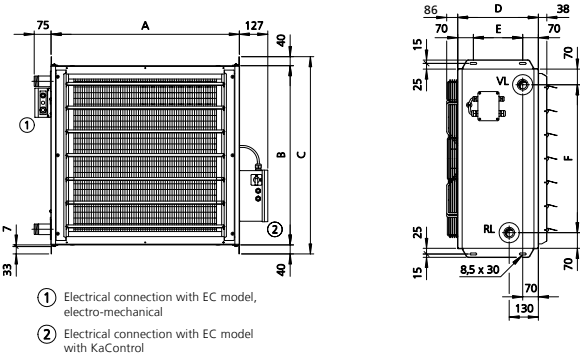
TOP EC

Copper / aluminium heat exchanger

Model 46

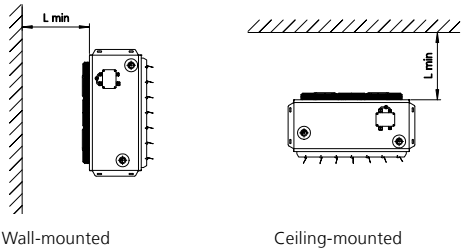
EC fan with high speed (motor code 33)

Technical Drawings (Dimensions in mm)



Front view

Side view



Type	A	B	C	D	E	F	L <sub>min</sub>
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
Model 46	740	700	780	320	180	560	230

Specifications

Weights

Type	Weight	Water content
	[kg]	[l]
462033	46	3,4
463033	48	4,5
464033	51	5,6

Connection

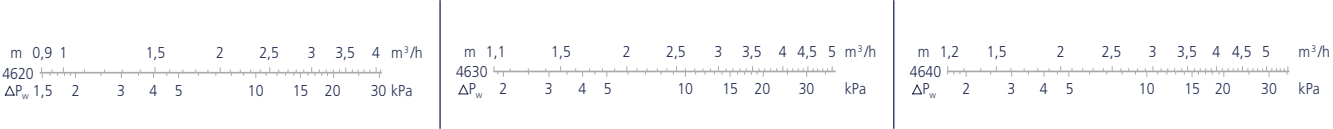
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Water resistance



m = Water volumetric flow [m³/h]  
ΔP<sub>w</sub> = Water resistance [kPa]

## Outputs Series 46\*\*33 EC



Type	Intake air temperature	Control voltage	Heat outputs				Air volume	Speed <sup>1)</sup>	Power consumption <sup>1)</sup>	Throw (Wall-mounted)	Maximum installation height when ceiling-mounted					Sound pressure level <sup>2)</sup>	Sound power level
			with LPHW 75/65 °C		with LPHW 82/71 °C						Louvre	Air diffuser	Outlet nozzle	Induction louvre	KaMAX, vertical		
	t <sub>L1</sub> [°C]	[V]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	V [m³/h]	n [min <sup>-1</sup> ]	P [W]		[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]
462033	10	10	40.1	27.8	44.5	29.7	6450	1000	434	30	7.7	4.4	10.6	10.6	13.6	62	78
		8	35.6	29.9	39.5	32.1	5110	780	226	24	6.7	3.8	9.1	9.1	11.6	56	72
		6	29.5	33.1	32.8	35.7	3650	560	93	17	5.5	3.2	7.3	7.3	9.3	47	63
		4	24.2	41.5	26.8	45.0	2190	320	29	10	4.0	2.4	5.3	5.3	6.6	33	49
		2	10.3	50.4	11.5	54.9	730	120	9	3	--	--	2.7	2.7	3.3	20	36
	15	10	36.5	31.4	41.0	33.4	6450	1000	434	30	7.7	4.4	10.6	10.6	13.6	62	78
		8	32.4	33.4	36.4	35.6	5110	780	226	24	6.7	3.8	9.1	9.1	11.6	56	72
		6	26.9	36.4	30.2	39.0	3650	560	93	17	5.5	3.2	7.3	7.3	9.3	47	63
		4	22.0	44.2	24.7	47.7	2190	320	29	10	4.0	2.4	5.3	5.3	6.6	33	49
		2	9.4	52.4	10.6	56.9	730	120	9	3	--	--	2.7	2.7	3.3	20	36
	20	10	33.0	35.0	37.4	37.1	6450	1000	434	30	7.7	4.4	10.6	10.6	13.6	62	78
		8	29.3	36.9	33.2	39.1	5110	780	226	24	6.7	3.8	9.1	9.1	11.6	56	72
		6	24.3	39.6	27.6	42.2	3650	560	93	17	5.5	3.2	7.3	7.3	9.3	47	63
		4	19.9	46.7	22.6	50.3	2190	320	29	10	4.0	2.4	5.3	5.3	6.6	33	49
		2	8.5	54.2	9.6	58.9	730	120	9	3	--	--	2.7	2.7	3.3	20	36
463033	10	10	53.4	36.6	59.3	39.6	5730	1000	434	27	7.2	4.1	9.8	9.8	12.5	62	78
		8	46.3	39.4	51.4	42.7	4490	780	226	21	6.2	3.6	8.4	8.4	10.6	56	72
		6	37.6	43.5	41.8	47.2	3210	560	93	15	5.1	3.0	6.8	6.8	8.5	47	63
		4	26.1	49.9	29.0	54.3	1870	320	29	8	3.7	--	4.8	4.8	5.9	33	49
		2	12.4	60.6	13.8	66.2	700	120	9	3	--	--	2.6	2.6	3.2	20	36
	15	10	48.7	39.6	54.6	42.6	5730	1000	434	27	7.2	4.1	9.8	9.8	12.5	62	78
		8	42.2	42.2	47.3	45.5	4490	780	226	21	6.2	3.6	8.4	8.4	10.6	56	72
		6	34.3	46.0	38.5	49.8	3210	560	93	15	5.1	3.0	6.8	6.8	8.5	47	63
		4	23.8	51.9	26.7	56.4	1870	320	29	8	3.7	--	4.8	4.8	5.9	33	49
		2	11.3	61.8	12.7	67.4	700	120	9	3	--	--	2.6	2.6	3.2	20	36
	20	10	44.0	42.6	49.9	45.6	5730	1000	434	27	7.2	4.1	9.8	9.8	12.5	62	78
		8	38.1	45.0	43.2	48.3	4490	780	226	21	6.2	3.6	8.4	8.4	10.6	56	72
		6	31.0	48.4	35.2	52.2	3210	560	93	15	5.1	3.0	6.8	6.8	8.5	47	63
		4	21.5	53.8	24.4	58.4	1870	320	29	8	3.7	--	4.8	4.8	5.9	33	49
		2	10.2	62.9	11.6	68.6	700	120	9	3	--	--	2.6	2.6	3.2	20	36
Suitable for low water temperatures 464033	10	10	59.4	44.6	66.0	48.5	4900	1000	434	23	6.5	3.8	8.9	8.9	11.3	62	78
		8	50.6	47.7	56.2	51.9	3840	780	226	18	5.7	3.3	7.6	7.6	9.6	56	72
		6	40.2	51.8	44.6	56.4	2750	560	93	12	4.6	2.8	6.2	6.2	7.7	47	63
		4	27.0	58.1	29.9	63.5	1600	320	29	7	3.3	--	4.4	4.4	5.3	33	49
		2	11.9	66.7	13.2	72.9	600	120	9	2	--	--	2.4	2.4	2.9	20	36
	15	10	54.1	47.0	60.7	50.9	4900	1000	434	23	6.5	3.8	8.9	8.9	11.3	62	78
		8	46.2	49.8	51.8	54.1	3840	780	226	18	5.7	3.3	7.6	7.6	9.6	56	72
		6	36.6	53.6	41.1	58.3	2750	560	93	12	4.6	2.8	6.2	6.2	7.7	47	63
		4	24.6	59.5	27.6	64.9	1600	320	29	7	3.3	--	4.4	4.4	5.3	33	49
		2	10.9	67.4	12.2	73.8	600	120	9	2	--	--	2.4	2.4	2.9	20	36
	20	10	48.9	49.4	55.5	53.3	4900	1000	434	23	6.5	3.8	8.9	8.9	11.3	62	78
		8	41.7	51.9	47.3	56.2	3840	780	226	18	5.7	3.3	7.6	7.6	9.6	56	72
		6	33.1	55.4	37.6	60.2	2750	560	93	12	4.6	2.8	6.2	6.2	7.7	47	63
		4	22.2	60.8	25.2	66.3	1600	320	29	7	3.3	--	4.4	4.4	5.3	33	49
		2	9.8	68.0	11.1	74.5	600	120	9	2	--	--	2.4	2.4	2.9	20	36

V [m³/h] = air volume, free-blowing; Q<sub>H</sub> [kW] = heat output; t<sub>L1</sub> [°C] = air inlet temperature; t<sub>L2</sub> [°C] = air outlet temperature

<sup>1)</sup> Measured in a TOP with heat exchanger code 33.

<sup>2)</sup> The sound pressure levels were calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).



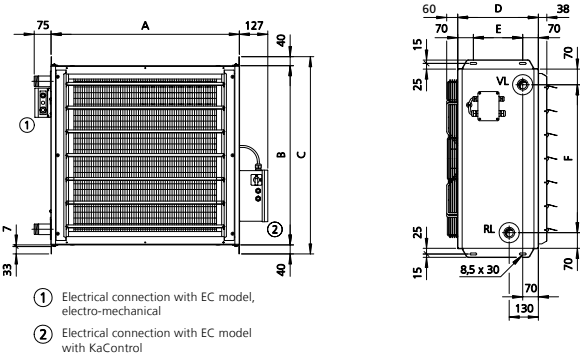
TOP EC

Copper / aluminium heat exchanger

Model 47

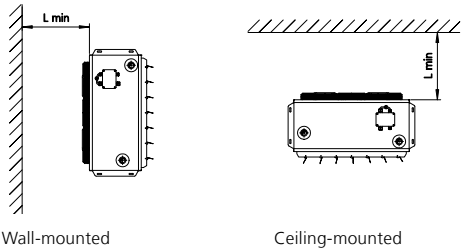
EC fan with high speed (motor code 33)

Technical Drawings (Dimensions in mm)



Front view

Side view



Type	A	B	C	D	E	F	L <sub>min</sub>
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
Model 47	840	800	880	360	220	660	300

Specifications

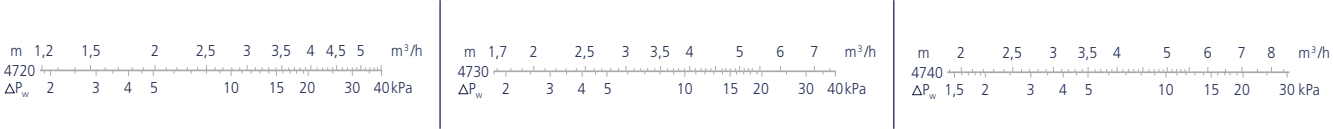
Weights			Connection 1½"
Type	Weight [kg]	Water content [l]	
472033	55	4,8	
473033	59	6,2	
474033	63	7,6	

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Water resistance



m = Water volumetric flow [m³/h]  
ΔP<sub>w</sub> = Water resistance [kPa]

## Outputs Series 47\*\*33 EC



Type	Intake air temperature	Control voltage	Heat outputs				Air volume	Speed <sup>1)</sup>	Power consumption <sup>1)</sup>	Throw (Wall-mounted)	Maximum installation height when ceiling-mounted					Sound pressure level <sup>2)</sup>	Sound power level
			with LPHW 75/65 °C		with LPHW 82/71 °C						Louvre	Air diffuser	Outlet nozzle	Induction louvre	KaMAX, vertical		
	t <sub>L1</sub> [°C]	[V]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	V [m³/h]	n [min <sup>-1</sup> ]	P [W]		[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]
472033	10	10	56.6	29.3	62.9	31.4	8390	900	390	34	7.8	4.2	11.1	11.1	16.9	61	77
		8	54.3	30.0	60.3	32.3	7740	830	320	31	7.5	4.0	10.5	10.5	16.0	59	75
		6	47.4	32.5	52.6	35.0	6010	650	156	24	6.4	3.5	9.0	9.0	13.5	53	69
		4	36.8	37.0	40.9	40.0	3890	420	57	15	5.0	2.8	6.8	6.8	10.1	41	57
		2	23.0	45.1	25.5	49.0	1870	200	18	6	3.3	--	4.4	4.4	6.3	22	38
	15	10	51.6	32.8	57.9	35.0	8390	900	390	34	7.8	4.2	11.1	11.1	16.9	61	77
		8	49.5	33.5	55.5	35.8	7740	830	320	31	7.5	4.0	10.5	10.5	16.0	59	75
		6	43.2	35.8	48.4	38.4	6010	650	156	24	6.4	3.5	9.0	9.0	13.5	53	69
		4	33.5	40.0	37.6	43.0	3890	420	57	15	5.0	2.8	6.8	6.8	10.1	41	57
		2	20.9	47.4	23.5	51.4	1870	200	18	6	3.3	--	4.4	4.4	6.3	22	38
	20	10	46.6	36.3	52.9	38.5	8390	900	390	34	7.8	4.2	11.1	11.1	16.9	61	77
		8	44.7	37.0	50.7	39.3	7740	830	320	31	7.5	4.0	10.5	10.5	16.0	59	75
		6	39.0	39.1	44.2	41.7	6010	650	156	24	6.4	3.5	9.0	9.0	13.5	53	69
		4	30.3	42.9	34.4	46.0	3890	420	57	15	5.0	2.8	6.8	6.8	10.1	41	57
		2	18.9	49.7	21.4	53.7	1870	200	18	6	3.3	--	4.4	4.4	6.3	22	38
473033	10	10	73.1	37.8	81.2	40.9	7520	900	390	31	7.3	3.9	10.3	10.3	15.6	61	77
		8	69.7	38.7	77.4	41.9	6940	830	320	28	7.0	3.7	9.8	9.8	14.7	59	75
		6	59.7	41.7	66.4	45.2	5380	650	156	21	6.0	3.3	8.4	8.4	12.6	53	69
		4	45.2	47.0	50.2	51.1	3490	420	57	13	4.7	2.6	6.4	6.4	9.4	41	57
		2	26.7	55.4	29.7	60.5	1680	200	18	5	3.1	--	4.2	4.2	5.9	22	38
	15	10	66.7	40.7	74.7	43.8	7520	900	390	31	7.3	3.9	10.3	10.3	15.6	61	77
		8	63.6	41.5	71.3	44.8	6940	830	320	28	7.0	3.7	9.8	9.8	14.7	59	75
		6	54.5	44.3	61.1	47.9	5380	650	156	21	6.0	3.3	8.4	8.4	12.6	53	69
		4	41.2	49.2	46.2	53.4	3490	420	57	13	4.7	2.6	6.4	6.4	9.4	41	57
		2	24.4	57.0	27.3	62.1	1680	200	18	5	3.1	--	4.2	4.2	5.9	22	38
	20	10	60.2	43.5	68.3	46.7	7520	900	390	31	7.3	3.9	10.3	10.3	15.6	61	77
		8	57.4	44.3	65.1	47.6	6940	830	320	28	7.0	3.7	9.8	9.8	14.7	59	75
		6	49.2	46.9	55.8	50.5	5380	650	156	21	6.0	3.3	8.4	8.4	12.6	53	69
		4	37.2	51.4	42.2	55.6	3490	420	57	13	4.7	2.6	6.4	6.4	9.4	41	57
		2	22.0	58.5	25.0	63.7	1680	200	18	5	3.1	--	4.2	4.2	5.9	22	38
474033	10	10	84.4	45.8	93.7	49.8	6730	900	390	27	6.9	3.7	9.7	9.7	14.5	61	77
		8	80.0	46.8	88.9	50.9	6210	830	320	25	6.6	3.6	9.2	9.2	13.8	59	75
		6	67.5	50.0	75.0	54.5	4820	650	156	19	5.7	3.1	7.9	7.9	11.7	53	69
		4	49.4	55.3	54.9	60.3	3120	420	57	11	4.4	2.5	6.0	6.0	8.7	41	57
		2	27.8	63.0	30.9	68.8	1500	200	18	4	2.9	--	3.9	3.9	5.5	22	38
	15	10	76.9	48.1	86.3	52.2	6730	900	390	27	6.9	3.7	9.7	9.7	14.5	61	77
		8	73.0	49.1	81.8	53.2	6210	830	320	25	6.6	3.6	9.2	9.2	13.8	59	75
		6	61.6	52.0	69.0	56.5	4820	650	156	19	5.7	3.1	7.9	7.9	11.7	53	69
		4	45.1	56.9	50.5	61.9	3120	420	57	11	4.4	2.5	6.0	6.0	8.7	41	57
		2	25.4	64.0	28.4	69.9	1500	200	18	4	2.9	--	3.9	3.9	5.5	22	38
	20	10	69.5	50.4	78.9	54.5	6730	900	390	27	6.9	3.7	9.7	9.7	14.5	61	77
		8	65.9	51.2	74.8	55.4	6210	830	320	25	6.6	3.6	9.2	9.2	13.8	59	75
		6	55.6	53.9	63.1	58.5	4820	650	156	19	5.7	3.1	7.9	7.9	11.7	53	69
		4	40.7	58.4	46.2	63.5	3120	420	57	11	4.4	2.5	6.0	6.0	8.7	41	57
		2	22.9	64.9	26.0	70.9	1500	200	18	4	2.9	--	3.9	3.9	5.5	22	38

V [m³/h] = air volume, free-blowing; Q<sub>H</sub> [kW] = heat output; t<sub>L1</sub> [°C] = air inlet temperature; t<sub>L2</sub> [°C] = air outlet temperature

<sup>1)</sup> Measured in a TOP with heat exchanger code 33.

<sup>2)</sup> The sound pressure levels were calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).





## Outputs Series 44\*\*33 EC



Type	Intake air temperature	Control voltage	Heat outputs				Air volume	Speed <sup>1)</sup>	Power consumption <sup>1)</sup>	Throw (Wall-mounted)	Maximum installation height when ceiling-mounted					Sound pressure level <sup>2)</sup>	Sound power level
			with LPHW 75/65 °C		with LPHW 82/71 °C						Louvre	Air diffuser	Outlet nozzle	Induction louvre	KaMAX, vertical		
	t <sub>L1</sub> [°C]	[V]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	V [m³/h]	n [min <sup>-1</sup> ]	P [W]		[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]
442133	10	10	16.0	26.2	17.8	28.0	2820	1520	162	22	6.2	3.9	8.5	8.5	9.9	56	72
		8	14.1	27.2	15.6	29.1	2340	1260	95	18	5.5	3.5	7.5	7.5	8.7	52	68
		6	11.9	28.6	13.2	30.6	1830	980	48	14	4.7	3.0	6.4	6.4	7.4	45	61
		4	9.1	31.0	10.1	33.3	1240	670	18	10	3.7	2.4	4.9	4.9	5.6	35	51
		2	6.0	35.8	6.6	38.6	660	360	6	5	2.5	--	3.3	3.3	3.7	19	35
	15	10	14.6	30.0	16.4	31.8	2820	1520	162	22	6.2	3.9	8.5	8.5	9.9	56	72
		8	12.8	30.9	14.4	32.8	2340	1260	95	18	5.5	3.5	7.5	7.5	8.7	52	68
		6	10.9	32.2	12.2	34.3	1830	980	48	14	4.7	3.0	6.4	6.4	7.4	45	61
		4	8.3	34.4	9.3	36.8	1240	670	18	10	3.7	2.4	4.9	4.9	5.6	35	51
		2	5.4	38.8	6.1	41.7	660	360	6	5	2.5	--	3.3	3.3	3.7	19	35
	20	10	13.2	33.8	15.0	35.6	2820	1520	162	22	6.2	3.9	8.5	8.5	9.9	56	72
		8	11.6	34.6	13.2	36.5	2340	1260	95	18	5.5	3.5	7.5	7.5	8.7	52	68
		6	9.8	35.8	11.1	37.9	1830	980	48	14	4.7	3.0	6.4	6.4	7.4	45	61
		4	7.5	37.8	8.5	40.2	1240	670	18	10	3.7	2.4	4.9	4.9	5.6	35	51
		2	4.9	41.8	5.6	44.8	660	360	6	5	2.5	--	3.3	3.3	3.7	19	35
443133	10	10	21.4	31.7	23.7	34.1	2820	1520	162	22	6.2	3.9	8.5	8.5	9.9	56	72
		8	18.8	33.0	20.9	35.5	2340	1260	95	18	5.5	3.5	7.5	7.5	8.7	52	68
		6	15.9	34.8	17.7	37.6	1830	980	48	14	4.7	3.0	6.4	6.4	7.4	45	61
		4	12.1	38.0	13.5	41.1	1240	670	18	10	3.7	2.4	4.9	4.9	5.6	35	51
		2	7.9	44.2	8.8	48.0	660	360	6	5	2.5	--	3.3	3.3	3.7	19	35
	15	10	19.5	35.0	21.9	37.5	2820	1520	162	22	6.2	3.9	8.5	8.5	9.9	56	72
		8	17.2	36.3	19.2	38.8	2340	1260	95	18	5.5	3.5	7.5	7.5	8.7	52	68
		6	14.5	38.0	16.3	40.8	1830	980	48	14	4.7	3.0	6.4	6.4	7.4	45	61
		4	11.1	40.9	12.4	44.0	1240	670	18	10	3.7	2.4	4.9	4.9	5.6	35	51
		2	7.2	46.6	8.1	50.4	660	360	6	5	2.5	--	3.3	3.3	3.7	19	35
	20	10	17.6	38.4	20.0	40.8	2820	1520	162	22	6.2	3.9	8.5	8.5	9.9	56	72
		8	15.5	39.5	17.6	42.1	2340	1260	95	18	5.5	3.5	7.5	7.5	8.7	52	68
		6	13.1	41.1	14.9	43.9	1830	980	48	14	4.7	3.0	6.4	6.4	7.4	45	61
		4	10.0	43.7	11.3	46.9	1240	670	18	10	3.7	2.4	4.9	4.9	5.6	35	51
		2	6.5	49.0	7.4	52.9	660	360	6	5	2.5	--	3.3	3.3	3.7	19	35
Suitable for low water temperatures 444133	10	10	23.2	39.1	25.8	42.3	2280	1520	162	18	5.4	3.5	7.5	7.5	8.7	56	72
		8	20.5	40.9	22.8	44.3	1900	1260	95	15	4.8	3.1	6.6	6.6	7.7	52	68
		6	17.2	43.3	19.2	47.0	1480	980	48	11	4.1	2.7	5.6	5.6	6.4	45	61
		4	13.2	47.4	14.7	51.6	1010	670	18	8	3.2	--	4.3	4.3	4.9	35	51
		2	8.5	55.8	9.4	60.9	530	360	6	4	--	--	2.8	2.8	3.2	19	35
	15	10	21.1	41.9	23.7	45.2	2280	1520	162	18	5.4	3.5	7.5	7.5	8.7	56	72
		8	18.7	43.5	21.0	47.0	1900	1260	95	15	4.8	3.1	6.6	6.6	7.7	52	68
		6	15.7	45.8	17.6	49.5	1480	980	48	11	4.1	2.7	5.6	5.6	6.4	45	61
		4	12.1	49.6	13.5	53.8	1010	670	18	8	3.2	--	4.3	4.3	4.9	35	51
		2	7.8	57.4	8.7	62.5	530	360	6	4	--	--	2.8	2.8	3.2	19	35
	20	10	19.1	44.6	21.7	48.0	2280	1520	162	18	5.4	3.5	7.5	7.5	8.7	56	72
		8	16.9	46.2	19.2	49.7	1900	1260	95	15	4.8	3.1	6.6	6.6	7.7	52	68
		6	14.2	48.2	16.1	52.0	1480	980	48	11	4.1	2.7	5.6	5.6	6.4	45	61
		4	10.9	51.7	12.4	56.0	1010	670	18	8	3.2	--	4.3	4.3	4.9	35	51
		2	7.0	58.8	7.9	64.1	530	360	6	4	--	--	2.8	2.8	3.2	19	35

V [m³/h] = air volume, free-blowing; Q<sub>H</sub> [kW] = heat output; t<sub>L1</sub> [°C] = air inlet temperature; t<sub>L2</sub> [°C] = air outlet temperature

<sup>1)</sup> Measured in a TOP with heat exchanger code 33.

<sup>2)</sup> The sound pressure levels were calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

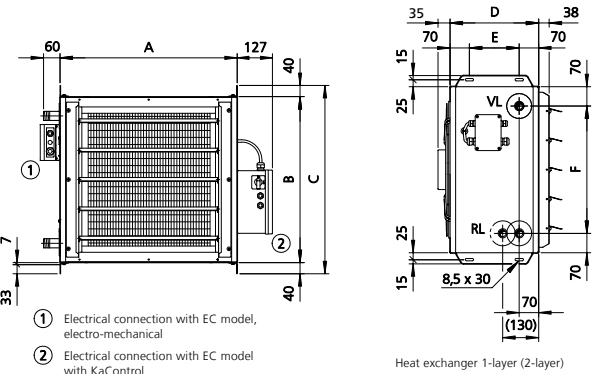
TOP EC

Heat exchanger, galvanised steel

Model 44

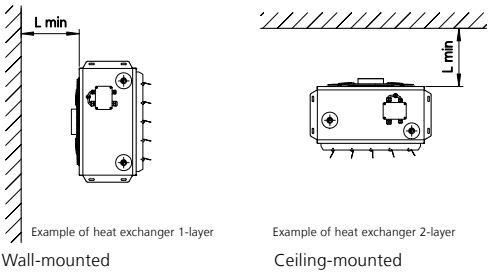
EC fan with low speed (motor code 34)

**Technical Drawings** (Dimensions in mm)



Front view

Side view



Type	A	B	C	D	E	F	L <sub>min</sub>
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
<b>Model 44</b>	540	500	580	320	180	360	160

**Specifications**

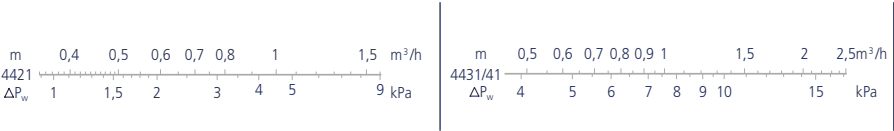
Weights			Connection 1"
Type	Weight	Water content	
	[kg]	[l]	
<b>442134</b>	44	3,1	
<b>443134</b>	48	6,1	
<b>444134</b>	57	6,1	

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**Water resistance**



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.

m = Water volumetric flow [ $m^3/h$ ]  
 $\Delta P_w$  = Water resistance [kPa]

## Outputs Series 44\*\*34 EC



Type	Intake air temperature	Control voltage	Heat outputs				Air volume	Speed <sup>1)</sup>	Power consumption <sup>1)</sup>	Throw (Wall-mounted)	Maximum installation height when ceiling-mounted					Sound pressure level <sup>2)</sup>	Sound power level
			with LPHW 75/65 °C		with LPHW 82/71 °C						Louvre	Air diffuser	Outlet nozzle	Induction louvre	KaMAX. vertical		
	t <sub>L1</sub> [°C]	[V]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	V [m³/h]	n [min <sup>-1</sup> ]	P [W]	[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]	
442134	10	10	12.8	28.0	14.2	30.0	2020	1090	72	16	5.0	3.2	6.8	6.8	7.9	49	65
		8	11.8	28.7	13.1	30.8	1800	970	52	14	4.7	3.0	6.3	6.3	7.3	46	62
		6	10.0	30.3	11.1	32.6	1400	750	26	11	4.0	2.6	5.4	5.4	6.2	39	55
		4	7.5	32.9	8.4	35.4	940	510	9	7	3.1	--	4.1	4.1	4.7	29	45
		2	5.0	37.4	5.5	40.4	520	280	4	4	--	--	2.8	2.8	3.1	13	29
	15	10	11.6	31.7	13.0	33.7	2020	1090	72	16	5.0	3.2	6.8	6.8	7.9	49	65
		8	10.7	32.3	12.0	34.4	1800	970	52	14	4.7	3.0	6.3	6.3	7.3	46	62
		6	9.1	33.8	10.2	36.1	1400	750	26	11	4.0	2.6	5.4	5.4	6.2	39	55
		4	6.9	36.2	7.7	38.7	940	510	9	7	3.1	--	4.1	4.1	4.7	29	45
		2	4.5	40.3	5.1	43.4	520	280	4	4	--	--	2.8	2.8	3.1	13	29
	20	10	10.5	35.3	11.9	37.3	2020	1090	72	16	5.0	3.2	6.8	6.8	7.9	49	65
		8	9.7	35.8	11.0	38.0	1800	970	52	14	4.7	3.0	6.3	6.3	7.3	46	62
		6	8.2	37.2	9.3	39.5	1400	750	26	11	4.0	2.6	5.4	5.4	6.2	39	55
		4	6.2	39.4	7.0	42.0	940	510	9	7	3.1	--	4.1	4.1	4.7	29	45
		2	4.1	43.2	4.7	46.3	520	280	4	4	--	--	2.8	2.8	3.1	13	29
443134	10	10	17.0	34.0	18.9	36.7	2020	1090	72	16	5.0	3.2	6.8	6.8	7.9	49	65
		8	15.7	34.9	17.4	37.6	1800	970	52	14	4.7	3.0	6.3	6.3	7.3	46	62
		6	13.2	37.0	14.7	40.0	1400	750	26	11	4.0	2.6	5.4	5.4	6.2	39	55
		4	10.1	40.6	11.2	44.0	940	510	9	7	3.1	--	4.1	4.1	4.7	29	45
		2	6.7	46.7	7.4	50.8	520	280	4	4	--	--	2.8	2.8	3.1	13	29
	15	10	15.5	37.2	17.4	39.9	2020	1090	72	16	5.0	3.2	6.8	6.8	7.9	49	65
		8	14.3	38.0	16.0	40.8	1800	970	52	14	4.7	3.0	6.3	6.3	7.3	46	62
		6	12.1	40.0	13.5	43.0	1400	750	26	11	4.0	2.6	5.4	5.4	6.2	39	55
		4	9.2	43.3	10.3	46.8	940	510	9	7	3.1	--	4.1	4.1	4.7	29	45
		2	6.1	48.9	6.8	53.1	520	280	4	4	--	--	2.8	2.8	3.1	13	29
	20	10	14.0	40.4	15.9	43.1	2020	1090	72	16	5.0	3.2	6.8	6.8	7.9	49	65
		8	12.9	41.1	14.6	43.9	1800	970	52	14	4.7	3.0	6.3	6.3	7.3	46	62
		6	10.9	42.9	12.4	46.0	1400	750	26	11	4.0	2.6	5.4	5.4	6.2	39	55
		4	8.3	46.0	9.4	49.5	940	510	9	7	3.1	--	4.1	4.1	4.7	29	45
		2	5.5	51.1	6.2	55.3	520	280	4	4	--	--	2.8	2.8	3.1	13	29
Suitable for low water temperatures 444134	10	10	18.2	42.3	20.2	45.9	1610	1090	72	12	4.3	2.8	5.9	5.9	6.8	49	65
		8	16.9	43.7	18.7	47.5	1430	970	52	11	4.0	2.7	5.5	5.5	6.3	46	62
		6	14.1	46.3	15.6	50.3	1110	750	26	9	3.4	2.3	4.6	4.6	5.3	39	55
		4	10.8	51.2	12.0	55.7	750	510	9	6	2.7	--	3.6	3.6	4.0	29	45
		2	7.2	59.9	8.0	65.5	410	280	4	3	--	--	2.4	2.4	2.6	13	29
	15	10	16.6	44.9	18.6	48.5	1610	1090	72	12	4.3	2.8	5.9	5.9	6.8	49	65
		8	15.4	46.2	17.3	50.0	1430	970	52	11	4.0	2.7	5.5	5.5	6.3	46	62
		6	12.8	48.5	14.4	52.6	1110	750	26	9	3.4	2.3	4.6	4.6	5.3	39	55
		4	9.9	53.1	11.1	57.7	750	510	9	6	2.7	--	3.6	3.6	4.0	29	45
		2	6.5	61.2	7.3	66.8	410	280	4	3	--	--	2.4	2.4	2.6	13	29
	20	10	15.0	47.4	17.0	51.1	1610	1090	72	12	4.3	2.8	5.9	5.9	6.8	49	65
		8	13.9	48.6	15.8	52.4	1430	970	52	11	4.0	2.7	5.5	5.5	6.3	46	62
		6	11.6	50.7	13.2	54.9	1110	750	26	9	3.4	2.3	4.6	4.6	5.3	39	55
		4	8.9	54.9	10.1	59.6	750	510	9	6	2.7	--	3.6	3.6	4.0	29	45
		2	5.9	62.3	6.7	68.0	410	280	4	3	--	--	2.4	2.4	2.6	13	29

V [m³/h] = air volume, free-blowing; Q<sub>H</sub> [kW] = heat output; t<sub>L1</sub> [°C] = air inlet temperature; t<sub>L2</sub> [°C] = air outlet temperature

<sup>1)</sup> Measured in a TOP with heat exchanger code 33.

<sup>2)</sup> The sound pressure levels were calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).



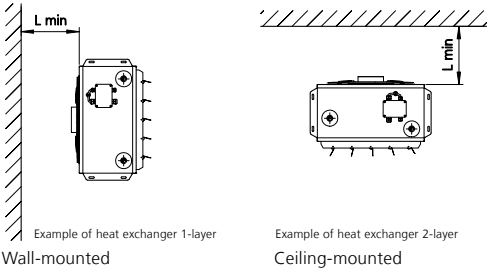
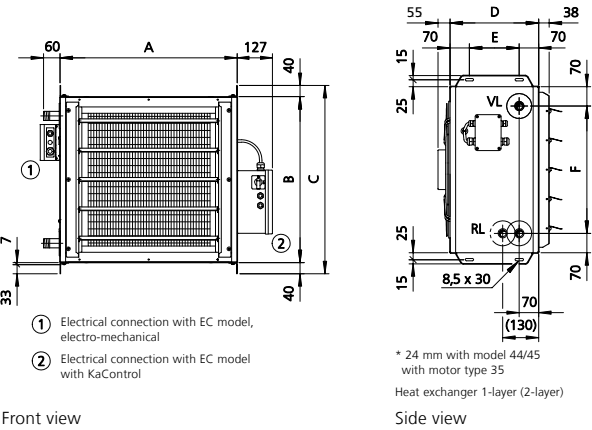
TOP EC

Heat exchanger, galvanised steel

Model 45

EC fan with high speed (motor code 33)

Technical Drawings (Dimensions in mm)



Type	A	B	C	D	E	F	L <sub>min</sub>
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
Model 45	640	600	680	320	180	460	180

Specifications

Weights

Type	Weight	Water content
	[kg]	[l]
452133	60	5,1
453133	69	8,2
454133	82	8,2

Connection

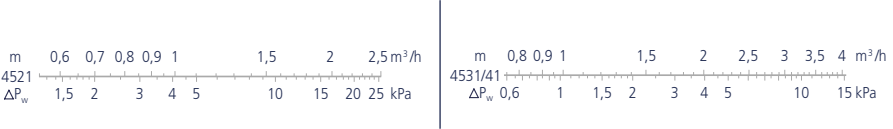
1 \*

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Water resistance



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.

m = Water volumetric flow [m³/h]  
ΔP<sub>w</sub> = Water resistance [kPa]

## Outputs Series 45\*\*33 EC



Type	Intake air temperature	Control voltage	Heat outputs				Air volume	Speed <sup>1)</sup>	Power consumption <sup>1)</sup>	Throw (Wall-mounted)	Maximum installation height when ceiling-mounted					Sound pressure level <sup>2)</sup>	Sound power level
			with LPHW 75/65 °C		with LPHW 82/71 °C						Louvre	Air diffuser	Outlet nozzle	Induction louvre	KaMAX, vertical		
	t <sub>L1</sub> [°C]	[V]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	V [m³/h]	n [min <sup>-1</sup> ]	P [W]	[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]	
452133	10	10	24.8	26.1	27.5	27.9	4390	1600	325	24	6.8	4.2	9.5	9.5	11.8	64	80
		8	21.3	27.3	23.6	29.3	3500	1280	171	19	5.9	3.7	8.2	8.2	10.1	58	74
		6	16.8	29.3	18.6	31.4	2480	910	75	13	4.8	3.1	6.5	6.5	8.0	49	65
		4	11.9	32.5	13.2	35.0	1510	550	27	8	3.5	2.3	4.7	4.7	5.7	36	52
		2	7.3	38.1	8.1	41.2	740	270	2	3	2.3	--	3.0	3.0	3.6	17	33
	15	10	22.6	29.9	25.3	31.7	4390	1600	325	24	6.8	4.2	9.5	9.5	11.8	64	80
		8	19.4	31.0	21.7	33.0	3500	1280	171	19	5.9	3.7	8.2	8.2	10.1	58	74
		6	15.3	32.9	17.1	35.0	2480	910	75	13	4.8	3.1	6.5	6.5	8.0	49	65
		4	10.9	35.8	12.2	38.4	1510	550	27	8	3.5	2.3	4.7	4.7	5.7	36	52
		2	6.6	41.0	7.5	44.2	740	270	2	3	2.3	--	3.0	3.0	3.6	17	33
	20	10	20.4	33.7	23.1	35.5	4390	1600	325	24	6.8	4.2	9.5	9.5	11.8	64	80
		8	17.5	34.7	19.9	36.7	3500	1280	171	19	5.9	3.7	8.2	8.2	10.1	58	74
		6	13.8	36.4	15.7	38.6	2480	910	75	13	4.8	3.1	6.5	6.5	8.0	49	65
		4	9.8	39.1	11.1	41.7	1510	550	27	8	3.5	2.3	4.7	4.7	5.7	36	52
		2	6.0	43.8	6.8	47.1	740	270	2	3	2.3	--	3.0	3.0	3.6	17	33
453133	10	10	31.6	30.5	35.1	32.8	4390	1600	325	24	6.8	4.2	9.5	9.5	11.8	64	80
		8	27.1	32.1	30.1	34.6	3500	1280	171	19	5.9	3.7	8.2	8.2	10.1	58	74
		6	21.4	34.6	23.7	37.3	2480	910	75	13	4.8	3.1	6.5	6.5	8.0	49	65
		4	15.2	38.7	16.9	41.9	1510	550	27	8	3.5	2.3	4.7	4.7	5.7	36	52
		2	9.2	45.6	10.3	49.6	740	270	2	3	2.3	--	3.0	3.0	3.6	17	33
	15	10	28.8	34.0	32.3	36.3	4390	1600	325	24	6.8	4.2	9.5	9.5	11.8	64	80
		8	24.7	35.4	27.7	37.9	3500	1280	171	19	5.9	3.7	8.2	8.2	10.1	58	74
		6	19.5	37.8	21.9	40.5	2480	910	75	13	4.8	3.1	6.5	6.5	8.0	49	65
		4	13.8	41.6	15.5	44.8	1510	550	27	8	3.5	2.3	4.7	4.7	5.7	36	52
		2	8.4	48.0	9.4	52.0	740	270	2	3	2.3	--	3.0	3.0	3.6	17	33
	20	10	26.0	37.4	29.5	39.8	4390	1600	325	24	6.8	4.2	9.5	9.5	11.8	64	80
		8	22.3	38.7	25.3	41.3	3500	1280	171	19	5.9	3.7	8.2	8.2	10.1	58	74
		6	17.6	40.9	20.0	43.7	2480	910	75	13	4.8	3.1	6.5	6.5	8.0	49	65
		4	12.5	44.3	14.2	47.6	1510	550	27	8	3.5	2.3	4.7	4.7	5.7	36	52
		2	7.6	50.2	8.6	54.3	740	270	2	3	2.3	--	3.0	3.0	3.6	17	33
Suitable for low water temperatures 454133	10	10	38.3	39.5	42.5	42.7	3710	1600	325	20	6.1	3.9	8.6	8.6	10.6	64	80
		8	32.7	41.5	36.3	45.0	2960	1280	171	16	5.3	3.4	7.4	7.4	9.1	58	74
		6	25.7	45.0	28.6	48.9	2100	910	75	11	4.3	2.8	5.8	5.8	7.1	49	65
		4	18.3	50.9	20.4	55.5	1280	550	27	6	3.2	--	4.2	4.2	5.1	36	52
		2	11.2	61.5	12.4	67.2	620	270	2	3	--	--	2.7	2.7	3.2	17	33
	15	10	34.9	42.2	39.1	45.6	3710	1600	325	20	6.1	3.9	8.6	8.6	10.6	64	80
		8	29.8	44.2	33.4	47.7	2960	1280	171	16	5.3	3.4	7.4	7.4	9.1	58	74
		6	23.5	47.4	26.3	51.3	2100	910	75	11	4.3	2.8	5.8	5.8	7.1	49	65
		4	16.7	52.9	18.7	57.5	1280	550	27	6	3.2	--	4.2	4.2	5.1	36	52
		2	10.2	62.6	11.4	68.4	620	270	2	3	--	--	2.7	2.7	3.2	17	33
	20	10	31.5	45.0	35.7	48.3	3710	1600	325	20	6.1	3.9	8.6	8.6	10.6	64	80
		8	26.9	46.7	30.5	50.3	2960	1280	171	16	5.3	3.4	7.4	7.4	9.1	58	74
		6	21.2	49.7	24.1	53.7	2100	910	75	11	4.3	2.8	5.8	5.8	7.1	49	65
		4	15.1	54.7	17.1	59.4	1280	550	27	6	3.2	--	4.2	4.2	5.1	36	52
		2	9.2	63.6	10.4	69.5	620	270	2	3	--	--	2.7	2.7	3.2	17	33

V [m³/h] = air volume, free-blowing; Q<sub>H</sub> [kW] = heat output; t<sub>L1</sub> [°C] = air inlet temperature; t<sub>L2</sub> [°C] = air outlet temperature

<sup>1)</sup> Measured in a TOP with heat exchanger code 33.

<sup>2)</sup> The sound pressure levels were calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).





## Outputs Series 45\*\*34 EC



Type	Intake air temperature	Control voltage	Heat outputs				Air volume	Speed <sup>1)</sup>	Power consumption <sup>1)</sup>	Throw (Wall-mounted)	Maximum installation height when ceiling-mounted					Sound pressure level <sup>2)</sup>	Sound power level
			with LPHW 75/65 °C		with LPHW 82/71 °C						Louvre	Air diffuser	Outlet nozzle	Induction louvre	KaMAX, vertical		
	t <sub>L1</sub> [°C]	[V]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	V [m³/h]	n [min <sup>-1</sup> ]	P [W]		[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]
452134	10	10	21.1	27.3	23.5	29.3	3480	1130	165	19	5.9	3.7	8.2	8.2	10.0	56	72
		8	18.6	28.4	20.6	30.4	2890	940	101	15	5.2	3.4	7.2	7.2	8.8	51	67
		6	15.7	29.8	17.4	32.0	2260	730	47	12	4.5	3.0	6.2	6.2	7.6	44	60
		4	12.1	32.4	13.5	34.9	1550	500	18	8	3.6	2.4	4.9	4.9	5.9	35	51
		2	10.0	34.3	11.1	37.0	1170	380	10	6	3.0	--	4.1	4.1	4.9	19	35
	15	10	19.3	31.0	21.6	33.0	3480	1130	165	19	5.9	3.7	8.2	8.2	10.0	56	72
		8	16.9	32.0	19.0	34.1	2890	940	101	15	5.2	3.4	7.2	7.2	8.8	51	67
		6	14.3	33.3	16.0	35.5	2260	730	47	12	4.5	3.0	6.2	6.2	7.6	44	60
		4	11.1	35.7	12.4	38.2	1550	500	18	8	3.6	2.4	4.9	4.9	5.9	35	51
		2	9.1	37.5	10.2	40.2	1170	380	10	6	3.0	--	4.1	4.1	4.9	19	35
	20	10	17.4	34.7	19.7	36.7	3480	1130	165	19	5.9	3.7	8.2	8.2	10.0	56	72
		8	15.3	35.6	17.4	37.7	2890	940	101	15	5.2	3.4	7.2	7.2	8.8	51	67
		6	12.9	36.8	14.6	39.0	2260	730	47	12	4.5	3.0	6.2	6.2	7.6	44	60
		4	10.0	39.0	11.3	41.5	1550	500	18	8	3.6	2.4	4.9	4.9	5.9	35	51
		2	8.2	40.6	9.3	43.4	1170	380	10	6	3.0	--	4.1	4.1	4.9	19	35
453134	10	10	27.0	32.1	29.9	34.6	3480	1130	165	19	5.9	3.7	8.2	8.2	10.0	56	72
		8	23.7	33.4	26.3	36.0	2890	940	101	15	5.2	3.4	7.2	7.2	8.8	51	67
		6	20.0	35.3	22.3	38.1	2260	730	47	12	4.5	3.0	6.2	6.2	7.6	44	60
		4	15.4	38.4	17.1	41.6	1550	500	18	8	3.6	2.4	4.9	4.9	5.9	35	51
		2	12.8	41.1	14.2	44.6	1170	380	10	6	3.0	--	4.1	4.1	4.9	19	35
	15	10	24.6	35.5	27.6	38.0	3480	1130	165	19	5.9	3.7	8.2	8.2	10.0	56	72
		8	21.6	36.7	24.2	39.3	2890	940	101	15	5.2	3.4	7.2	7.2	8.8	51	67
		6	18.3	38.4	20.5	41.3	2260	730	47	12	4.5	3.0	6.2	6.2	7.6	44	60
		4	14.1	41.3	15.8	44.5	1550	500	18	8	3.6	2.4	4.9	4.9	5.9	35	51
		2	11.6	43.8	13.0	47.3	1170	380	10	6	3.0	--	4.1	4.1	4.9	19	35
	20	10	22.2	38.8	25.2	41.3	3480	1130	165	19	5.9	3.7	8.2	8.2	10.0	56	72
		8	19.5	39.8	22.1	42.5	2890	940	101	15	5.2	3.4	7.2	7.2	8.8	51	67
		6	16.5	41.5	18.7	44.4	2260	730	47	12	4.5	3.0	6.2	6.2	7.6	44	60
		4	12.7	44.1	14.4	47.3	1550	500	18	8	3.6	2.4	4.9	4.9	5.9	35	51
		2	10.5	46.4	11.9	49.9	1170	380	10	6	3.0	--	4.1	4.1	4.9	19	35
Suitable for low water temperatures 454134	10	10	31.8	42.0	35.3	45.6	2840	1130	165	15	5.2	3.3	7.1	7.1	8.7	56	72
		8	27.9	44.0	31.0	47.7	2350	940	101	12	4.6	3.0	6.3	6.3	7.7	51	67
		6	23.6	46.6	26.2	50.6	1840	730	47	10	4.0	2.6	5.4	5.4	6.6	44	60
		4	18.1	51.0	20.1	55.6	1260	500	18	6	3.2	--	4.2	4.2	5.1	35	51
		2	15.1	54.8	16.7	59.8	960	380	10	5	2.7	--	3.6	3.6	4.3	19	35
	15	10	29.0	44.6	32.5	48.2	2840	1130	165	15	5.2	3.3	7.1	7.1	8.7	56	72
		8	25.5	46.4	28.6	50.2	2350	940	101	12	4.6	3.0	6.3	6.3	7.7	51	67
		6	21.5	48.8	24.1	52.9	1840	730	47	10	4.0	2.6	5.4	5.4	6.6	44	60
		4	16.5	52.9	18.5	57.6	1260	500	18	6	3.2	--	4.2	4.2	5.1	35	51
		2	13.7	56.5	15.4	61.5	960	380	10	5	2.7	--	3.6	3.6	4.3	19	35
	20	10	26.2	47.1	29.7	50.8	2840	1130	165	15	5.2	3.3	7.1	7.1	8.7	56	72
		8	23.0	48.8	26.1	52.7	2350	940	101	12	4.6	3.0	6.3	6.3	7.7	51	67
		6	19.4	51.0	22.0	55.2	1840	730	47	10	4.0	2.6	5.4	5.4	6.6	44	60
		4	14.9	54.8	16.9	59.5	1260	500	18	6	3.2	--	4.2	4.2	5.1	35	51
		2	12.4	58.0	14.1	63.1	960	380	10	5	2.7	--	3.6	3.6	4.3	19	35

V [m³/h] = air volume, free-blowing; Q<sub>H</sub> [kW] = heat output; t<sub>L1</sub> [°C] = air inlet temperature; t<sub>L2</sub> [°C] = air outlet temperature

<sup>1)</sup> Measured in a TOP with heat exchanger code 33.

<sup>2)</sup> The sound pressure levels were calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

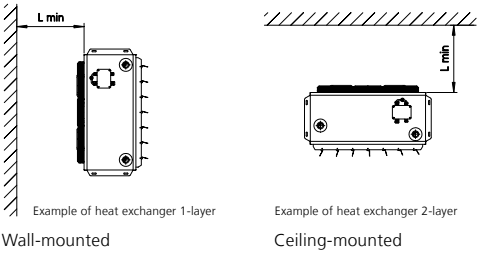
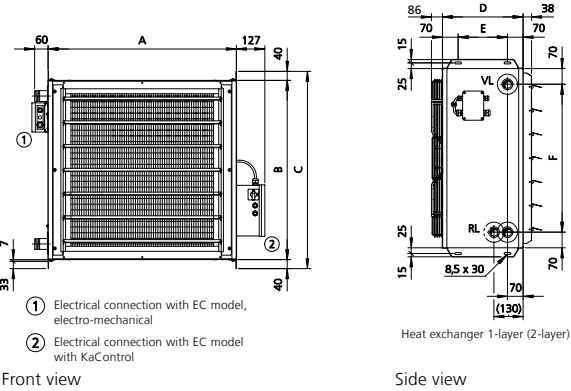
TOP EC

Heat exchanger, galvanised steel

Model 46

EC fan with high speed (motor code 33)

Technical Drawings (Dimensions in mm)



Type	A	B	C	D	E	F	L <sub>min</sub>
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
Model 46	740	700	780	320	180	560	230

Specifications

### Weights

Type	Weight	Water content
	[kg]	[l]
462133	81	5,7
463133	93	11,5
464133	111	11,5

### Connection

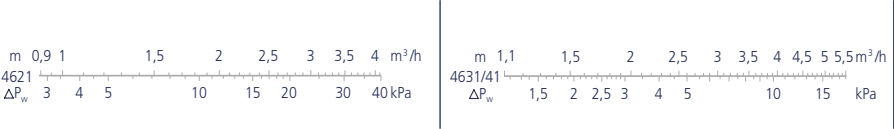
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Water resistance



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.

m = Water volumetric flow [m³/h]  
ΔP<sub>w</sub> = Water resistance [kPa]

## Outputs Series 46\*\*33 EC



Type	Intake air temperature	Control voltage	Heat outputs				Air volume	Speed <sup>1)</sup>	Power consumption <sup>1)</sup>	Throw (Wall-mounted)	Maximum installation height when ceiling-mounted					Sound pressure level <sup>2)</sup>	Sound power level
			with LPHW 75/65 °C		with LPHW 82/71 °C						Louvre	Air diffuser	Outlet nozzle	Induction louvre	KaMAX, vertical		
	t <sub>L1</sub> [°C]	[V]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	V [m³/h]	n [min <sup>-1</sup> ]	P [W]	[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]	
462133	10	10	39.8	27.6	44.2	29.6	6450	1000	434	30	7.7	4.4	10.6	10.6	13.6	62	78
		8	33.9	28.9	37.6	31.0	5110	780	226	24	6.7	3.8	9.1	9.1	11.6	56	72
		6	26.8	31.0	29.8	33.3	3650	560	93	17	5.5	3.2	7.3	7.3	9.3	47	63
		4	18.8	34.6	20.9	37.3	2190	320	29	10	4.0	2.4	5.3	5.3	6.6	33	49
		2	8.9	44.7	9.8	48.5	730	120	9	3	--	--	2.7	2.7	3.3	20	36
	15	10	36.3	31.3	40.7	33.3	6450	1000	434	30	7.7	4.4	10.6	10.6	13.6	62	78
		8	30.9	32.5	34.6	34.7	5110	780	226	24	6.7	3.8	9.1	9.1	11.6	56	72
		6	24.5	34.4	27.4	36.8	3650	560	93	17	5.5	3.2	7.3	7.3	9.3	47	63
		4	17.2	37.7	19.2	40.5	2190	320	29	10	4.0	2.4	5.3	5.3	6.6	33	49
		2	8.1	47.1	9.1	51.0	730	120	9	3	--	--	2.7	2.7	3.3	20	36
	20	10	32.8	35.0	37.2	37.0	6450	1000	434	30	7.7	4.4	10.6	10.6	13.6	62	78
		8	27.9	36.1	31.7	38.2	5110	780	226	24	6.7	3.8	9.1	9.1	11.6	56	72
		6	22.1	37.8	25.1	40.2	3650	560	93	17	5.5	3.2	7.3	7.3	9.3	47	63
		4	15.5	40.8	17.6	43.6	2190	320	29	10	4.0	2.4	5.3	5.3	6.6	33	49
		2	7.3	49.4	8.3	53.4	730	120	9	3	--	--	2.7	2.7	3.3	20	36
463133	10	10	51.0	32.6	56.7	35.1	6450	1000	434	30	7.7	4.4	10.6	10.6	13.6	62	78
		8	43.5	34.3	48.3	37.0	5110	780	226	24	6.7	3.8	9.1	9.1	11.6	56	72
		6	34.5	37.0	38.3	40.0	3650	560	93	17	5.5	3.2	7.3	7.3	9.3	47	63
		4	24.2	41.5	26.8	45.0	2190	320	29	10	4.0	2.4	5.3	5.3	6.6	33	49
		2	11.3	54.2	12.5	59.1	730	120	9	3	--	--	2.7	2.7	3.3	20	36
	15	10	46.5	35.9	52.2	38.4	6450	1000	434	30	7.7	4.4	10.6	10.6	13.6	62	78
		8	39.6	37.5	44.5	40.2	5110	780	226	24	6.7	3.8	9.1	9.1	11.6	56	72
		6	31.4	40.0	35.3	43.0	3650	560	93	17	5.5	3.2	7.3	7.3	9.3	47	63
		4	22.0	44.2	24.7	47.7	2190	320	29	10	4.0	2.4	5.3	5.3	6.6	33	49
		2	10.3	55.9	11.5	60.9	730	120	9	3	--	--	2.7	2.7	3.3	20	36
	20	10	42.0	39.2	47.7	41.7	6450	1000	434	30	7.7	4.4	10.6	10.6	13.6	62	78
		8	35.8	40.6	40.6	43.4	5110	780	226	24	6.7	3.8	9.1	9.1	11.6	56	72
		6	28.4	42.9	32.2	46.0	3650	560	93	17	5.5	3.2	7.3	7.3	9.3	47	63
		4	19.9	46.7	22.6	50.3	2190	320	29	10	4.0	2.4	5.3	5.3	6.6	33	49
		2	9.3	57.5	10.6	62.5	730	120	9	3	--	--	2.7	2.7	3.3	20	36
Suitable for low water temperatures 464133	10	10	53.4	41.2	59.3	44.6	4900	1000	434	23	6.5	3.8	8.9	8.9	11.3	62	78
		8	45.2	43.6	50.2	47.3	3840	780	226	18	5.7	3.3	7.6	7.6	9.6	56	72
		6	35.9	47.3	39.9	51.5	2750	560	93	12	4.6	2.8	6.2	6.2	7.7	47	63
		4	24.7	54.0	27.4	58.9	1600	320	29	7	3.3	--	4.4	4.4	5.3	33	49
		2	12.5	69.6	13.9	76.2	600	120	9	2	--	--	2.4	2.4	2.9	20	36
	15	10	48.7	43.8	54.6	47.3	4900	1000	434	23	6.5	3.8	8.9	8.9	11.3	62	78
		8	41.2	46.1	46.2	49.9	3840	780	226	18	5.7	3.3	7.6	7.6	9.6	56	72
		6	32.8	49.5	36.8	53.7	2750	560	93	12	4.6	2.8	6.2	6.2	7.7	47	63
		4	22.5	55.7	25.2	60.7	1600	320	29	7	3.3	--	4.4	4.4	5.3	33	49
		2	11.4	70.1	12.8	76.8	600	120	9	2	--	--	2.4	2.4	2.9	20	36
	20	10	44.0	46.4	49.9	50.0	4900	1000	434	23	6.5	3.8	8.9	8.9	11.3	62	78
		8	37.2	48.5	42.2	52.3	3840	780	226	18	5.7	3.3	7.6	7.6	9.6	56	72
		6	29.6	51.7	33.6	55.9	2750	560	93	12	4.6	2.8	6.2	6.2	7.7	47	63
		4	20.3	57.3	23.0	62.3	1600	320	29	7	3.3	--	4.4	4.4	5.3	33	49
		2	10.3	70.5	11.7	77.3	600	120	9	2	--	--	2.4	2.4	2.9	20	36

V [m³/h] = air volume, free-blowing; Q<sub>H</sub> [kW] = heat output; t<sub>L1</sub> [°C] = air inlet temperature; t<sub>L2</sub> [°C] = air outlet temperature

<sup>1)</sup> Measured in a TOP with heat exchanger code 33.

<sup>2)</sup> The sound pressure levels were calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

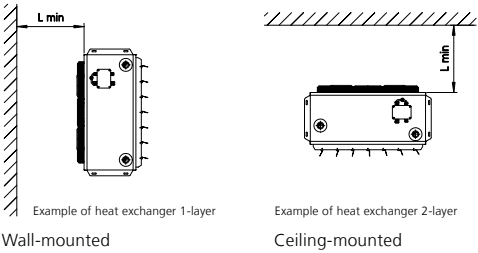
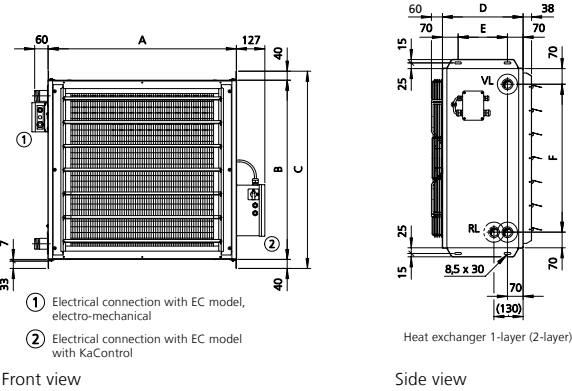
TOP EC

Heat exchanger, galvanised steel

Model 47

EC fan with high speed (motor code 33)

Technical Drawings (Dimensions in mm)



Type	A	B	C	D	E	F	L <sub>min</sub>
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
Model 47	840	800	880	360	220	660	300

Specifications

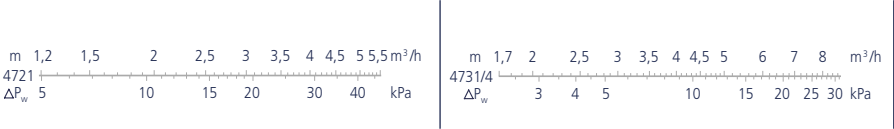
Weights			Connection 1½"
Type	Weight [kg]	Water content [l]	
472133	99	8,7	
473133	116	16,8	
474133	140	16,8	

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Water resistance



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.

m = Water volumetric flow [m³/h]  
ΔP<sub>w</sub> = Water resistance [kPa]



## Outputs Series 47\*\*33 EC



Type	Intake air temperature	Control voltage	Heat outputs				Air volume	Speed <sup>1)</sup>	Power consumption <sup>1)</sup>	Throw (Wall-mounted)	Maximum installation height when ceiling-mounted					Sound pressure level <sup>2)</sup>	Sound power level
			with LPHW 75/65 °C		with LPHW 82/71 °C						Louvre	Air diffuser	Outlet nozzle	Induction louvre	KaMAX, vertical		
	t <sub>L1</sub> [°C]	[V]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	V [m³/h]	n [min <sup>-1</sup> ]	P [W]		[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]
472133	10	10	59.4	30.2	66.0	32.5	8390	900	390	34	7.8	4.2	11.1	11.1	16.9	61	77
		8	56.7	30.9	63.0	33.3	7740	830	320	31	7.5	4.0	10.5	10.5	16.0	59	75
		6	47.1	32.4	52.3	34.9	6010	650	156	24	6.4	3.5	9.0	9.0	13.5	53	69
		4	35.0	35.7	38.8	38.5	3890	420	57	15	5.0	2.8	6.8	6.8	10.1	41	57
		2	21.1	42.3	23.5	45.9	1870	200	18	6	3.3	--	4.4	4.4	6.3	22	38
	15	10	54.1	33.7	60.7	36.0	8390	900	390	34	7.8	4.2	11.1	11.1	16.9	61	77
		8	51.7	34.4	58.0	36.7	7740	830	320	31	7.5	4.0	10.5	10.5	16.0	59	75
		6	43.0	35.7	48.2	38.2	6010	650	156	24	6.4	3.5	9.0	9.0	13.5	53	69
		4	31.9	38.8	35.8	41.6	3890	420	57	15	5.0	2.8	6.8	6.8	10.1	41	57
		2	19.3	44.9	21.6	48.5	1870	200	18	6	3.3	--	4.4	4.4	6.3	22	38
	20	10	48.9	37.1	55.5	39.4	8390	900	390	34	7.8	4.2	11.1	11.1	16.9	61	77
		8	46.7	37.7	53.0	40.1	7740	830	320	31	7.5	4.0	10.5	10.5	16.0	59	75
		6	38.8	39.0	44.0	41.5	6010	650	156	24	6.4	3.5	9.0	9.0	13.5	53	69
		4	28.8	41.8	32.7	44.7	3890	420	57	15	5.0	2.8	6.8	6.8	10.1	41	57
		2	17.4	47.4	19.7	51.0	1870	200	18	6	3.3	--	4.4	4.4	6.3	22	38
473133	10	10	76.9	36.2	85.4	39.1	8390	900	390	34	7.8	4.2	11.1	11.1	16.9	61	77
		8	72.7	36.8	80.8	39.8	7740	830	320	31	7.5	4.0	10.5	10.5	16.0	59	75
		6	61.1	39.0	67.8	42.3	6010	650	156	24	6.4	3.5	9.0	9.0	13.5	53	69
		4	45.3	43.3	50.3	47.0	3890	420	57	15	5.0	2.8	6.8	6.8	10.1	41	57
		2	27.3	51.7	30.3	56.4	1870	200	18	6	3.3	--	4.4	4.4	6.3	22	38
	15	10	70.1	39.2	78.6	42.2	8390	900	390	34	7.8	4.2	11.1	11.1	16.9	61	77
		8	66.3	39.8	74.4	42.9	7740	830	320	31	7.5	4.0	10.5	10.5	16.0	59	75
		6	55.7	41.9	62.5	45.1	6010	650	156	24	6.4	3.5	9.0	9.0	13.5	53	69
		4	41.3	45.8	46.3	49.5	3890	420	57	15	5.0	2.8	6.8	6.8	10.1	41	57
		2	24.9	53.6	27.9	58.3	1870	200	18	6	3.3	--	4.4	4.4	6.3	22	38
	20	10	63.3	42.2	71.8	45.2	8390	900	390	34	7.8	4.2	11.1	11.1	16.9	61	77
		8	59.9	42.8	68.0	45.8	7740	830	320	31	7.5	4.0	10.5	10.5	16.0	59	75
		6	50.3	44.6	57.1	47.9	6010	650	156	24	6.4	3.5	9.0	9.0	13.5	53	69
		4	37.3	48.2	42.3	52.0	3890	420	57	15	5.0	2.8	6.8	6.8	10.1	41	57
		2	22.5	55.4	25.5	60.1	1870	200	18	6	3.3	--	4.4	4.4	6.3	22	38
Suitable for low water temperatures 474133	10	10	77.2	42.8	85.8	46.4	6730	900	390	27	6.9	3.7	9.7	9.7	14.5	61	77
		8	73.0	43.6	81.1	47.3	6210	830	320	25	6.6	3.6	9.2	9.2	13.8	59	75
		6	61.3	46.3	68.1	50.4	4820	650	156	19	5.7	3.1	7.9	7.9	11.7	53	69
		4	45.4	51.6	50.4	56.2	3120	420	57	11	4.4	2.5	6.0	6.0	8.7	41	57
		2	27.4	62.3	30.5	68.1	1500	200	18	4	2.9	--	3.9	3.9	5.5	22	38
	15	10	70.4	45.3	79.0	49.0	6730	900	390	27	6.9	3.7	9.7	9.7	14.5	61	77
		8	66.5	46.1	74.6	49.8	6210	830	320	25	6.6	3.6	9.2	9.2	13.8	59	75
		6	55.9	48.6	62.7	52.7	4820	650	156	19	5.7	3.1	7.9	7.9	11.7	53	69
		4	41.4	53.5	46.4	58.1	3120	420	57	11	4.4	2.5	6.0	6.0	8.7	41	57
		2	25.0	63.4	28.1	69.2	1500	200	18	4	2.9	--	3.9	3.9	5.5	22	38
	20	10	63.6	47.8	72.2	51.5	6730	900	390	27	6.9	3.7	9.7	9.7	14.5	61	77
		8	60.1	48.5	68.2	52.3	6210	830	320	25	6.6	3.6	9.2	9.2	13.8	59	75
		6	50.5	50.8	57.3	55.0	4820	650	156	19	5.7	3.1	7.9	7.9	11.7	53	69
		4	37.4	55.3	42.4	60.0	3120	420	57	11	4.4	2.5	6.0	6.0	8.7	41	57
		2	22.6	64.3	25.6	70.3	1500	200	18	4	2.9	--	3.9	3.9	5.5	22	38

V [m³/h] = air volume, free-blowing; Q<sub>H</sub> [kW] = heat output; t<sub>L1</sub> [°C] = air inlet temperature; t<sub>L2</sub> [°C] = air outlet temperature

<sup>1)</sup> Measured in a TOP with heat exchanger code 33.

<sup>2)</sup> The sound pressure levels were calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

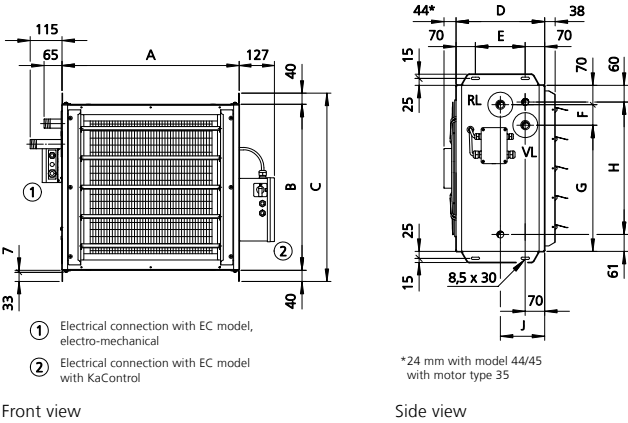
TOP EC

Heat exchanger, galvanised steel, cross-counterflow

Model 44

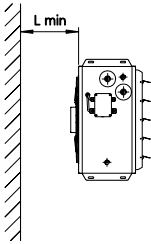
EC fan with high speed (motor code 33)

Technical Drawings (Dimensions in mm)

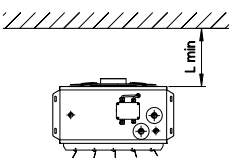


Front view

Side view



Wall-mounted



Ceiling-mounted

Type	A	B	C	D	E	F	G	H	L <sub>min</sub>
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
Model 44	540	500	580	320	180	49	395	379	160

Specifications

Weights

Type	Weight	Water content
	[kg]	[l]
443333	56	6,1
444333	62	6,1

Connection

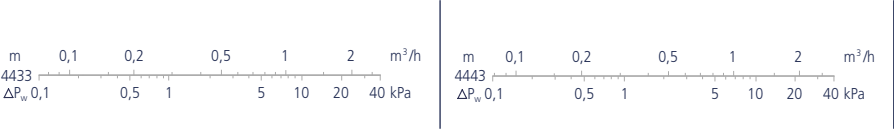
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Water resistance



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.

m = Water volumetric flow [m³/h]  
ΔP<sub>w</sub> = Water resistance [kPa]

## Outputs Series 44\*\*33 EC



Type	Intake air temperature	Control voltage	Heat outputs				Air volume	Speed <sup>1)</sup>	Power consumption <sup>1)</sup>	Throw (Wall-mounted)	Maximum installation height when ceiling-mounted					Sound pressure level <sup>2)</sup>	Sound power level
			with LPHW 80/40 °C		with LPHW 110/50 °C						Louvre	Air diffuser	Outlet nozzle	Induction louvre	KaMAX. vertical		
	t <sub>L1</sub> [°C]	[V]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	V [m³/h]	n [min <sup>-1</sup> ]	P [W]		[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]
443333	10	10	16.5	26.7	22.3	32.6	2820	1520	162	22	6.2	3.9	8.5	8.5	9.9	56	72
		8	14.4	27.6	19.5	33.8	2340	1260	95	18	5.5	3.5	7.5	7.5	8.7	52	68
		6	12.3	29.1	16.6	35.9	1830	980	48	14	4.7	3.0	6.4	6.4	7.4	45	61
		4	9.4	31.6	12.7	39.3	1240	670	18	10	3.7	2.4	4.9	4.9	5.6	35	51
		2	6.0	35.9	8.1	45.1	660	360	6	5	2.5	--	3.3	3.3	3.7	19	35
	15	10	14.5	29.9	20.4	35.9	2820	1520	162	22	6.2	3.9	8.5	8.5	9.9	56	72
		8	12.7	30.7	17.9	37.1	2340	1260	95	18	5.5	3.5	7.5	7.5	8.7	52	68
		6	10.8	32.1	15.2	39.0	1830	980	48	14	4.7	3.0	6.4	6.4	7.4	45	61
		4	8.3	34.3	11.6	42.2	1240	670	18	10	3.7	2.4	4.9	4.9	5.6	35	51
		2	5.3	38.1	7.4	47.5	660	360	6	5	2.5	--	3.3	3.3	3.7	19	35
	20	10	12.1	32.6	18.5	39.3	2820	1520	162	22	6.2	3.9	8.5	8.5	9.9	56	72
		8	10.6	33.3	16.2	40.3	2340	1260	95	18	5.5	3.5	7.5	7.5	8.7	52	68
		6	9.0	34.5	13.7	42.1	1830	980	48	14	4.7	3.0	6.4	6.4	7.4	45	61
		4	6.9	36.4	10.5	45.0	1240	670	18	10	3.7	2.4	4.9	4.9	5.6	35	51
		2	4.4	39.6	6.7	49.9	660	360	6	5	2.5	--	3.3	3.3	3.7	19	35
444333	10	10	18.4	33.0	24.9	41.1	2280	1520	162	18	5.4	3.5	7.5	7.5	8.7	56	72
		8	16.2	34.4	21.9	42.9	1900	1260	95	15	4.8	3.1	6.6	6.6	7.7	52	68
		6	13.8	36.5	18.6	45.9	1480	980	48	11	4.1	2.7	5.6	5.6	6.4	45	61
		4	10.5	39.7	14.2	50.1	1010	670	18	8	3.2	--	4.3	4.3	4.9	35	51
		2	6.7	46.0	9.0	58.6	530	360	6	4	--	--	2.8	2.8	3.2	19	35
	15	10	16.2	35.6	22.7	43.9	2280	1520	162	18	5.4	3.5	7.5	7.5	8.7	56	72
		8	14.3	36.7	20.0	45.6	1900	1260	95	15	4.8	3.1	6.6	6.6	7.7	52	68
		6	12.1	38.7	17.0	48.3	1480	980	48	11	4.1	2.7	5.6	5.6	6.4	45	61
		4	9.2	41.5	13.0	52.2	1010	670	18	8	3.2	--	4.3	4.3	4.9	35	51
		2	5.9	47.1	8.3	60.1	530	360	6	4	--	--	2.8	2.8	3.2	19	35
	20	10	13.5	37.4	20.6	46.6	2280	1520	162	18	5.4	3.5	7.5	7.5	8.7	56	72
		8	11.9	38.4	18.2	48.1	1900	1260	95	15	4.8	3.1	6.6	6.6	7.7	52	68
		6	10.1	40.1	15.4	50.6	1480	980	48	11	4.1	2.7	5.6	5.6	6.4	45	61
		4	7.7	42.4	11.8	54.2	1010	670	18	8	3.2	--	4.3	4.3	4.9	35	51
		2	4.9	47.2	7.5	61.5	530	360	6	4	--	--	2.8	2.8	3.2	19	35

V [m³/h] = air volume, free-blowing; Q<sub>H</sub> [kW] = heat output; t<sub>L1</sub> [°C] = air inlet temperature; t<sub>L2</sub> [°C] = air outlet temperature

<sup>1)</sup> Measured in a TOP with heat exchanger code 33.

<sup>2)</sup> The sound pressure levels were calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

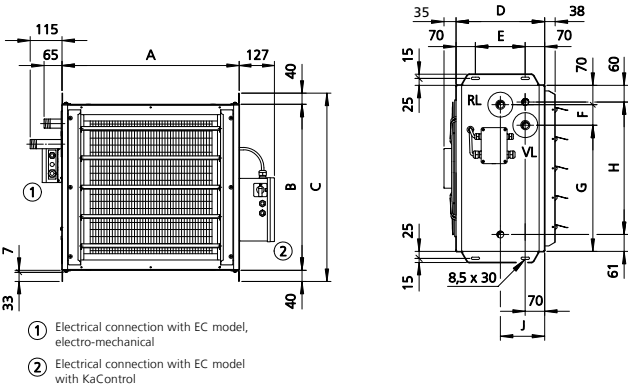
TOP EC

Heat exchanger, galvanised steel, cross-counterflow

Model 44

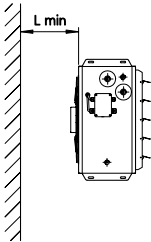
EC fan with low speed (motor code 34)

Technical Drawings (Dimensions in mm)

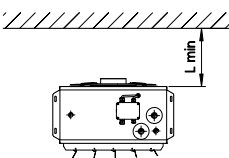


Front view

Side view



Wall-mounted



Ceiling-mounted

Type	A	B	C	D	E	F	G	H	L <sub>min</sub>
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
Model 44	540	500	580	320	180	49	395	379	160

Specifications

Weights

Type	Weight	Water content
	[kg]	[l]
443334	55	6,1
444334	62	6,1

Connection

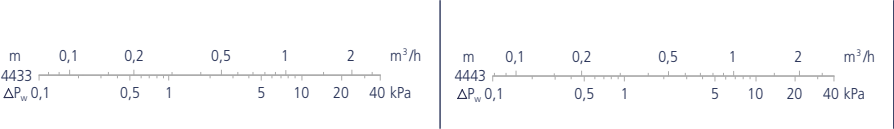
1"

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Water resistance



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.

m = Water volumetric flow [m³/h]  
ΔP<sub>w</sub> = Water resistance [kPa]



## Outputs Series 44\*\*34 EC



Type	Intake air temperature	Control voltage	Heat outputs				Air volume	Speed <sup>1)</sup>	Power consumption <sup>1)</sup>	Throw (Wall-mounted)	Maximum installation height when ceiling-mounted					Sound pressure level <sup>2)</sup>	Sound power level
			with LPHW 80/40 °C		with LPHW 110/50 °C						Louvre	Air diffuser	Outlet nozzle	Induction louvre	KaMAX. vertical		
	t <sub>L1</sub> [°C]	[V]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	V [m³/h]	n [min <sup>-1</sup> ]	P [W]		[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]
443334	10	10	13.1	28.5	17.7	35.0	2020	1090	72	16	5.0	3.2	6.8	6.8	7.9	49	65
		8	12.1	29.2	16.4	36.0	1800	970	52	14	4.7	3.0	6.3	6.3	7.3	46	62
		6	10.2	30.8	13.8	38.2	1400	750	26	11	4.0	2.6	5.4	5.4	6.2	39	55
		4	7.8	33.6	10.5	41.9	940	510	9	7	3.1	--	4.1	4.1	4.7	29	45
		2	5.2	38.4	7.0	48.4	520	280	4	4	--	--	2.8	2.8	3.1	13	29
	15	10	11.5	31.5	16.2	38.2	2020	1090	72	16	5.0	3.2	6.8	6.8	7.9	49	65
		8	10.7	32.2	15.0	39.1	1800	970	52	14	4.7	3.0	6.3	6.3	7.3	46	62
		6	9.0	33.6	12.6	41.1	1400	750	26	11	4.0	2.6	5.4	5.4	6.2	39	55
		4	6.8	36.1	9.6	44.6	940	510	9	7	3.1	--	4.1	4.1	4.7	29	45
		2	4.6	40.4	6.4	50.7	520	280	4	4	--	--	2.8	2.8	3.1	13	29
	20	10	9.6	34.0	14.7	41.3	2020	1090	72	16	5.0	3.2	6.8	6.8	7.9	49	65
		8	8.9	34.5	13.6	42.2	1800	970	52	14	4.7	3.0	6.3	6.3	7.3	46	62
		6	7.5	35.8	11.5	44.1	1400	750	26	11	4.0	2.6	5.4	5.4	6.2	39	55
		4	5.7	37.8	8.7	47.2	940	510	9	7	3.1	--	4.1	4.1	4.7	29	45
		2	3.8	41.5	5.8	52.8	520	280	4	4	--	--	2.8	2.8	3.1	13	29
444334	10	10	14.6	35.9	19.7	45.0	1610	1090	72	12	4.3	2.8	5.9	5.9	6.8	49	65
		8	13.3	36.7	18.0	46.0	1430	970	52	11	4.0	2.7	5.5	5.5	6.3	46	62
		6	11.2	38.7	15.1	48.9	1110	750	26	9	3.4	2.3	4.6	4.6	5.3	39	55
		4	8.6	42.7	11.6	54.2	750	510	9	6	2.7	--	3.6	3.6	4.0	29	45
		2	5.6	48.9	7.5	62.6	410	280	4	3	--	--	2.4	2.4	2.6	13	29
	15	10	12.8	38.1	18.0	47.4	1610	1090	72	12	4.3	2.8	5.9	5.9	6.8	49	65
		8	11.7	38.8	16.5	48.5	1430	970	52	11	4.0	2.7	5.5	5.5	6.3	46	62
		6	9.8	40.7	13.8	51.1	1110	750	26	9	3.4	2.3	4.6	4.6	5.3	39	55
		4	7.5	44.2	10.6	56.0	750	510	9	6	2.7	--	3.6	3.6	4.0	29	45
		2	4.9	49.7	6.9	63.8	410	280	4	3	--	--	2.4	2.4	2.6	13	29
	20	10	10.7	39.5	16.3	49.8	1610	1090	72	12	4.3	2.8	5.9	5.9	6.8	49	65
		8	9.8	40.2	15.0	50.8	1430	970	52	11	4.0	2.7	5.5	5.5	6.3	46	62
		6	8.2	41.7	12.5	53.2	1110	750	26	9	3.4	2.3	4.6	4.6	5.3	39	55
		4	6.3	44.7	9.6	57.7	750	510	9	6	2.7	--	3.6	3.6	4.0	29	45
		2	4.1	49.4	6.3	64.9	410	280	4	3	--	--	2.4	2.4	2.6	13	29

V [m³/h] = air volume, free-blowing; Q<sub>H</sub> [kW] = heat output; t<sub>L1</sub> [°C] = air inlet temperature; t<sub>L2</sub> [°C] = air outlet temperature

<sup>1)</sup> Measured in a TOP with heat exchanger code 33.

<sup>2)</sup> The sound pressure levels were calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

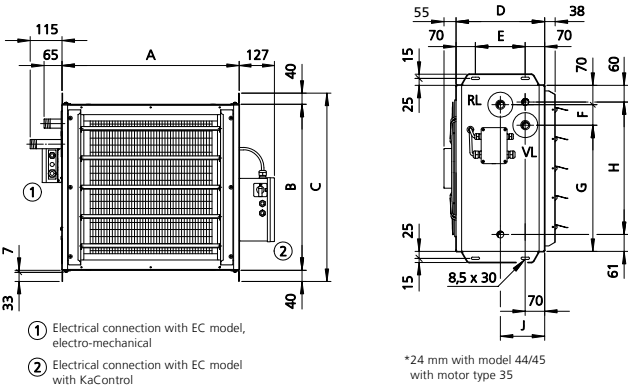
TOP EC

Heat exchanger, galvanised steel, cross-counterflow

Model 45

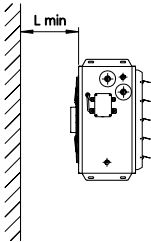
EC fan with high speed (motor code 33)

**Technical Drawings** (Dimensions in mm)

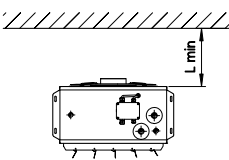


Front view

Side view



Wall-mounted



Ceiling-mounted

Type	A	B	C	D	E	F	G	H	L <sub>min</sub>
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
<b>Model 45</b>	640	600	680	320	180	74	495	479	180

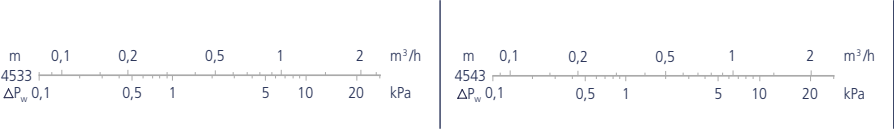
**Specifications**

Weights			Connection 1"
Type	Weight	Water content	
	[kg]	[l]	
<b>453333</b>	78	8,2	
<b>454333</b>	92	8,2	

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**Water resistance**



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.

m = Water volumetric flow [m³/h]  
ΔP<sub>w</sub> = Water resistance [kPa]

## Outputs Series 45\*\*33 EC



Type	Intake air temperature	Control voltage	Heat outputs				Air volume	Speed <sup>1)</sup>	Power consumption <sup>1)</sup>	Throw (Wall-mounted)	Maximum installation height when ceiling-mounted					Sound pressure level <sup>2)</sup>	Sound power level
			with LPHW 80/40 °C		with LPHW 110/50 °C						Louvre	Air diffuser	Outlet nozzle	Induction louvre	KaMAX. vertical		
	t <sub>L1</sub> [°C]	[V]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	V [m³/h]	n [min <sup>-1</sup> ]	P [W]		[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]
453333	10	10	27.0	27.5	36.5	33.7	4390	1600	325	24	6.8	4.2	9.5	9.5	11.8	64	80
		8	23.0	28.8	31.1	35.4	3500	1280	171	19	5.9	3.7	8.2	8.2	10.1	58	74
		6	18.1	30.9	24.5	38.2	2480	910	75	13	4.8	3.1	6.5	6.5	8.0	49	65
		4	12.9	34.5	17.5	43.1	1510	550	27	8	3.5	2.3	4.7	4.7	5.7	36	52
		2	7.9	40.5	10.7	51.2	740	270	2	3	2.3	--	3.0	3.0	3.6	17	33
	15	10	23.7	30.7	33.3	37.0	4390	1600	325	24	6.8	4.2	9.5	9.5	11.8	64	80
		8	20.2	31.8	28.5	38.6	3500	1280	171	19	5.9	3.7	8.2	8.2	10.1	58	74
		6	15.9	33.6	22.4	41.2	2480	910	75	13	4.8	3.1	6.5	6.5	8.0	49	65
		4	11.4	36.8	16.0	45.7	1510	550	27	8	3.5	2.3	4.7	4.7	5.7	36	52
		2	6.9	42.2	9.8	53.3	740	270	2	3	2.3	--	3.0	3.0	3.6	17	33
	20	10	19.8	33.3	30.2	40.3	4390	1600	325	24	6.8	4.2	9.5	9.5	11.8	64	80
		8	16.9	34.2	25.8	41.7	3500	1280	171	19	5.9	3.7	8.2	8.2	10.1	58	74
		6	13.3	35.8	20.3	44.1	2480	910	75	13	4.8	3.1	6.5	6.5	8.0	49	65
		4	9.5	38.5	14.5	48.3	1510	550	27	8	3.5	2.3	4.7	4.7	5.7	36	52
		2	5.8	43.1	8.9	55.2	740	270	2	3	2.3	--	3.0	3.0	3.6	17	33
	454333	10	10	29.1	32.4	39.4	40.3	3710	1600	325	20	6.1	3.9	8.6	8.6	10.6	64
8			24.9	34.0	33.7	42.5	2960	1280	171	16	5.3	3.4	7.4	7.4	9.1	58	74
6			19.7	36.9	26.7	46.3	2100	910	75	11	4.3	2.8	5.8	5.8	7.1	49	65
4			14.0	41.3	19.0	52.3	1280	550	27	6	3.2	--	4.2	4.2	5.1	36	52
2			8.4	48.9	11.4	62.6	620	270	2	3	--	--	2.7	2.7	3.2	17	33
15		10	25.6	35.0	36.0	43.2	3710	1600	325	20	6.1	3.9	8.6	8.6	10.6	64	80
		8	21.9	36.5	30.8	45.2	2960	1280	171	16	5.3	3.4	7.4	7.4	9.1	58	74
		6	17.4	39.0	24.4	48.7	2100	910	75	11	4.3	2.8	5.8	5.8	7.1	49	65
		4	12.3	42.9	17.3	54.3	1280	550	27	6	3.2	--	4.2	4.2	5.1	36	52
		2	7.4	49.7	10.4	63.8	620	270	2	3	--	--	2.7	2.7	3.2	17	33
20		10	21.4	37.0	32.7	45.9	3710	1600	325	20	6.1	3.9	8.6	8.6	10.6	64	80
		8	18.3	38.2	27.9	47.8	2960	1280	171	16	5.3	3.4	7.4	7.4	9.1	58	74
		6	14.5	40.3	22.1	51.0	2100	910	75	11	4.3	2.8	5.8	5.8	7.1	49	65
		4	10.3	43.7	15.7	56.1	1280	550	27	6	3.2	--	4.2	4.2	5.1	36	52
		2	6.2	49.4	9.5	64.9	620	270	2	3	--	--	2.7	2.7	3.2	17	33

V [m³/h] = air volume, free-blowing; Q<sub>H</sub> [kW] = heat output; t<sub>L1</sub> [°C] = air inlet temperature; t<sub>L2</sub> [°C] = air outlet temperature

<sup>1)</sup> Measured in a TOP with heat exchanger code 33.

<sup>2)</sup> The sound pressure levels were calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

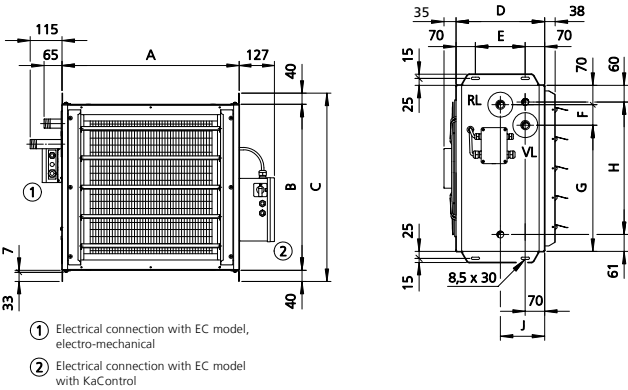
TOP EC

Heat exchanger, galvanised steel, cross-counterflow

Model 45

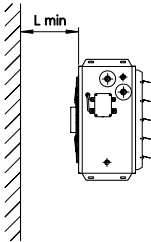
EC fan with low speed (motor code 34)

**Technical Drawings** (Dimensions in mm)

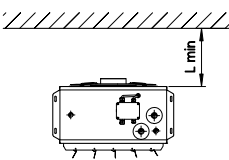


Front view

Side view



Wall-mounted



Ceiling-mounted

Type	A	B	C	D	E	F	G	H	L <sub>min</sub>
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
<b>Model 45</b>	640	600	680	320	180	74	495	479	180

**Specifications**

**Weights**

Type	Weight	Water content
	[kg]	[l]
<b>453334</b>	76	8,2
<b>454334</b>	90	8,2

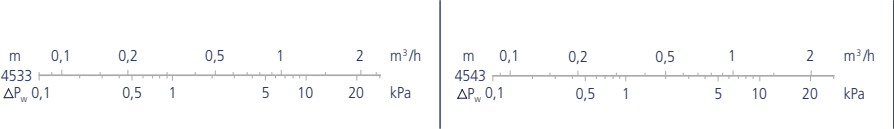
**Connection**  
1"

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**Water resistance**



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.

m = Water volumetric flow [ $m^3/h$ ]  
 $\Delta P_w$  = Water resistance [kPa]



## Outputs Series 45\*\*34 EC



Type	Intake air temperature	Control voltage	Heat outputs				Air volume	Speed <sup>1)</sup>	Power consumption <sup>1)</sup>	Throw (Wall-mounted)	Maximum installation height when ceiling-mounted					Sound pressure level <sup>2)</sup>	Sound power level
			with LPHW 80/40 °C		with LPHW 110/50 °C						Louvre	Air diffuser	Outlet nozzle	Induction louvre	KaMAX. vertical		
	t <sub>L1</sub> [°C]	[V]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	V [m³/h]	n [min <sup>-1</sup> ]	P [W]		[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]
453334	10	10	23.0	28.9	31.1	35.5	3480	1130	165	19	5.9	3.7	8.2	8.2	10.0	56	72
		8	20.1	29.9	27.2	36.9	2890	940	101	15	5.2	3.4	7.2	7.2	8.8	51	67
		6	17.0	31.5	23.0	39.1	2260	730	47	12	4.5	3.0	6.2	6.2	7.6	44	60
		4	13.1	34.1	17.7	42.6	1550	500	18	8	3.6	2.4	4.9	4.9	5.9	35	51
		2	10.8	36.3	14.5	45.5	1170	380	10	6	3.0	--	4.1	4.1	4.9	19	35
	15	10	20.2	31.9	28.5	38.7	3480	1130	165	19	5.9	3.7	8.2	8.2	10.0	56	72
		8	17.7	32.8	24.9	40.0	2890	940	101	15	5.2	3.4	7.2	7.2	8.8	51	67
		6	15.0	34.2	21.1	42.0	2260	730	47	12	4.5	3.0	6.2	6.2	7.6	44	60
		4	11.5	36.5	16.2	45.2	1550	500	18	8	3.6	2.4	4.9	4.9	5.9	35	51
		2	9.5	38.4	13.3	48.0	1170	380	10	6	3.0	--	4.1	4.1	4.9	19	35
	20	10	16.9	34.3	25.8	41.8	3480	1130	165	19	5.9	3.7	8.2	8.2	10.0	56	72
		8	14.8	35.1	22.6	43.0	2890	940	101	15	5.2	3.4	7.2	7.2	8.8	51	67
		6	12.5	36.3	19.1	44.8	2260	730	47	12	4.5	3.0	6.2	6.2	7.6	44	60
		4	9.6	38.2	14.7	47.8	1550	500	18	8	3.6	2.4	4.9	4.9	5.9	35	51
		2	7.9	39.9	12.1	50.3	1170	380	10	6	3.0	--	4.1	4.1	4.9	19	35
	454334	10	10	24.2	34.4	32.8	43.0	2840	1130	165	15	5.2	3.3	7.1	7.1	8.7	56
8			21.2	35.8	28.7	44.9	2350	940	101	12	4.6	3.0	6.3	6.3	7.7	51	67
6			18.0	37.9	24.3	47.7	1840	730	47	10	4.0	2.6	5.4	5.4	6.6	44	60
4			13.9	41.5	18.8	52.6	1260	500	18	6	3.2	--	4.2	4.2	5.1	35	51
2			11.4	44.0	15.5	56.0	960	380	10	5	2.7	--	3.6	3.6	4.3	19	35
15		10	21.3	36.8	30.0	45.6	2840	1130	165	15	5.2	3.3	7.1	7.1	8.7	56	72
		8	18.7	38.0	26.3	47.4	2350	940	101	12	4.6	3.0	6.3	6.3	7.7	51	67
		6	15.8	39.9	22.2	50.0	1840	730	47	10	4.0	2.6	5.4	5.4	6.6	44	60
		4	12.2	43.1	17.2	54.5	1260	500	18	6	3.2	--	4.2	4.2	5.1	35	51
		2	10.1	45.4	14.1	57.7	960	380	10	5	2.7	--	3.6	3.6	4.3	19	35
20		10	17.8	38.4	27.2	48.1	2840	1130	165	15	5.2	3.3	7.1	7.1	8.7	56	72
		8	15.6	39.5	23.8	49.8	2350	940	101	12	4.6	3.0	6.3	6.3	7.7	51	67
		6	13.2	41.1	20.2	52.2	1840	730	47	10	4.0	2.6	5.4	5.4	6.6	44	60
		4	10.2	43.8	15.6	56.4	1260	500	18	6	3.2	--	4.2	4.2	5.1	35	51
		2	8.4	45.7	12.8	59.3	960	380	10	5	2.7	--	3.6	3.6	4.3	19	35

V [m³/h] = air volume, free-blowing; Q<sub>H</sub> [kW] = heat output; t<sub>L1</sub> [°C] = air inlet temperature; t<sub>L2</sub> [°C] = air outlet temperature

<sup>1)</sup> Measured in a TOP with heat exchanger code 33.

<sup>2)</sup> The sound pressure levels were calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

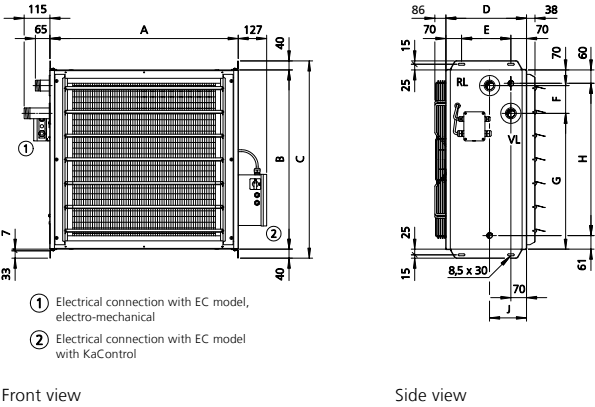
TOP EC

Heat exchanger, galvanised steel, cross-counterflow

Model 46

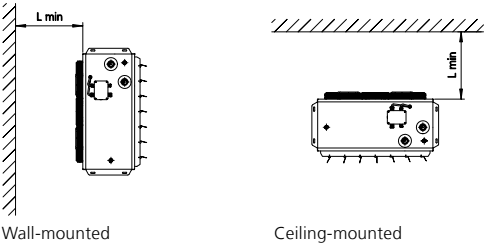
EC fan with high speed (motor code 33)

Technical Drawings (Dimensions in mm)



Front view

Side view



Type	A	B	C	D	E	F	G	H	L <sub>min</sub>
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
Model 46	740	700	780	320	180	99	595	579	230

Specifications

Weights

Type	Weight	Water content
	[kg]	[l]
463333	104	11,5
464333	125	11,5

Connection

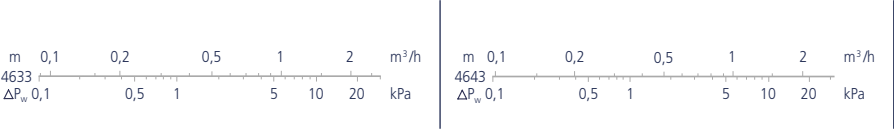
1 ¼ "

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Water resistance



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.

m = Water volumetric flow [m³/h]  
ΔP<sub>w</sub> = Water resistance [kPa]

## Outputs Series 46\*\*33 EC



Type	Intake air temperature	Control voltage	Heat outputs				Air volume	Speed <sup>1)</sup>	Power consumption <sup>1)</sup>	Throw (Wall-mounted)	Maximum installation height when ceiling-mounted					Sound pressure level <sup>2)</sup>	Sound power level
			with LPHW 80/40 °C		with LPHW 110/50 °C						Louvre	Air diffuser	Outlet nozzle	Induction louvre	KaMAX. vertical		
	t <sub>L1</sub> [°C]	[V]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	V [m³/h]	n [min <sup>-1</sup> ]	P [W]		[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]
463333	10	10	39.9	27.7	53.9	33.9	6450	1000	434	30	7.7	4.4	10.6	10.6	13.6	62	78
		8	33.9	29.0	45.8	35.6	5110	780	226	24	6.7	3.8	9.1	9.1	11.6	56	72
		6	27.0	31.1	36.5	38.5	3650	560	93	17	5.5	3.2	7.3	7.3	9.3	47	63
		4	18.9	34.7	25.6	43.4	2190	320	29	10	4.0	2.4	5.3	5.3	6.6	33	49
		2	8.8	44.6	12.0	56.8	730	120	9	3	--	--	2.7	2.7	3.3	20	36
	15	10	35.1	30.8	49.3	37.2	6450	1000	434	30	7.7	4.4	10.6	10.6	13.6	62	78
		8	29.8	31.9	41.9	38.8	5110	780	226	24	6.7	3.8	9.1	9.1	11.6	56	72
		6	23.7	33.8	33.3	41.5	3650	560	93	17	5.5	3.2	7.3	7.3	9.3	47	63
		4	16.7	37.0	23.4	46.0	2190	320	29	10	4.0	2.4	5.3	5.3	6.6	33	49
		2	7.8	45.9	10.9	58.5	730	120	9	3	--	--	2.7	2.7	3.3	20	36
	20	10	29.3	33.4	44.7	40.4	6450	1000	434	30	7.7	4.4	10.6	10.6	13.6	62	78
		8	24.9	34.3	38.0	41.9	5110	780	226	24	6.7	3.8	9.1	9.1	11.6	56	72
		6	19.8	36.0	30.2	44.4	3650	560	93	17	5.5	3.2	7.3	7.3	9.3	47	63
		4	13.9	38.7	21.2	48.5	2190	320	29	10	4.0	2.4	5.3	5.3	6.6	33	49
		2	6.5	46.2	9.9	60.0	730	120	9	3	--	--	2.7	2.7	3.3	20	36
	464333	10	10	42.7	34.9	57.8	43.7	4900	1000	434	23	6.5	3.8	8.9	8.9	11.3	62
8			36.1	36.8	48.8	46.3	3840	780	226	18	5.7	3.3	7.6	7.6	9.6	56	72
6			28.7	39.8	38.8	50.4	2750	560	93	12	4.6	2.8	6.2	6.2	7.7	47	63
4			19.7	45.3	26.7	57.7	1600	320	29	7	3.3	--	4.4	4.4	5.3	33	49
2			10.1	58.0	13.6	74.9	600	120	9	2	--	--	2.4	2.4	2.9	20	36
15		10	37.6	37.3	52.9	46.3	4900	1000	434	23	6.5	3.8	8.9	8.9	11.3	62	78
		8	31.7	39.0	44.6	48.7	3840	780	226	18	5.7	3.3	7.6	7.6	9.6	56	72
		6	25.3	41.6	35.5	52.5	2750	560	93	12	4.6	2.8	6.2	6.2	7.7	47	63
		4	17.4	46.5	24.4	59.2	1600	320	29	7	3.3	--	4.4	4.4	5.3	33	49
		2	8.9	57.8	12.5	75.2	600	120	9	2	--	--	2.4	2.4	2.9	20	36
20		10	31.4	38.8	47.9	48.8	4900	1000	434	23	6.5	3.8	8.9	8.9	11.3	62	78
		8	26.5	40.3	40.5	51.0	3840	780	226	18	5.7	3.3	7.6	7.6	9.6	56	72
		6	21.1	42.6	32.2	54.5	2750	560	93	12	4.6	2.8	6.2	6.2	7.7	47	63
		4	14.5	46.7	22.1	60.7	1600	320	29	7	3.3	--	4.4	4.4	5.3	33	49
		2	7.4	56.3	11.3	75.4	600	120	9	2	--	--	2.4	2.4	2.9	20	36

V [m³/h] = air volume, free-blowing; Q<sub>H</sub> [kW] = heat output; t<sub>L1</sub> [°C] = air inlet temperature; t<sub>L2</sub> [°C] = air outlet temperature

<sup>1)</sup> Measured in a TOP with heat exchanger code 33.

<sup>2)</sup> The sound pressure levels were calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

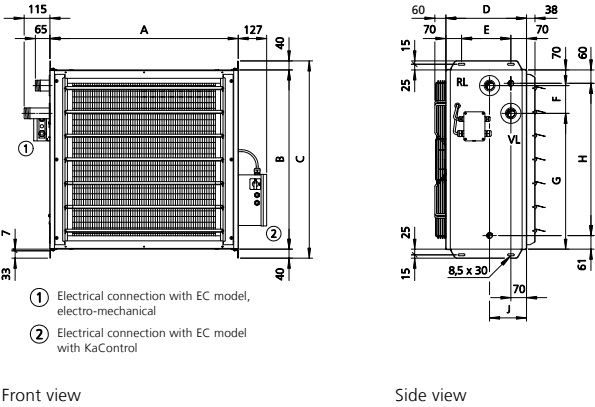
TOP EC

Heat exchanger, galvanised steel, cross-counterflow

Model 47

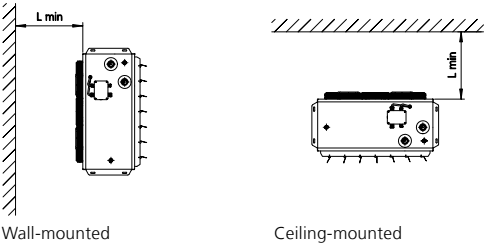
EC fan with high speed (motor code 33)

Technical Drawings (Dimensions in mm)



Front view

Side view



Type	A	B	C	D	E	F	G	H	L <sub>min</sub>
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
Model 47	840	800	880	360	220	124	695	679	300

Specifications

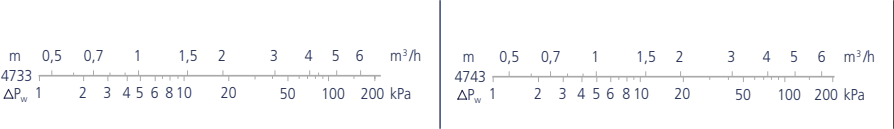
Weights			Connection 1½"
Type	Weight	Water content	
	[kg]	[l]	
473333	130	16,8	
474333	150	16,8	

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Water resistance



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.

m = Water volumetric flow [m³/h]  
ΔP<sub>w</sub> = Water resistance [kPa]

## Outputs Series 47\*\*33 EC



Type	Intake air temperature	Control voltage	Heat outputs				Air volume	Speed <sup>1)</sup>	Power consumption <sup>1)</sup>	Throw (Wall-mounted)	Maximum installation height when ceiling-mounted					Sound pressure level <sup>2)</sup>	Sound power level
			with LPHW 80/40 °C		with LPHW 110/50 °C						Louvre	Air diffuser	Outlet nozzle	Induction louvre	KaMAX. vertical		
	t <sub>L1</sub> [°C]	[V]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	V [m³/h]	n [min <sup>-1</sup> ]	P [W]		[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]
473333	10	10	62.1	31.1	83.9	38.6	8390	900	390	34	7.8	4.2	11.1	11.1	16.9	61	77
		8	58.7	31.7	79.3	39.3	7740	830	320	31	7.5	4.0	10.5	10.5	16.0	59	75
		6	49.3	33.4	66.6	41.7	6010	650	156	24	6.4	3.5	9.0	9.0	13.5	53	69
		4	36.5	36.8	49.3	46.2	3890	420	57	15	5.0	2.8	6.8	6.8	10.1	41	57
		2	22.1	43.7	29.8	55.6	1870	200	18	6	3.3	--	4.4	4.4	6.3	22	38
	15	10	54.6	33.9	76.8	41.5	8390	900	390	34	7.8	4.2	11.1	11.1	16.9	61	77
		8	51.6	34.3	72.6	42.2	7740	830	320	31	7.5	4.0	10.5	10.5	16.0	59	75
		6	43.4	35.9	61.0	44.4	6010	650	156	24	6.4	3.5	9.0	9.0	13.5	53	69
		4	32.1	38.9	45.1	48.6	3890	420	57	15	5.0	2.8	6.8	6.8	10.1	41	57
		2	19.4	45.1	27.3	57.3	1870	200	18	6	3.3	--	4.4	4.4	6.3	22	38
	20	10	45.6	36.0	69.6	44.4	8390	900	390	34	7.8	4.2	11.1	11.1	16.9	61	77
		8	43.1	36.4	65.8	45.0	7740	830	320	31	7.5	4.0	10.5	10.5	16.0	59	75
		6	36.2	37.7	55.3	47.1	6010	650	156	24	6.4	3.5	9.0	9.0	13.5	53	69
		4	26.8	40.3	40.9	50.9	3890	420	57	15	5.0	2.8	6.8	6.8	10.1	41	57
		2	16.2	45.5	24.7	58.9	1870	200	18	6	3.3	--	4.4	4.4	6.3	22	38
474333	10	10	66.2	38.1	89.5	48.0	6730	900	390	27	6.9	3.7	9.7	9.7	14.5	61	77
		8	62.6	38.8	84.7	49.0	6210	830	320	25	6.6	3.6	9.2	9.2	13.8	59	75
		6	52.6	41.1	71.1	52.1	4820	650	156	19	5.7	3.1	7.9	7.9	11.7	53	69
		4	38.9	45.7	52.7	58.2	3120	420	57	11	4.4	2.5	6.0	6.0	8.7	41	57
		2	23.6	54.9	31.8	70.7	1500	200	18	4	2.9	--	3.9	3.9	5.5	22	38
	15	10	58.2	40.1	81.8	50.2	6730	900	390	27	6.9	3.7	9.7	9.7	14.5	61	77
		8	55.1	40.7	77.5	51.2	6210	830	320	25	6.6	3.6	9.2	9.2	13.8	59	75
		6	46.2	42.8	65.0	54.1	4820	650	156	19	5.7	3.1	7.9	7.9	11.7	53	69
		4	34.3	46.8	48.2	59.7	3120	420	57	11	4.4	2.5	6.0	6.0	8.7	41	57
		2	20.7	55.0	29.1	71.3	1500	200	18	4	2.9	--	3.9	3.9	5.5	22	38
	20	10	48.6	41.2	74.2	52.4	6730	900	390	27	6.9	3.7	9.7	9.7	14.5	61	77
		8	46.0	41.8	70.2	53.3	6210	830	320	25	6.6	3.6	9.2	9.2	13.8	59	75
		6	38.6	43.6	58.9	56.0	4820	650	156	19	5.7	3.1	7.9	7.9	11.7	53	69
		4	28.6	47.0	43.7	61.2	3120	420	57	11	4.4	2.5	6.0	6.0	8.7	41	57
		2	17.3	53.9	26.4	71.8	1500	200	18	4	2.9	--	3.9	3.9	5.5	22	38

V [m³/h] = air volume, free-blowing; Q<sub>H</sub> [kW] = heat output; t<sub>L1</sub> [°C] = air inlet temperature; t<sub>L2</sub> [°C] = air outlet temperature

<sup>1)</sup> Measured in a TOP with heat exchanger code 33.

<sup>2)</sup> The sound pressure levels were calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).



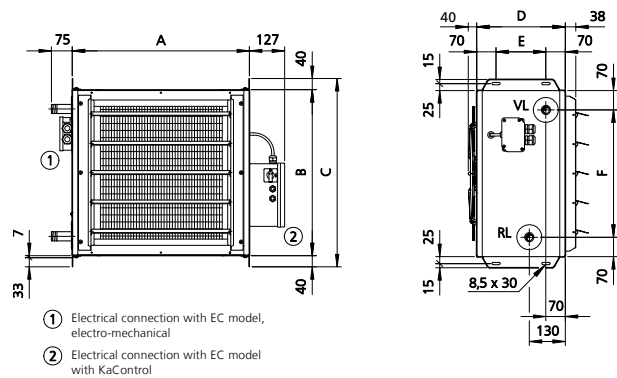
TOP AC

Copper / aluminium heat exchanger

Models 44 and 45

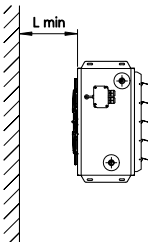
AC fan (motor code 31 and 36)

Technical Drawings (Dimensions in mm)

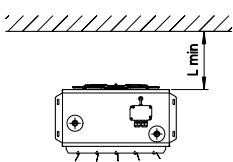


Front view

Side view



Wall-mounted



Ceiling-mounted

Type	A	B	C	D	E	F	L <sub>min</sub>
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
Model 44	540	500	580	320	180	360	160
Model 45	640	600	680	320	180	460	180

Specifications

Weights

Type	Weight [kg]	Water content [l]
4420	28	1,6
4430	29	2,1
4440	30	2,6
4520	36	2,2
4530	37	3,0
4540	38	3,8

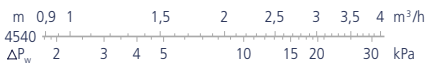
Connection

- 1" (Model 44)
- 1" (Model 45)

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Water resistance



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.

m = Water volumetric flow [m³/h]  
ΔP<sub>w</sub> = Water resistance [kPa]

## Outputs Series 44\*\*31/36 AC



Type	Intake air temperature	Switching stage	Heat outputs				Air volume	Speed <sup>1)</sup>	2-stage, three-phase 400 V, motor code 36	1-stage, Single-phase 230 V, motor code 31 <sup>2)</sup>	Throw (Wall-mounted)	Maximum installation height when Ceiling-mounted					Sound pressure level <sup>3)</sup>	Sound power level
			with LPHW 75/65 °C		with LPHW 82/71 °C				Power consumption <sup>1)</sup>	Power consumption <sup>1)</sup>		Louvre	Air diffuser	Outlet nozzle	Induction louvre	KaMAX. vertical		
	t <sub>L1</sub> [°C]		Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	V [m³/h]	n [min <sup>-1</sup> ]	P [W]	P [W]	[m]	[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]
4420	10	2	15.2	28.4	16.9	30.4	2360	1400	187	136	18	5.5	3.5	7.6	7.6	8.8	55	71
		1	13.5	30.6	15.0	32.9	1870	1170	142	-	13	4.7	3.0	6.5	6.5	7.4	49	65
	15	2	13.8	32.0	15.5	34.1	2360	1400	187	136	18	5.5	3.5	7.6	7.6	8.8	55	71
		1	12.3	34.0	13.8	36.4	1870	1170	142	-	13	4.7	3.0	6.5	6.5	7.4	49	65
	20	2	12.5	35.6	14.2	37.7	2360	1400	187	136	18	5.5	3.5	7.6	7.6	8.8	55	71
		1	11.1	37.5	12.6	39.8	1870	1170	142	-	13	4.7	3.0	6.5	6.5	7.4	49	65
4430	10	2	19.3	35.8	21.4	38.6	2140	1400	187	136	17	5.2	3.3	7.1	7.1	8.2	55	71
		1	16.8	38.7	18.6	41.8	1670	1170	142	-	13	4.5	2.9	6.0	6.0	7.0	49	65
	15	2	17.6	38.8	19.7	41.7	2140	1400	187	136	17	5.2	3.3	7.1	7.1	8.2	55	71
		1	15.3	41.5	17.1	44.7	1670	1170	142	-	13	4.5	2.9	6.0	6.0	7.0	49	65
	20	2	15.9	41.9	18.0	44.8	2140	1400	187	136	17	5.2	3.3	7.1	7.1	8.2	55	71
		1	13.8	44.3	15.7	47.6	1670	1170	142	-	13	4.5	2.9	6.0	6.0	7.0	49	65
Suitable for low water temperatures 4440	10	2	21.9	43.0	24.3	46.7	1890	1400	187	136	16	4.8	3.1	6.7	6.7	7.6	55	71
		1	18.7	46.1	20.8	50.1	1480	1170	142	-	12	4.1	2.7	5.6	5.6	6.5	49	65
	15	2	19.9	45.6	22.4	49.3	1890	1400	187	136	16	4.8	3.1	6.7	6.7	7.6	55	71
		1	17.1	48.4	19.1	52.4	1480	1170	142	-	12	4.1	2.7	5.6	5.6	6.5	49	65
	20	2	18.0	48.0	20.4	51.8	1890	1400	187	136	16	4.8	3.1	6.7	6.7	7.6	55	71
		1	15.4	50.6	17.5	54.7	1480	1170	142	-	12	4.1	2.7	5.6	5.6	6.5	49	65

## Outputs Series 45\*\*31/36 AC



Type	Intake air temperature	Switching stage	Heat outputs				Air volume		Speed <sup>1)</sup>	2-stage, three-phase 400 V, motor code 36	1-stage, Single-phase 230 V, motor code 31 <sup>2)</sup>	Throw (Wall-mounted)	Maximum installation height when Ceiling-mounted					Sound pressure level <sup>3)</sup>	Sound power level
			with LPHW 75/65 °C		with LPHW 82/71 °C					Power consumption <sup>1)</sup>	Power consumption <sup>1)</sup>		Louvre	Air diffuser	Outlet nozzle	Induction louvre	KaMAX. vertical		
	t <sub>L1</sub> [°C]		Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	V [m³/h]	n [min <sup>-1</sup> ]	P [W]	P [W]	[m]	[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]	
4520	10	2	24.0	26.6	26.7	28.4	4140	1350	249	256	23	6.5	4.1	9.2	9.2	11.4	59	75	
		1	21.5	28.4	23.9	30.5	3330	1100	172	-	17	5.7	3.6	8.0	8.0	9.8	51	67	
	15	2	21.9	30.3	24.6	32.2	4140	1350	249	256	23	6.5	4.1	9.2	9.2	11.4	59	75	
		1	19.6	32.1	22.0	34.1	3330	1100	172	-	17	5.7	3.6	8.0	8.0	9.8	51	67	
	20	2	19.8	34.1	22.5	36.0	4140	1350	249	256	23	6.5	4.1	9.2	9.2	11.4	59	75	
		1	17.7	35.6	20.1	37.7	3330	1100	172	-	17	5.7	3.6	8.0	8.0	9.8	51	67	
4530	10	2	33.3	35.0	37.0	37.7	3810	1350	249	256	21	6.2	3.9	8.7	8.7	10.7	59	75	
		1	29.4	37.4	32.6	40.5	3060	1100	172	-	16	5.4	3.4	7.5	7.5	9.2	51	67	
	15	2	30.3	38.1	34.0	40.9	3810	1350	249	256	21	6.2	3.9	8.7	8.7	10.7	59	75	
		1	26.8	40.4	30.0	43.5	3060	1100	172	-	16	5.4	3.4	7.5	7.5	9.2	51	67	
	20	2	27.4	41.2	31.1	44.0	3810	1350	249	256	21	6.2	3.9	8.7	8.7	10.7	59	75	
		1	24.2	43.3	27.5	46.4	3060	1100	172	-	16	5.4	3.4	7.5	7.5	9.2	51	67	
Suitable for low water temperatures 4540	10	2	37.5	41.3	41.7	44.7	3430	1350	249	256	19	5.8	3.7	8.2	8.2	10.1	59	75	
		1	32.3	44.2	35.9	48.0	2700	1100	172	-	13	5.0	3.2	7.0	7.0	8.5	51	67	
	15	2	34.2	43.9	38.4	47.4	3430	1350	249	256	19	5.8	3.7	8.2	8.2	10.1	59	75	
		1	29.5	46.6	33.0	50.5	2700	1100	172	-	13	5.0	3.2	7.0	7.0	8.5	51	67	
	20	2	30.9	46.5	35.1	50.1	3430	1350	249	256	19	5.8	3.7	8.2	8.2	10.1	59	75	
		1	26.6	49.0	30.2	52.9	2700	1100	172	-	13	5.0	3.2	7.0	7.0	8.5	51	67	

V [m³/h] = air volume, free-blowing; Q<sub>H</sub> [kW] = heat output; t<sub>L1</sub> [°C] = air inlet temperature; t<sub>L2</sub> [°C] = air outlet temperature

<sup>1)</sup> Measured in a TOP with heat exchanger code 33.

<sup>2)</sup> Speed may differ from the stated speed.

<sup>3)</sup> The sound pressure levels were calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

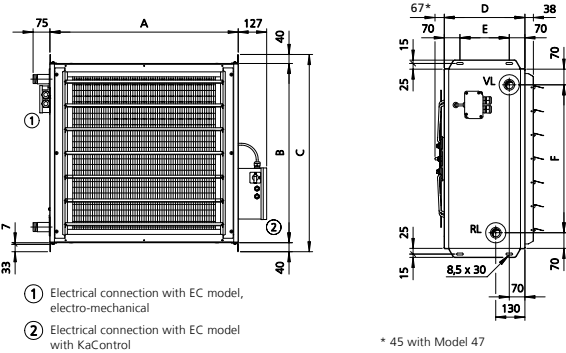
TOP AC

Copper / aluminium heat exchanger

Models 46 and 47

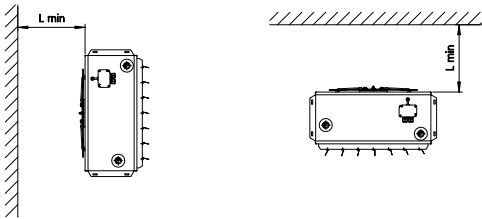
AC fan (motor code 31 and 36)

Technical Drawings (Dimensions in mm)



Front view

Side view



Wall-mounted

Ceiling-mounted

Type	A	B	C	D	E	F	L <sub>min</sub>
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
Model 46	740	700	780	320	180	560	230
Model 47	840	800	880	360	220	660	300

Specifications

Weights

Type	Weight	Water content
	[kg]	[l]
4620	44	3,4
4630	47	4,5
4640	49	5,6
4720	67	4,8
4730	71	6,2
4740	73	7,6

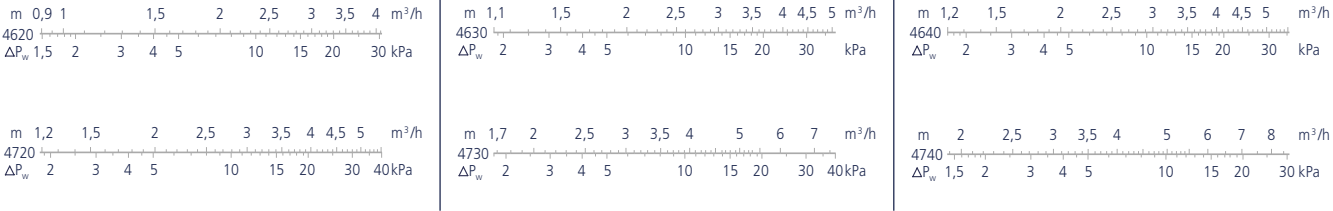
Connection

1¼" (Model 46)  
1½" (Model 47)

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Water resistance



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.

m = Water volumetric flow [m³/h]  
ΔP<sub>w</sub> = Water resistance [kPa]

## Outputs Series 46\*\*31/36 AC



Type	Intake air temperature	Switching stage	Heat outputs				Air volume	Speed <sup>1)</sup>	2-stage, three-phase 400 V, motor code 36	1-stage, Single-phase 230 V, motor code 31 <sup>2)</sup>	Throw (Wall-mounted)	Maximum installation height when Ceiling-mounted					Sound pressure level <sup>3)</sup>	Sound power level
			with LPHW 75/65 °C		with LPHW 82/71 °C				Power consumption <sup>1)</sup>	Power consumption <sup>1)</sup>		Louvre	Air diffuser	Outlet nozzle	Induction louvre	KaMAX, vertical		
	t <sub>L1</sub> [°C]		Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	V [m³/h]	n [min <sup>-1</sup> ]	P [W]	P [W]	[m]	[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]
4620	10	2	37.5	28.9	41,7	31,0	5680	910	359	344	27	7.2	4.1	9.8	9.8	12.5	58	74
		1	33.2	31.1	36,8	33,4	4490	640	226	-	20	6.2	3.6	8.4	8.4	10.7	51	67
	15	2	34.2	32.5	38,4	34,6	5680	910	359	344	27	7.2	4.1	9.8	9.8	12.5	58	74
		1	30.2	34.5	33,9	36,9	4490	640	226	-	20	6.2	3.6	8.4	8.4	10.7	51	67
	20	2	30.9	36.0	35,1	38,2	5680	910	359	344	27	7.2	4.1	9.8	9.8	12.5	58	74
		1	27.3	37.9	31,0	40,3	4490	640	226	-	20	6.2	3.6	8.4	8.4	10.7	51	67
4630	10	2	50.9	37.6	56,5	40,7	5260	910	359	344	25	6.8	3.9	9.3	9.3	11.8	58	74
		1	44.0	40.5	48,8	43,9	4120	640	226	-	19	5.9	3.4	8.0	8.0	10.2	51	67
	15	2	46.4	40.6	52,0	43,7	5260	910	359	344	25	6.8	3.9	9.3	9.3	11.8	58	74
		1	40.1	43.2	44,9	46,6	4120	640	226	-	19	5.9	3.4	8.0	8.0	10.2	51	67
	20	2	41.9	43.4	47,5	46,6	5260	910	359	344	25	6.8	3.9	9.3	9.3	11.8	58	74
		1	36.2	45.8	41,1	49,3	4120	640	226	-	19	5.9	3.4	8.0	8.0	10.2	51	67
Suitable for low water temperatures 4640	10	2	58.2	45.0	64,6	48,9	4750	910	359	344	21	6.4	3.7	8.8	8.8	11.1	58	74
		1	49.5	48.1	55,0	52,3	3720	640	226	-	16	5.1	3.0	7.0	7.0	8.7	51	67
	15	2	53.0	47.4	59,5	51,3	4750	910	359	344	21	6.4	3.7	8.8	8.8	11.1	58	74
		1	45.2	50.2	50,7	54,5	3720	640	226	-	16	5.1	3.0	7.0	7.0	8.7	51	67
	20	2	47.9	49.7	54,3	53,6	4750	910	359	344	21	6.4	3.7	8.8	8.8	11.1	58	74
		1	40.8	52.3	46,3	56,6	3720	640	226	-	16	5.1	3.0	7.0	7.0	8.7	51	67

## Outputs Series 47\*\*31/36 AC



Type	Intake air temperature	Switching stage	Heat outputs				Air volume	Speed <sup>1)</sup>	2-stage, three-phase 400 V, motor code 36	1-stage, Single-phase 230 V, motor code 31 <sup>2)</sup>	Throw (Wall-mounted)	Maximum installation height when Ceiling-mounted					Sound pressure level <sup>3)</sup>	Sound power level
			with LPHW 75/65 °C		with LPHW 82/71 °C				Power consumption <sup>1)</sup>	Power consumption <sup>1)</sup>		Louvre	Air diffuser	Outlet nozzle	Induction louvre	KaMAX, vertical		
	t <sub>L1</sub> [°C]		Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	V [m³/h]	n [min <sup>-1</sup> ]	P [W]	P [W]	[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]	
4720	10	2	57.9	28.9	64.3	31.0	8770	890	695	493	38	8.0	4.3	11.7	11.7	17.7	61	77
		1	52.7	30.6	58.5	32.8	7320	650	414	-	28	7.2	3.9	10.4	10.4	15.6	57	73
	15	2	52.8	32.5	59.2	34.6	8770	890	695	493	38	8.0	4.3	11.7	11.7	17.7	61	77
		1	48.1	34.0	53.9	36.3	7320	650	414	-	28	7.2	3.9	10.4	10.4	15.6	57	73
	20	2	47.7	36.0	54.1	38.1	8770	890	695	493	38	8.0	4.3	11.7	11.7	17.7	61	77
		1	43.4	37.4	49.2	39.8	7320	650	414	-	28	7.2	3.9	10.4	10.4	15.6	57	73
4730	10	2	78.3	36.3	87.0	39.2	8500	890	695	493	36	7.9	4.2	11.4	11.4	17.2	61	77
		1	68.5	39.1	76.1	42.3	6730	650	414	-	26	6.9	3.9	9.9	9.9	14.8	57	73
	15	2	71.4	39.4	80.1	42.3	8500	890	695	493	36	7.9	4.2	11.4	11.4	17.2	61	77
		1	62.4	41.9	70.0	45.2	6730	650	414	-	26	6.9	3.9	9.9	9.9	14.8	57	73
	20	2	64.5	42.3	73.2	45.3	8500	890	695	493	36	7.9	4.2	11.4	11.4	17.2	61	77
		1	56.4	44.6	64.0	48.0	6730	650	414	-	26	6.9	3.9	9.9	9.9	14.8	57	73
Suitable for low water temperatures 4740	10	2	93.7	43.6	104.1	47.4	7960	890	695	493	32	7.6	4.1	11.0	11.0	16.5	61	77
		1	79.5	47.0	88.3	51.0	6150	650	414	-	22	6.5	3.9	9.4	9.4	13.9	57	73
	15	2	85.5	46.1	95.9	49.9	7960	890	695	493	32	7.6	4.1	11.0	11.0	16.5	61	77
		1	72.5	49.2	81.3	53.3	6150	650	414	-	22	6.5	3.9	9.4	9.4	13.9	57	73
	20	2	77.2	48.5	87.6	52.4	7960	890	695	493	32	7.6	4.1	11.0	11.0	16.5	61	77
		1	65.5	51.3	74.3	55.5	6150	650	414	-	22	6.5	3.9	9.4	9.4	13.9	57	73

V [m³/h] = air volume, free-blowing; Q<sub>H</sub> [kW] = heat output; t<sub>L1</sub> [°C] = air inlet temperature; t<sub>L2</sub> [°C] = air outlet temperature

<sup>1)</sup> Measured in a TOP with heat exchanger code 33.

<sup>2)</sup> Speed may differ from the stated speed.

<sup>3)</sup> The sound pressure levels were calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).





## Outputs Series 44\*\*31/36 AC



Type	Intake air temperature	Switching stage	Heat outputs				Air volume	Speed <sup>1)</sup>	2-stage, three-phase 400 V, motor code 36	1-stage, Single-phase 230 V, motor code 31 <sup>2)</sup>	Throw (Wall-mounted)	Maximum installation height when Ceiling-mounted					Sound pressure level <sup>3)</sup>	Sound power level
			with LPHW 75/65 °C		with LPHW 82/71 °C				Power consumption <sup>1)</sup>	Power consumption <sup>1)</sup>		Louvre	Air diffuser	Outlet nozzle	Induction louvre	KaMAX. vertical		
	t <sub>L1</sub> [°C]		Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	V [m³/h]	n [min <sup>-1</sup> ]	P [W]	P [W]	[m]	[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]
4421	10	2	14.2	27.2	15.8	29.1	2360	1400	187	136	18	5.5	3.5	7.6	7.6	8.8	55	71
		1	12.1	28.5	13.4	30.5	1870	1170	142	-	13	4.7	3.0	6.5	6.5	7.4	49	65
	15	2	13.0	30.9	14.5	32.8	2360	1400	187	136	18	5.5	3.5	7.6	7.6	8.8	55	71
		1	11.0	32.1	12.4	34.2	1870	1170	142	-	13	4.7	3.0	6.5	6.5	7.4	49	65
	20	2	11.7	34.6	13.3	36.5	2360	1400	187	136	18	5.5	3.5	7.6	7.6	8.8	55	71
		1	10.0	35.7	11.3	37.8	1870	1170	142	-	13	4.7	3.0	6.5	6.5	7.4	49	65
4431	10	2	18.9	32.9	21.0	35.5	2360	1400	187	136	18	5.5	3.5	7.6	7.6	8.8	55	71
		1	16.1	34.6	17.9	37.4	1870	1170	142	-	13	4.7	3.0	6.5	6.5	7.4	49	65
	15	2	17.3	36.2	19.4	38.8	2360	1400	187	136	18	5.5	3.5	7.6	7.6	8.8	55	71
		1	14.7	37.8	16.5	40.6	1870	1170	142	-	13	4.7	3.0	6.5	6.5	7.4	49	65
	20	2	15.6	39.4	17.7	42.1	2360	1400	187	136	18	5.5	3.5	7.6	7.6	8.8	55	71
		1	13.3	40.9	15.1	43.7	1870	1170	142	-	13	4.7	3.0	6.5	6.5	7.4	49	65
Suitable for low water temperatures 4441	10	2	20.4	40.8	22.7	44.3	1890	1400	187	136	16	4.8	3.1	6.7	6.7	7.6	55	71
		1	17.2	43.3	19.1	47.0	1480	1170	142	-	12	4.1	2.7	5.6	5.6	6.5	49	65
	15	2	18.6	43.5	20.9	47.0	1890	1400	187	136	16	4.8	3.1	6.7	6.7	7.6	55	71
		1	15.7	45.8	17.6	49.5	1480	1170	142	-	12	4.1	2.7	5.6	5.6	6.5	49	65
	20	2	16.8	46.1	19.1	49.7	1890	1400	187	136	16	4.8	3.1	6.7	6.7	7.6	55	71
		1	14.2	48.2	16.1	52.0	1480	1170	142	-	12	4.1	2.7	5.6	5.6	6.5	49	65

## Outputs Series 45\*\*31/36 AC



Type	Intake air temperature	Switching stage	Heat outputs				Air volume		Speed <sup>1)</sup>	2-stage, three-phase 400 V, motor code 36	1-stage, Single-phase 230 V, motor code 31 <sup>2)</sup>	Throw (Wall-mounted)	Maximum installation height when Ceiling-mounted					Sound pressure level <sup>3)</sup>	Sound power level
			with LPHW 75/65 °C	with LPHW 82/71 °C	Power consumption <sup>1)</sup>	Power consumption <sup>1)</sup>				Louvre	Air diffuser		Outlet nozzle	Induction louvre	KaMAX. vertical				
	t <sub>L1</sub> [°C]		Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	V [m³/h]	n [min <sup>-1</sup> ]	P [W]	P [W]	[m]	[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]	
4521	10	2	23.8	26.4	26.4	28.2	4140	1350	249	256	23	6.5	4.1	9.2	9.2	11.4	59	75	
		1	20.5	27.6	22.7	29.5	3330	1100	172	-	17	5.7	3.6	8.0	8.0	9.8	51	67	
	15	2	21.7	30.2	24.3	32.0	4140	1350	249	256	23	6.5	4.1	9.2	9.2	11.4	59	75	
		1	18.7	31.3	20.9	33.2	3330	1100	172	-	17	5.7	3.6	8.0	8.0	9.8	51	67	
	20	2	19.6	33.9	22.2	35.8	4140	1350	249	256	23	6.5	4.1	9.2	9.2	11.4	59	75	
		1	16.9	34.9	19.1	36.9	3330	1100	172	-	17	5.7	3.6	8.0	8.0	9.8	51	67	
4531	10	2	30.4	31.0	33.7	33.3	4140	1350	249	256	23	6.5	4.1	9.2	9.2	11.4	59	75	
		1	26.1	32.4	29.0	34.9	3330	1100	172	-	17	5.7	3.6	8.0	8.0	9.8	51	67	
	15	2	27.7	34.4	31.0	36.7	4140	1350	249	256	23	6.5	4.1	9.2	9.2	11.4	59	75	
		1	23.8	35.7	26.7	38.3	3330	1100	172	-	17	5.7	3.6	8.0	8.0	9.8	51	67	
	20	2	25.0	37.8	28.4	40.2	4140	1350	249	256	23	6.5	4.1	9.2	9.2	11.4	59	75	
		1	21.5	39.0	24.4	41.6	3330	1100	172	-	17	5.7	3.6	8.0	8.0	9.8	51	67	
Suitable for low water temperatures 4541	10	2	36.2	40.1	40.2	43.5	3430	1350	249	256	19	5.8	3.7	8.2	8.2	10.1	59	75	
		1	30.7	42.5	34.1	46.1	2700	1100	172	-	13	5.0	3.2	7.0	7.0	8.5	51	67	
	15	2	33.0	42.9	37.0	46.3	3430	1350	249	256	19	5.8	3.7	8.2	8.2	10.1	59	75	
		1	28.0	45.0	31.4	48.7	2700	1100	172	-	13	5.0	3.2	7.0	7.0	8.5	51	67	
	20	2	29.8	45.6	33.8	49.0	3430	1350	249	256	19	5.8	3.7	8.2	8.2	10.1	59	75	
		1	25.3	47.5	28.7	51.2	2700	1100	172	-	13	5.0	3.2	7.0	7.0	8.5	51	67	

V [m³/h] = air volume, free-blowing; Q<sub>H</sub> [kW] = heat output; t<sub>L1</sub> [°C] = air inlet temperature; t<sub>L2</sub> [°C] = air outlet temperature

<sup>1)</sup> Measured in a TOP with heat exchanger code 33.

<sup>2)</sup> Speed may differ from the stated speed.

<sup>3)</sup> The sound pressure levels were calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

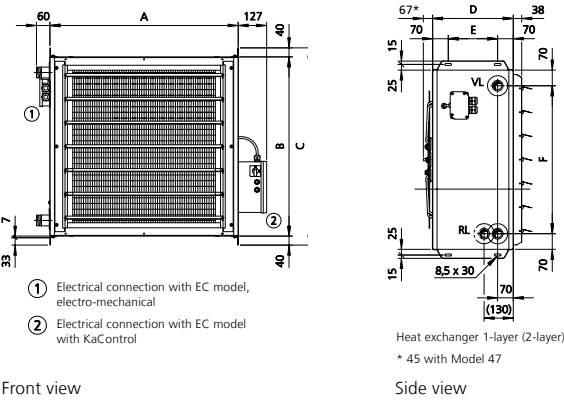
TOP AC

Heat exchanger, galvanised steel

Models 46 and 47

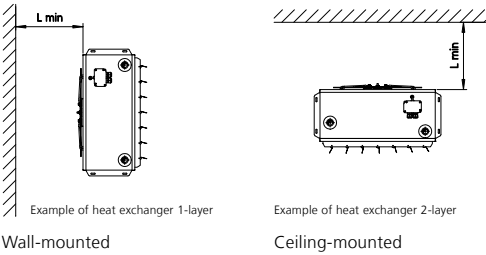
AC fan (motor code 31 and 36)

Technical Drawings (Dimensions in mm)



Front view

Side view



Type	A	B	C	D	E	F	L <sub>min</sub>
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
Model 46	740	700	780	320	180	560	230
Model 47	840	800	880	360	220	660	300

Specifications

### Weights

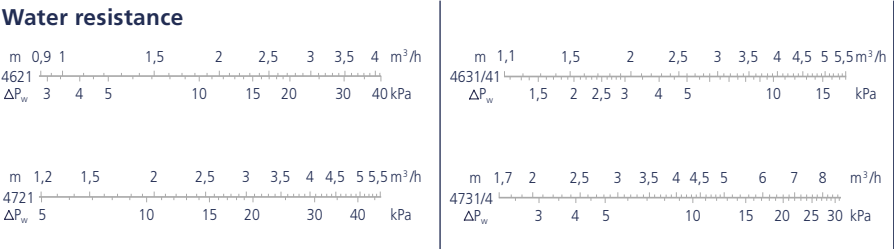
Type	Weight	Water content
	[kg]	[l]
4621	80	5,7
4631	91	11,5
4641	108	11,5
4721	111	8,7
4731	128	16,8
4741	152	16,8

### Connection

1¼" (Model 46)  
1½" (Model 47)

Take advantage of our online calculation programmes to simply calculate heat outputs and other technical information in a couple of clicks!

► [Kampmanngroup.com](https://www.kampmanngroup.com)  
► [Kampmann.co.uk/top](https://www.kampmann.co.uk/top)



m = Water volumetric flow [m³/h]  
ΔP<sub>w</sub> = Water resistance [kPa]

## Outputs Series 46\*\*31/36 AC



Type	Intake air temperature	Switching stage	Heat outputs				Air volume	Speed <sup>1)</sup>	2-stage, three-phase 400 V, motor code 36	1-stage, Single-phase 230 V, motor code 31 <sup>2)</sup>	Throw (Wall-mounted)	Maximum installation height when Ceiling-mounted					Sound pressure level <sup>3)</sup>	Sound power level
			with LPHW 75/65 °C		with LPHW 82/71 °C				Power consumption <sup>1)</sup>	Power consumption <sup>1)</sup>		Louvre	Air diffuser	Outlet nozzle	Induction louvre	KaMAX. vertical		
	t <sub>L1</sub> [°C]		Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	V [m³/h]	n [min <sup>-1</sup> ]	P [W]	P [W]	[m]	[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]
4621	10	2	36.4	28.3	40.5	30.4	5680	910	359	344	27	7.2	4.1	9.8	9.8	12.5	58	74
		1	31.0	29.7	34.4	31.9	4490	640	226	-	20	6.2	3.6	8.4	8.4	10.7	51	67
	15	2	33.2	31.9	37.3	34.0	5680	910	359	344	27	7.2	4.1	9.8	9.8	12.5	58	74
		1	28.2	33.2	31.7	35.4	4490	640	226	-	20	6.2	3.6	8.4	8.4	10.7	51	67
	20	2	30.0	35.5	34.0	37.6	5680	910	359	344	27	7.2	4.1	9.8	9.8	12.5	58	74
		1	25.5	36.7	28.9	39.0	4490	640	226	-	20	6.2	3.6	8.4	8.4	10.7	51	67
4631	10	2	46.8	33.5	51.9	36.1	5680	910	359	344	27	7.2	4.1	9.8	9.8	12.5	58	74
		1	39.7	35.3	44.2	38.1	4490	640	226	-	20	6.2	3.6	8.4	8.4	10.7	51	67
	15	2	42.6	36.8	47.8	39.4	5680	910	359	344	27	7.2	4.1	9.8	9.8	12.5	58	74
		1	36.2	38.4	40.6	41.2	4490	640	226	-	20	6.2	3.6	8.4	8.4	10.7	51	67
	20	2	38.5	39.9	43.7	42.6	5680	910	359	344	27	7.2	4.1	9.8	9.8	12.5	58	74
		1	32.7	41.4	37.1	44.3	4490	640	226	-	20	6.2	3.6	8.4	8.4	10.7	51	67
Suitable for low water temperatures 4641	10	2	52.3	41.5	58.1	45.0	4750	910	359	344	21	6.4	3.7	8.8	8.8	11.1	58	74
		1	44.2	44.0	49.1	47.7	3720	640	226	-	16	5.1	3.0	7.0	7.0	8.7	51	67
	15	2	47.7	44.1	53.5	47.7	4750	910	359	344	21	6.4	3.7	8.8	8.8	11.1	58	74
		1	40.3	46.4	45.2	50.2	3720	640	226	-	16	5.1	3.0	7.0	7.0	8.7	51	67
	20	2	43.1	46.7	48.9	50.3	4750	910	359	344	21	6.4	3.7	8.8	8.8	11.1	58	74
		1	36.4	48.8	41.3	52.7	3720	640	226	-	16	5.1	3.0	7.0	7.0	8.7	51	67

## Outputs Series 47\*\*31/36 AC



Type	Intake air temperature	Switching stage	Heat outputs				Air volume	Speed <sup>1)</sup>	2-stage, three-phase 400 V, motor code 36	1-stage, Single-phase 230 V, motor code 31 <sup>2)</sup>	Throw (Wall-mounted)	Maximum installation height when Ceiling-mounted					Sound pressure level <sup>3)</sup>	Sound power level
			with LPHW 75/65 °C	with LPHW 82/71 °C					Power consumption <sup>1)</sup>	Power consumption <sup>1)</sup>		Louvre	Air diffuser	Outlet nozzle	Induction louvre	KaMAX. vertical		
	t <sub>L1</sub> [°C]		Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	V [m³/h]	n [min <sup>-1</sup> ]	P [W]	P [W]	[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]	
4721	10	2	61.2	29.9	68.0	32.1	8770	890	695	493	38	8.0	4.3	11.7	11.7	17.7	61	77
		1	54.0	31.1	60.0	33.4	7320	650	414	-	28	7.2	3.9	10.4	40.4	15.6	57	73
	15	2	55.8	33.4	62.6	35.7	8770	890	695	493	38	8.0	4.3	11.7	11.7	17.7	61	77
		1	49.3	34.5	55.2	36.9	7320	650	414	-	28	7.2	3.9	10.4	40.4	15.6	57	73
	20	2	50.4	36.9	57.2	39.2	8770	890	695	493	38	8.0	4.3	11.7	11.7	17.7	61	77
		1	44.5	37.9	50.5	40.3	7320	650	414	-	28	7.2	3.9	10.4	40.4	15.6	57	73
4731	10	2	79.3	35.8	88.1	38.7	8770	890	695	493	38	8.0	4.3	11.7	11.7	17.7	61	77
		1	70.0	37.3	77.8	40.3	7320	650	414	-	28	7.2	3.9	10.4	40.4	15.6	57	73
	15	2	72.3	38.9	81.1	41.8	8770	890	695	493	38	8.0	4.3	11.7	11.7	17.7	61	77
		1	63.8	40.3	71.6	43.3	7320	650	414	-	28	7.2	3.9	10.4	40.4	15.6	57	73
	20	2	65.3	41.9	74.1	44.8	8770	890	695	493	38	8.0	4.3	11.7	11.7	17.7	61	77
		1	57.6	43.2	65.4	46.3	7320	650	414	-	28	7.2	3.9	10.4	40.4	15.6	57	73
Suitable for low water temperatures 4741	10	2	92.7	43.3	102.9	46.9	7960	890	695	493	32	7.6	4.1	11.0	11.0	16.5	61	77
		1	77.5	46.0	86.1	50.0	6150	650	414	-	22	6.5	3.9	9.4	9.4	13.9	57	73
	15	2	84.5	45.8	94.7	49.5	7960	890	695	493	32	7.6	4.1	11.0	11.0	16.5	61	77
		1	70.7	48.3	79.3	52.4	6150	650	414	-	22	6.5	3.9	9.4	9.4	13.9	57	73
	20	2	76.3	48.2	86.6	52.0	7960	890	695	493	32	7.6	4.1	11.0	11.0	16.5	61	77
		1	63.9	50.5	72.4	54.6	6150	650	414	-	22	6.5	3.9	9.4	9.4	13.9	57	73

V [m³/h] = air volume, free-blowing; Q<sub>H</sub> [kW] = heat output; t<sub>L1</sub> [°C] = air inlet temperature; t<sub>L2</sub> [°C] = air outlet temperature

<sup>1)</sup> Measured in a TOP with heat exchanger code 33.

<sup>2)</sup> Speed may differ from the stated speed.

<sup>3)</sup> The sound pressure levels were calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

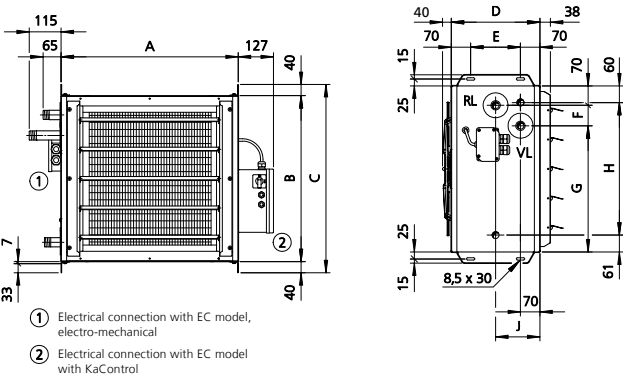
TOP AC

Heat exchanger, galvanised steel, cross-counterflow

Models 44 and 45

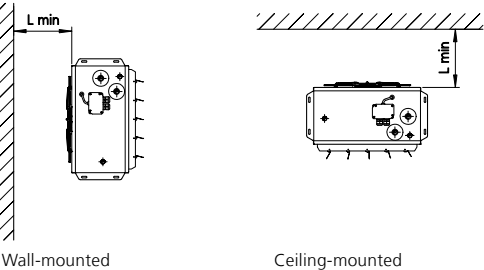
AC fan (motor code 31 and 36)

Technical Drawings (Dimensions in mm)



Front view

Side view



Type	A	B	C	D	E	F	G	H	L <sub>min</sub>
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
Model 44	540	500	580	320	180	49	395	379	160
Model 45	640	600	680	320	180	74	495	479	180

Specifications

Weights

Type	Weight	Water content
	[kg]	[l]
4433	57	6,1
4443	64	6,1
4533	78	8,2
4543	93	8,2

Connection

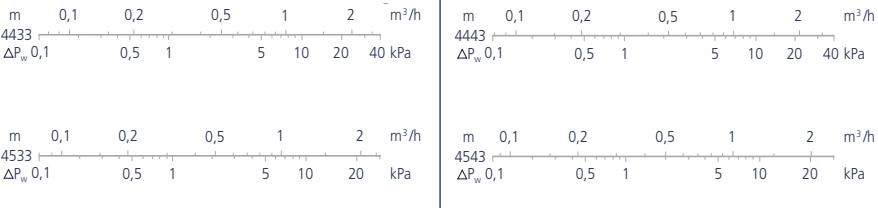
1" (Model 44)

1" (Model 45)

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- [Kampmanngroup.com](https://www.kampmanngroup.com)
- [Kampmann.co.uk/top](https://www.kampmann.co.uk/top)

Water resistance



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.

m = Water volumetric flow [m³/h]  
ΔP<sub>w</sub> = Water resistance [kPa]

## Outputs Series 44\*\*31/36 AC



Type	Intake air temperature	Switching stage	Heat outputs				Air volume	Speed <sup>1)</sup>	2-stage, three-phase 400 V, motor code 36	1-stage, Single-phase 230 V, motor code 31 <sup>2)</sup>	Throw (Wall-mounted)	Maximum installation height when Ceiling-mounted					Sound pressure level <sup>3)</sup>	Sound power level
			with LPHW 80/40 °C		with LPHW 110/50 °C				Power consumption <sup>1)</sup>	Power consumption <sup>1)</sup>		Louvre	Air diffuser	Outlet nozzle	Induction louvre	KaMAX. vertical		
			Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]												
	t <sub>L1</sub> [°C]						V [m³/h]	n [min <sup>-1</sup> ]	P [W]	P [W]	[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]	
4433	10	2	14.6	27.7	19.8	33.9	2360	1400	187	136	18	5.5	3.5	7.6	7.6	8.8	55	71
		1	13.1	30.0	17.7	37.0	1870	1170	142	-	13	4.7	3.0	6.5	6.5	7.4	49	65
	15	2	12.9	30.8	18.1	37.2	2360	1400	187	136	18	5.5	3.5	7.6	7.6	8.8	55	71
		1	11.5	32.8	16.2	40.1	1870	1170	142	-	13	4.7	3.0	6.5	6.5	7.4	49	65
	20	2	10.7	33.4	16.4	40.4	2360	1400	187	136	18	5.5	3.5	7.6	7.6	8.8	55	71
		1	9.6	35.1	14.7	43.1	1870	1170	142	-	13	4.7	3.0	6.5	6.5	7.4	49	65
4443	10	2	16.2	34.5	21.9	43.1	1890	1400	187	136	16	4.8	3.1	6.7	6.7	7.6	55	71
		1	14.2	37.3	19.1	47.0	1480	1170	142	-	12	4.1	2.7	5.6	5.6	6.5	49	65
	15	2	14.3	36.9	20.0	45.7	1890	1400	187	136	16	4.8	3.1	6.7	6.7	7.6	55	71
		1	12.5	39.4	17.5	49.3	1480	1170	142	-	12	4.1	2.7	5.6	5.6	6.5	49	65
	20	2	11.9	38.5	18.2	48.3	1890	1400	187	136	16	4.8	3.1	6.7	6.7	7.6	55	71
		1	10.4	40.7	15.9	51.6	1480	1170	142	-	12	4.1	2.7	5.6	5.6	6.5	49	65

## Outputs Series 45\*\*31/36 AC



Type	Intake air temperature	Switching stage	Heat outputs				Air volume	Speed <sup>1)</sup>	2-stage, three-phase 400 V, motor code 36	1-stage, Single-phase 230 V, motor code 31 <sup>2)</sup>	Throw (Wall-mounted)	Maximum installation height when Ceiling-mounted					Sound pressure level <sup>3)</sup>	Sound power level
			with LPHW 80/40 °C		with LPHW 110/50 °C				Power consumption <sup>1)</sup>	Power consumption <sup>1)</sup>		Louvre	Air diffuser	Outlet nozzle	Induction louvre	KaMAX. vertical		
	t <sub>L1</sub> [°C]		Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	V [m³/h]	n [min <sup>-1</sup> ]	P [W]	P [W]	[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]	
4533	10	2	25.9	27.9	35.0	34.1	4140	1350	249	256	23	6.5	4.1	9.2	9.2	11.4	59	75
		1	23.3	30.0	31.5	37.0	3330	1100	172	-	17	5.7	3.6	8.0	8.0	9.8	51	67
	15	2	22.8	30.9	32.0	37.4	4140	1350	249	256	23	6.5	4.1	9.2	9.2	11.4	59	75
		1	20.5	32.8	28.8	40.1	3330	1100	172	-	17	5.7	3.6	8.0	8.0	9.8	51	67
	20	2	19.0	33.5	29.0	40.6	4140	1350	249	256	23	6.5	4.1	9.2	9.2	11.4	59	75
		1	17.1	35.1	26.1	43.1	3330	1100	172	-	17	5.7	3.6	8.0	8.0	9.8	51	67
4543	10	2	27.6	33.0	37.4	41.1	3430	1350	249	256	19	5.8	3.7	8.2	8.2	10.1	59	75
		1	24.4	35.8	33.0	44.9	2700	1100	172	-	13	5.0	3.2	7.0	7.0	8.5	51	67
	15	2	24.3	35.5	34.2	43.9	3430	1350	249	256	19	5.8	3.7	8.2	8.2	10.1	59	75
		1	21.4	38.0	30.1	47.4	2700	1100	172	-	13	5.0	3.2	7.0	7.0	8.5	51	67
	20	2	20.3	37.4	31.0	46.6	3430	1350	249	256	19	5.8	3.7	8.2	8.2	10.1	59	75
		1	17.9	39.5	27.3	49.8	2700	1100	172	-	13	5.0	3.2	7.0	7.0	8.5	51	67

V [m³/h] = air volume, free-blowing; Q<sub>H</sub> [kW] = heat output; t<sub>L1</sub> [°C] = air inlet temperature; t<sub>L2</sub> [°C] = air outlet temperature

<sup>1)</sup> Measured in a TOP with heat exchanger code 33.

<sup>2)</sup> Speed may differ from the stated speed.

<sup>3)</sup> The sound pressure levels were calculated based on an assumed room insulation of 16 dB(A).

This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

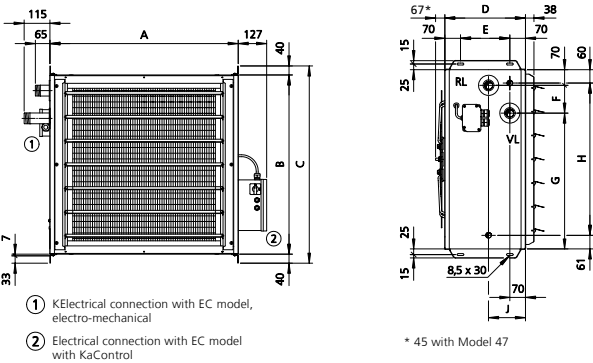
TOP AC

Heat exchanger, galvanised steel, cross-counterflow

Models 46 and 47

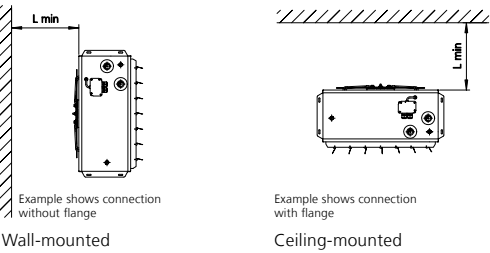
AC fan (motor code 31 and 36)

Technical Drawings (Dimensions in mm)



Front view

Side view



Type	A	B	C	D	E	F	G	H	L <sub>min</sub>
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
Model 46	740	700	780	320	180	99	595	579	230
Model 47	840	800	880	360	220	124	695	679	300

Specifications

Weights

Type	Weight	Water content
	[kg]	[l]
4633	103	11,5
4643	124	11,5
4733	142	16,8
4743	171	16,8

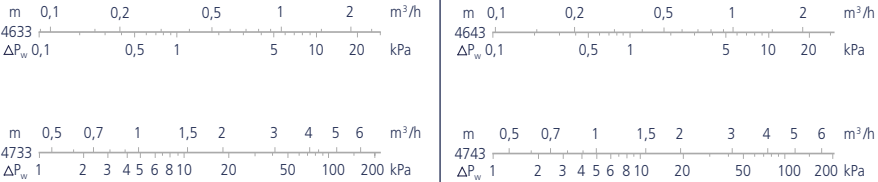
Connection

1¼" (Model 46)  
1½" (Model 47)

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- [Kampmanngroup.com](https://www.kampmanngroup.com)
- [Kampmann.co.uk/top](https://www.kampmann.co.uk/top)

Water resistance



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.

m = Water volumetric flow [m³/h]  
ΔP<sub>w</sub> = Water resistance [kPa]



## Outputs Series 46\*\*31/36 AC



Type	Intake air temperature	Switching stage	Heat outputs				Air volume	Speed <sup>1)</sup>	2-stage, three-phase 400 V, motor code 36	1-stage, Single-phase 230 V, motor code 31 <sup>2)</sup>	Throw (Wall-mounted)	Maximum installation height when Ceiling-mounted					Sound pressure level <sup>3)</sup>	Sound power level
			with LPHW 80/40 °C		with LPHW 110/50 °C				Power consumption <sup>1)</sup>	Power consumption <sup>1)</sup>		Louvre	Air diffuser	Outlet nozzle	Induction louvre	KaMAX. vertical		
			Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]												
	t <sub>L1</sub> [°C]		Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	V [m³/h]	n [min <sup>-1</sup> ]	P [W]	P [W]	[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]	
4633	10	2	36.5	28.4	49.3	34.8	5680	910	359	344	27	7.2	4.1	9.8	9.8	12.5	58	74
		1	32.4	30.6	43.8	37.9	4490	640	226	-	20	6.2	3.6	8.4	8.4	10.7	51	67
	15	2	32.1	31.4	45.1	38.0	5680	910	359	344	27	7.2	4.1	9.8	9.8	12.5	58	74
		1	28.5	33.4	40.1	40.9	4490	640	226	-	20	6.2	3.6	8.4	8.4	10.7	51	67
	20	2	26.8	33.9	40.9	41.2	5680	910	359	344	27	7.2	4.1	9.8	9.8	12.5	58	74
		1	23.8	35.6	36.3	43.8	4490	640	226	-	20	6.2	3.6	8.4	8.4	10.7	51	67
4643	10	2	41.8	35.1	56.5	44.0	4750	910	359	344	21	6.4	3.7	8.8	8.8	11.1	58	74
		1	36.3	37.9	49.2	47.8	3720	640	226	-	16	5.1	3.0	7.0	7.0	8.7	51	67
	15	2	36.8	37.4	51.7	46.5	4750	910	359	344	21	6.4	3.7	8.8	8.8	11.1	58	74
		1	32.0	39.9	45.0	50.0	3720	640	226	-	16	5.1	3.0	7.0	7.0	8.7	51	67
	20	2	30.7	39.0	46.9	49.0	4750	910	359	344	21	6.4	3.7	8.8	8.8	11.1	58	74
		1	26.7	41.1	40.8	52.2	3720	640	226	-	16	5.1	3.0	7.0	7.0	8.7	51	67

## Outputs Series 47\*\*31/36 AC



Type	Intake air temperature	Switching stage	Heat outputs				Air volume	Speed <sup>1)</sup>	2-stage, three-phase 400 V, motor code 36	1-stage, Single-phase 230 V, motor code 31 <sup>2)</sup>	Throw (Wall-mounted)	Maximum installation height when Ceiling-mounted					Sound pressure level <sup>3)</sup>	Sound power level
			with LPHW 80/40 °C		with LPHW 110/50 °C				Power consumption <sup>1)</sup>	Power consumption <sup>1)</sup>		Louvre	Air diffuser	Outlet nozzle	Induction louvre	KaMAX. vertical		
			Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]												
	t <sub>L1</sub> [°C]		Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	Q <sub>H</sub> [kW]	t <sub>L2</sub> [°C]	V [m³/h]	n [min <sup>-1</sup> ]	P [W]	P [W]	[m]	[m]	[m]	[m]	[m]	L <sub>PA</sub> [dB(A)]	L <sub>WA</sub> [dB(A)]	
4733	10	2	64.0	30.8	86.5	38.2	8770	890	695	493	38	8.0	4.3	11.7	11.7	17.7	61	77
		1	58.1	32.7	78.6	40.7	7320	650	414	-	28	7.2	3.9	10.4	40.4	15.6	57	73
	15	2	56.3	33.6	79.1	41.2	8770	890	695	493	38	8.0	4.3	11.7	11.7	17.7	61	77
		1	51.2	35.3	71.9	43.5	7320	650	414	-	28	7.2	3.9	10.4	40.4	15.6	57	73
	20	2	47.0	35.8	71.8	44.1	8770	890	695	493	38	8.0	4.3	11.7	11.7	17.7	61	77
		1	42.7	37.2	65.2	46.2	7320	650	414	-	28	7.2	3.9	10.4	40.4	15.6	57	73
4743	10	2	74.3	36.7	100.5	46.1	7960	890	695	493	32	7.6	4.1	11.0	11.0	16.5	61	77
		1	64.8	40.1	87.6	50.7	6150	650	414	-	22	6.5	3.9	9.4	9.4	13.9	57	73
	15	2	65.4	38.8	91.9	48.5	7960	890	695	493	32	7.6	4.1	11.0	11.0	16.5	61	77
		1	57.0	41.9	80.2	52.8	6150	650	414	-	22	6.5	3.9	9.4	9.4	13.9	57	73
	20	2	54.6	40.2	83.4	50.8	7960	890	695	493	32	7.6	4.1	11.0	11.0	16.5	61	77
		1	47.6	42.8	72.7	54.8	6150	650	414	-	22	6.5	3.9	9.4	9.4	13.9	57	73

V [m³/h] = air volume, free-blowing; Q<sub>H</sub> [kW] = heat output; t<sub>L1</sub> [°C] = air inlet temperature; t<sub>L2</sub> [°C] = air outlet temperature

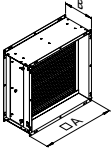

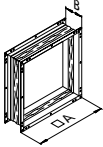
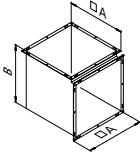
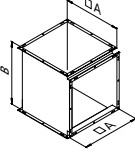
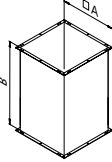
<sup>1)</sup> Measured in a TOP with heat exchanger code 33.

<sup>2)</sup> Speed may differ from the stated speed.

<sup>3)</sup> The sound pressure levels were calculated based on an assumed room insulation of 16 dB(A).

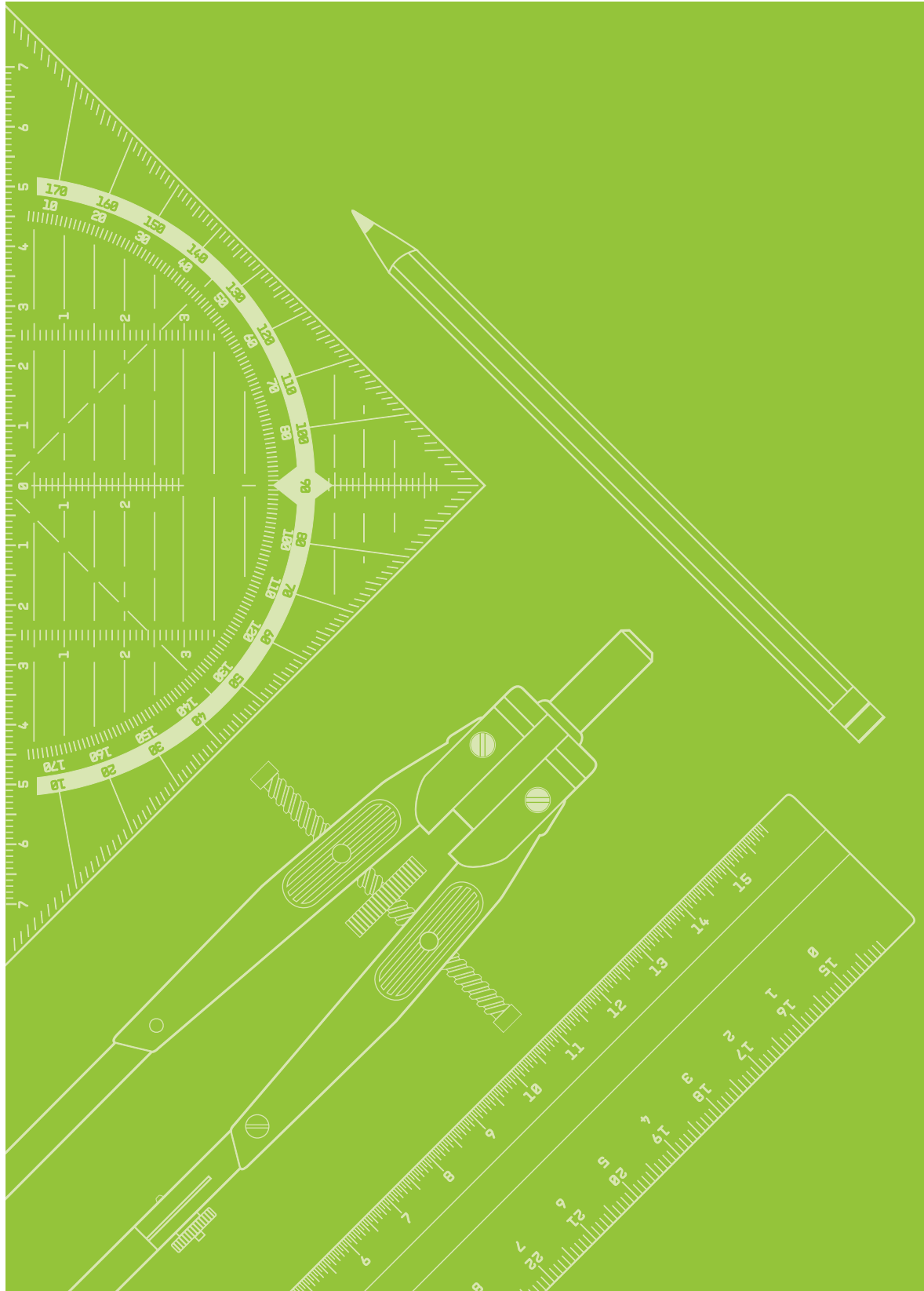
This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

# Sheet Steel Accessories

Figure	Article	Properties	Model	Dimensions	
				□ A [mm]	B [mm]
	<b>Filter box, Filter ISO Coarse 90 %</b> Type 3*010	made of sendzimir galvanised sheet steel with pleated filter medium Filter quality ISO Coarse 90 % according to DIN ISO 16890	44	500	250
			45	600	250
			46	700	250
			47	800	250
	<b>Replacement filter cassette ISO Coarse 90 %</b> Type 3*611	to fit filter box type 3*010			
	<b>Flexible connecting piece, square</b> Type 3*013	with a duct connection profile on both sides and a flexible canvas connection for decoupling from structure-borne noise and for length compensation	44	500	120 – 160
			45	600	120 – 160
			46	700	120 – 160
			47	800	120 – 160
	<b>Air duct 90°</b> Type 3*021	with a duct connection profile on both sides	44	500	525
			45	600	625
			46	700	725
			47	800	825
	<b>Air duct T-piece</b> Type 3*022	with a duct connection profile on 3 sides	44	500	550
			45	600	650
			46	700	750
			47	800	850
	<b>Air duct</b> Type 3*015	with a duct connection profile on both sides; please specify length when ordering	44	500	Please specify dimensions when ordering
			45	600	
			46	700	
			47	800	

# 03 ► Design Information

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## Information on Planning and Design

The size of TOP unit heaters depends on the heat output calculated and also on the structural conditions.

### Number and size of unit heaters

The number and size of unit heaters installed is based on the heat load calculated, which also takes into consideration structural factors, such as the fixing and installation points and the permitted sound level.

**In all cases it is better to use several smaller units, as**

- ▶ the temperature distribution is better,
- ▶ the air velocities are lower,
- ▶ lower sound levels can be expected.

If only very slow air velocities are required, we would recommend designing the unit heaters so that the required heat output is produced at low to medium fan speed. In practice, designing the units to operate at stage 1 with 2-stage AC and 6 V with EC fans has worked well. This leaves some reserve for heating up after longer interruptions (e.g. at weekends).

### Air circulation

Designing a unit heater system based on the air circulation has proved itself to be very practical to obtain a reliable unit selection and uniform air distribution.

$$LU \quad [1/h] = \frac{V_{L\text{ eff}} \cdot n}{V}$$

LU [1/h] = Air circulation at the design stage

$V_{L\text{ eff}}$  [m<sup>3</sup>/h] = Effective unit heat air volume at the design stage

V [m<sup>3</sup>] = Volume of the space to be heated

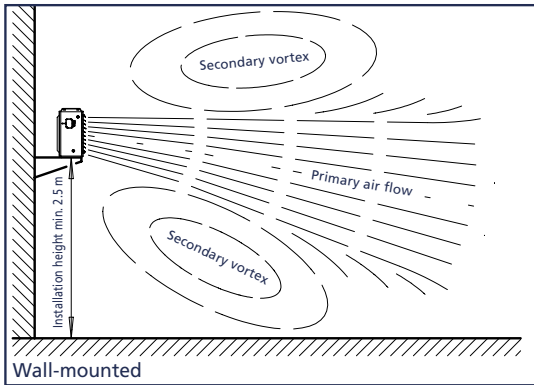
n [-] = Number of unit heaters

A design based on the air circulation significantly simplifies the choice of unit heaters. The right gaps between unit heaters can be obtained taking into consideration the maximum mounting heights of the various air outlets without the need for additional calculations.

Should the minimum required air circulation, as per the table below, not be possible with the selected unit heaters, then ceiling fans from the accessories range can also be used. For more information and installation examples see page 75.

### Air circulation LU

LU [1/h]	Standard louveres	KaMAX
minimum	2.0	1.5
better	2.5	1.8
good	3 – 3.5	2.5
very good	4 – 5	3.0



### Layout of unit heaters

Existing equipment and fixtures in the hall, such as shelving, large production systems, machines, cranes etc., have to be taken into consideration when arranging unit heaters in the hall. Workplaces and areas in which people spend time should not be located in the primary air flow from a unit heater, rather they should be located in the secondary air vortices.

### Wall-mounted

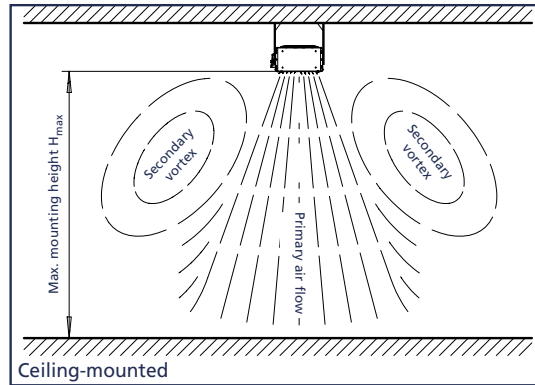
When unit heaters are installed on the wall, the distance from the floor to the underneath of the unit heater should be at least 2.5 metres and at most 4 metres. Mounting heights of > 4 metres cannot guarantee the uniform heating of the occupied zone without the use of additional accessories, such as ductwork etc. The lateral distance between the unit heaters is primarily determined by the air circulation, although gaps of > 15 metres should be avoided. Unit heaters offset opposite each other produce improved air distribution.

### Ceiling-mounted

Ceiling installation has a number of decisive advantages over wall installation:

- ▶ energy savings due to lower temperatures under the ceiling. The accumulation of warm air is reduced, with heat losses minimised.
- ▶ The layout of the unit heaters depends on the equipment and fixtures and should essentially be free of restrictions caused by structural obstacles.
- ▶ A number of special air outlets, such as the KaMAX diffuser, allow for individual selection.
- ▶ The gap from ground level enables the air outlets to be ideally set to ensure that air reaches ground level essentially draught-free.

The distance of the units from each other comes from a symmetrical arrangement of the units in the space and is determined by the air circulation.



### Throw

The throw (see pages 15 and 16) is directly dependent on

- ▶ the room geometry, predominantly the height of the space.
- ▶ the temperature of the air flow,
- ▶ the equipment in the room,
- ▶ the air volume,
- ▶ the unit heater air outlet.

The throw is defined as the maximum penetration depth of the primary air stream under ideal conditions. The isothermic throw figures given in the performance tables for wall mounting only apply to louver type 3\*001. These values should only be viewed as guideline values, in view of the significant dependency of the throw on the room geometry, equipment and up-current caused by higher outlet temperatures. Assume a maximum penetration depth of the primary air stream of 3 to 4.5 x ceiling height of the space. Large room depths are only indirectly involved in the air exchange through secondary vortices.

### Maximum mounting height

The maximum mounting height  $H_{max}$  is based on the maximum penetration depth of the air stream at ground level with ceiling mounted units. Like the throw with wall-mounted units, the maximum mounting height is also dependent on the

- ▶ room geometry and equipment in the room,
- ▶ the air volume and air outlet of the unit heaters, but especially the overtemperature of the discharged air stream.

The maximum mounting heights given in the Technical Data on pages 15 to 61 apply to free-blowing operation at the respective fan speed. The maximum mounting heights depending on the effective air volume, e.g. when using attachments, can be seen on the diagrams on page 70.

All the given maximum mounting heights only apply to entering air temperatures of up to 15 K above room temperature. A correction is needed with higher outlet temperatures, see diagram below.

### Correction of mounting height

The given maximum mounting heights only apply to entering air temperatures of up to 15 K above room temperature. As the thermal up-current reduces the penetration depth of the primary air stream, the maximum mounting height  $H_{\max}$  needs to be corrected as follows when the overtemperature of the discharged air is greater than 15 K:

$$H = H_{\max} \cdot f_H$$

$H$  [m] = Permitted mounting height

$H_{\max}$  [m] = Max. mounting height

$f_H$  [ ] = Correction factor for mounting height (see diagram below)

Calculation of overtemperature of discharged air:

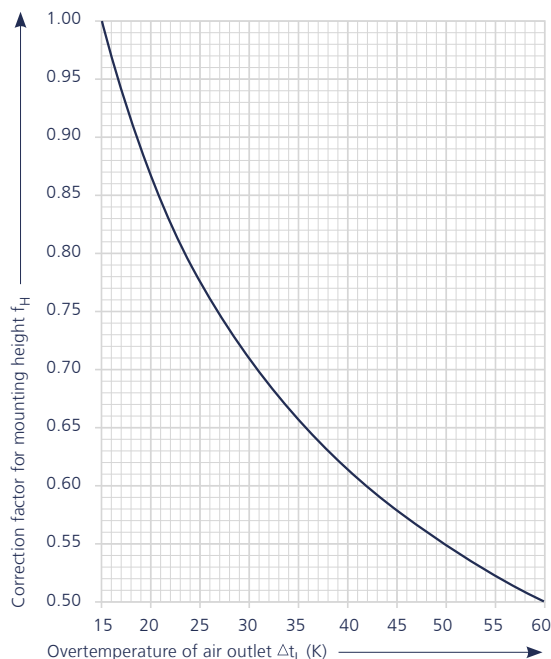
$$\Delta t_L = t_{L2} - t_i$$

$\Delta t_L$  [°C] = Overtemperature of air outlet

$t_{L2}$  [°C] = Outlet air temperature

$t_i$  [°C] = Internal temperature of room

### Correction of mounting height



### Outlet air temperatures

Please refer to the performance tables for the outlet air temperatures of the different unit heaters (on pages 15 to 61). If the use of additional components results in a reduced air volume and thus a lower heat output or if a temperature difference  $\Delta t$  between the mean water temperature and the air intake temperature has been selected that is not shown in the performance tables then the outlet air temperature can be calculated as follows:

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

$t_{L1}$  [°C] = Air intake temperature

$t_{L2}$  [°C] = Outlet air temperature

$Q_{\text{eff}}$  [KW] = Eff. heat output of unit heater

$V_{L \text{ eff}}$  [m³/h] = Effective air volume of unit heater (including attachments)

$C$  [Wh/m³ K] = Multipl. air outlet temperature calculation

$t_{L1}$	$C$	$t_{L1}$	$C$
[°C]	[Wh/m³ K]	[°C]	[Wh/m³ K]
+ 20	0,34	± 0	0,36
+ 10	0,35	– 10	0,37

Guideline values for the air outlet temperature:

- ▶ min. 35 – 40 °C (only go below this temperature at high fan speed or with ceiling installation in high halls),
- ▶ max. 50 – 55 °C (max. 45 °C with very high halls).

Primary air flows below 40 °C cause feelings of discomfort when directed at people. If an air outlet temperature of approx. 40 °C cannot be achieved due to low flow temperature, then select outlet air-side accessories so that occupied zones at ground level are located in the secondary air stream. When units are ceiling-mounted at heights of greater than approx. 4.5 m, the outlet air temperature should not be too high, as the strong thermal upcurrent will not evenly heat the lower zones of the space.



## KaMAX air outlet

### KaMAX air outlet, Type 3\*111

KaMAX stands for Kampmann-Multi-Air-MiX. This indicates the operating method of this tried and tested air outlet. A number of different factors can adversely affect the distribution of temperature and air circulation in a space:

- ▶ increasingly improved thermal insulation
- ▶ minimum permissible outlet air temperatures in conjunction with predominantly ceiling-mounted units.

KaMAX ensures the systematic mixing of indoor air, bridges thermal lift and thus prevents the formation of undesirable pockets of heat underneath the ceiling:

- ▶ transmission heat losses are minimised,
- ▶ energy costs are reduced,
- ▶ comfort at ground level is enhanced.

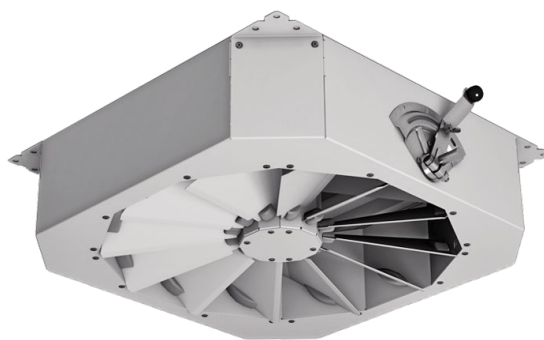
### Design and effectiveness

Circular slats have a bearing on the inside and outside. The slats can be adjusted on the outside by means of an adjustment lever. The slats feature both a short and a long adjustment lever.

The slats are almost perpendicular to the flow of air in their horizontal position. The narrow air outlet gap between the slats is simultaneously wide open and the discharged air is distributed extremely flat with a pronounced swirling effect under the ceiling.

The more the louvre slats are moved into a vertical position, the greater is the gap between the slats. The penetration depth of the air stream increases, at the same time secondary air is increasingly induced. In their maximum vertical position, two slats effectively form a nozzle with each other. A diffuser-like cavity this forms between each nozzle-forming pair of slats. The negative pressure formed at this point pulls with it the

secondary air entrained from the escaping air flow. The escaping warm primary air flow is intensively mixed with the indoor air, lowering the outlet air temperature, and reducing the thermal lift of the overall air stream.



### Benefits

KaMAX does not produce high temperature differences between the floor and ceiling.

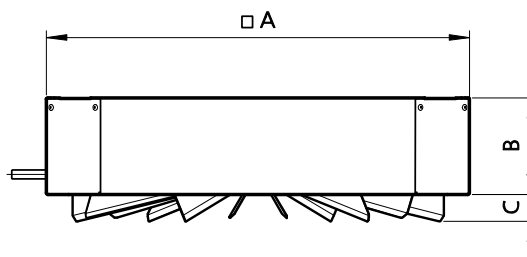
Heat that accumulates under the ceiling is drawn in and involved in the air circulation.

A significantly larger volume of air at a pleasant temperature and low speed reaches ground level.

Draughts are effectively avoided.

The swirl of the discharged air, its rotation, can be changed so that both horizontal and vertical air streams with variable induction and penetration can be generated.

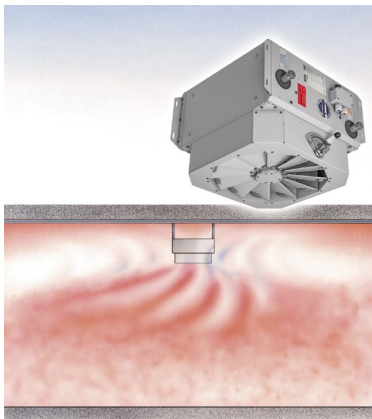
### TOP unit heater with KaMAX in vertical position (cross-section)



### KaMAX dimensions

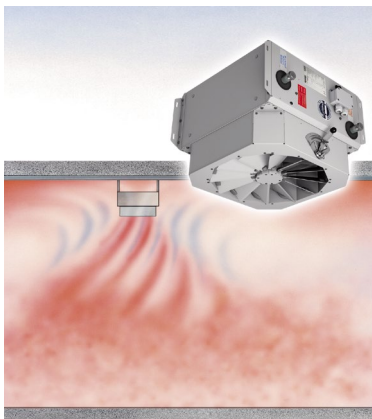
Dimensions in mm			
Type	A □	B	C
34111	500	165	35
35111	600	165	50
36111	700	165	65
37111	800	165	75

## Functions and applications



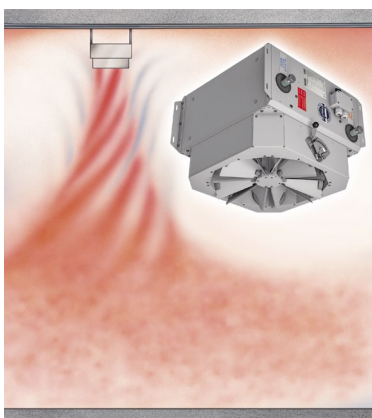
### Example 1: Hall height 3–5 m

- ▶ The slats are almost horizontal.
- ▶ Air is distributed horizontally under the ceiling and flows in a circle around the KaMAX.
- ▶ Floor-level and ceiling air is entrained.
- ▶ Even air movements occur.
- ▶ Low air velocities at ground level, no draughts and thus greater comfort are achieved.



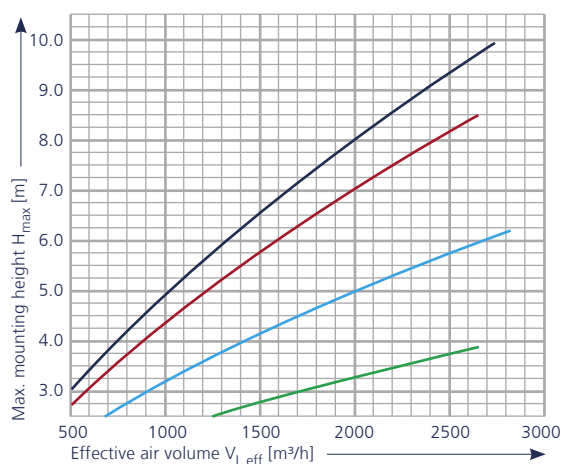
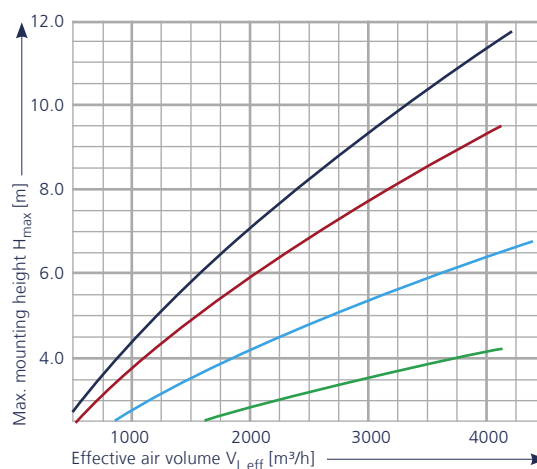
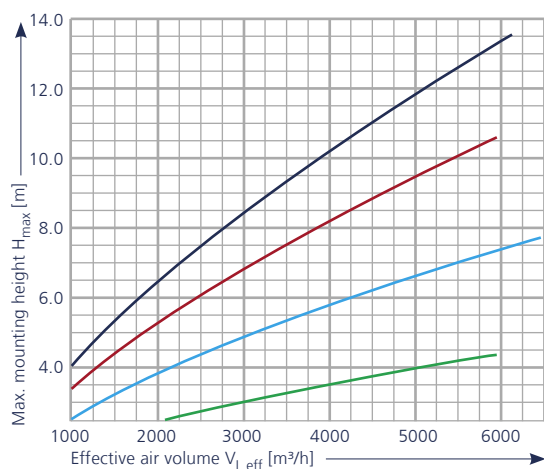
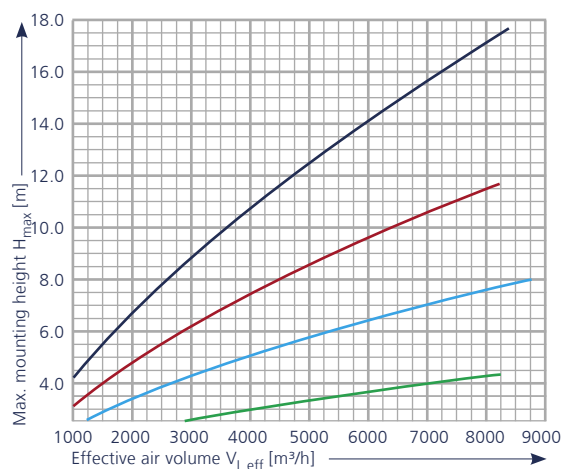
### Example 2: Hall height 5-10 m

- ▶ The air can be discharged at any angle.
- ▶ Thanks to the slightly vertical arrangement of the slats, the percentage of induction air increases directly at the KaMAX air outlet.
- ▶ The entire volume of air in the room is drawn into the air exchange through a strong swirling movement.
- ▶ A direct primary air stream cannot be felt at ground level.
- ▶ As air is induced, the outlet air temperature falls.
- ▶ Intensive mixing of indoor air at low air speed and minimal temperature stratification.
- ▶ Comfort and energy savings are the result.



### Example 3: Hall height up to 17 m

- ▶ The air is discharged predominantly vertically.
- ▶ In their maximum vertical position, the slats act as nozzles.
- ▶ Air is induced from all sides, the outlet air temperature thereby significantly falls.
- ▶ Twice the volume of air is moved around 2 meters below the KaMAX diffuser.
- ▶ High volumes of air are moved at a low temperature and speed, increasing the penetration depth by up to 30%.
- ▶ Comfort and energy savings are the result.
- ▶ This discharge position is ideal for the cost-effective heating of very high-ceilinged spaces.

**Max. mounting height\* Series 44****Max. mounting height\* Series 45****Max. mounting height\* Series 46****Max. mounting height\* Series 47**

\* All maximum mounting heights only apply to entering air temperatures of up to 15 K above room temperature; with higher outlet air temperatures refer to Correction on page 67

### Door air curtains

An unpleasant exchange of air, which can have an effect far into a building, is caused by frequently open doors, especially with a poor location. Cold air streams at a low level, while heat escapes at the top. Workplaces near doorways are adversely affected. Unpleasant draughts can be minimised by the use of door air curtains. Possible control options:

- ▶ By means of a door contact switch with pre-set speed.
- ▶ Continuous operation with continuously open doors.
- ▶ Door contact switch with external thermostat connected in series, to avoid unnecessary operation when the outside temperature is high enough.

Unit heaters are particularly suitable for installation above doorways. The doorway design and fixing options have to be considered. Unit heaters with the following air outlets have proved themselves for screening doorways.

**Single-row louvre type 3\*002** for 4-sided air stream with doors up to a height of approx. 3.5 m, depending on the air volume of the unit heater.

**Wide-stream nozzle, type 3\*007** for door air curtains at a height of more than 3.0 m. Special designs are available on request.

The outlet air temperature should be a minimum of 30 °C. Too high outlet air temperatures reduce the penetration depth. Unit heaters with a low heat exchanger performance code and high air output should be selected, depending on the heating medium.

### Design

Scientific research on the effectiveness and design of door air curtains is not available. In practice, however, the following selection method has stood the test of time. The heat output of the door air curtain system should not be added to the heat requirement, as door air curtain systems are not generally constantly in operation. The heat loss through the open doors can be disregarded.

### Selection of unit heaters

Doorway dimensions		Protected doorways, normal requirements	Unprotected doorways, higher requirements	Protected doorways, reduced requirements
Width [m]	Height [m]			
2,0	2,0	2 x 4420 (4421)	2 x 4520 (4521)	1 x 4520 (4521)
2,0	3,0	2 x 4620 (4621) or 1 x 4720 (4721)	2 x 4620 (4621) or 2 x 4720 (4721)	2 x 4520 (4521)
3,0	3,0	3 x 4620 (4621) or 2 x 4720 (4721)	5 x 4620 (4621) or 3 x 4720 (4721)	2 x 4620 (4621)
3,0	4,0	4 x 4620 (4621) or 3 x 4720 (4721)	6 x 4620 (4621) or 4 x 4720 (4721)	3 x 4620 (4621) or 2 x 4720 (4721)
4,0	4,0	5 x 4620 (4621) or 4 x 4720 (4721)	8 x 4620 (4621) or 5 x 4720 (4721)	4 x 4620 (4621) or 3 x 4720 (4721)
5,0	4,0	7 x 4620 (4621) or 4 x 4720 (4721)	6 x 4720 (4721)	5 x 4620 (4621) or 3 x 4720 (4721)
4,0	5,0	7 x 4620 (4621) or 4 x 4720 (4721)	7 x 4720 (4721)	5 x 4620 (4621) or 3 x 4720 (4721)
5,0	5,0	5 x 4720 (4721)	8 x 4720 (4721)	6 x 4620 (4621) or 4 x 4720 (4721)

Figures in brackets apply to unit heaters with galvanised steel heat exchanger

Use of attachments

This comprehensive product range permits a wide range of combination options with the attachments shown on page 62. They can be used both on the air intake and air outlet side. Important note:

- ▶ When using attachments, especially attachments with large air-side resistance, a reduced air volume and heat output is to be expected. Information on page 71.

Further components, such as mixing boxes, outside air suction accessories, for ventilation systems, are available on request.

Max. permissible flow temperature

Important:

Note the maximum flow temperatures to protect the fan!

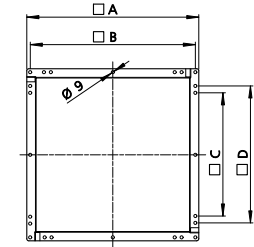
Long periods of fan idleness with high water temperatures can lead to impermissible heating of the fan motor. The flow temperatures should therefore be limited depending on the use and motor configuration. Should a temperature limit not be possible or not be sensible for the intended use, there is also an option of using appropriate valves (thermoelectric, motorised or solenoid) to shut off the heating medium. This can interrupt the flow of medium before the fan is switched off and the heat exchanger cools down. Appropriate fan controllers with a fan run-on relay and connection terminals for the motorised valve are available on request.

Max. flow temperatures\*

		Type of installation	
Use	Motor design	Ceiling	Wall
without shut-off valve	AC fan	100 °C	120 °C
	EC fan	100 °C	120 °C
with shut-off valve	AC fan	200 °C	200 °C
	EC fan	160 °C	160 °C

\* Fan models and operation for higher temperatures on request.

Connecting frame dimensions of outlet and intake accessories



Connecting frame dimensions

All the accessories for the outlet and intake side have standard frame dimensions. The standardised duct connection profile simplifies installation.

Unit heater series	Dimensions			
	A	B	C	D
44 ----	500	480	360	400
45 ----	600	580	460	500
46 ----	700	680	560	600
47 ----	800	780	660	700

## Resistance figures

Component	Type	Resistance figure Z
KaMAX, centre position	3*111	0
KaMAX, vertical slat position	3*111	2
KaMAX, horizontal slat position	3*111	4
Outlet nozzle	3*006	4
Induction louvre	3*101	4
4-way diffuser	3*004	2
Wide-stream nozzle	3*007	4
Air duct (per m of duct)	3*015	0.1
Air duct 90°	3*021	1
Filter box ISO Coarse 90 %	3*010	12

The use of attachments reduces the air as a result of pressure losses and this also the units' heat output. Correction factors for air volumes and heat outputs can be calculated using all the resistance figures in the table below. The necessary resistance figures are listed in the table at the side.

## Air volume and heat output correction factors

Heat exchanger			Switching stage			Total resistance figures Z															
Copper/ aluminium	Steel, galvanised	Cross- counter flow	Motor code 33	Motor code 34	Motor code 36	2		4		6		8		10		12		14		16	
						f <sub>L</sub>	f <sub>Q</sub>	f <sub>L</sub>	f <sub>Q</sub>	f <sub>L</sub>	f <sub>Q</sub>	f <sub>L</sub>	f <sub>Q</sub>	f <sub>L</sub>	f <sub>Q</sub>	f <sub>L</sub>	f <sub>Q</sub>	f <sub>L</sub>	f <sub>Q</sub>	f <sub>L</sub>	f <sub>Q</sub>
4420	4421 4431	4433	10 V	--	2	0.97	0.98	0.94	0.96	0.92	0.94	0.90	0.93	0.87	0.91	0.85	0.89	0.82	0.87	0.80	0.86
			6 V	10 V	1	0.97	0.98	0.95	0.97	0.93	0.95	0.90	0.93	0.88	0.92	0.86	0.90	0.83	0.88	0.81	0.86
			--	6 V	--	0.99	0.99	0.98	0.99	0.97	0.98	0.95	0.97	0.95	0.97	0.94	0.96	0.92	0.94	0.91	0.94
4430	--	--	10 V	--	2	0.97	0.98	0.95	0.97	0.93	0.95	0.90	0.93	0.88	0.92	0.87	0.91	0.84	0.89	0.81	0.86
			6 V	10 V	1	0.97	0.98	0.95	0.97	0.93	0.95	0.90	0.93	0.89	0.92	0.87	0.91	0.85	0.89	0.83	0.88
			--	6 V	--	0.99	0.99	0.98	0.99	0.97	0.98	0.95	0.97	0.94	0.96	0.93	0.95	0.91	0.94	0.90	0.93
4440	4441	4443	10 V	--	2	0.99	0.99	0.97	0.98	0.95	0.97	0.93	0.95	0.91	0.94	0.89	0.92	0.87	0.91	0.85	0.89
			6 V	10 V	1	0.99	0.99	0.97	0.98	0.95	0.97	0.93	0.95	0.91	0.94	0.89	0.92	0.87	0.91	0.86	0.9
			--	6 V	--	0.99	0.99	0.98	0.99	0.97	0.98	0.96	0.97	0.94	0.96	0.93	0.95	0.91	0.94	0.90	0.93
4520	4521 4531	4533	10 V	--	2	0.96	0.97	0.94	0.96	0.91	0.94	0.88	0.92	0.85	0.89	0.82	0.87	0.80	0.86	0.77	0.83
			6 V	10 V	1	0.96	0.97	0.94	0.96	0.91	0.94	0.88	0.92	0.86	0.90	0.83	0.88	0.81	0.86	0.79	0.85
			--	6 V	--	0.98	0.99	0.96	0.97	0.95	0.97	0.93	0.95	0.91	0.94	0.90	0.93	0.88	0.92	0.86	0.9
4530	--	--	10 V	--	2	0.97	0.98	0.94	0.96	0.91	0.94	0.89	0.92	0.86	0.90	0.83	0.88	0.81	0.86	0.78	0.84
			6 V	10 V	1	0.95	0.97	0.93	0.95	0.90	0.93	0.88	0.92	0.86	0.90	0.83	0.88	0.81	0.86	0.79	0.85
			--	6 V	--	0.98	0.99	0.97	0.98	0.95	0.97	0.93	0.95	0.92	0.94	0.91	0.94	0.89	0.92	0.88	0.92
4540	4541	4543	10 V	--	2	0.98	0.99	0.95	0.97	0.93	0.95	0.90	0.93	0.88	0.92	0.85	0.89	0.83	0.88	0.80	0.86
			6 V	10 V	1	0.96	0.97	0.94	0.96	0.92	0.94	0.89	0.92	0.88	0.92	0.85	0.89	0.84	0.89	0.82	0.87
			--	6 V	--	0.98	0.99	0.96	0.97	0.95	0.97	0.94	0.96	0.93	0.95	0.92	0.94	0.90	0.93	0.88	0.92
4620	4621 4631	4633	10 V	--	2	0.95	0.97	0.92	0.94	0.89	0.92	0.85	0.89	0.83	0.88	0.79	0.85	0.77	0.83	0.74	0.81
			6 V		1	0.95	0.97	0.92	0.94	0.89	0.92	0.85	0.89	0.83	0.88	0.79	0.85	0.77	0.83	0.74	0.81
4630	--	--	10 V	--	2	0.95	0.97	0.92	0.94	0.89	0.92	0.86	0.90	0.83	0.88	0.80	0.86	0.78	0.84	0.75	0.82
			6 V		1	0.95	0.97	0.92	0.94	0.89	0.92	0.86	0.90	0.83	0.88	0.80	0.86	0.78	0.84	0.75	0.82
4640	4641	4643	10 V	--	2	0.95	0.97	0.93	0.95	0.90	0.93	0.87	0.91	0.85	0.89	0.83	0.88	0.80	0.86	0.78	0.84
			6 V		1	0.95	0.97	0.93	0.95	0.90	0.93	0.87	0.91	0.85	0.89	0.82	0.87	0.80	0.86	0.77	0.83
4720	4721 4731	4733	10 V	--	2	0.93	0.95	0.90	0.93	0.85	0.89	0.81	0.86	0.78	0.84	0.73	0.80	0.71	0.79	0.68	0.77
			6 V		1	0.93	0.95	0.90	0.93	0.86	0.90	0.82	0.87	0.79	0.85	0.75	0.82	0.72	0.80	0.70	0.78
4730	--	--	10 V	--	2	0.92	0.94	0.89	0.92	0.85	0.89	0.80	0.86	0.78	0.84	0.73	0.80	0.71	0.79	0.68	0.77
			6 V		1	0.94	0.96	0.91	0.94	0.87	0.91	0.83	0.88	0.81	0.86	0.77	0.83	0.74	0.81	0.71	0.79
4740	4741	4743	10 V	--	2	0.93	0.95	0.90	0.93	0.86	0.90	0.82	0.87	0.79	0.85	0.75	0.82	0.72	0.80	0.70	0.78
			6 V		1	0.94	0.96	0.91	0.94	0.88	0.92	0.84	0.89	0.82	0.87	0.78	0.84	0.76	0.83	0.73	0.8

## Berechnungsformeln

$$V_{\text{Leff}} = V_L \cdot f_L$$

$$Q_{\text{eff}} = Q_N \cdot f_Q$$

## Symbols

$V_{\text{Leff}}$	[m³/h]	= effective air volume of unit heater
$V_L$	[m³/h]	= nominal air volume of unit heaters (technical data)
$f_L$	[-]	= air volume correction factor (air resistance)
$Q_{\text{eff}}$	[kW]	= effective heat output of unit heater
$Q_N$	[kW]	= nominal heat output of unit heater (technical data)
$f_Q$	[-]	= heat output correction factor (air resistance)



### Water resistance

Calculate the water resistance using the water resistance diagrams (pages 15 to 61). This is formed from:

- ▶ the heat output  $Q_{\text{eff}}$
- ▶ of the heating medium temperature difference  $\Delta t_w = t_{w1} - t_{w2}$
- ▶ the volumetric flow rate  $m = \frac{Q_{\text{eff}}}{\Delta t_w} \times 0,86$

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 dependance on the water temperature.

### Noise

There is minimal noise from these units due to the aerodynamic design of the sickle-blade, whisper-quiet fan. Flow noise is reduced because of the sickle-shaped design of the profiled blades combined with the optimised inlet nozzle.

The uniform spread over the entire frequency range, minimising blade passing noise, reduces unpleasant peaks of noise. Nevertheless, take into account the permissible noise levels when designing unit heaters.

The A-rated total noise levels, for both sound pressure and sound power, are given in the performance tables on pages 15 to 61.

### Sound pressure level

The A-rated sound pressure levels given in the technical data (pages 15 to 61) have been calculated with an assumed room insulation of 16 dB(A). This corresponds to a distance of 5 m, a room volume of 3000 m<sup>3</sup> and a reverberation time of 2.0 s (in accordance with VDI 2081). The actual sound pressure level may differ significantly from the given figures, depending on the room geometry, absorption capacity of the space, equipment, accessories etc.

### Sound power level

The sound power level describes the noise emission from the units, independent of the space and distance. The sound pressure level can be determined if the spatial geometry and absorption behaviour is known. The sound power levels were determined based on the enveloping surface method in line with DIN 45635-56.

### Calculation data

Unit heater Type	Speed [rpm]	Voltage [V] / Frequency [Hz]	Power consumption [kW]	Current consumption [A]
44**33	1475	230 / 50/60	0.165	1.35
44**34	1040	230 / 50/60	0.073	0.65
45**33	1600	230 / 50/60	0.390	1.70
45**34	1090	230 / 50/60	0.165	1.35
46**33	990	230 / 50/60	0.460	2.00
47**33	900	230 / 50/60	0.450	2.00
44**31	1390	230 / 50	0.15	0.65
45**31	1350	230 / 50	0.28	1.25
46**31	910	230 / 50	0.36	1.65
47**31	870	230 / 50	0.48	2.20
44**36	1390 / 1170	400 / 50	0.19 / 0.14	0.40 / 0.23
45**36	1340 / 1080	400 / 50	0.28 / 0.19	0.58 / 0.31
46**36	890 / 630	400 / 50	0.36 / 0.22	0.83 / 0.46
47**36	870 / 650	400 / 50	0.76 / 0.47	1.50 / 0.87

\*\* Heat exchanger model

**Conversion to other fan speeds**

The speed of the unit heater can be significantly lowered using 5-stage switches with three-phase motors and 7-stage switches with single-stage motors. To achieve this, the unit heater is wired to stage 2 or 1 and the speed is reduced by the output voltage.

Calculation formulae:

$$V_{\text{eff}} = V_L \cdot f_{L2} \quad Q_{\text{eff}} = Q \cdot f_{Q2}$$

**Symbols**

$V_{\text{Leff}}$  [m<sup>3</sup>/h] = effective air volume of unit heater

$V_L$  [m<sup>3</sup>/h] = nominal air volume of unit heaters (Technical data)

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

$Q_{\text{eff}}$  [kW] = effective heat output of unit heater

$Q$  [kW] = nominal heat output of unit heater (Technical data)

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

**Correction factors for heat outputs and air volumes at other speeds**

5-stage switch type 30752 / type 30751												7-stage switch, type 30772							
		2 (delta connection)					1 (Y-connection)					Operation with 7-stage single-phase controller							
	TOP series	Switching stage					Switching stage					TOP series	Switching stage						
		5	4	3	2	1	5	4	3	2	1		7	6	5	4	3	2	1
Fan speed [rpm]	44_ _36/45_ _36	1350	1280	1200	1000	770	1050	900	700	530	380	44_ _31 45_ _31	1350	1300	1260	1190	890	600	390
$f_{L2}$	44_ _36/45_ _36	1,0	0,95	0,88	0,74	0,57	1,0	0,86	0,67	0,50	0,36		1,0	0,96	0,93	0,88	0,66	0,44	0,29
$f_{Q2}$	44_ _36/45_ _36	1,0	0,96	0,92	0,82	0,68	1,0	0,9	0,76	0,62	0,50		1,0	0,97	0,95	0,92	0,75	0,57	0,42
Sound pressure level [dB (A)]	44_ _36	55	54	52	48	42	49	45	39	34	30	44_ _31	55	54	53	52	46	37	28
Sound power level [dB(A)]		71	70	68	64	58	65	61	55	50	46		71	70	69	68	62	53	44
Sound pressure level [dB (A)]	45_ _36	59	57	55	51	45	51	47	42	37	32	45_ _31	59	58	57	56	50	41	32
Sound power level [dB(A)]		75	73	71	67	61	67	63	58	53	48		75	74	73	72	66	57	48
Fan speed [rpm]	46_ _36/47_ _36	900	800	730	600	490	700	550	460	360	280	46_ _31 47_ _31	900	770	640	500	370	290	220
$f_{L2}$	46_ _36/47_ _36	1,0	0,89	0,81	0,67	0,54	1,0	0,79	0,66	0,51	0,40		1,0	0,86	0,71	0,56	0,41	0,32	0,24
$f_{Q2}$	46_ _36/47_ _36	1,0	0,93	0,87	0,76	0,65	1,0	0,85	0,75	0,63	0,54		1,0	0,9	0,79	0,67	0,54	0,46	0,38
Sound pressure level [dB (A)]	46_ _36	58	56	53	49	45	51	46	42	37	32	46_ _31	58	55	51	45	39	33	27
Sound power level [dB(A)]		74	72	69	65	61	67	62	58	53	48		74	71	67	61	55	49	43
Sound pressure level [dB (A)]	47_ _36	61	58	56	52	48	57	52	48	43	37	47_ _31	61	58	54	48	42	36	30
Sound power level [dB(A)]		77	74	72	68	64	73	68	64	59	53		77	74	70	64	58	52	46

## For additional air circulation: Ceiling fan

Ceiling fans can be used to increase air recirculation and prevent the accumulation of heat underneath the ceiling. When designing the system, consider the minimum required air circulation, referring also to the chapter "Air Circulation" on page 65.

### In winter:

- ▶ Air stratification with accumulated heat under the ceiling is reduced and, as a result, energy is saved.
- ▶ The transmission heat loss is reduced, thanks to the minimal temperature difference between the outside temperature and indoor temperature under the ceiling.
- ▶ It is possible to quickly and evenly heat up the space, particularly in the event of infrequent use of halls and larger spaces.
- ▶ The pre-heating time is significantly shortened (and/or the night set-back time is extended), resulting in additional savings.

### In summer:

- ▶ Pleasant layered effect due to the high air circulation.
- ▶ No need to change the outlet direction due to high suspension height in halls.

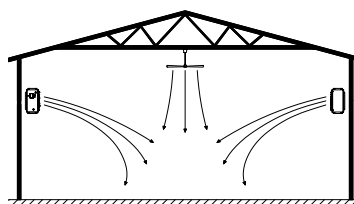
### Position

In an ideal world, the fans will alternate symmetrically with the unit heaters, with the same gaps in between. Some of the ceiling fans should be installed at the highest point in the room. This avoids pocket of warm air. Varying the height of the ceiling fans with ceilings over 10 meters in height helps to reduce vertical temperature stratification.

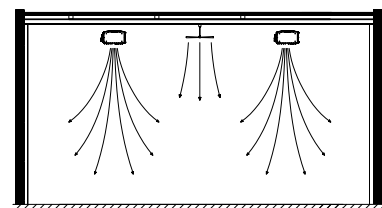
Should it not be possible to vary the height of the ceiling fans due to the structural conditions on site (e.g. high-bay warehouses, crane etc.), the use of TOP unit heaters without heat exchanger with special air outlets (e.g. KaMAX) help to balance the temperature down to ground level. These units are available on request.



### Installation examples



Example 1: TOP wall-mounted with additional ceiling fan



Example 2: TOP ceiling-mounted with additional ceiling fan

### Technical data

Fan diameter	1420 mm
Max. speed	300 rpm
Moving air volume	15,000 m³/h
Operating voltage	230 V/50 Hz
Power uptake	75 W
Max. current consumption	0.35 A
Sound pressure level (1 m distance)	52 dB(A)
Protection class	IP20
Rotor diameter	1420 mm
Height	690 mm
Weight	9.5 kg
Minimum mounting height	
Lower edge of fan	2.5 m
Max. mounting height	10 m

## Hybrid ECO System

### Air exchange separate from temperature control for comfort and efficiency

Industrial premises, workshops and retail stores are now not only heated and air conditioned by unit heaters, but also supplied with outside air. In this configuration, the extract air is discharged out of the building by means of natural overflow in accordance with 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 Regulation (EU) 1253/2014.

If these units have an integral heating and cooling function, their many attachments and long lengths of ductwork means 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.

TOP unit heaters 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 chiller, heater and long lengths of ductwork. The temperature of the air is not adjusted (heating/cooling) in the ventilation unit, but rather outside in the TOP unit heater.

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 the ultra-efficient TOP unit heater is operated at times at which 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.

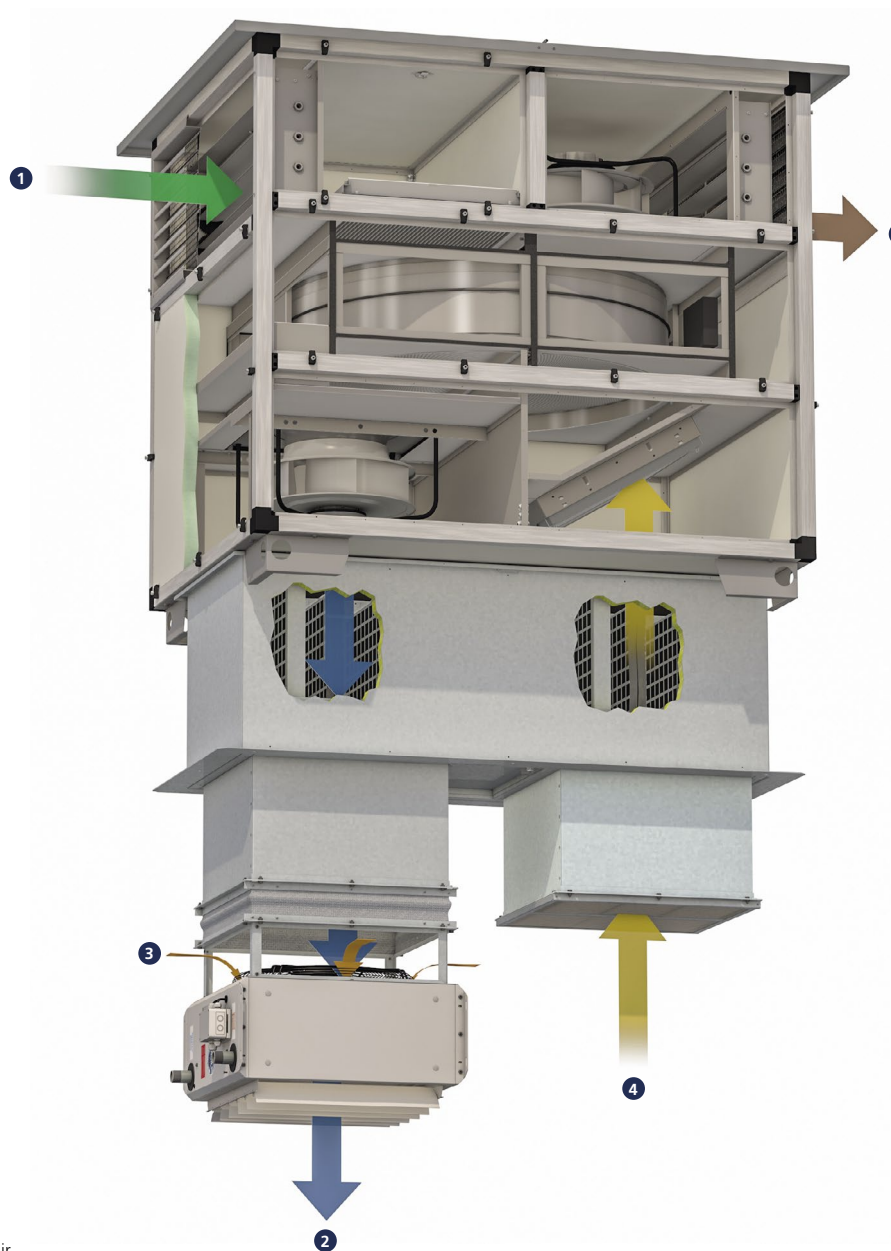
The ventilation units are extremely important in this system and are designated as “fresh ventilators” if they fulfil the following criteria:

- ▶ 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 the ventilation units and the TOP unit heater

Possible ventilation units for combination with TOP unit heaters include:

- ▶ Airblock FG
- ▶ Airblock FG
- ▶ KaCompact

## Combination of TOP unit heater with KaCompact ventilation unit



- 1 Outside air
- 2 Supply air
- 3 Secondary air
- 4 Exhaust air
- 5 Extract air

# 04 ▶ Control

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## 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 unit heaters 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 mode.\*

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 45\*\*33, 46\*\*33, 47\*\*33.

### Model with AC motors

- ▶ Speed controllers 2-stage / 5-stage / 7-stage
- ▶ 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 with the motor protection device.
- ▶ Total power for the connected heaters 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.
- ▶ Switch 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 enables 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 for 2- or 4-pipe mode. The room temperature can be set using the function keys. The temperature is controlled by means of a fan and valve. In principle, the ventilation units 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 electronic speed controller, type 30515**

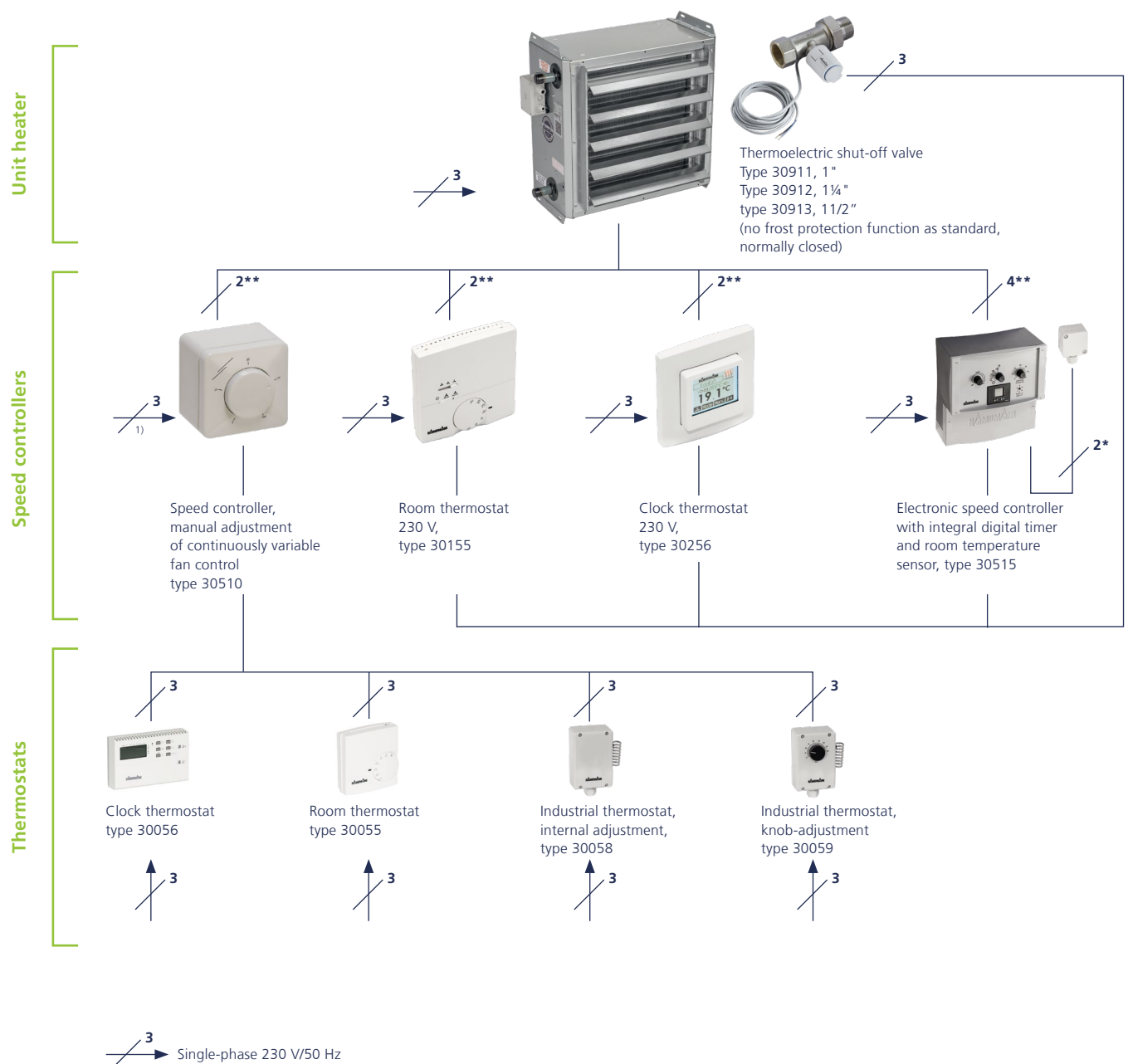
The continuously variable electronic compact controller is designed for the operation of up to 10 recirculating air units (2-pipe heating/cooling) with EC fans, to heat and cool rooms. The controller has a temperature control, which works with a fan and shut-off valve. The temperature setpoint for day 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, an external enable switch and a potential-free operating and collective fault alert. If required, the fan can also be used for pure air circulation without heating or cooling.

# 230 V EC motor

## Maximum connectable unit heaters with EC fan per speed control

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

## Wiring diagram for EC recirculating air \*00



<sup>1)</sup> when operating without a thermostat.

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

<sup>\*\*</sup>) Lay shielded cables (e.g. B. J-Y(ST)Y, 0.8 mm) separately from high-voltage cables! Max. 100 m, 20 m cable length, shield on side of ventilation unit (PE).

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

TOP complete with KaControl operating units are supplied factory-fitted with all electrical parts ready for connection (with the exception of optional accessories). A high-performance parameterisable microprocessor provides all the requisite functions. Each TOP is thus equipped with its own “intelligence” and can be operated in groups via Kampmann-T-LAN or CANbus networks.

### Building automation system

TOP unit heaters with KaControl can be equipped with plug-in communication interfaces for linking into higher-order control systems: Therefore, each basic unit can be linked into a technical building network.

Available interfaces:

- KNX
- Modbus
- Canbus
- LON
- BACnet IP (Ethernet)

### Electrical wiring

All electrical cables are connected to the TOP. 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

Each TOP 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 TOP

- ▶ The parameterisable KaControl offers a wide range of functions:
- ▶ 5-speed fan control and continuously 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 operating unit**

The “face” of the KaControl building automation system the KaController operating unit.

The KaController provides the ultimate in operating 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.

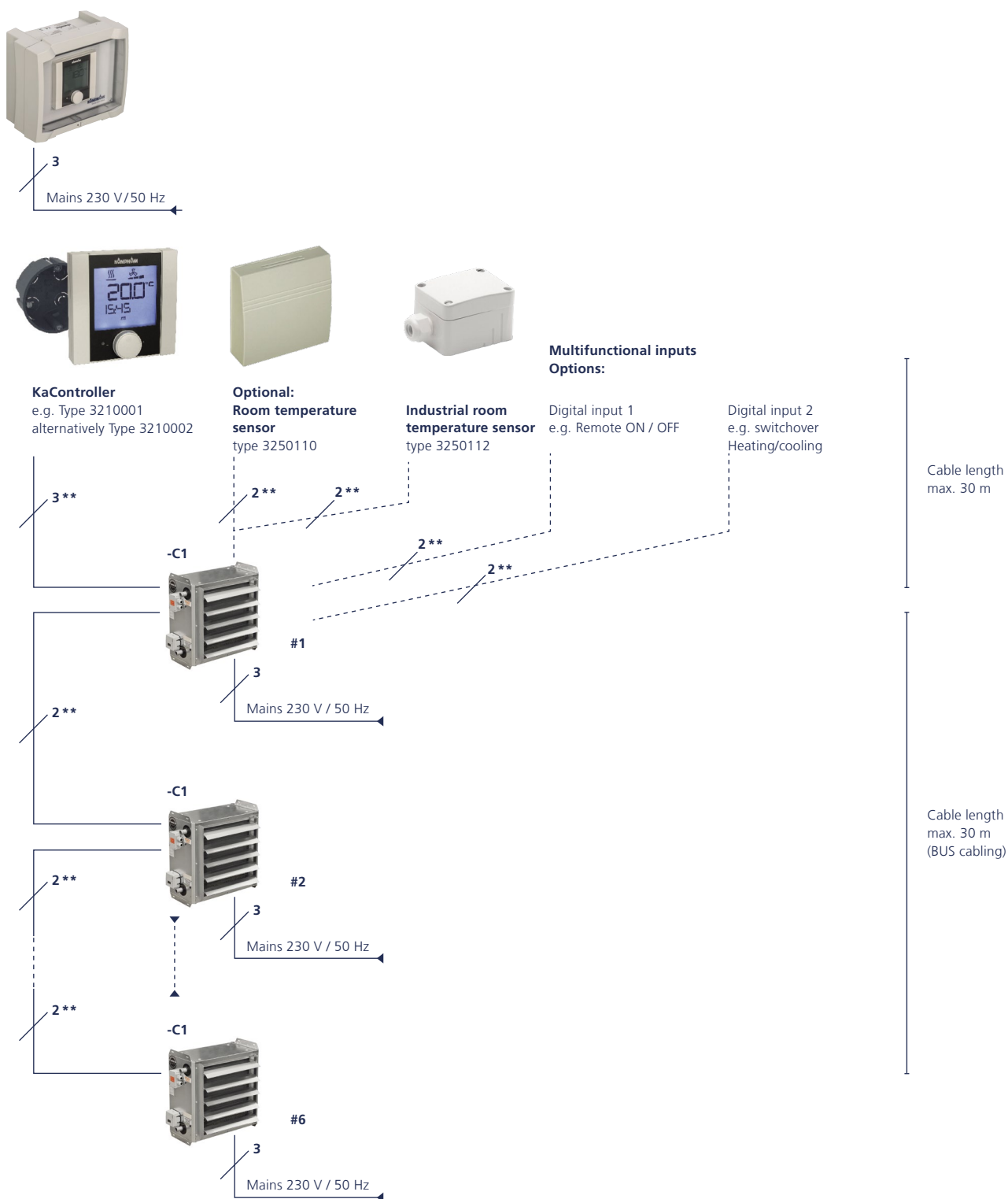
**Product features**

- ▶ 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)

**KaController – Type 3210002****Turn:** Simplest room temperature setting method**Press:** Fan stage setting

## single-circuit control system

### System configuration for up to six TOP -C1

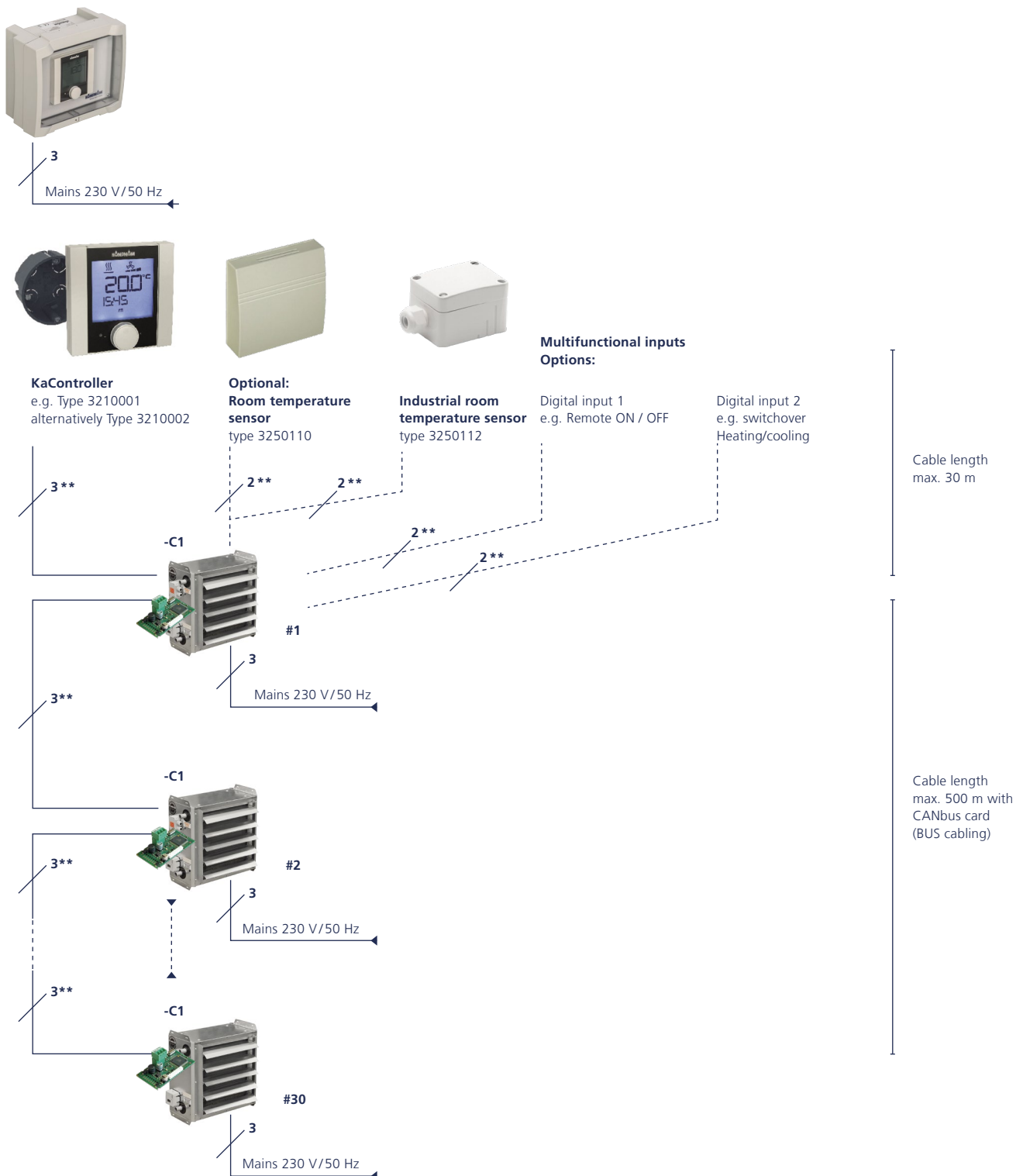


\*\* Only use CAT5 (AWG 23 or similar) cable connections.

**Caution: All BUS connections must be laid in a line – star-shaped cabling is not permitted!**

## single-circuit control system

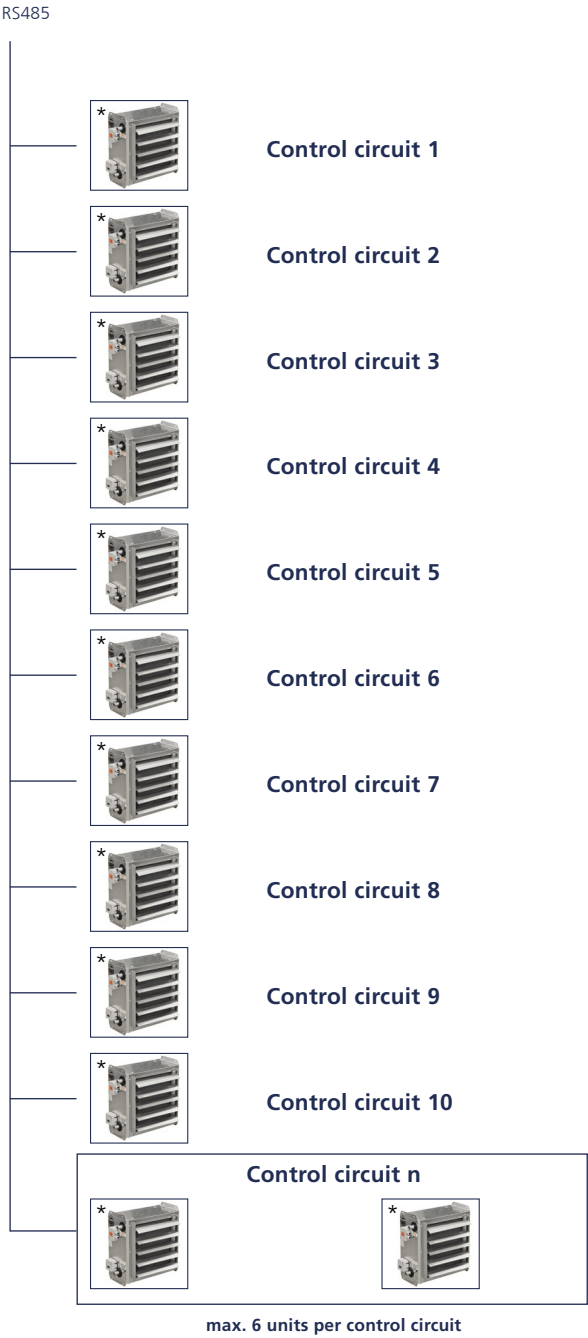
System configuration for max. thirty TOP -C1



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

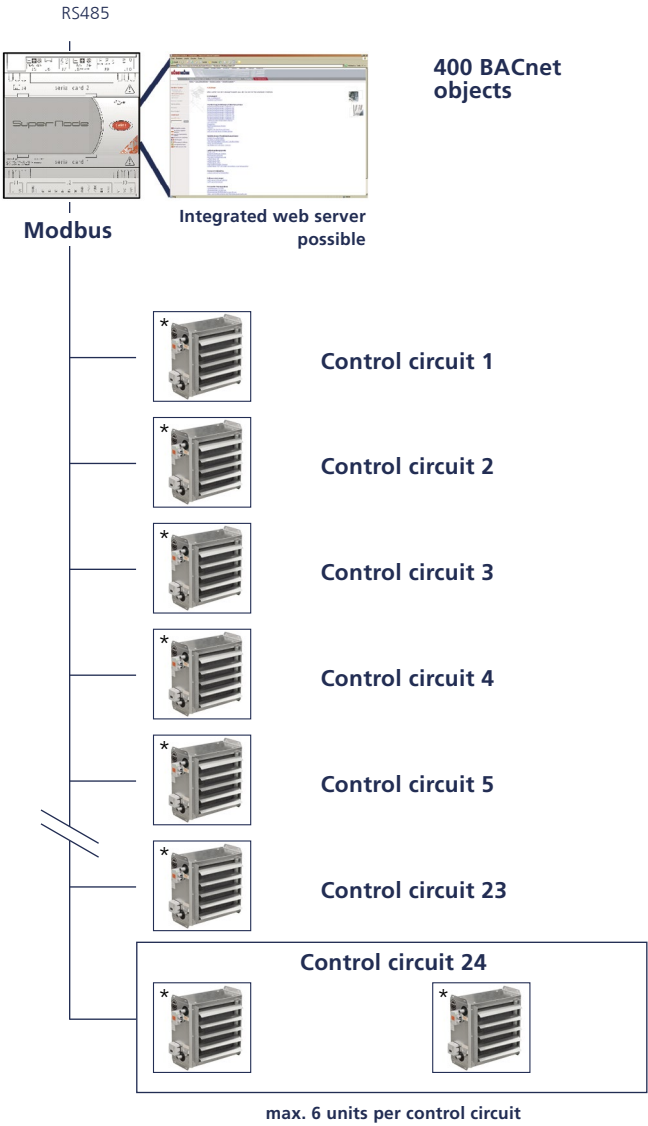
**Caution: All BUS connections must be laid in a line – star-shaped cabling is not permitted!**

Modbus



\* RS485 Modbus interface card

BACnet IP

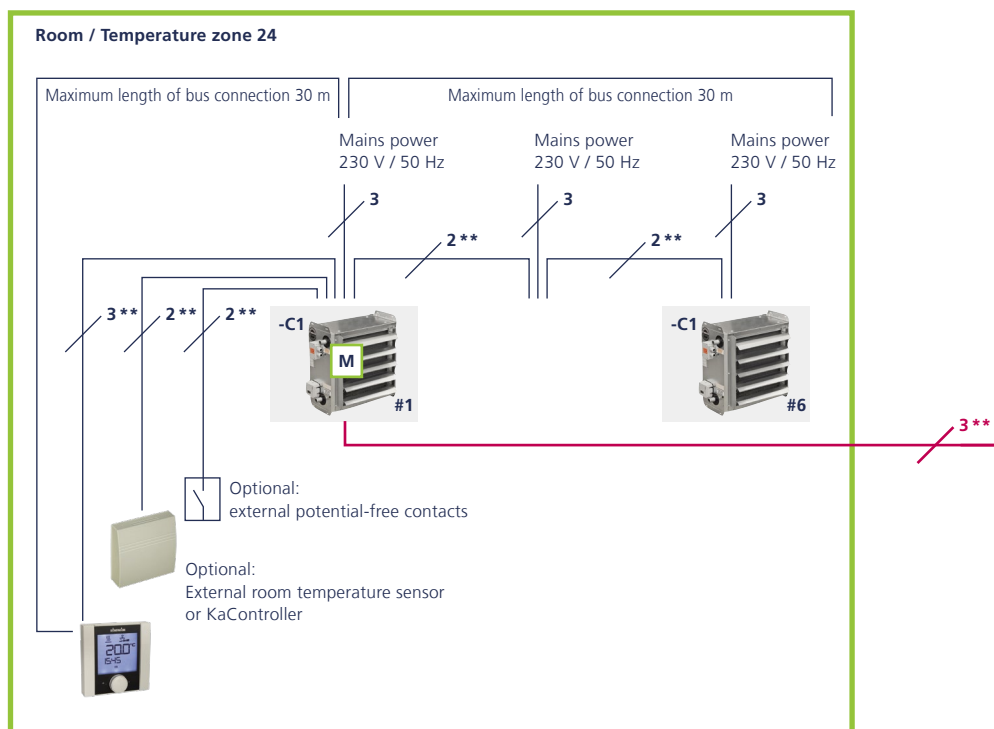
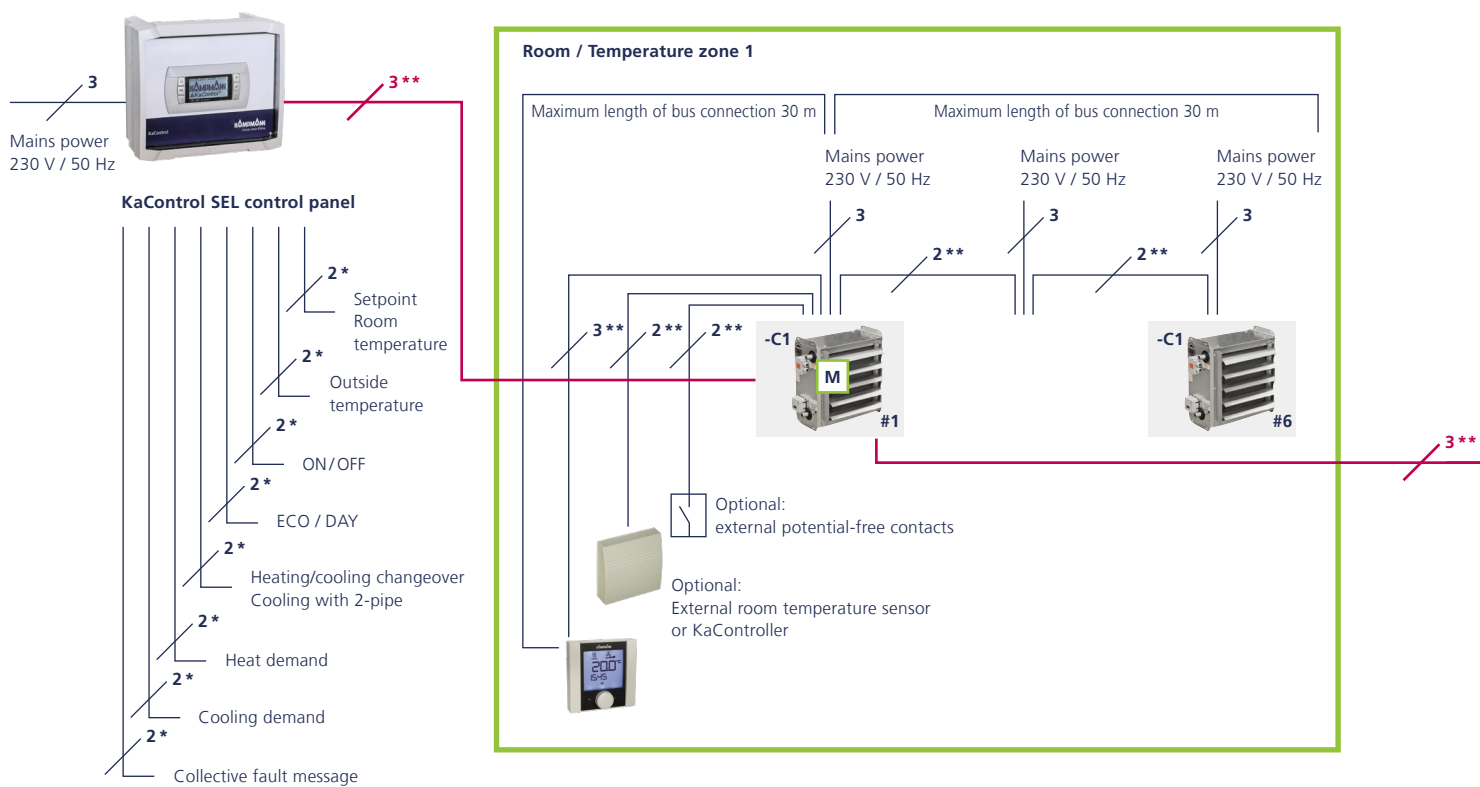


\* RS485 Modbus interface card



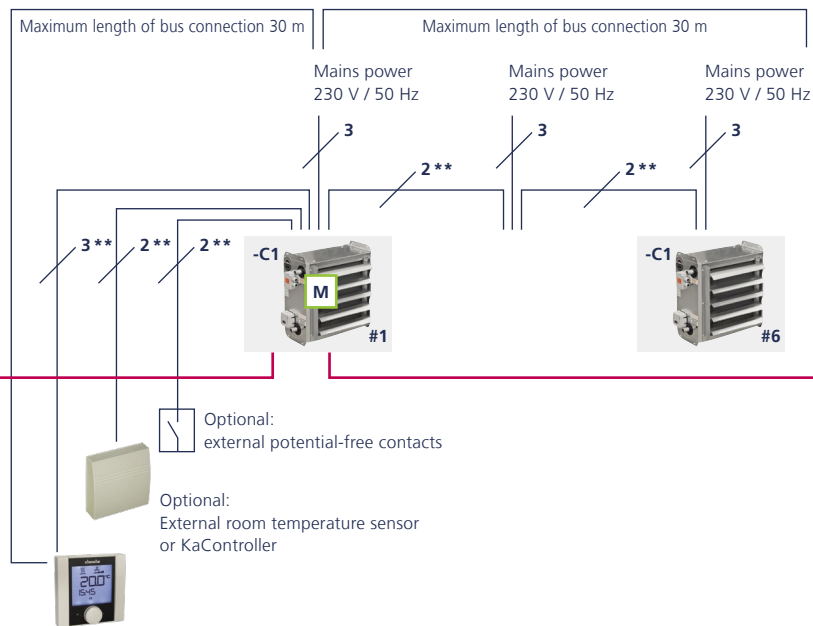


## KaControl System Controller

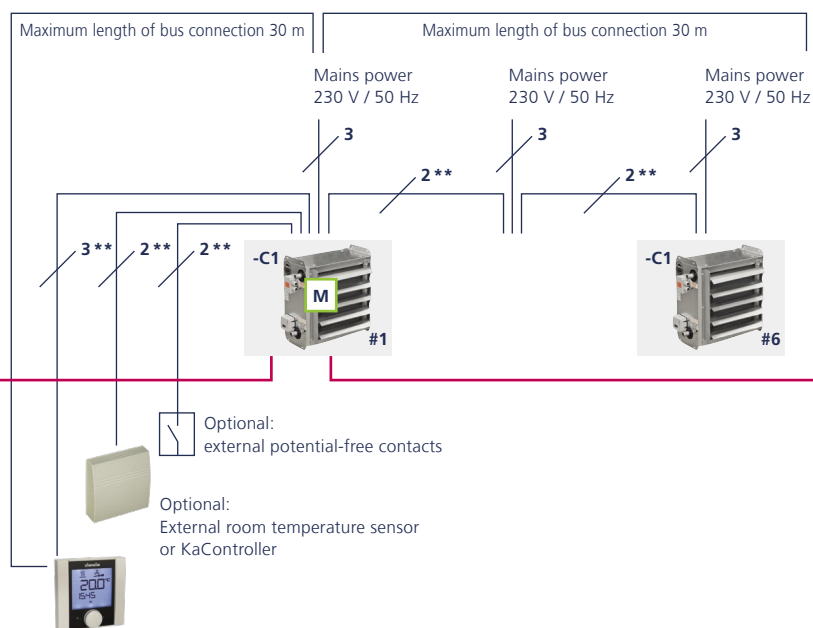


**M** Modbus card

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

**Room / Temperature zone 2**

Modbus  
maximum 500 m

**Room / Temperature zone 3****Unit groups / Fault monitoring**

- ▶ A maximum of 24 units with Modbus communication can be networked.
- ▶ Five other units can be operated in parallel per Modbus unit (same temperature zone).
- ▶ Fault monitoring is possible with units with Modbus communication.

**Decentralised functions**

- ▶ Room temperature measurement via room temperature sensor or KaController
- ▶ KaControl (optional)
- ▶ Valve actuation via KaController
- ▶ Room temperature setpoint

**Room temperature specification**

The room temperature is specified depending on the timer program programmed. The user can change it on site on the KaController if required. The changes made by the user during the day are overwritten at the next centralised timer command, for example when switching from Day > ECO (night mode).

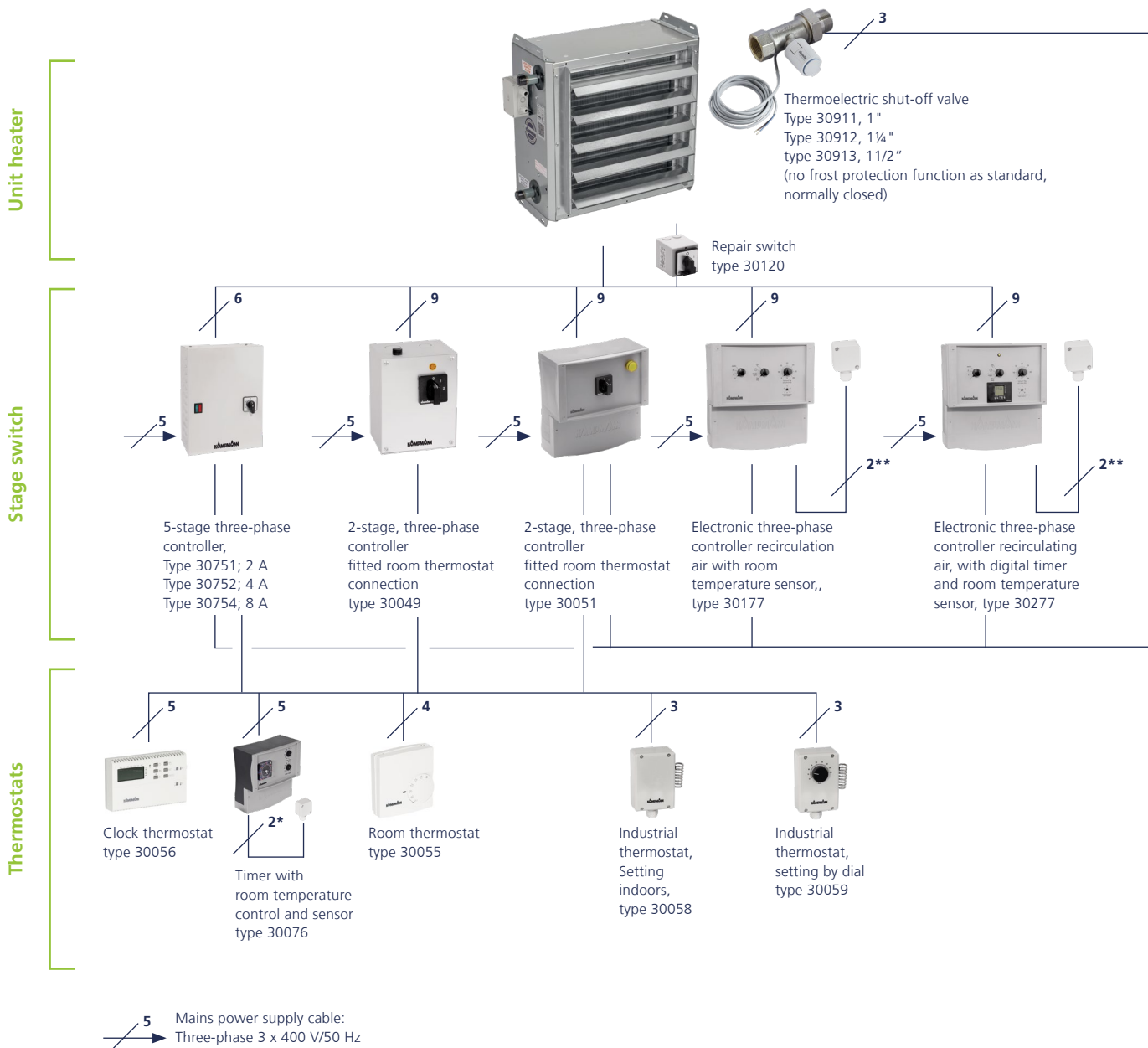
\* Lay shielded cables (e.g. IY(ST)Y, 0.8 mm), separately from high-voltage cables.

\*\* Lay shielded, paired cables, e.g. CAT5 (AWG23) of at least the same value, separately from high-voltage cables.

## 2-stage three-phase motor

### Maximum connectable unit heaters per switch

Unit heater with 2-stage 3-phase motor	Switch					
	30751	30752	30754	2-stage, three-phase controller 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]	[Number]	[Number]	[Number]	[Number]		
44	4	9	18	19		
45	3	6	12	13		
46	2	4	9	10		
47	1	2	5	5		



\*) Sensor connection cable 1.5 mm<sup>2</sup> (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!

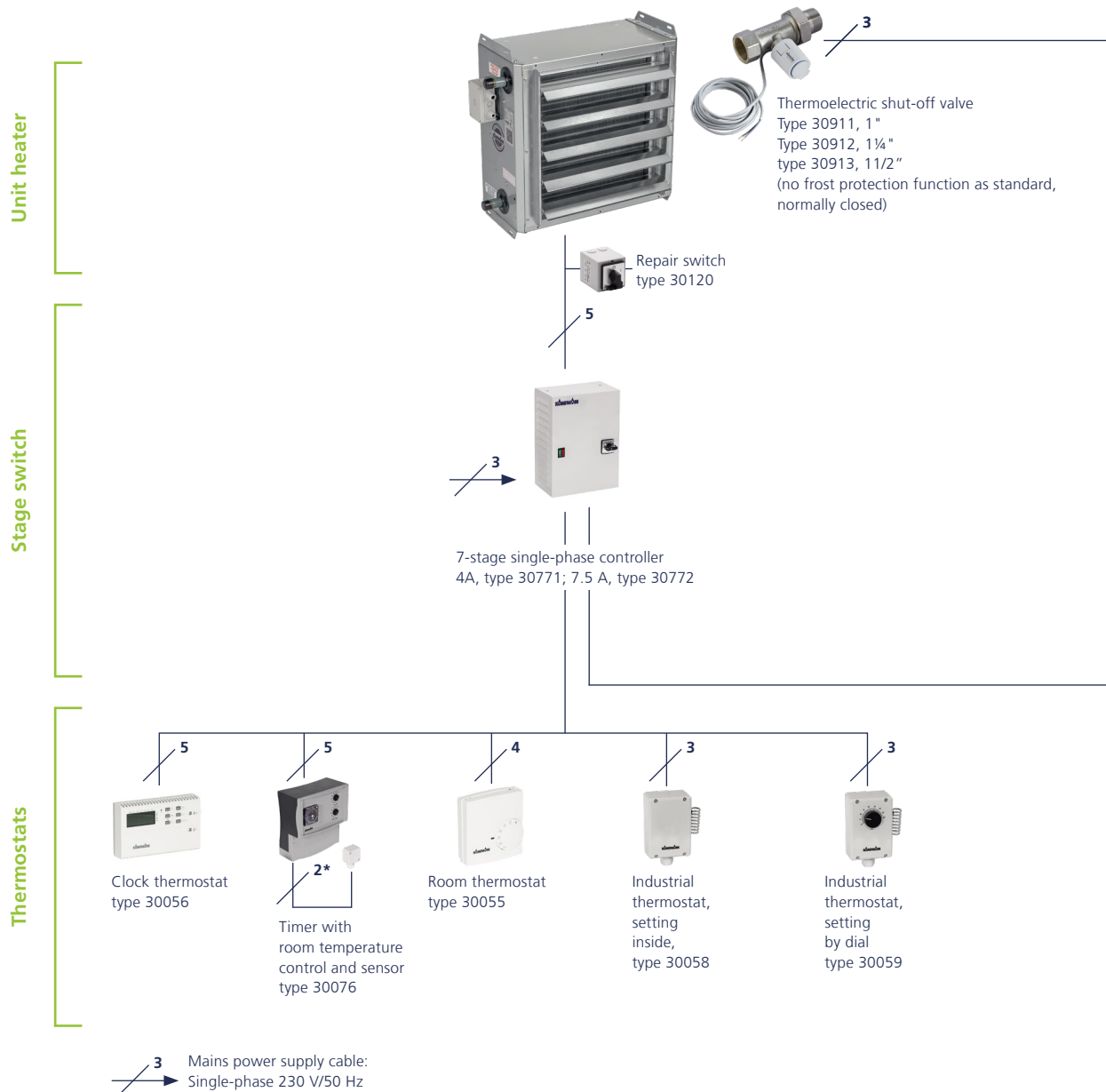
The number of connecting wires required including fuses is given on the individual control units.

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

# 1-stage single-phase motor

## Maximum connectable unit heaters per switch

Unit heater with 1-stage single-phase motor	Switch	
	7-stage single-phase controller with room thermostat connection	
	type 30771	type 30772
[Series]	[Number]	[Number]
44	5	10
45	3	5
46	2	4
47	1	3

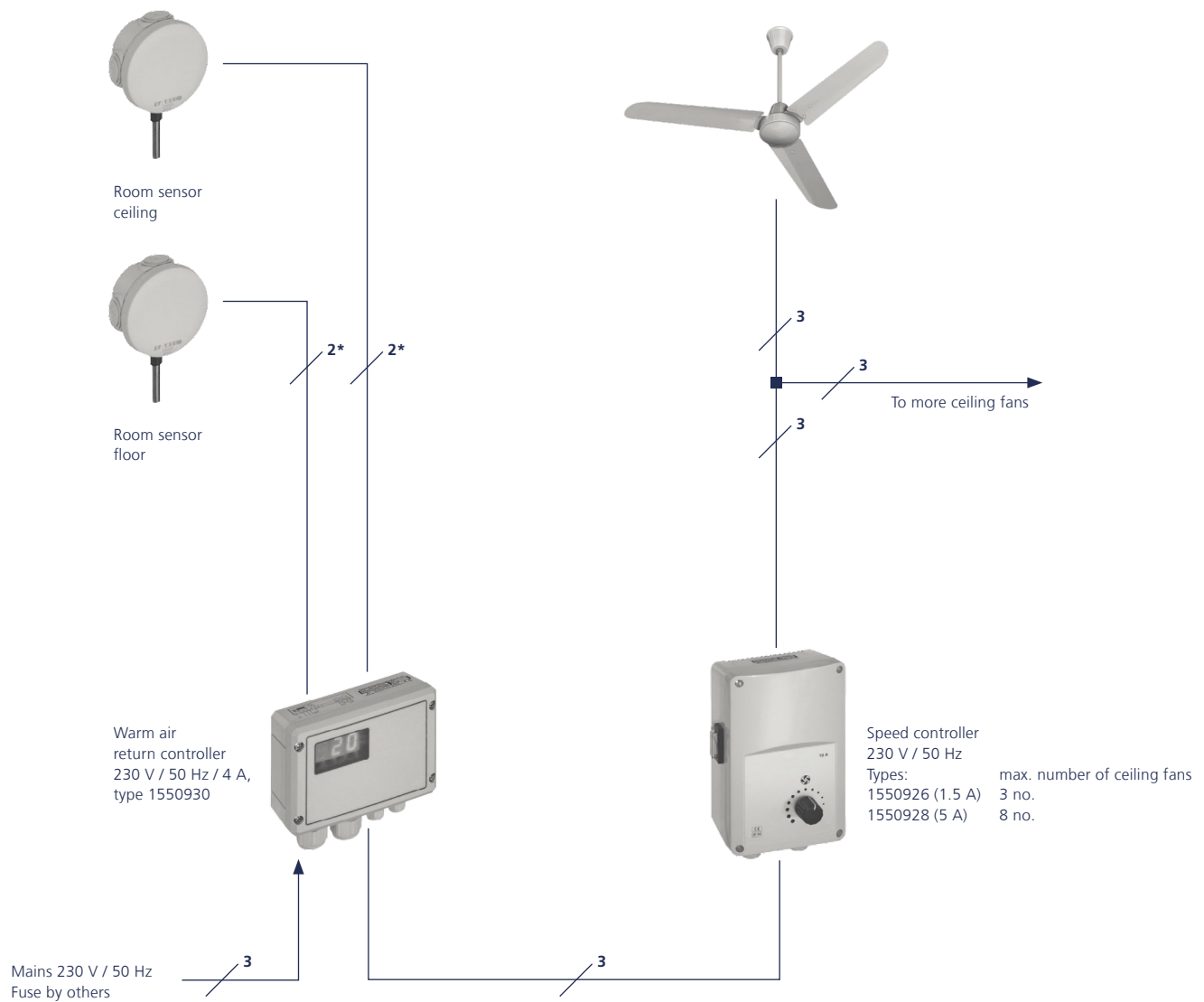


\*) Sensor connection cable 1.5 mm<sup>2</sup> (e.g. J-Y(ST)Y, 4 x 2 x 0.8 mm), max. 100 m, lay separately from high-voltage cables!  
The number of connecting wires required including fuses is given on the individual control units.

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

## Wiring of Ceiling Fan

Switching capacity of warm air return controller max. 4 A



\*) Sensor connection cable 0.75 mm<sup>2</sup> (e.g. J-Y(ST)Y, 2 x 2 x 0.8 mm), max. 45 m, lay separately from high-voltage cables!





# 05 ▶ Ordering Information

## TOP

Model	Speed	Length	Width	Height <sup>1)</sup>	Control components	Art. No.		
	[min <sup>-1</sup> ]	[mm]	[mm]	[mm]				
Model 44								
EC, 230V / 50Hz	360 – 1520	540	540	320	without control components	15300044 <b>2033</b>		
					with repair switch	15300044 <b>20330R</b>		
					with KaControl	15300044 <b>2033C1</b>		
					with frost protection thermostat	15300044 <b>2033F0</b>		
					with repair switch + frost protection thermostat	15300044 <b>2033FR</b>		
	280 – 1090				without control components	15300044 <b>2034</b>		
					with repair switch	15300044 <b>20340R</b>		
					with KaControl	15300044 <b>2034C1</b>		
					with frost protection thermostat	15300044 <b>2034F0</b>		
					with repair switch + frost protection thermostat	15300044 <b>2034FR</b>		
AC, 400V / 50Hz	1050 / 1350				without control components	15300044 <b>2036</b>		
					with repair switch	15300044 <b>20360R</b>		
					with frost protection thermostat	15300044 <b>2036F0</b>		
					with repair switch + frost protection thermostat	15300044 <b>2036FR</b>		
					without control components	15300044 <b>2031</b>		
	1350				with repair switch	15300044 <b>20310R</b>		
					with frost protection thermostat	15300044 <b>2031F0</b>		
					with repair switch + frost protection thermostat	15300044 <b>2031FR</b>		
					Model 45			
		EC, 230V / 50Hz	270 – 1600	640	640	320	without control components	15300045 <b>2033</b>
with repair switch	15300045 <b>20330R</b>							
with KaControl	15300045 <b>2033C1</b>							
with frost protection thermostat	15300045 <b>2033F0</b>							
with repair switch + frost protection thermostat	15300045 <b>2033FR</b>							
380 – 1130	without control components		15300045 <b>2034</b>					
	with repair switch		15300045 <b>20340R</b>					
	with KaControl		15300045 <b>2034C1</b>					
	with frost protection thermostat		15300045 <b>2034F0</b>					
	with repair switch + frost protection thermostat		15300045 <b>2034FR</b>					
AC, 400V / 50Hz	1050 / 1350	without control components	15300045 <b>2036</b>					
		with repair switch	15300045 <b>20360R</b>					
		with frost protection thermostat	15300045 <b>2036F0</b>					
		with repair switch + frost protection thermostat	15300045 <b>2036FR</b>					
		without control components	15300045 <b>2031</b>					
	1350	with repair switch	15300045 <b>20310R</b>					
		with frost protection thermostat	15300045 <b>2031F0</b>					
		with repair switch + frost protection thermostat	15300045 <b>2031FR</b>					







<sup>1)</sup> Without discharge nozzle and motor guard.

Model	Speed	Length	Width	Height <sup>1)</sup>	Control components	Art. No.
	[min <sup>-1</sup> ]	[mm]	[mm]	[mm]		
Model 46						
EC, 230V / 50Hz	120 – 1000	740	740	320	without control components	15300046 <b>2033</b>
					with repair switch	15300046 <b>20330R</b>
					with KaControl	15300046 <b>2033C1</b>
					with frost protection thermostat	15300046 <b>2033F0</b>
					with repair switch + frost protection thermostat	15300046 <b>2033FR</b>
AC, 400V / 50Hz	700 / 900				without control components	15300046 <b>2036</b>
					with repair switch	15300046 <b>20360R</b>
					with frost protection thermostat	15300046 <b>2036F0</b>
					with repair switch + frost protection thermostat	15300046 <b>2036FR</b>
					AC, 230V / 50Hz	900
with repair switch	15300046 <b>20310R</b>					
with frost protection thermostat	15300046 <b>2031F0</b>					
with repair switch + frost protection thermostat	15300046 <b>2031FR</b>					
Model 47						
EC, 230V / 50Hz	200 – 900	840	840	360	without control components	15300047 <b>2033</b>
					with repair switch	15300047 <b>20330R</b>
					with KaControl	15300047 <b>2033C1</b>
					with frost protection thermostat	15300047 <b>2033F0</b>
					with repair switch + frost protection thermostat	15300047 <b>2033FR</b>
AC, 400V / 50Hz	700 / 900				without control components	15300047 <b>2036</b>
					with repair switch	15300047 <b>20360R</b>
					with frost protection thermostat	15300047 <b>2036F0</b>
					with repair switch + frost protection thermostat	15300047 <b>2036FR</b>
					AC, 230V / 50Hz	900
with repair switch	15300047 <b>20310R</b>					
with frost protection thermostat	15300047 <b>2031F0</b>					
with repair switch + frost protection thermostat	15300047 <b>2031FR</b>					



15300044		Heat exchanger	Heat exchanger capacity
<b>2033</b>		Copper/aluminium	low
<b>30</b>		Copper/aluminium	medium
<b>40</b>		Copper/aluminium	high
<b>21</b>		Galvanised steel	low
<b>31</b>		Galvanised steel	medium
<b>41</b>		Galvanised steel	high
<b>33</b>		Galvanised steel, cross-counterflow	medium
<b>43</b>		Galvanised steel, cross-counterflow	high

## Accessories

Figure	Article	Properties	Suitable for	Art. No.
<b>Compact speed controls with integral room temperature control EC</b>				
	<b>Continuously variable speed controller</b>	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 in the mains supply cable. 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	<b>196000030510</b>
	<b>Continuously variable electronic compact controller</b>	type 30515 Electronic speed controller, recirculating air 2-pipe heating/cooling with digital timer, operating mode selector switch, speed controller, speed limitation, room temperature-dependent speed control, external room temperature sensor unit heater frost protection function, switch-on lock after motor fault, automatic restart after power failure. Max. current for unit heater 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	<b>196000030515</b>
	<b>Temperature Sensor</b>	Housing made of impact-resistant plastic, grey, for wall mounting, Sensor type NTC 10 K, degree of protection IP54, Dimensions W x H x D: 50 x 50 x 35 mm	Control type 30515	<b>196001035642</b>
	<b>EC climate controller</b>	type 30155 Heating/cooling climate controller 2 / 4-pipe systems Operating modes AUTO / MAN / OFF. Fan speed can be set using 2-stage switch (programmable). 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) / changeover relay heating/cooling, external room temperature sensor (47 kOhm), ECO/Day or ON/OFF changeover Three outputs for: Speed control (0 - 10 VDC/5 mA) Valve drives (230 VAC/ 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	<b>196000030155</b>
	<b>EC climate controller with clock</b>	type 30256 Climate controller for heating / cooling systems in 2-/4-pipe configurations with timer program. Summer/winter changeover, mode switch (with room frost protection function), manual 10-stage speed control. Flush-mounted, pure white, similar to RAL 9010. Two inputs for: external dew point sensor, external flow sensor, external room temperature sensor, heating/cooling , ECO/Day or on/off changeover Analogue output: 0-10 V/5 mA 2 switching contacts per 230 V/3 (0.5) A Control range: 5-30 °C heating and 18...40 °C cooling Power reserve: approx. 3 days Operating voltage: 230 V/50 Hz/<2.2 VA Protection class: IP 30 Dimensions W x H x D: 81 x 85 x 18 mm (installed height, +29 mm flush-mounted installation depth)	Motor code 33 + 34	<b>196000030256</b>

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Figure	Article	Properties	Suitable for	Art. No.
<b>KaControl Recirculation Air Controller</b>				
	<b>KaController with one-touch operation</b>	type 3210001 Room operating unit with large LCD multifunctional display and one-touch operation, only for control option -C1 Housing: Wall mounting (surface-mounted) Housing: 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	Motor code 33 + 34	<b>196003210001</b>
	<b>KaController with side operating keys</b>	type 3210002 for quick access to fan setting, operating modes, Eco mode, time and timer program, otherwise as type 3210001; only for control option -C1 Housing: Wall mounting (surface-mounted) Housing: 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	Motor code 33 + 34	<b>196003210002</b>
	<b>KaController with side operating keys IP65</b>	type 3214002 for quick access to fan setting, operating modes, Eco mode, time and timer program, otherwise as type 3210001; only for control option -C1 Housing: Wall mounting (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
	<b>room temperature sensor</b>	type 3250110 Room temperature sensor can optionally be used if the KaController does not permit temperature measurement because of its mounting location. Housing: Wall-mounted Housing colour: white Protection class: IP30 Dimensions H x W x D: 84.5 x 84.5 x 25 mm	Motor code 33 + 34	<b>196003250110</b>
	<b>Industrial room temperature sensor</b>	type 3250112 The industrial room temperature sensor can optionally be used if the KaController does not permit temperature measurement because of its mounting location. Housing: Wall-mounted Housing colour: white Protection class: IP65 Dimensions H x W x D: 65 x 50 x 44.5 mm	Motor code 33 + 34	<b>196003250112</b>
	<b>Pipe clip-on sensor</b>	type 3250115 for the decentralised changeover from heating to cooling in 2-pipe applications, including strap, cable length 3 m	Motor code 33 + 34	<b>196003250115</b>
	<b>Thermoelectric shut-off valve</b>	Actuator 24 V AC/24 V DC, only for control option C1	Series 44, 45	<b>196000030931</b>
		Connection 1", type 30931		
		Connection 1 1/4", type 30932		<b>196000030932</b>
		Connection 1 1/2", type 30933	Series 47	<b>196000030933</b>



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Figure	Article	Properties	Suitable for	Art. No.
	<b>CANbus card</b>	type 3260301 to increase the number of units in a single-circuit control system to up to 30 units, 1 x required per Ultra	Motor code 31, 33 + 34	<b>196003260301</b>
	<b>Serial Modbus card</b>	type 3260101 for connection to BMS and automation units	Motor code 31, 33 + 34	<b>196003260101</b>
Compact controls for speed control with integral room temperature control AC				
	<b>Electronic 2-stage three-phase controller 4 KW/10 A</b>	type 30277 with integrated digital timer with day, night, week program, room temperature control and room temperature sensor in a separate enclosure, protection class IP54, Protection class IP40 Dimensions W x H x D: 262 x 277 x 153 mm	Motor code 36	<b>196000030277</b>
		type 30177 with room temperature sensor in a separate housing in enclosure IP54, Day/Night changeover via external potential-free contact (e.g. timer) Protection class IP40 Dimensions W x H x D: 262 x 277 x 153 mm		<b>196000030177</b>
Stage switch for speed control AC				
	<b>7-stage single-phase controller</b>	4 A, type 30771 Protection class IP20 Dimensions W x H x D: 260 x 340 x 150 mm	Motor code 31	<b>196000030771</b>
		7.5 A, type 30772 Protection class IP20 Dimensions W x H x D: 260 x 340 x 150 mm		<b>196000030772</b>
	<b>2-stage, three-phase controller 4 KW/10 A</b>	type 30049 without connection option for valve actuator Degree of protection IP44 Dimensions W x H x D: 127 x 160 x 100 mm	Motor code 36	<b>196000030049</b>
		type 30051 with connection option for valve actuator Degree of protection IP54 Dimensions W x H x D: 262 x 277 x 153 mm		<b>196000030051</b>
	<b>5-stage three-phase controller</b>	2 A, type 30751 Protection class IP20 Dimensions W x H x D: 260 x 340 x 150 mm	Motor code 36	<b>196000030751</b>
		4 A, type 30752 Protection class IP20 Dimensions W x H x D: 260 x 340 x 150 mm		<b>196000030752</b>
		8 A, type 30754 Protection class IP20 Dimensions W x H x D: 330 x 380 x 170 mm		<b>196000030754</b>

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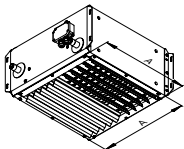
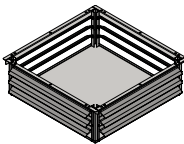
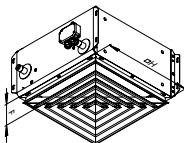
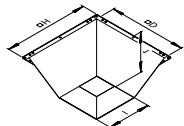
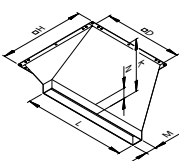
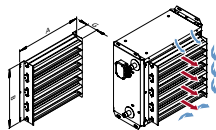
Figure	Article	Properties	Suitable for	Art. No.
<b>Thermostats AC/EC</b>				
	<b>Clock thermostat</b>	type 30056 Attractive combined clock/room thermostat with electronic 2-point room temperature control 2-pipe heating/cooling and digital weekly timer, Power reserve approx. 4 hours, party circuit, status display and Auto/Day/Night/Off mode switch. Temperature adjustment range 5 - 40 °C Night setback or rise 2 - 10 K Adjustable switching differential Switch capacity 250 V AC, 50 Hz, 10 (4) A Housing: Plastic, white, surface-mounted Protection class: IP20 Dimensions W x H x D: 132 x 82 x 32 mm	all series	<b>196000030056</b>
	<b>Timer with electronic room temperature control and room temperature sensor</b>	type 30076 Electronic 2-point controller for the remote adjustment of the room temperature from a central location with two separately adjustable setpoint potentiometers for day and night room temperature Timer with 100 hours of power reserve, day, night, week program, with pins. with room temperature sensors in a separate housing Housing: polystyrene, wall-mounted Temperature setting range: 0 - 40 °C Switching capacity: 230 V ; 8 (3) A Degree of protection timer: IP20; sensor: IP54 Dimensions of timer W x H x D: 262 x 277 x 153 mm Dimensions of sensor W x H x D: 50 x 50 x 30 mm	all series	<b>196000030076</b>
	<b>Industrial thermostat with setpoint adjustment with tool</b>	Housing made of impact-resistant plastic, setpoint adjustment only after removal of housing cover by screwdriver. Protection class: IP54, Temperature setting range: 0 – 40 °C Switching capacity: 250 VAC, 50 Hz Heating: 16 (4) A Cooling: 8 (4) A	all series	<b>196000030058</b>
	<b>Industrial thermostat with setpoint adjustment with dial</b>	Housing made of impact-resistant plastic, dial-operated setpoint adjustment. Protection class: IP54 Temperature setting range: 0 – 40 °C Switch capacity 250 VAC, 50 Hz Heating: 16 (4) A Cooling 8 (4) A	all series	<b>196000030059</b>
	<b>Room thermostat with thermal feedback</b>	in a flat housing, white, with thermal setback Temperature setting range: 5 – 30 °C, Range restriction possible. Protection class: IP30 Switching capacity: 250 VAC, 50 Hz, 10 (4) A Dimensions (W x H x D): 74 x 74 x 27 mm	all series	<b>196000030055</b>

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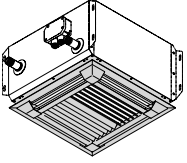



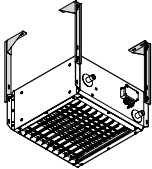
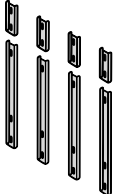
Figure	Article	Properties	Suitable for	Art. No.		
Repair switch						
	Repair switch	type 30160 for EC motors, supplied loose; enables decommissioning of individual unit heaters in a switching group by voltage disconnection; the fault alert contact is bridged in advance and then the motor side is opened so that the other unit heaters in the group can continue operating without interruption. Degree of protection IP55; max. switching current 25 A	Motor code 33 und 34	196000030160		
	Repair switch	type 30120 for 1-stage single-phase or 2-stage three-phase motors, supplied loose; enables the decommissioning of individual heaters in a switching group by voltage disconnection; the thermal contacts are bridged in advance, and then the motor side is opened so that the other unit heaters in the group can continue operating without interruption. Degree of protection IP55; max. switching current 25 A	Motor code 31 und 36	196000030120		
Valves (not for KaControl)						
	Thermoelectric Shut-off valve 230 V AC	Connection 1", type 30911	Series 44, 45	196000030911		
		Connection 1¼", type 30912	Series 46	196000030912		
		Connection 1½", type 30913	Series 47	196000030913		
Ceiling fan and accessories						
	Ceiling fan	type 1551421 Freely-suspended axial fan, 3-blade design for recirculating air mode to increase air recirculation and accumulated heat under the ceiling. Robust full-metal design with GS mark, over-temperature cutout, white housing enamelled. Vibration-damped suspension with suspended tube for vibration-free operation and ease of assembly.	All TOP combinations	155001551421		
	Warm air return controller	type 1550930 for detecting the temperature difference between the floor and ceiling (incl. two separate temperature sensors) and control of single-phase industrial ceiling fans 230 V/50 Hz; display with status and fault display, adjustable switch on/off temperature difference (1-10 K) Housing: surface-mounted housing Operating voltage: 230 V/50 Hz Protection class: IP54 Switching current: 4 A Dimensions W x H x D: 125 x 85 x 57.5 mm	Single-phase industrial ceiling fans 230 V/50 Hz	196001550930		
	Continuously variable speed controller	Type 155092* For single-phase industrial ceiling fans; internal adjustment of minimum motor speed; load monitoring of the speed controller and thermal monitoring of the motor current Housing: surface-mounted housing for wall mounting Operating voltage: 230 V/50 Hz Protection class: IP54 Dimensions W x H x D: 94 x 162 x 74 mm	Operating current: 0.1 - 1.5 A Max. number of ceiling fans: 3	196001550926		
			Operating current: 0.5 - 5.0 A Max. number of ceiling fans: 8	196001550928		
Air outlets						
	Louvre single-row	Type 3*001 for wall and ceiling-mounted units or connection to a ductwork system; achieves good throw; air stream in one or two directions; fitted as standard t TOP unit heater		Series 44	198000034001	
				Series 45	198000035001	
		Series 44	A	B	Series 46	198000036001
		Series 45	495	525		
		Series 46	595	525	Series 47	198000037001
		Series 47	695	625		
		795	725			

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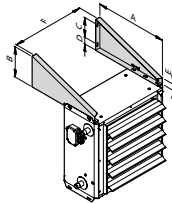
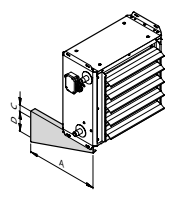
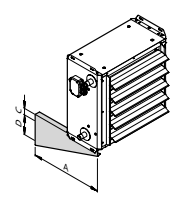
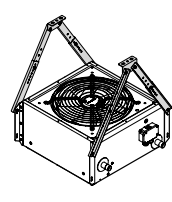
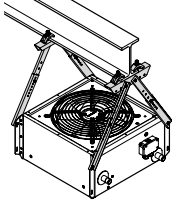


Figure	Article	Properties				Suitable for	Art. No.			
	Louvre double-row	Type 3*002 for wall and ceiling-mounted units or connection to a ductwork system; achieves good throw; air stream in three or four directions.				Series 44	198000034002			
						Series 45	198000035002			
		Series 44	A			Series 46	198000036002			
		Series 45	495							
		Series 46	595							
Series 46	695			Series 47	198000037002					
Series 47	795									
	Air diffuser in 4 directions	Type 3*004 for ceiling mounting with self-obstructing fins for air guidance in three or four directions.				Series 44	198000034004			
						Series 45	198000035004			
						Series 46	198000036004			
						Series 47	198000037004			
		Outlet-side accessories								
	Diffuser	Type 3*005 for ceiling-mounted units, especially suitable for installation in suspended ceilings, as units are shallow; only for low ceiling heights of less than 3.5 m; air stream in four directions				Series 44	198000034005			
						Series 45	198000035005			
		Series 44	H	F		Series 46	198000036005			
		Series 45	500	70						
		Series 46	600	70		Series 47	198000037005			
Series 47	700	70								
Series 47	800	70								
	Outlet nozzle	Type 3*006 for ceiling-mounted units; use in high halls; for precise mounting heights and performance data see technical data; concentric concentrated air stream by means of conical constriction of the air stream				Series 44	198000034006			
						Series 45	198000035006			
		Series 44	D	H	I	J	Series 46	198000036006		
		Series 45	450	500	250	230				
		Series 46	550	600	300	260	Series 47	198000037006		
Series 47	650	700	350	290						
Series 47	750	800	400	320						
	Wide-stream nozzle	Type 3*007 suitable for door air curtains, concentric concentration of air stream into a flat air stream				Series 44	198000034007			
						Series 45	198000035007			
		Series 44	D	H	K	L	M	N	Series 46	198000036007
		Series 45	450	500	300	600	60	50		
		Series 46	550	600	340	700	90	50	Series 47	198000037007
Series 47	650	700	380	800	120	50				
Series 47	750	800	420	900	150	50				
	Induction louvre	Type 3*101 Inductive secondary air is entrained between the primary air streams. This reduces the outlet air temperature and the upcurrent of warm air falls. In this way, air mixing is significantly improved. Ideal as a diffuser for wall-mounting; also suitable for ceiling-mounting with ceilings of more than 4 metres when Kampmann KaMAX cannot be used; slats are arranged to work against each other, individually adjustable and stoppable.				Series 44	198000034101			
						Series 45	198000035101			
						Series 46	198000036101			
		Series 44	A	B	G	Series 47	198000037101			
		Series 45	495	425	100					
Series 46	595	525	100							
Series 47	695	625	100							
Series 47	795	725	100							

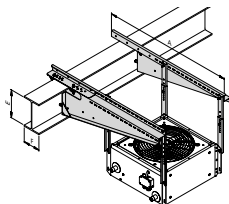
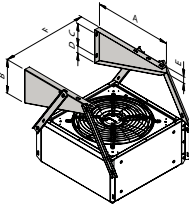
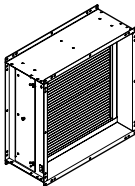

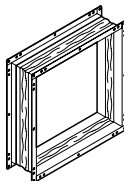
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Figure	Article	Properties	Suitable for	Art. No.
	<b>Ceiling air outlet RaDeck</b>	Type 3*087 4-way diffuser with aerodynamically shaped slots for individual distribution of the core air stream into 2 vertical and 4 horizontal directions	Series 44	<b>198000034087</b>
			Series 45	<b>198000035087</b>
			Series 46	<b>198000036087</b>
			Series 47	<b>198000037087</b>
	<b>KaMAX air outlet</b>	Type 3*111 prevents large temperature differences between the floor and ceiling; heat that accumulates under the ceiling is drawn in and included in the air circulation; significantly larger air volume of pleasant temperature and low air velocity reaches ground level; draughts are effectively avoided; the swirl (rotation) of the discharged air can be changed, so that both horizontal and vertical streams with variable induction and penetration depth can be generated	Series 44	<b>198000034111</b>
			Series 45	<b>198000035111</b>
			Series 46	<b>198000036111</b>
			Series 47	<b>198000037111</b>
	<b>"Open-Stop-Close" switch for KaMAX</b>	type 30115 for the electrically-actuated continuously variable slat adjustment of the KaMAX by hand	all series	<b>196000030115</b>
	<b>Open/Close servomotor</b>	type 30262 for the electrically-actuated continuously variable slat adjustment of the KaMAX 230 V, protection class IP54	all series	<b>196000030262</b>
<b>Brackets</b>				
	<b>Universal 4-point brackets</b>	type 30042 for ceiling mounting of wall and ceiling-mounted units as 4-point suspension, complete set consisting of 4 U-profiles with slots, 4 triangular brackets and bolts.	all series	<b>198000030042</b>
	<b>Universal bracket-extension</b>	type 30043 Made of sendzimir-galvanized sheet steel, to extend universal brackets type 30041, 30042 and 30047, consisting of: 4 U-profiles with slots for length adjustment, length 500 mm; 4 connecting struts with nuts and bolts	all series	<b>198000030043</b>

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Figure	Article	Properties	Suitable for	Art. No.																													
 	Wall bracket	type 34044 for wall-mounting, hanging or upright, made of sendzimir-galvanised sheet steel, complete set, consisting of 2 folded brackets with bolts. Length 585 mm.	Series 44	198000034044																													
		<table><tr><td></td><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td><td>F</td></tr><tr><td>Series 44</td><td>585</td><td>251</td><td>160</td><td>40</td><td>50</td><td>485</td></tr></table>				A	B	C	D	E	F	Series 44	585	251	160	40	50	485															
			A	B	C	D	E	F																									
		Series 44	585	251	160	40	50	485																									
		type 35044 for wall-mounting, hanging or upright, made of sendzimir-galvanised sheet steel, complete set, consisting of 2 folded brackets with bolts. Length 585 mm.	Series 45	198000035044																													
<table><tr><td></td><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td><td>F</td></tr><tr><td>Series 45</td><td>585</td><td>251</td><td>160</td><td>40</td><td>50</td><td>585</td></tr></table>		A			B	C	D	E	F	Series 45	585	251	160	40	50	585																	
	A	B	C	D	E	F																											
Series 45	585	251	160	40	50	585																											
type 36044 for wall-mounting, hanging or upright, made of sendzimir-galvanised sheet steel, complete set, consisting of 2 folded brackets with bolts. Length 635 mm.	Series 46	198000036044																															
<table><tr><td></td><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td><td>F</td></tr><tr><td>Series 46</td><td>635</td><td>268</td><td>187</td><td>40</td><td>50</td><td>685</td></tr></table>				A	B	C	D	E	F	Series 46	635	268	187	40	50	685																	
	A	B	C	D	E	F																											
Series 46	635	268	187	40	50	685																											
		type 37044 for wall-mounting, hanging or upright, made of sendzimir-galvanised sheet steel, complete set, consisting of 2 folded brackets with bolts. Length 685 mm.	Series 47	198000037044																													
		<table><tr><td></td><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td><td>F</td></tr><tr><td>Series 47</td><td>685</td><td>286</td><td>204</td><td>40</td><td>50</td><td>785</td></tr></table>				A	B	C	D	E	F	Series 47	685	286	204	40	50	785															
			A	B	C	D	E	F																									
Series 47	685	286	204	40	50	785																											
	Wall brackets, extended	type 3002_ For extended distance from the wall with accessories, such as filter box, canvas connection etc. The length A of the bracket can be selected as required.	all series	1980000300_ _																													
	<table><tr><td>Type</td><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td></tr><tr><td>30022</td><td>785</td><td>321</td><td>123</td><td>40</td><td>50</td></tr><tr><td>30024</td><td>885</td><td>355</td><td>143</td><td>40</td><td>50</td></tr><tr><td>30026</td><td>1080</td><td>422</td><td>175</td><td>40</td><td>50</td></tr><tr><td>30020</td><td colspan="5">Dimensions depending on the bracket length</td></tr></table>	Type			A	B	C	D	E	30022	785	321	123	40	50	30024	885	355	143	40	50	30026	1080	422	175	40	50	30020	Dimensions depending on the bracket length				
	Type	A			B	C	D	E																									
	30022	785			321	123	40	50																									
	30024	885			355	143	40	50																									
30026	1080	422	175	40	50																												
30020	Dimensions depending on the bracket length																																
	Universal 2-point brackets	type 30041 as 2-point bracket for ceiling mounting, made of sendzimir galvanised sheet steel, consisting of: 4 pairs of U-profiles with multiple drill holes for length adjustment, length 340 mm to 560 mm; 2 fixing brackets with nuts and bolts	all series	198000030041																													
	Universal 2-point T-beam brackets	type 30047 as 2-point bracket for ceiling mounting on T-beams with flange widths of 80 mm to 220 mm, made of sendzimir-galvanised sheet steel, consisting of: 4 pairs of U-profiles with several holes for length adjustment, length 260 mm to 560 mm; 2 fixing brackets with nuts and bolts; 4 beam clamps with nuts and bolts	all series	198000030047																													

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Figure	Article	Properties	Suitable for	Art. No.																																	
	<b>Trapezoidal ceiling brackets</b>	Type 3*046 as ceiling brackets for steel beams with trapezoidal-shaped covers; for fixing to steel beams (height 300 mm, up to flange width 340 mm) without welding or drilling; fix to the side facing away from installation by two beam clamps; the bracket is supported by distance brackets on the installation side. Unit hearers are fixed onto 4 U-shaped rails. The trapezoidal sheet metal must have a free cross-section of at least 80 x 80 mm.	Series 44	<b>198000034046</b>																																	
			Series 45	<b>198000035046</b>																																	
			Series 46	<b>198000036046</b>																																	
			Series 47	<b>198000037046</b>																																	
			<table><tr><td></td><td>A</td><td>E mind.</td><td>F max.</td></tr><tr><td>Series 44</td><td>1300</td><td>300</td><td>340</td></tr><tr><td>Series 45</td><td>1300</td><td>300</td><td>340</td></tr><tr><td>Series 46</td><td>1500</td><td>300</td><td>340</td></tr><tr><td>Series 47</td><td>1500</td><td>300</td><td>340</td></tr></table>		A	E mind.	F max.	Series 44	1300	300	340	Series 45	1300	300	340	Series 46	1500	300	340	Series 47	1500	300	340														
	A	E mind.	F max.																																		
Series 44	1300	300	340																																		
Series 45	1300	300	340																																		
Series 46	1500	300	340																																		
Series 47	1500	300	340																																		
	<b>Wall brackets</b>	Type 3*048 for the installation of unit heaters with vertical air outlet on the wall, e.g. with door air curtains or to girders, e.g. for timber girder constructions; the unit heaters are suspended on 4 U-shaped rails; made of sendzimir galvanised sheet steel, consisting of: 2 folded brackets for installation on the wall or girder; 4 U-shaped profiles with slots and bolts	Series 44	<b>198000034048</b>																																	
			Series 45	<b>198000035048</b>																																	
			Series 46	<b>198000036048</b>																																	
			Series 47	<b>198000037048</b>																																	
			<table><tr><td></td><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td><td>F</td></tr><tr><td>Series 44</td><td>785</td><td>321</td><td>160</td><td>40</td><td>50</td><td>520</td></tr><tr><td>Series 45</td><td>885</td><td>355</td><td>160</td><td>40</td><td>50</td><td>620</td></tr><tr><td>Series 46</td><td>1080</td><td>422</td><td>187</td><td>40</td><td>50</td><td>720</td></tr><tr><td>Series 47</td><td>1080</td><td>422</td><td>187</td><td>40</td><td>50</td><td>820</td></tr></table>		A	B	C	D	E	F	Series 44	785	321	160	40	50	520	Series 45	885	355	160	40	50	620	Series 46	1080	422	187	40	50	720	Series 47	1080	422	187	40	50
	A	B	C	D	E	F																															
Series 44	785	321	160	40	50	520																															
Series 45	885	355	160	40	50	620																															
Series 46	1080	422	187	40	50	720																															
Series 47	1080	422	187	40	50	820																															
Sheet steel accessories																																					
	<b>Filter box, Filter ISO Coarse 90 %</b>	Type 3*010 made of sendzimir-galvanised sheet steel; filter insert for insertion into fibre plastic frame; filter cell with pleated filter class ISO Coarse 90 % according to DIN ISO 16890; designs with other filter media on request	Series 44	<b>198000034010</b>																																	
			Series 45	<b>198000035010</b>																																	
			Series 46	<b>198000036010</b>																																	
			Series 47	<b>198000037010</b>																																	
	<b>Replacement filter cassette ISO Coarse 90 %</b>	Type 3*611 to match the filter box 3*010	Series 44, filter box 198000034010	<b>198000034611</b>																																	
			Series 45, filter box 198000035010	<b>198000035611</b>																																	
			Series 46, filter box 198000036010	<b>198000036611</b>																																	
			Series 47, filter box 198000037010	<b>198000037611</b>																																	
	<b>Canvas connection</b>	Type 3*013 as a flexible connection with connecting frame on both sides; length 120 mm to 160 mm	Series 44	<b>198000034013</b>																																	
			Series 45	<b>198000035013</b>																																	
			Series 46	<b>198000036013</b>																																	
			Series 47	<b>198000037013</b>																																	

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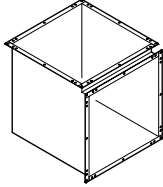
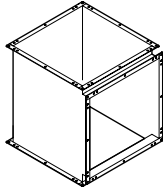
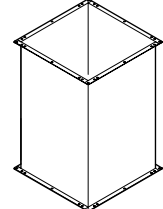
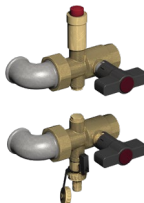

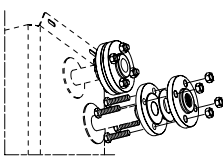
Figure	Article	Properties		Suitable for	Art. No.
	<b>Air duct 90°</b>	Type 3*021 with a duct connection profile on both sides		Series 44	<b>198000034021</b>
				Series 45	<b>198000035021</b>
				Series 46	<b>198000036021</b>
				Series 47	<b>198000037021</b>
	<b>Air duct T</b>	Type 3*022 with a duct connection profile on three sides		Series 44	<b>198000034022</b>
				Series 45	<b>198000035022</b>
				Series 46	<b>198000036022</b>
				Series 47	<b>198000037022</b>
	<b>Air duct</b>	Type 3*015 with a duct connection profile on both sides; please specify length when ordering		Series 44	<b>198000034015</b>
				Series 45	<b>198000035015</b>
				Series 46	<b>198000036015</b>
				Series 47	<b>198000037015</b>
Other accessories					
	<b>Unit heater shut-off set, angled design</b>	1 "	Type 3*976 consisting of 2 threaded connectors, 2 ball valves with two side connections, for thermometer and air vent and drain cock, for use with hot water to max. 110 °C, 10 bar.	Series 44	<b>198000034976</b>
		1¼ "		Series 45	<b>198000035976</b>
		1½ "		Series 46	<b>198000036976</b>
		1½ "		Series 47	<b>198000037976</b>
	<b>Unit heater shut-off set, straight design</b>	1 "	Type 3*977 consisting of 2 threaded connectors, 2 ball valves with two side connections, for thermometer and air vent and drain cock, for use with hot water to max. 110 °C, 10 bar.	Series 44	<b>198000034977</b>
		1¼ "		Series 45	<b>198000035977</b>
		1½ "		Series 46	<b>198000036977</b>
		1½ "		Series 47	<b>198000037977</b>
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Figure	Article	Properties		Suitable for	Art. No.
	<b>Flange connection PN 16</b>	DN 25	Flange connection PN 16, DIN 2633-compliant, consisting of 2 threaded flanges, counter-flanges seals and screws.	Series 44	<b>198000034009</b>
				Series 45	<b>198000035009</b>
		DN 32		Series 46	<b>198000036009</b>
		DN 40		Series 47	<b>198000037009</b>
	<b>Surcharge for powder coating of the unit heater housing</b>	in RAL 9016 or RAL 7035 (other RAL colours available on request)		Series 44	<b>198000034040</b>
				Series 45	<b>198000035040</b>
				Series 46	<b>198000036040</b>
				Series 47	<b>198000037040</b>
	<b>Surcharge for powder coating of the sheet steel accessories</b>	in RAL 9016 or RAL 7035 (other RAL colours available on request)		Series 44	<b>198000034039</b>
				Series 45	<b>198000035039</b>
				Series 46	<b>198000036039</b>
				Series 47	<b>198000037039</b>





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