TOP

Wall- and ceiling-mounted unit heaters

Technical catalogue

Kampmanngroup.com/top

Contents

TOP: wall and ceiling-mounted unit heaters. The warm air solution for almost all hall requirements.

TOP unit heaters for excellent climate in the high-bay warehouse and loading area. Spedition Metzger, Neu-Kupfer, Germany

01 Product information

TOP – Temperature-controlled air. As much as you need.

TOP unit heaters – "TOP" in terms of money and performance – essentially meet the demand for economical and controllable air handling.
TOP unit heaters are all-purpose units for wall or ceiling installation.

A comprehensive range of modular accessories 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

- factories
- warehouses
- industrial or commercial workshops
- sports halls
- showrooms
- greenhouses
- buildings supplied by district heating or with high temperature differences (barracks etc.)
- premises at risk from explosion
- buildings with steam heating systems

Featuring 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. Their standard equipment also includes a single-row louvre and motor guard.

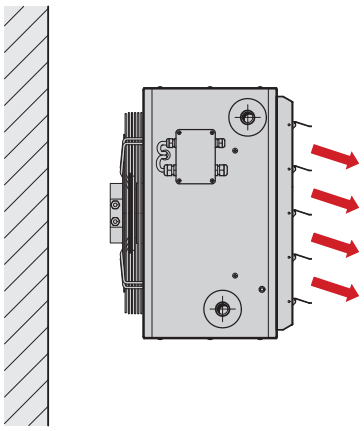
Operating principle

Air is drawn in through the whisper-quiet sickle-blade fan and is blown through the heat exchanger into the room. Models with large heat exchanger capacity are ideal for use with low water temperatures.

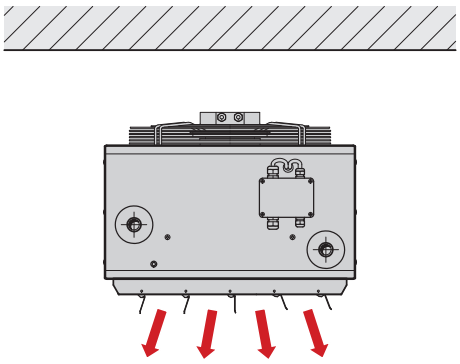
Air guidance

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

Example of wall-mounted heating unit



Example of ceiling-mounted heating unit



Product data

Product benefits

- A wide range of models to meet every design need - "TOP" in terms of price and performance
- Whisper-quiet sickle-blade fan with energy-efficient EC technology complies with ErP requirements
- Heat exchanger and fan options for the most diverse applications
- Neutral in colour, hard-wearing and tough
- Single-row ceiling or wall louvre and motor guard as standard
- Hybrid ECO system module for decentralised temperature control
- Recirculating air accessories are possible (mixed air and primary air accessories on request)

Features

- Continuously variable EC motor, 2-stage three-phase motor or 1-stage single-phase motor (Ex-e protected on request)
- Different air outlets are available
- Primary air version is available
- Unit and accessories available powder coated in RAL colours
- Extensive range of control accessories

Installation	▸ Wall or ceiling installation (model size 8 ceiling installation only)
Air stream	▸ Recirculating air ▸ Mixed air and primary air (on request)
Heating	▸ LPHW ▸ Thermal oil ▸ Steam
Cooling	▸ See product range (TOP C)
Hybrid Eco	▸ In conjunction with primary or secondary air spigots, on request
KaControl	▸ Optional

Performance data

Heat output [kW]1)	› 6.2 – 89.6
Air flow [m³/h]	› 460 – 12220
Sound pressure level [dB(A)]2)	› 15 – 66
Sound power level [dB(A)]	› 31 – 82

1) at LPHW 75/65 °C, tL1 = 20 °C Refer to the performance tables for other heating media or heat exchanger models.
2) The sound pressure levels were calculated with 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).

Operating limits

- Max. operating pressure: 16 bar
- Max. entering water temperature: 120 °C
- Min. entering water temperature: 35 °C
- Max. air inlet temp.: 40 °C
- Max. glycol volume: 50 %
- Models for higher operating conditions available on request

Applications

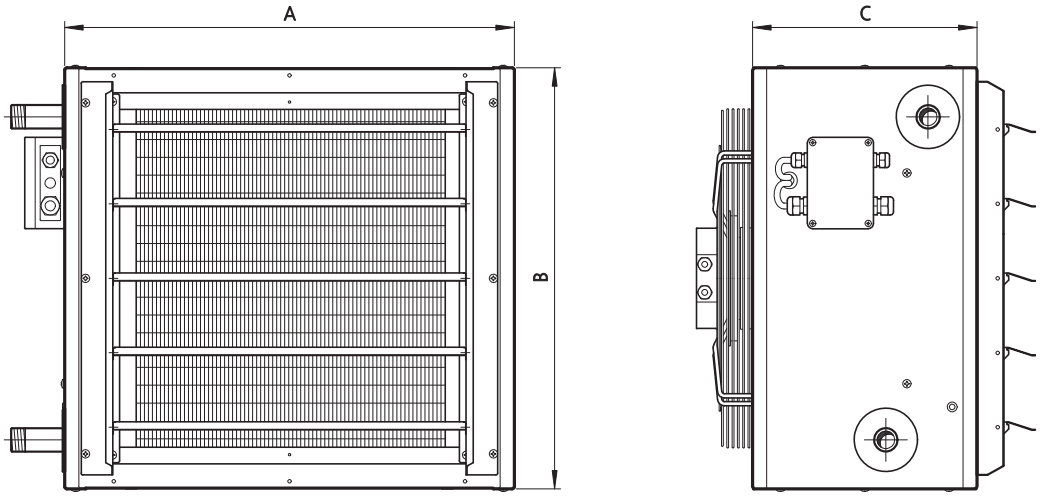
Buildings of all kinds, which are to be ideally heated and ventilated with centralised or decentralised control.

Selection guide

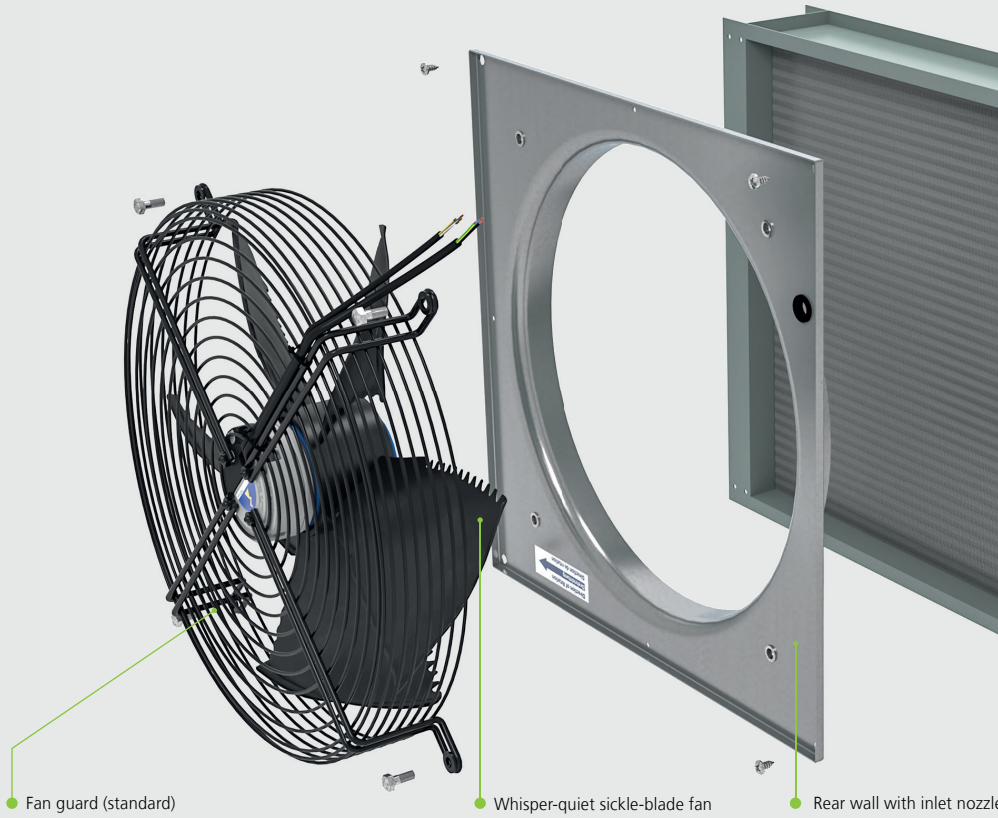
Fan version	Model	Heat exchanger model1)			
		copper/aluminium		steel galvanised	
		Heat output [kW]	Air flow [m³/h]	Heat output [kW]	Air flow [m³/h]
EC fan, 200-240 V, high speed	4	6.6 – 18.3	550 – 2680	6.4 – 18.0	590 – 2730
	5	6.3 – 37.6	460 – 4880	7.1 – 34.1	610 – 4800
	6	7.5 – 48.4	490 – 6840	7.4 – 43.7	550 – 5810
	7	15.1 – 71.4	1220 – 9900	14.3 – 58.8	1260 – 8980
	8	20.0 – 89.5	1580 – 11790	19.6 – 89.6	1900 – 12220
EC fan, 200-240 V, reduced speed	4	6.5 – 15.1	530 – 2140	6.2 – 14.7	580 – 2150
	5	7.6 – 26.5	590 – 3420	8.1 – 25.0	730 – 3440
	7	11.3 – 55.5	660 – 7830	10.9 – 46.3	760 – 7070

1) at LPHW 75/65 °C, tL1 = 20 °C

Technical drawing (Dimensions in mm)



TOP at a glance



Features

1 Fan guard (standard):
- screw-fixed as standard with whisper-quiet sickle-blade fan

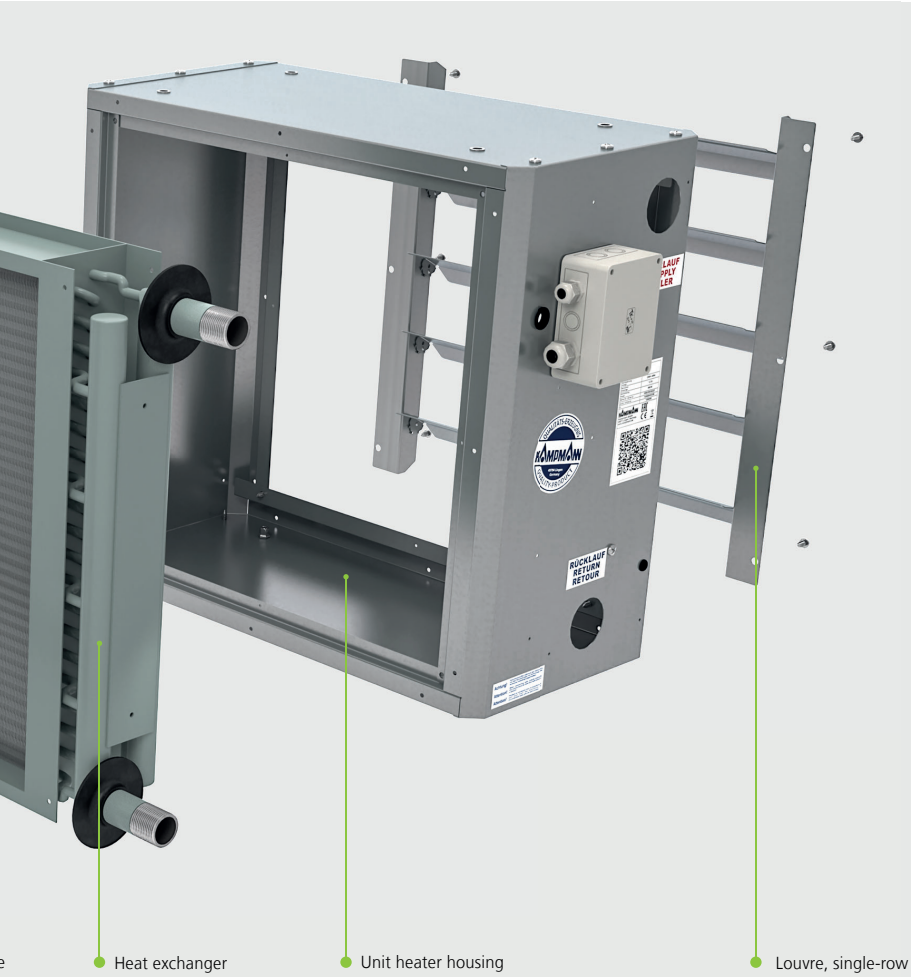
2 Whisper-quiet, sickle-blade fan, ErP 2015-compliant:
- continuously variable EC single-phase whisper-quiet sickle-blade fan
- excellent efficiency due to the aerodynamic design of the rotor housing
- motor protection: IP 54
- Balanced according to DIN ISO 21940-11 for the corresponding fan category according to ISO 14694
- external rotor motor integrated in the fan impeller
- complies with Directive (EU) 327/2011 ("LOT 11")

3 Rear wall with inlet nozzle:
- inlet nozzle optimised to the flow characteristics of the fan

4 Heat exchanger:
- copper/aluminium heat exchanger, especially lightweight, with high heat outputs from minimal dimensions
- galvanised steel
- galvanised steel, cross-counterflow
- suitable for low temperature heating systems and LPHW heating systems
- steel distributor and collector

5 Unit heater housing:
- self-supporting, made of galvanized sheet steel
- standard fixing holes for wall or ceiling-mounting
- resistant to damage
- shallow depth, ideal for the simple attachment of outlet-side accessories
- powder-coated versions, e.g. to match the colour of the building ceiling on request

6 Single-row air louvre (standard):
- for wall or ceiling-mounting
- achieves excellent throw



Heat exchanger

Unit heater housing

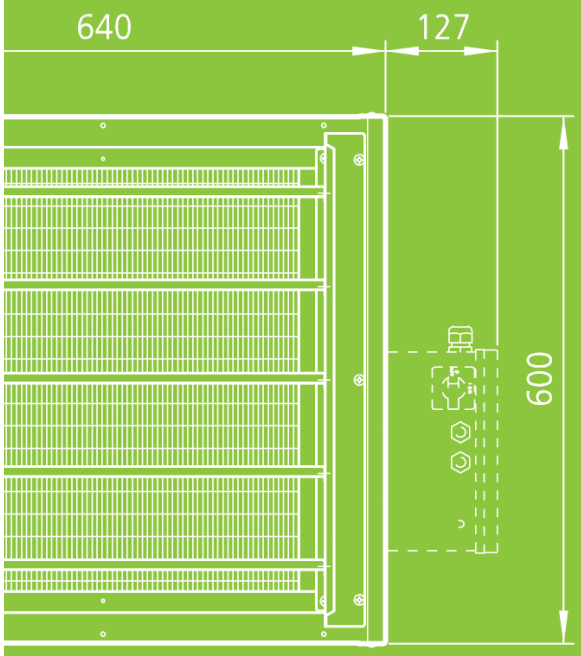
Louvre, single-row (standard)

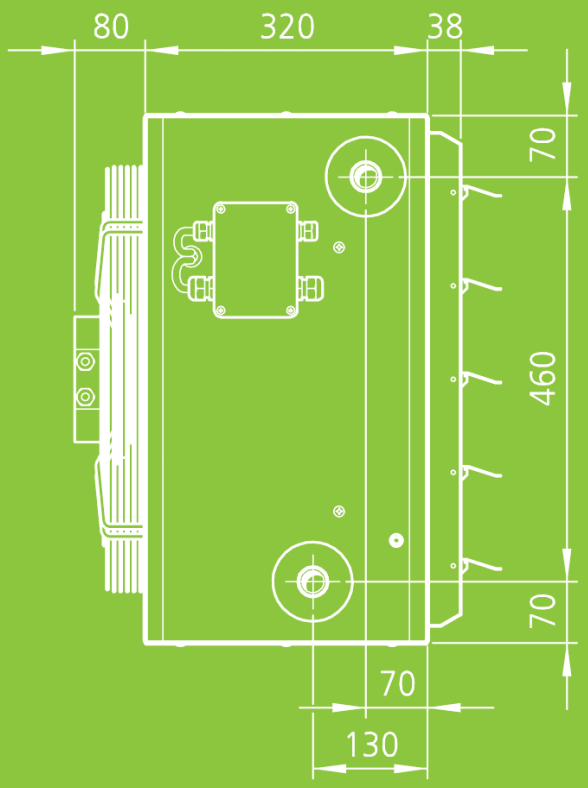
TOP model 48

View from below

Plan view

02 Technical data





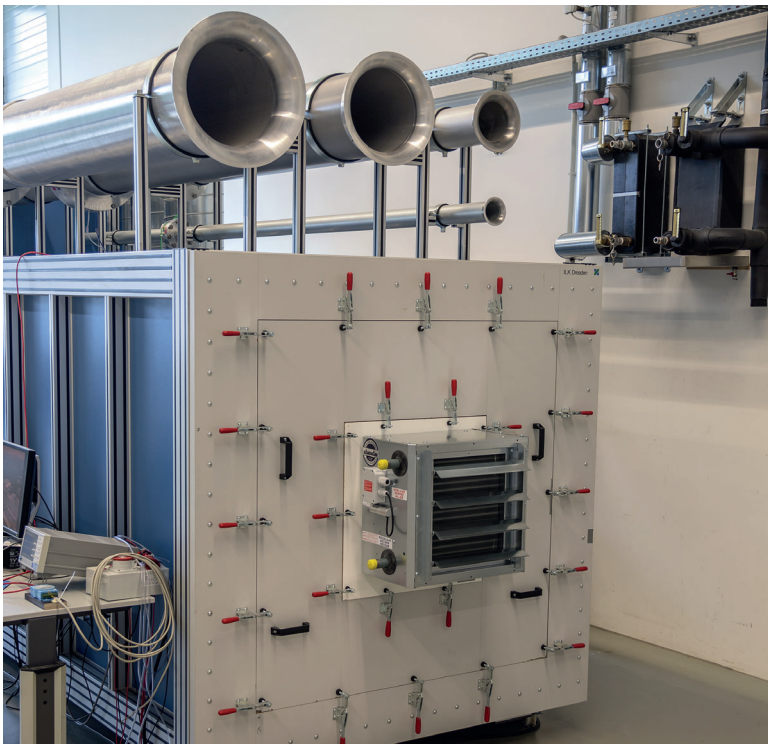
General

EU Directive 2009/125/EU

Compliance with the Energy-related Products Directive 2015

The European Commission's ErP Directive ("Energy-related Products") evaluates and modifies the requirements of technical products in energy-related applications.
According to the Directive (EU) 327/2011 ("LOT 11"), the efficiency requirements have become more stringent for 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 must be taken into account along with the fan, in terms of energy.

The TOP range of unit heaters is solely fitted with ErP- ompliant 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 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, EN 60335 (Safety of Electrical Equipment) and EMC are all met.

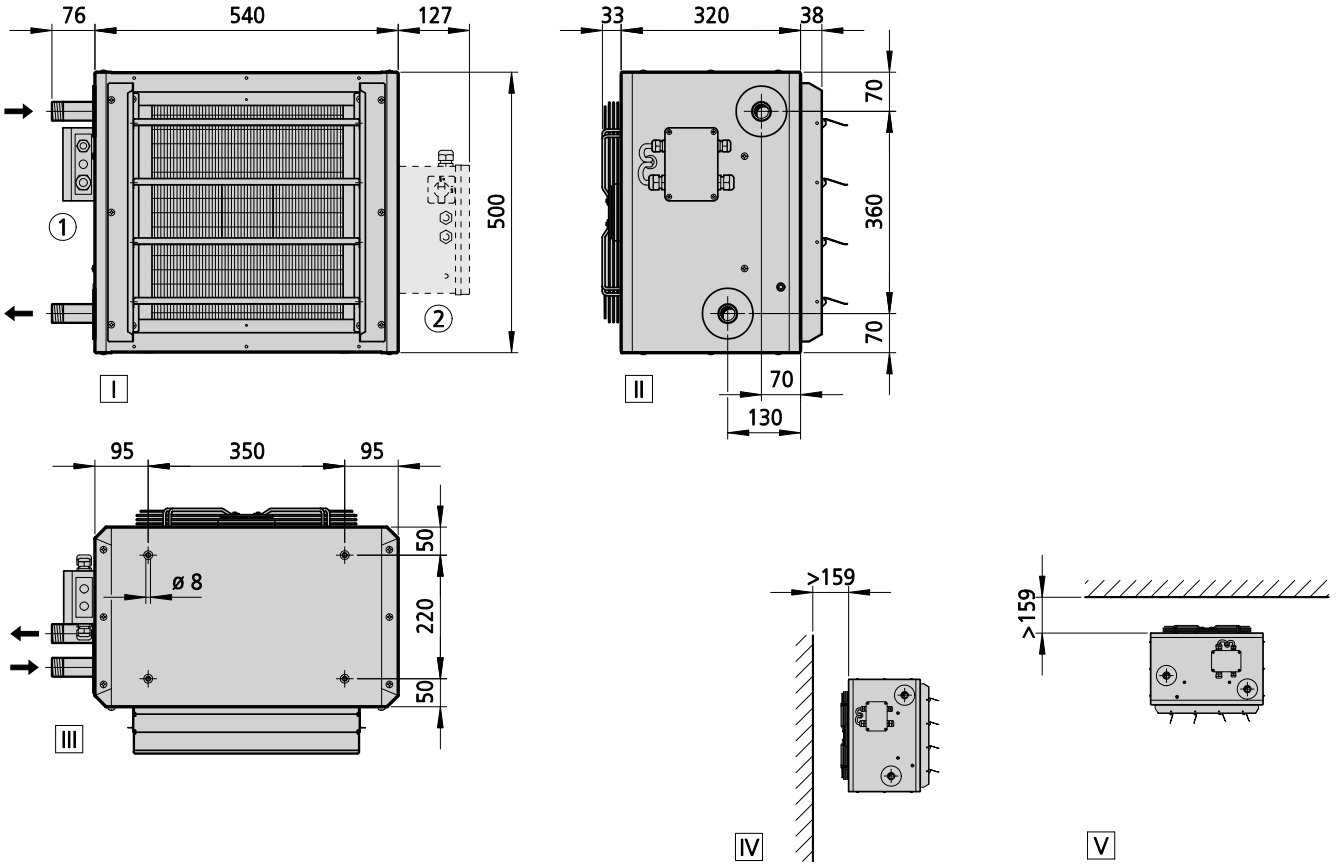


Test chamber for air performance measurements according to DIN EN ISO 5801, Kampmann R & D Centre

TOP, Heat exchanger copper/aluminium Model 4

EC fan, 200-240 V, high speed

Technical drawing (Dimensions in mm)



View

I Front view
II side view
III top view
IV Wall-mounted
V Ceiling-mounted

Further information

① Electrical connection for EC model, electromechanical
② Electrical connection for EC model with KaControl (optional)

Specifications

Type	Weight [kg]	Water content [l]	Connection
442058	23	1.6	1“
443058	22	2.1	1“
444058	24	2.6	1“

Performance data

Type	Inlet air temperature	Control voltage	Heat output[1]	Outlet air temperature	Air flow	Nominal fan speed	Power consumption	Amperage	Throw (wall-mounted)	Max. mounting height when ceiling-mounted					Sound pressure level[3]	Sound power level
										Louvre[2]	Diffuser	Outlet nozzle	Induction air outlet louvre	KaMAX, vertical slat position		
	[°C]	[V]	[kW]	[°C]	[m³/h]	[1/min]	[W]	[A]	[m]	[m]	[m]	[m]	[m]	[m]	[dB(A)]	[dB(A)]
442058	20	10	12.6	34.2	2680	1520	165	1.5	21.0	6.1	3.9	7.5	7.3	9.0	57	73
		8	11.5	35.1	2310	1290	99	1.0	18.0	5.4	3.5	6.6	6.5	8.0	52	68
		6	10.0	36.9	1780	1000	46	0.5	13.0	4.5	3.0	5.5	5.4	6.6	46	62
		4	8.3	40.4	1220	735	22	0.3	9.0	3.6	2.4	4.4	4.3	5.2	38	54
		2	6.9	41.4	790	525	12	0.2	6.0	2.8	2.3	3.4	3.3	3.9	31	47
443058	20	10	14.9	38.5	2440	1520	165	1.5	19.0	5.7	3.7	7.1	7.0	8.5	55	71
		8	13.4	39.5	2070	1290	99	1.0	16.0	5.1	3.3	6.3	6.2	7.5	50	66
		6	11.4	41.6	1590	1000	46	0.5	12.0	4.2	2.8	5.2	5.1	6.2	44	60
		4	9.2	45.5	1090	735	22	0.3	8.0	3.3	2.3	4.1	4.1	4.8	36	52
		2	7.5	46.7	690	525	12	0.2	5.0	2.5	2.3	3.1	3.1	3.6	29	45
444058	20	10	18.3	47.2	2030	1520	165	1.5	16.0	5.1	3.3	6.4	6.3	7.6	53	69
		8	15.8	48.0	1700	1290	99	1.0	13.0	4.5	3.0	5.7	5.6	6.7	48	64
		6	12.7	49.4	1300	1000	46	0.5	10.0	3.7	2.5	4.7	4.6	5.5	42	58
		4	9.4	51.9	890	735	22	0.3	6.0	2.9	2.3	3.7	3.6	4.2	34	50
		2	6.6	52.7	550	525	12	0.2	4.0	2.3	2.3	2.7	2.7	3.1	27	43

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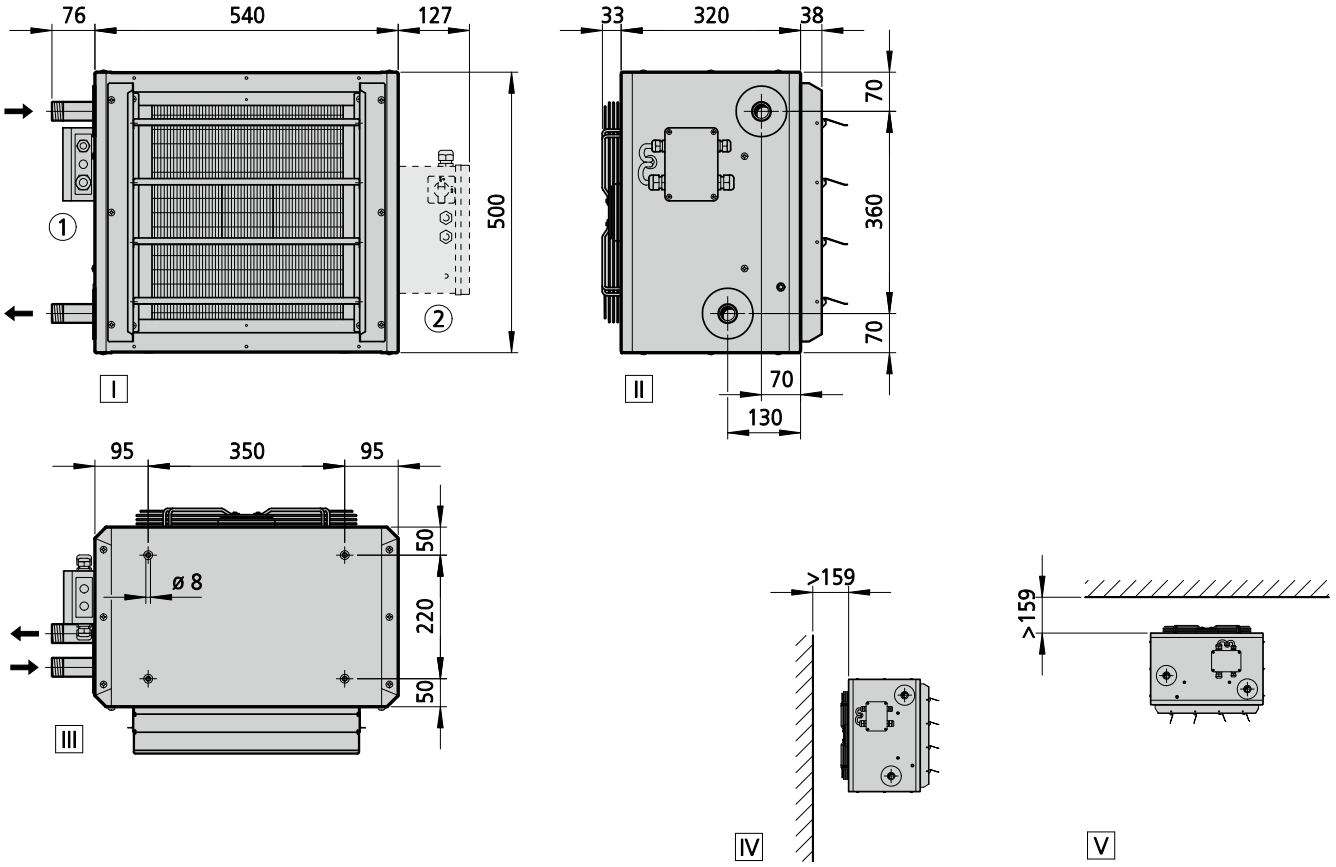
[1] at LPHW 75/65 °C, t_{L1} = 20 °C
[2] The maximum mounting heights only apply for a leaving air temperature of up to 15 K above room temperature (see also design information).
[3] The sound pressure levels were calculated with an assumed room insulation of 16 dB(A). This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

TOP, Heat exchanger copper/aluminium Model 4

EC fan, 200-240 V, reduced speed

Technical drawing (Dimensions in mm)



View

Ⅰ Front view
Ⅱ side view
Ⅲ top view
Ⅳ Wall-mounted
Ⅴ Ceiling-mounted

Further information

① Electrical connection for EC model, electromechanical
② Electrical connection for EC model with KaControl (optional)

Specifications

Type	Weight [kg]	Water content [l]	Connection
442056	22	1.6	1“
443056	22	2.1	1“
444056	24	2.6	1“

Performance data

Type	Inlet air temperature	Control voltage	Heat output[1]	Outlet air temperature	Air flow	Nominal fan speed	Power consumption	Amperage	Throw (wall-mounted)	Max. mounting height when ceiling-mounted					Sound pressure level[3]	Sound power level
										Louvre[2]	Diffuser	Outlet nozzle	Induction air outlet louvre	KaMAX, vertical slat position		
	[°C]	[V]	[kW]	[°C]	[m³/h]	[1/min]	[W]	[A]	[m]	[m]	[m]	[m]	[m]	[m]	[dB(A)]	[dB(A)]
442056	20	10	11.1	35.6	2140	1410	124	1.2	17.0	5.3	3.5	6.5	6.4	7.8	55	71
		8	10.3	36.5	1890	1150	64	0.7	14.0	4.7	3.1	5.7	5.6	6.8	50	66
		6	8.9	38.8	1420	905	32	0.4	11.0	4.0	2.7	4.8	4.7	5.7	43	59
		4	7.5	43.1	980	665	14	0.2	8.0	3.2	2.3	3.9	3.8	4.6	35	51
		2	6.8	44.1	750	480	7	0.1	5.0	2.6	2.3	3.1	3.1	3.6	28	44
443056	20	10	12.9	40.1	1930	1410	124	1.2	15.0	5.0	3.3	6.2	6.1	7.3	53	69
		8	11.8	41.1	1690	1150	64	0.7	12.0	4.3	2.9	5.3	5.3	6.3	48	64
		6	10.0	43.8	1260	905	32	0.4	10.0	3.7	2.5	4.5	4.5	5.3	41	57
		4	8.3	48.7	870	665	14	0.2	7.0	3.0	2.3	3.6	3.6	4.2	33	49
		2	7.4	49.8	670	480	7	0.1	5.0	2.3	2.3	2.9	2.8	3.3	26	42
444056	20	10	15.1	48.3	1600	1410	124	1.2	13.0	4.4	2.9	5.6	5.5	6.6	51	67
		8	13.4	49.1	1390	1150	64	0.7	10.0	3.8	2.6	4.8	4.8	5.6	46	62
		6	10.5	50.9	1020	905	32	0.4	8.0	3.2	2.3	4.0	4.0	4.7	39	55
		4	7.9	53.8	700	665	14	0.2	5.0	2.5	2.3	3.2	3.1	3.6	31	47
		2	6.5	54.6	530	480	7	0.1	3.0	2.3	2.3	2.4	2.4	2.7	24	40

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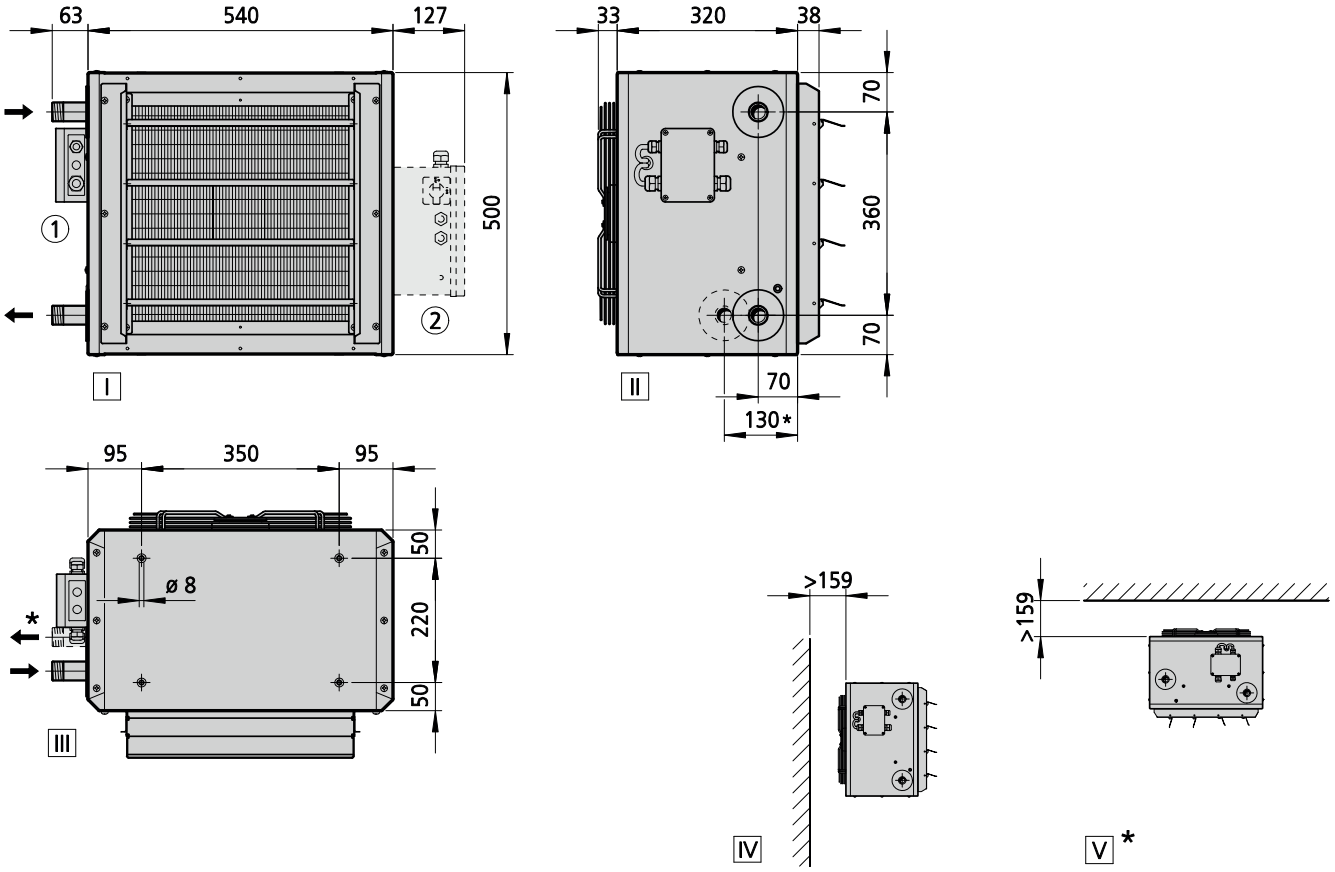
[1] at LPHW 75/65 °C, t_{L1} = 20 °C
[2] The maximum mounting heights only apply for a leaving air temperature of up to 15 K above room temperature (see also design information).
[3] The sound pressure levels were calculated with an assumed room insulation of 16 dB(A). This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

TOP, Heat exchanger steel galvanised Model 4

EC fan, 200-240 V, high speed

Technical drawing (Dimensions in mm)



View

I Front view
II Side view, 1-layer heat exchanger (* = 2-layer)
III Top view, 1-layer heat exchanger (* = 2-layer)
IV Wall-mounted, 1-layer heat exchanger
V Ceiling-mounted, 2-layer heat exchanger

Further information

① Electrical connection for EC model, electromechanical
② Electrical connection for EC model with KaControl (optional)

Specifications

Type	Weight [kg]	Water content [l]	Connection
442158	41	3.1	1"
443158	51	6.1	1"
444158	61	6.1	1"

Performance data

Type	Inlet air temperature	Control voltage	Heat output[1]	Outlet air temperature	Air flow	Nominal fan speed	Power consumption	Amperage	Throw (wall-mounted)	Max. mounting height when ceiling-mounted					Sound pressure level[3]	Sound power level
										Louvre[2]	Diffuser	Outlet nozzle	Induction air outlet louvre	KaMAX, vertical slat position		
	[°C]	[V]	[kW]	[°C]	[m³/h]	[1/min]	[W]	[A]	[m]	[m]	[m]	[m]	[m]	[m]	[dB(A)]	[dB(A)]
442158	20	10	12.3	33.6	2730	1520	165	1.5	22.0	6.1	4.0	7.4	7.3	9.0	58	74
		8	11.2	34.5	2320	1290	99	1.0	18.0	5.4	3.5	6.6	6.4	7.9	53	69
		6	9.6	36.4	1760	1000	46	0.5	13.0	4.4	2.9	5.4	5.3	6.4	47	63
		4	7.8	40.1	1170	735	22	0.3	8.0	3.4	2.3	4.1	4.1	4.9	39	55
		2	6.5	41.1	720	525	12	0.2	5.0	2.4	2.3	3.0	3.0	3.5	32	48
443158	20	10	14.6	36.1	2730	1520	165	1.5	22.0	6.1	4.0	7.4	7.3	9.0	57	73
		8	13.1	36.9	2320	1290	99	1.0	18.0	5.4	3.5	6.6	6.4	7.9	52	68
		6	11.0	38.8	1760	1000	46	0.5	13.0	4.4	2.9	5.4	5.3	6.4	46	62
		4	8.7	42.3	1170	735	22	0.3	8.0	3.4	2.3	4.1	4.1	4.9	38	54
		2	6.9	43.3	720	525	12	0.2	5.0	2.4	2.3	3.0	3.0	3.5	31	47
444158	20	10	18.0	44.1	2240	1520	165	1.5	18.0	5.4	3.5	6.8	6.7	8.1	55	71
		8	15.5	44.8	1890	1290	99	1.0	14.0	4.8	3.2	6.0	5.9	7.1	50	66
		6	12.4	46.1	1440	1000	46	0.5	11.0	3.9	2.6	4.9	4.8	5.8	44	60
		4	9.1	48.2	970	735	22	0.3	7.0	3.0	2.3	3.8	3.8	4.4	36	52
		2	6.4	49.0	590	525	12	0.2	4.0	2.3	2.3	2.8	2.8	3.2	29	45

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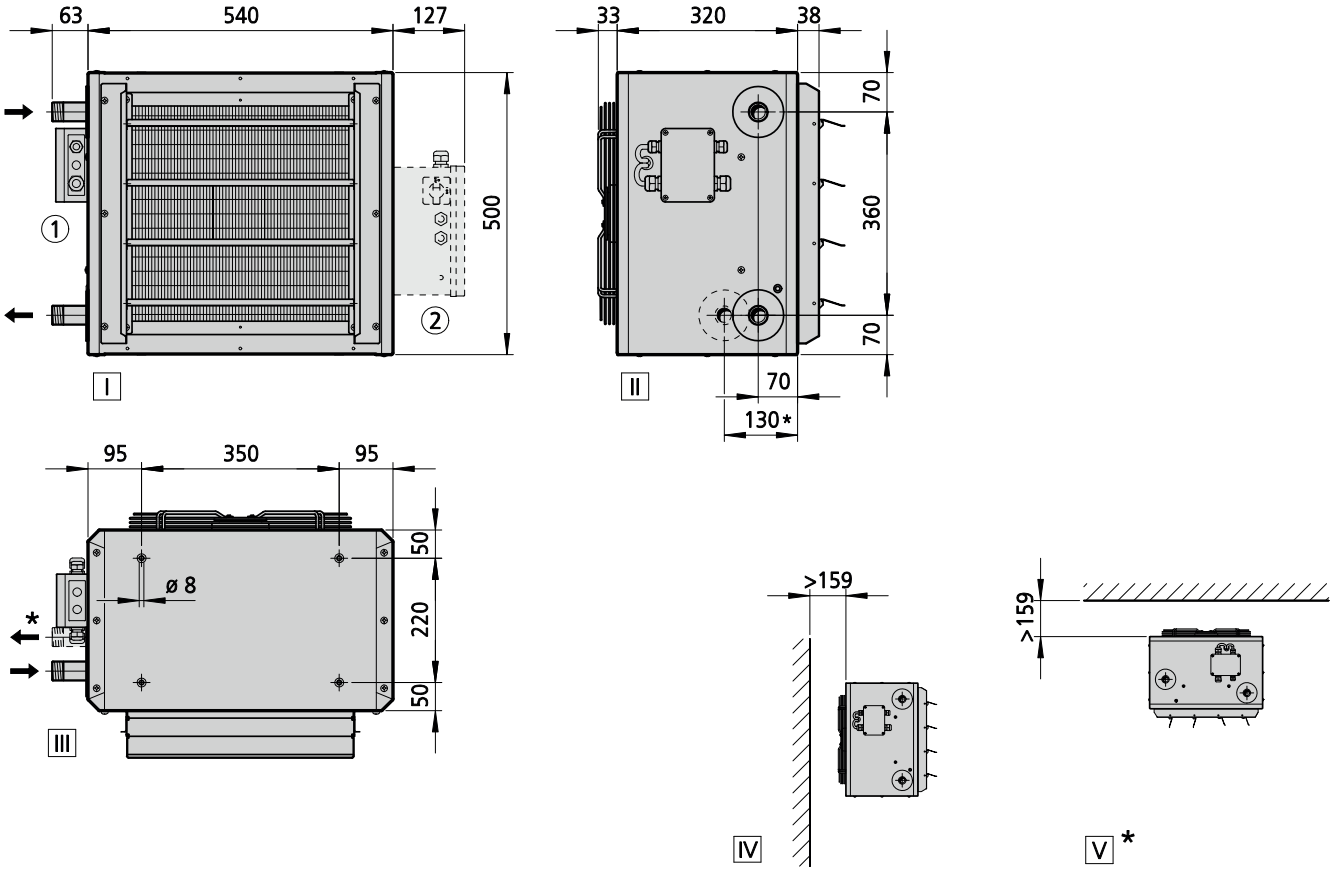
[1] at LPHW 75/65 °C, t_{L1} = 20 °C
[2] The maximum mounting heights only apply for a leaving air temperature of up to 15 K above room temperature (see also design information).
[3] The sound pressure levels were calculated with an assumed room insulation of 16 dB(A). This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

TOP, Heat exchanger steel galvanised Model 4

EC fan, 200-240 V, reduced speed

Technical drawing (Dimensions in mm)



View

I Front view
II Side view, 1-layer heat exchanger (* = 2-layer)
III Top view, 1-layer heat exchanger (* = 2-layer)
IV Wall-mounted, 1-layer heat exchanger
V Ceiling-mounted, 2-layer heat exchanger

Further information

① Electrical connection for EC model, electromechanical
② Electrical connection for EC model with KaControl (optional)

Specifications

Type	Weight [kg]	Water content [l]	Connection
442156	40	3.1	1“
443156	51	6.1	1“
444156	60	6.1	1“

Performance data

Type	Inlet air temperature	Control voltage	Heat output[1]	Outlet air temperature	Air flow	Nominal fan speed	Power consumption	Amperage	Throw (wall-mounted)	Max. mounting height when ceiling-mounted					Sound pressure level[3]	Sound power level
										Louvre[2]	Diffuser	Outlet nozzle	Induction air outlet louvre	KaMAX, vertical slat position		
	[°C]	[V]	[kW]	[°C]	[m³/h]	[1/min]	[W]	[A]	[m]	[m]	[m]	[m]	[m]	[m]	[dB(A)]	[dB(A)]
442156	20	10	10.7	35.0	2150	1410	124	1.2	17.0	5.3	3.5	6.4	6.3	7.7	56	72
		8	9.9	35.9	1870	1150	64	0.7	14.0	4.6	3.0	5.5	5.4	6.6	51	67
		6	8.5	38.5	1380	905	32	0.4	10.0	3.8	2.6	4.6	4.5	5.5	44	60
		4	7.1	43.2	920	665	14	0.2	7.0	3.0	2.3	3.6	3.6	4.2	36	52
		2	6.4	44.1	690	480	7	0.1	4.0	2.3	2.3	2.8	2.8	3.2	29	45
443156	20	10	12.4	37.4	2150	1410	124	1.2	17.0	5.3	3.5	6.4	6.3	7.7	55	71
		8	11.4	38.3	1870	1150	64	0.7	14.0	4.6	3.0	5.5	5.4	6.6	50	66
		6	9.5	40.7	1380	905	32	0.4	10.0	3.8	2.6	4.6	4.5	5.5	43	59
		4	7.7	45.2	920	665	14	0.2	7.0	3.0	2.3	3.6	3.6	4.2	35	51
		2	6.8	46.1	690	480	7	0.1	4.0	2.3	2.3	2.8	2.8	3.2	28	44
444156	20	10	14.7	45.1	1760	1410	124	1.2	14.0	4.7	3.1	5.9	5.8	6.9	53	69
		8	13.1	45.8	1530	1150	64	0.7	11.0	4.0	2.7	5.0	5.0	5.9	48	64
		6	10.2	47.4	1120	905	32	0.4	8.0	3.4	2.3	4.2	4.2	4.9	41	57
		4	7.6	50.0	760	665	14	0.2	6.0	2.7	2.3	3.3	3.3	3.8	33	49
		2	6.2	50.6	580	480	7	0.1	4.0	2.3	2.3	2.5	2.5	2.9	26	42

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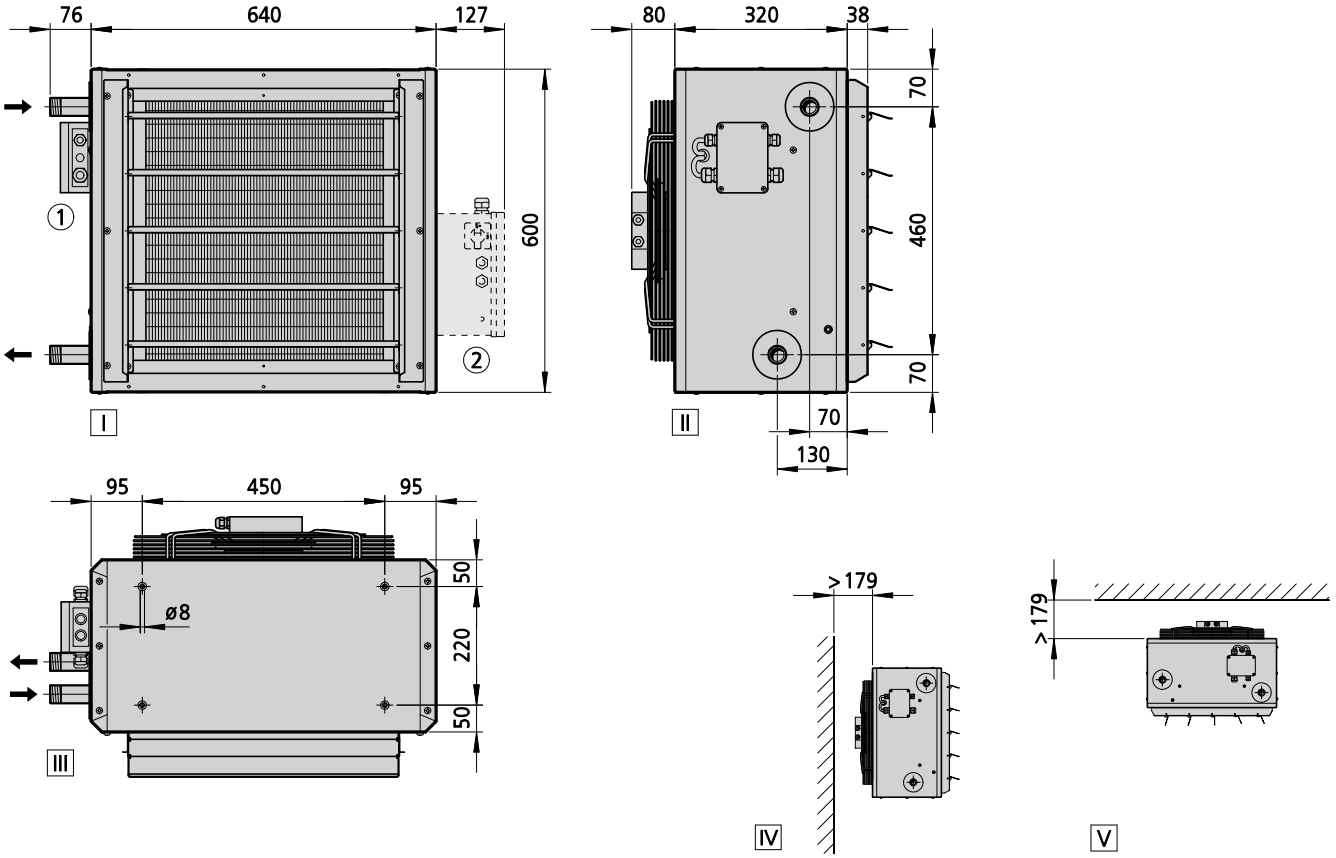
[1] at LPHW 75/65 °C, t_{L1} = 20 °C
[2] The maximum mounting heights only apply for a leaving air temperature of up to 15 K above room temperature (see also design information).
[3] The sound pressure levels were calculated with an assumed room insulation of 16 dB(A). This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

TOP, Heat exchanger copper/aluminium Model 5

EC fan, 200-240 V, high speed

Technical drawing (Dimensions in mm)



View

I Front view
II side view
III top view
IV Wall-mounted
V Ceiling-mounted

Further information

① Electrical connection for EC model, electromechanical
② Electrical connection for EC model with KaControl (optional)

Specifications

Type	Weight [kg]	Water content [l]	Connection
452058	32	2.2	1“
453058	32	3.0	1“
454058	34	3.8	1“

Performance data

Type	Inlet air temperature	Control voltage	Heat output[1]	Outlet air temperature	Air flow	Nominal fan speed	Power consumption	Amperage	Throw (wall-mounted)	Max. mounting height when ceiling-mounted					Sound pressure level[3]	Sound power level
										Louvre[2]	Diffuser	Outlet nozzle	Induction air outlet louvre	KaMAX, vertical slat position		
	[°C]	[V]	[kW]	[°C]	[m³/h]	[1/min]	[W]	[A]	[m]	[m]	[m]	[m]	[m]	[m]	[dB(A)]	[dB(A)]
452058	20	10	24.1	34.9	4880	1470	400	1.8	26.0	7.2	4.6	9.4	9.2	12.0	65	81
		8	20.2	35.8	3840	1180	208	0.9	21.0	6.2	4.1	8.0	7.9	10.3	59	75
		6	15.8	37.5	2710	865	88	0.4	15.0	5.1	3.4	6.4	6.4	8.2	51	67
		4	11.7	41.1	1670	550	20	0.2	8.0	3.7	2.5	4.6	4.6	5.7	40	56
		2	7.3	42.5	590	235	10	0.1	2.0	2.3	2.3	2.3	2.3	2.7	27	43
453058	20	10	29.0	39.4	4510	1470	400	1.8	24.0	6.9	4.4	9.0	8.9	11.5	63	79
		8	23.9	40.3	3540	1180	208	0.9	19.0	5.9	3.9	7.7	7.6	9.8	57	73
		6	18.1	42.1	2470	865	88	0.4	13.0	4.8	3.2	6.1	6.1	7.7	49	65
		4	12.9	45.7	1510	550	20	0.2	7.0	3.5	2.4	4.4	4.3	5.4	38	54
		2	7.5	47.2	530	235	10	0.1	2.0	2.3	2.3	2.3	2.3	2.4	25	41
454058	20	10	37.6	49.3	3870	1470	400	1.8	21.0	6.3	4.1	8.3	8.2	10.5	61	77
		8	30.1	50.1	3020	1180	208	0.9	16.0	5.4	3.5	7.1	7.0	8.9	55	71
		6	21.4	51.3	2060	865	88	0.4	11.0	4.3	2.9	5.6	5.6	7.0	47	63
		4	13.7	53.4	1230	550	20	0.2	6.0	3.0	2.3	3.9	3.9	4.7	36	52
		2	6.3	54.5	460	235	10	0.1	1.0	2.3	2.3	2.3	2.3	2.3	23	39

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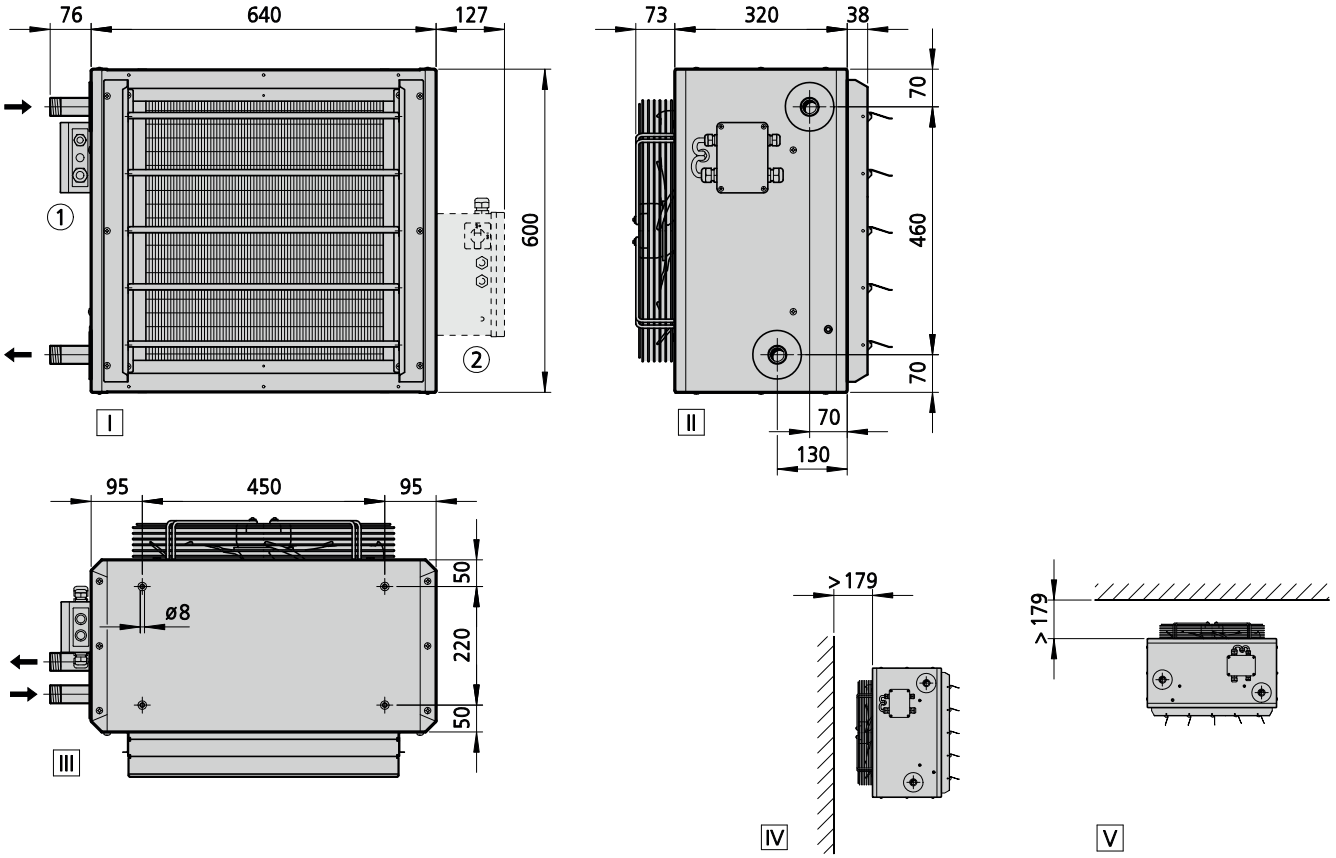
[1] at LPHW 75/65 °C, t_{L1} = 20 °C
[2] The maximum mounting heights only apply for a leaving air temperature of up to 15 K above room temperature (see also design information).
[3] The sound pressure levels were calculated with an assumed room insulation of 16 dB(A). This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

TOP, Heat exchanger copper/aluminium Model 5

EC fan, 200-240 V, reduced speed

Technical drawing (Dimensions in mm)



View

I Front view
II side view
III top view
IV Wall-mounted
V Ceiling-mounted

Further information

① Electrical connection for EC model, electromechanical
② Electrical connection for EC model with KaControl (optional)

Specifications

Type	Weight [kg]	Water content [l]	Connection
452056	30	2.2	1“
453056	30	3.0	1“
454056	32	3.8	1“

Performance data

Type	Inlet air temperature	Control voltage	Heat output[1]	Outlet air temperature	Air flow	Nominal fan speed	Power consumption	Amperage	Throw (wall-mounted)	Max. mounting height when ceiling-mounted					Sound pressure level[3]	Sound power level
										Louvre[2]	Diffuser	Outlet nozzle	Induction air outlet louvre	KaMAX, vertical slat position		
	[°C]	[V]	[kW]	[°C]	[m³/h]	[1/min]	[W]	[A]	[m]	[m]	[m]	[m]	[m]	[m]	[dB(A)]	[dB(A)]
452056	20	10	18.5	36.3	3420	1080	162	1.5	18.0	5.8	3.8	7.3	7.2	9.3	56	72
		8	16.4	37.2	2870	925	93	1.0	15.0	5.2	3.4	6.5	6.4	8.2	52	68
		6	12.7	39.8	1930	720	46	0.5	11.0	4.3	2.9	5.3	5.2	6.7	45	61
		4	10.1	44.0	1270	530	22	0.3	7.0	3.3	2.3	4.1	4.0	5.0	36	52
		2	8.1	45.4	760	380	11	0.2	4.0	2.4	2.3	2.9	2.9	3.6	29	45
453056	20	10	21.6	40.9	3110	1080	162	1.5	16.0	5.4	3.6	7.0	6.9	8.8	54	70
		8	18.8	41.8	2590	925	93	1.0	13.0	4.8	3.2	6.2	6.1	7.7	50	66
		6	14.3	44.4	1760	720	46	0.5	10.0	4.0	2.7	5.0	4.9	6.2	43	59
		4	10.9	48.6	1150	530	22	0.3	6.0	3.0	2.3	3.8	3.7	4.7	34	50
		2	8.4	50.0	700	380	11	0.2	3.0	2.3	2.3	2.7	2.6	3.2	27	43
454056	20	10	26.5	50.5	2610	1080	162	1.5	14.0	4.9	3.2	6.4	6.3	7.9	52	68
		8	22.3	51.1	2160	925	93	1.0	11.0	4.3	2.9	5.6	5.5	6.9	48	64
		6	16.1	52.6	1490	720	46	0.5	8.0	3.5	2.4	4.5	4.4	5.5	41	57
		4	11.1	54.8	960	530	22	0.3	4.0	2.6	2.3	3.3	3.3	4.0	32	48
		2	7.6	55.6	590	380	11	0.2	2.0	2.3	2.3	2.3	2.3	2.6	25	41

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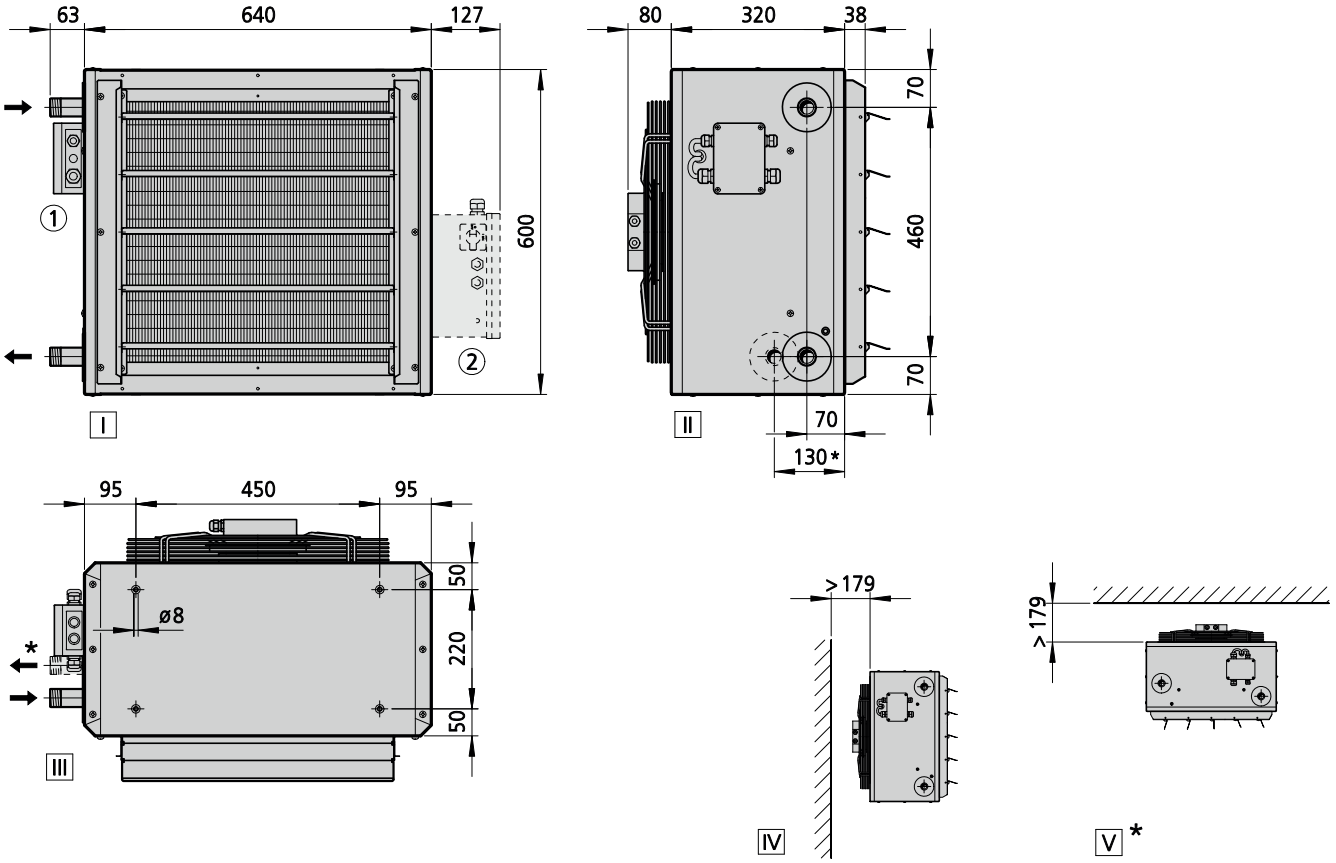
[1] at LPHW 75/65 °C, t_{L1} = 20 °C
[2] The maximum mounting heights only apply for a leaving air temperature of up to 15 K above room temperature (see also design information).
[3] The sound pressure levels were calculated with an assumed room insulation of 16 dB(A). This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

TOP, Heat exchanger steel galvanised Model 5

EC fan, 200-240 V, high speed

Technical drawing (Dimensions in mm)



View

Ⅰ Front view
Ⅱ Side view, 1-layer heat exchanger (* = 2-layer)
Ⅲ Top view, 1-layer heat exchanger (* = 2-layer)
Ⅳ Wall-mounted, 1-layer heat exchanger
Ⅴ Ceiling-mounted, 2-layer heat exchanger

Further information

① Electrical connection for EC model, electromechanical
② Electrical connection for EC model with KaControl (optional)

Specifications

Type	Weight [kg]	Water content [l]	Connection
452158	58	5.1	1“
453158	73	8.2	1“
454158	88	8.2	1“

Performance data

Type	Inlet air temperature	Control voltage	Heat output[1]	Outlet air temperature	Air flow	Nominal fan speed	Power consumption	Amperage	Throw (wall-mounted)	Max. mounting height when ceiling-mounted					Sound pressure level[3]	Sound power level
										Louvre[2]	Diffuser	Outlet nozzle	Induction air outlet louvre	KaMAX, vertical slat position		
	[°C]	[V]	[kW]	[°C]	[m³/h]	[1/min]	[W]	[A]	[m]	[m]	[m]	[m]	[m]	[m]	[dB(A)]	[dB(A)]
452158	20	10	22.8	34.3	4800	1470	400	1.8	26.0	7.2	4.6	9.4	9.2	12.0	66	82
		8	19.3	35.1	3850	1180	208	0.9	21.0	6.3	4.1	8.1	8.0	10.3	60	76
		6	15.4	36.6	2800	865	88	0.4	15.0	5.2	3.4	6.6	6.5	8.4	52	68
		4	11.7	39.6	1800	550	20	0.2	9.0	3.9	2.7	4.9	4.9	6.2	41	57
		2	7.7	40.9	750	235	10	0.1	4.0	2.3	2.3	2.8	2.8	3.5	28	44
453158	20	10	27.6	37.3	4800	1470	400	1.8	26.0	7.2	4.6	9.4	9.2	12.0	65	81
		8	23.0	38.0	3850	1180	208	0.9	21.0	6.3	4.1	8.1	8.0	10.3	59	75
		6	17.9	39.3	2800	865	88	0.4	15.0	5.2	3.4	6.6	6.5	8.4	51	67
		4	13.1	41.8	1800	550	20	0.2	9.0	3.9	2.7	4.9	4.9	6.2	40	56
		2	7.8	42.9	750	235	10	0.1	4.0	2.3	2.3	2.8	2.8	3.5	27	43
454158	20	10	34.1	46.3	3910	1470	400	1.8	21.0	6.3	4.1	8.4	8.4	10.6	63	79
		8	28.1	46.9	3140	1180	208	0.9	17.0	5.5	3.6	7.3	7.2	9.2	57	73
		6	21.1	48.0	2270	865	88	0.4	12.0	4.6	3.1	6.0	5.9	7.4	49	65
		4	14.6	49.6	1490	550	20	0.2	8.0	3.5	2.4	4.4	4.4	5.5	38	54
		2	7.1	50.5	610	235	10	0.1	3.0	2.3	2.3	2.6	2.5	3.1	25	41

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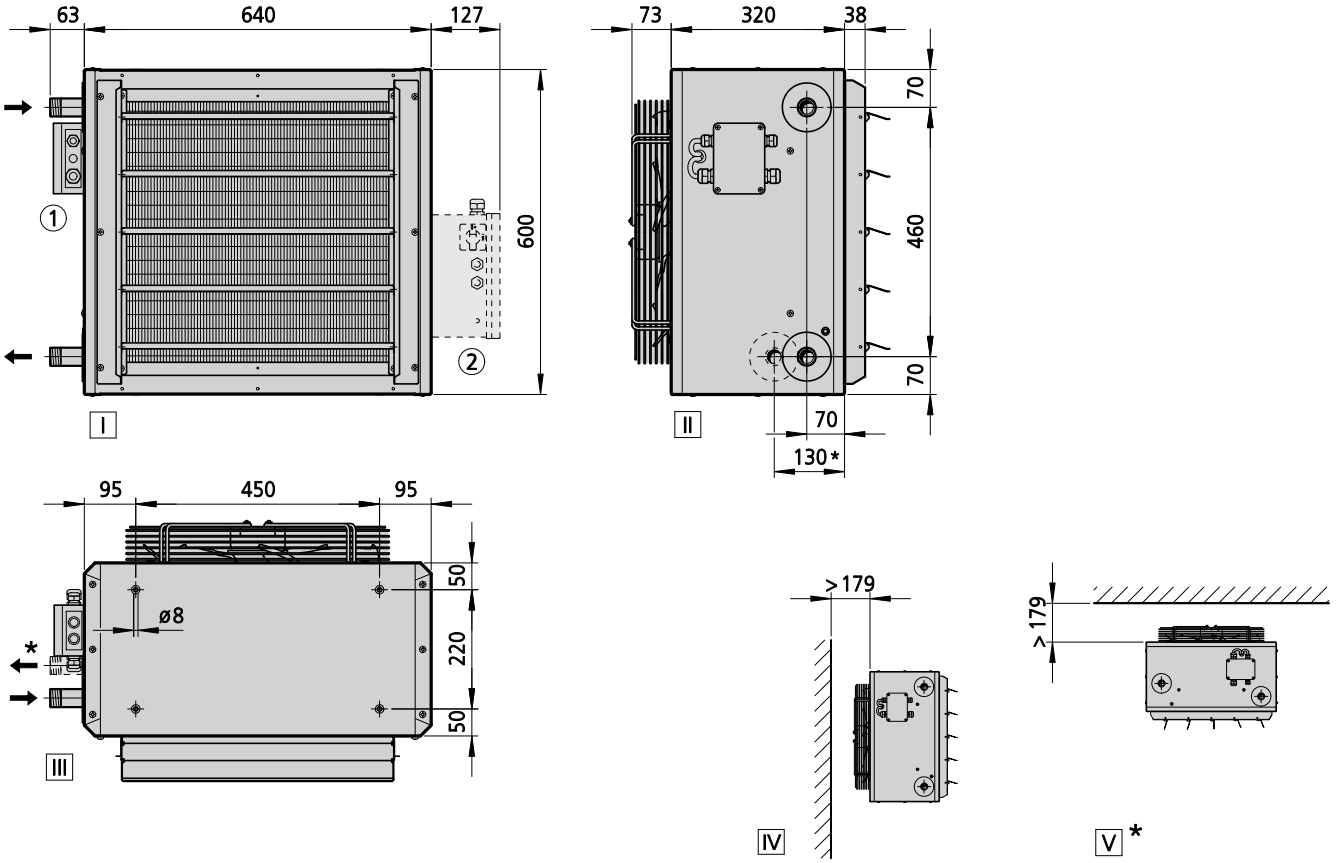
[1] at LPHW 75/65 °C, t_{L1} = 20 °C
[2] The maximum mounting heights only apply for a leaving air temperature of up to 15 K above room temperature (see also design information).
[3] The sound pressure levels were calculated with an assumed room insulation of 16 dB(A). This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

TOP, Heat exchanger steel galvanised Model 5

EC fan, 200-240 V, reduced speed

Technical drawing (Dimensions in mm)



View

I Front view
II Side view, 1-layer heat exchanger (* = 2-layer)
III Top view, 1-layer heat exchanger (* = 2-layer)
IV Wall-mounted, 1-layer heat exchanger
V Ceiling-mounted, 2-layer heat exchanger

Further information

① Electrical connection for EC model, electromechanical
② Electrical connection for EC model with KaControl (optional)

Specifications

Type	Weight [kg]	Water content [l]	Connection
452156	56	5.1	1“
453156	71	8.2	1“
454156	86	8.2	1“

Performance data

Type	Inlet air temperature	Control voltage	Heat output[1]	Outlet air temperature	Air flow	Nominal fan speed	Power consumption	Amperage	Throw (wall-mounted)	Max. mounting height when ceiling-mounted					Sound pressure level[3]	Sound power level
										Louvre[2]	Diffuser	Outlet nozzle	Induction air outlet louvre	KaMAX, vertical slat position		
	[°C]	[V]	[kW]	[°C]	[m³/h]	[1/min]	[W]	[A]	[m]	[m]	[m]	[m]	[m]	[m]	[dB(A)]	[dB(A)]
452156	20	10	17.8	35.6	3440	1080	162	1.5	18.0	5.8	3.8	7.4	7.3	9.4	57	73
		8	15.9	36.4	2920	925	93	1.0	16.0	5.3	3.5	6.7	6.6	8.4	53	69
		6	12.5	38.8	2010	720	46	0.5	12.0	4.5	3.0	5.6	5.5	7.0	46	62
		4	10.1	42.2	1370	530	22	0.3	8.0	3.6	2.5	4.5	4.4	5.6	37	53
		2	8.1	43.4	850	380	11	0.2	5.0	2.9	2.3	3.5	3.4	4.3	30	46
453156	20	10	21.0	38.4	3440	1080	162	1.5	18.0	5.8	3.8	7.4	7.3	9.4	56	72
		8	18.5	39.1	2920	925	93	1.0	16.0	5.3	3.5	6.7	6.6	8.4	52	68
		6	14.1	41.1	2010	720	46	0.5	12.0	4.5	3.0	5.6	5.5	7.0	45	61
		4	10.9	44.0	1370	530	22	0.3	8.0	3.6	2.5	4.5	4.4	5.6	36	52
		2	8.3	45.0	850	380	11	0.2	5.0	2.9	2.3	3.5	3.4	4.3	29	45
454156	20	10	25.0	47.3	2760	1080	162	1.5	15.0	5.1	3.4	6.7	6.6	8.3	54	70
		8	21.5	47.9	2330	925	93	1.0	12.0	4.6	3.1	6.0	5.9	7.4	50	66
		6	16.0	49.1	1660	720	46	0.5	9.0	3.9	2.6	5.0	4.9	6.2	43	59
		4	11.6	50.8	1140	530	22	0.3	6.0	3.2	2.3	4.0	3.9	4.9	34	50
		2	8.2	51.6	730	380	11	0.2	4.0	2.5	2.3	3.1	3.0	3.7	27	43

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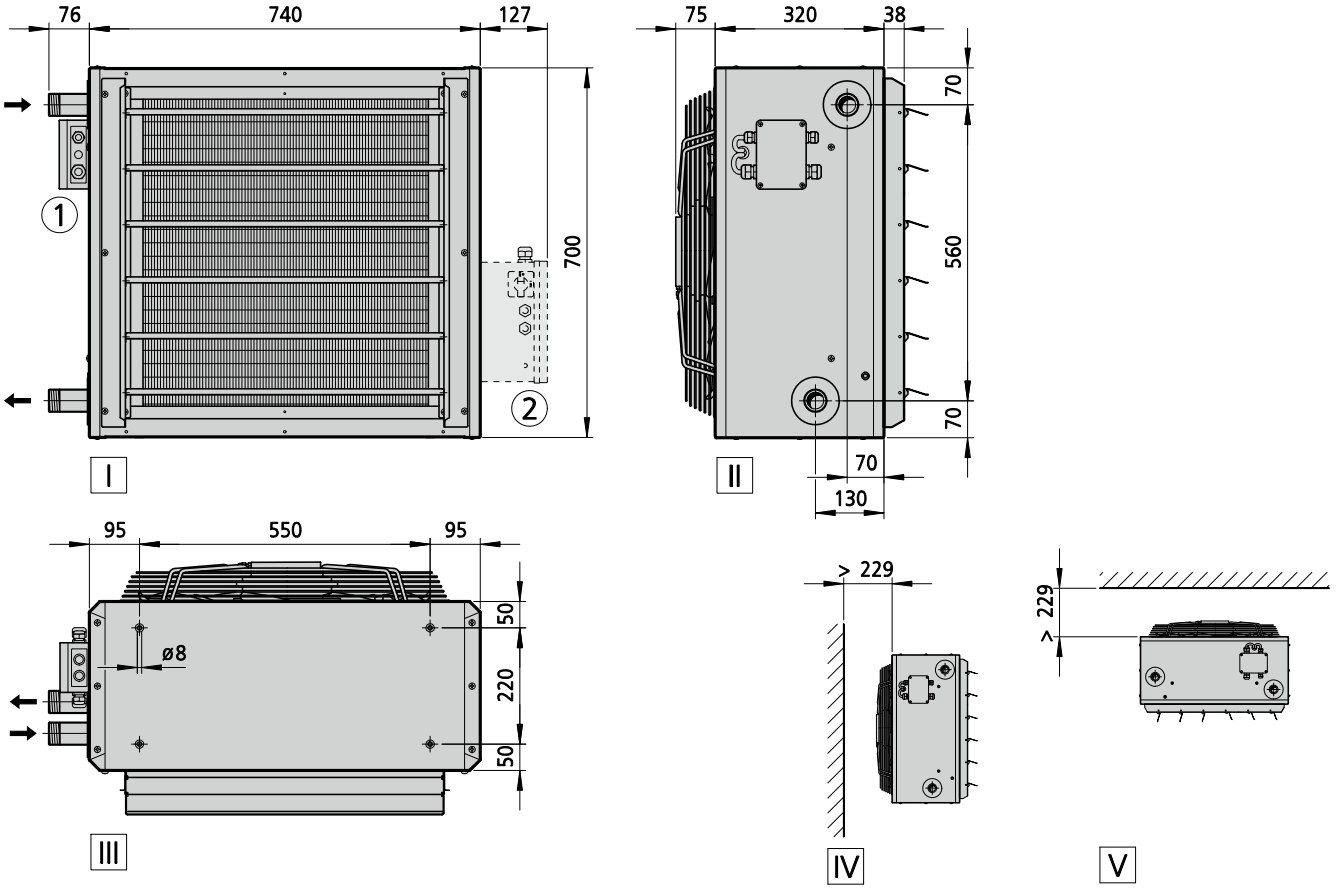
[1] at LPHW 75/65 °C, t_{L1} = 20 °C
[2] The maximum mounting heights only apply for a leaving air temperature of up to 15 K above room temperature (see also design information).
[3] The sound pressure levels were calculated with an assumed room insulation of 16 dB(A). This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

TOP, Heat exchanger copper/aluminium Model 6

EC fan, 200-240 V, high speed

Technical drawing (Dimensions in mm)



View

I Front view
II side view
III top view
IV Wall-mounted
V Ceiling-mounted

Further information

① Electrical connection for EC model, electromechanical
② Electrical connection for EC model with KaControl (optional)

Specifications

Type	Weight [kg]	Water content [l]	Connection
462058	44	3.4	1 1/4"
463058	46	4.5	1 1/4"
464058	49	5.6	1 1/4"

Performance data

Type	Inlet air temperature	Control voltage	Heat output[1]	Outlet air temperature	Air flow	Nominal fan speed	Power consumption	Amperage	Throw (wall-mounted)	Max. mounting height when ceiling-mounted					Sound pressure level[3]	Sound power level
										Louvre[2]	Diffuser	Outlet nozzle	Induction air outlet louvre	KaMAX, vertical slat position		
	[°C]	[V]	[kW]	[°C]	[m³/h]	[1/min]	[W]	[A]	[m]	[m]	[m]	[m]	[m]	[m]	[dB(A)]	[dB(A)]
462058	20	10	31.6	33.9	6840	990	420	1.8	32.0	8.0	4.7	10.1	10.0	13.4	64	80
		8	26.8	34.9	5440	790	218	1.0	25.0	7.0	4.2	8.7	8.6	11.5	58	74
		6	21.5	36.4	3940	580	89	0.4	18.0	5.7	3.5	7.0	6.9	9.2	50	66
		4	15.2	40.7	2210	370	28	0.2	11.0	4.2	2.7	5.1	5.0	6.6	39	55
		2	9.0	42.0	570	160	20	0.1	3.0	2.3	2.3	2.6	2.6	3.2	25	41
463058	20	10	40.7	41.6	5690	990	420	1.8	27.0	7.2	4.3	9.3	9.2	12.1	62	78
		8	33.3	42.6	4440	790	218	1.0	21.0	6.2	3.7	8.0	7.9	10.3	56	72
		6	25.9	44.2	3220	580	89	0.4	14.0	5.0	3.1	6.5	6.4	8.2	48	64
		4	17.3	48.4	1830	370	28	0.2	8.0	3.7	2.3	4.6	4.6	5.8	37	53
		2	9.0	49.8	530	160	20	0.1	2.0	2.3	2.3	2.3	2.3	2.7	23	39
464058	20	10	48.4	50.0	4870	990	420	1.8	23.0	6.5	3.9	8.7	8.7	11.2	60	76
		8	38.9	50.8	3800	790	218	1.0	17.0	5.6	3.4	7.5	7.4	9.5	54	70
		6	29.1	52.0	2740	580	89	0.4	12.0	4.6	2.8	6.0	6.0	7.5	46	62
		4	18.2	54.5	1590	370	28	0.2	7.0	3.3	2.3	4.3	4.3	5.3	35	51
		2	7.5	55.6	490	160	20	0.1	1.0	2.3	2.3	2.3	2.3	2.4	21	37

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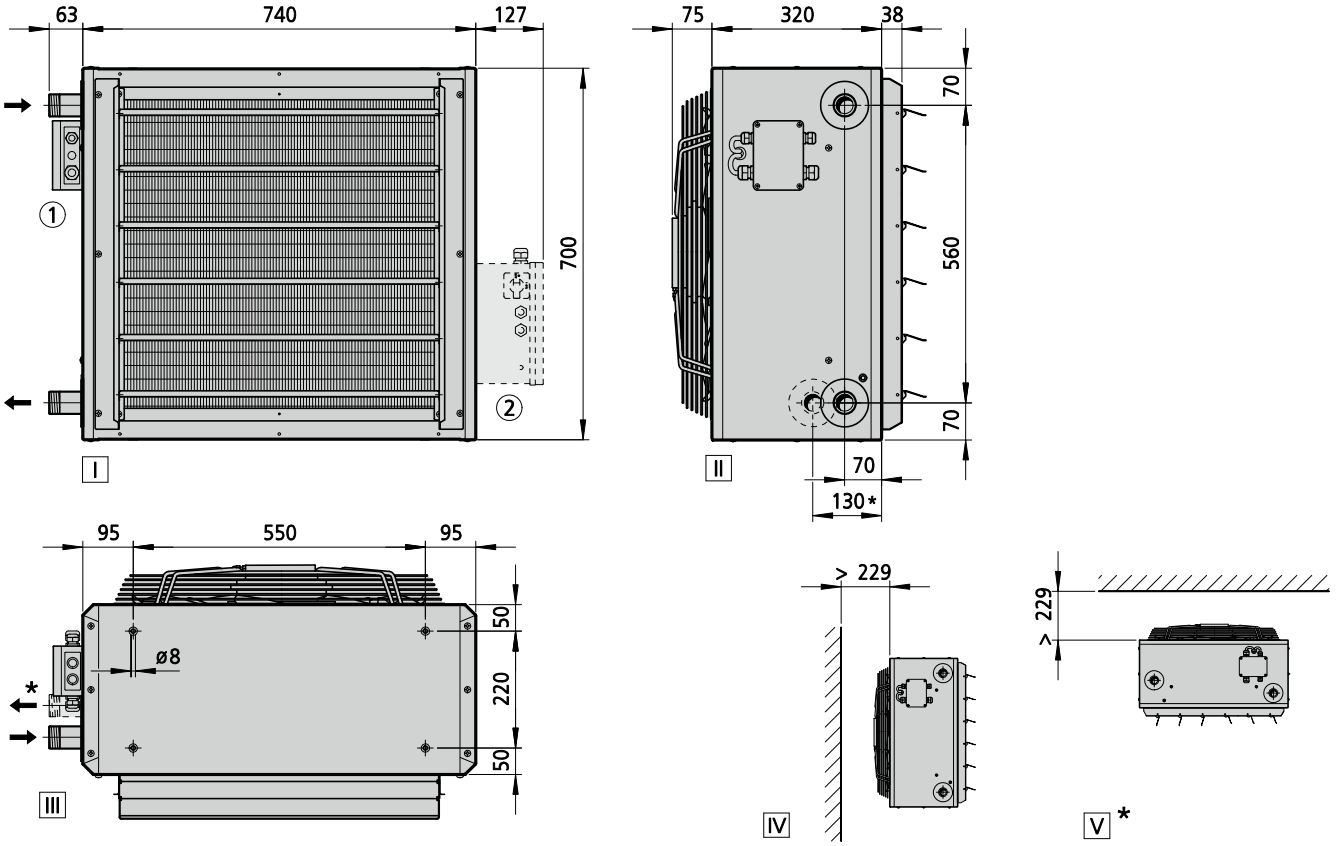
[1] at LPHW 75/65 °C, t_{L1} = 20 °C
[2] The maximum mounting heights only apply for a leaving air temperature of up to 15 K above room temperature (see also design information).
[3] The sound pressure levels were calculated with an assumed room insulation of 16 dB(A). This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

TOP, Heat exchanger steel galvanised Model 6

EC fan, 200-240 V, high speed

Technical drawing (Dimensions in mm)



View

I Front view
II Side view, 1-layer heat exchanger (* = 2-layer)
III Top view, 1-layer heat exchanger (* = 2-layer)
IV Wall-mounted, 1-layer heat exchanger
V Ceiling-mounted, 2-layer heat exchanger

Further information

① Electrical connection for EC model, electromechanical
② Electrical connection for EC model with KaControl (optional)

Specifications

Type	Weight [kg]	Water content [l]	Connection
462158	81	5.7	1 1/4"
463158	101	11.5	1 1/4"
464158	122	11.5	1 1/4"

Performance data

Type	Inlet air temperature	Control voltage	Heat output[1]	Outlet air temperature	Air flow	Nominal fan speed	Power consumption	Amperage	Throw (wall-mounted)	Max. mounting height when ceiling-mounted					Sound pressure level[3]	Sound power level
										Louvre[2]	Diffuser	Outlet nozzle	Induction air outlet louvre	KaMAX, vertical slat position		
	[°C]	[V]	[kW]	[°C]	[m³/h]	[1/min]	[W]	[A]	[m]	[m]	[m]	[m]	[m]	[m]	[dB(A)]	[dB(A)]
462158	20	10	26.9	33.9	5810	990	420	1.8	27.0	7.3	4.3	9.5	9.4	12.3	65	81
		8	23.0	34.9	4630	790	218	1.0	21.0	6.4	3.8	8.2	8.1	10.6	59	75
		6	18.8	36.5	3430	580	89	0.4	16.0	5.3	3.2	6.7	6.6	8.6	51	67
		4	13.8	40.6	2020	370	28	0.2	10.0	4.0	2.5	5.0	5.0	6.4	40	56
		2	8.5	41.9	580	160	20	0.1	4.0	2.4	2.3	2.9	2.9	3.6	26	42
463158	20	10	37.2	39.3	5810	990	420	1.8	27.0	7.3	4.3	9.5	9.4	12.3	64	80
		8	31.0	40.2	4630	790	218	1.0	21.0	6.4	3.8	8.2	8.1	10.6	58	74
		6	24.5	41.5	3430	580	89	0.4	16.0	5.3	3.2	6.7	6.6	8.6	50	66
		4	16.7	44.9	2020	370	28	0.2	10.0	4.0	2.5	5.0	5.0	6.4	39	55
		2	8.5	46.0	580	160	20	0.1	4.0	2.4	2.3	2.9	2.9	3.6	25	41
464158	20	10	43.7	46.7	4940	990	420	1.8	23.0	6.6	4.0	8.8	8.8	11.3	62	78
		8	35.8	47.4	3940	790	218	1.0	18.0	5.8	3.5	7.6	7.6	9.7	56	72
		6	27.6	48.5	2920	580	89	0.4	13.0	4.8	3.0	6.3	6.2	7.9	48	64
		4	17.9	50.6	1760	370	28	0.2	8.0	3.7	2.3	4.7	4.7	5.8	37	53
		2	7.4	51.5	550	160	20	0.1	3.0	2.3	2.3	2.7	2.7	3.3	23	39

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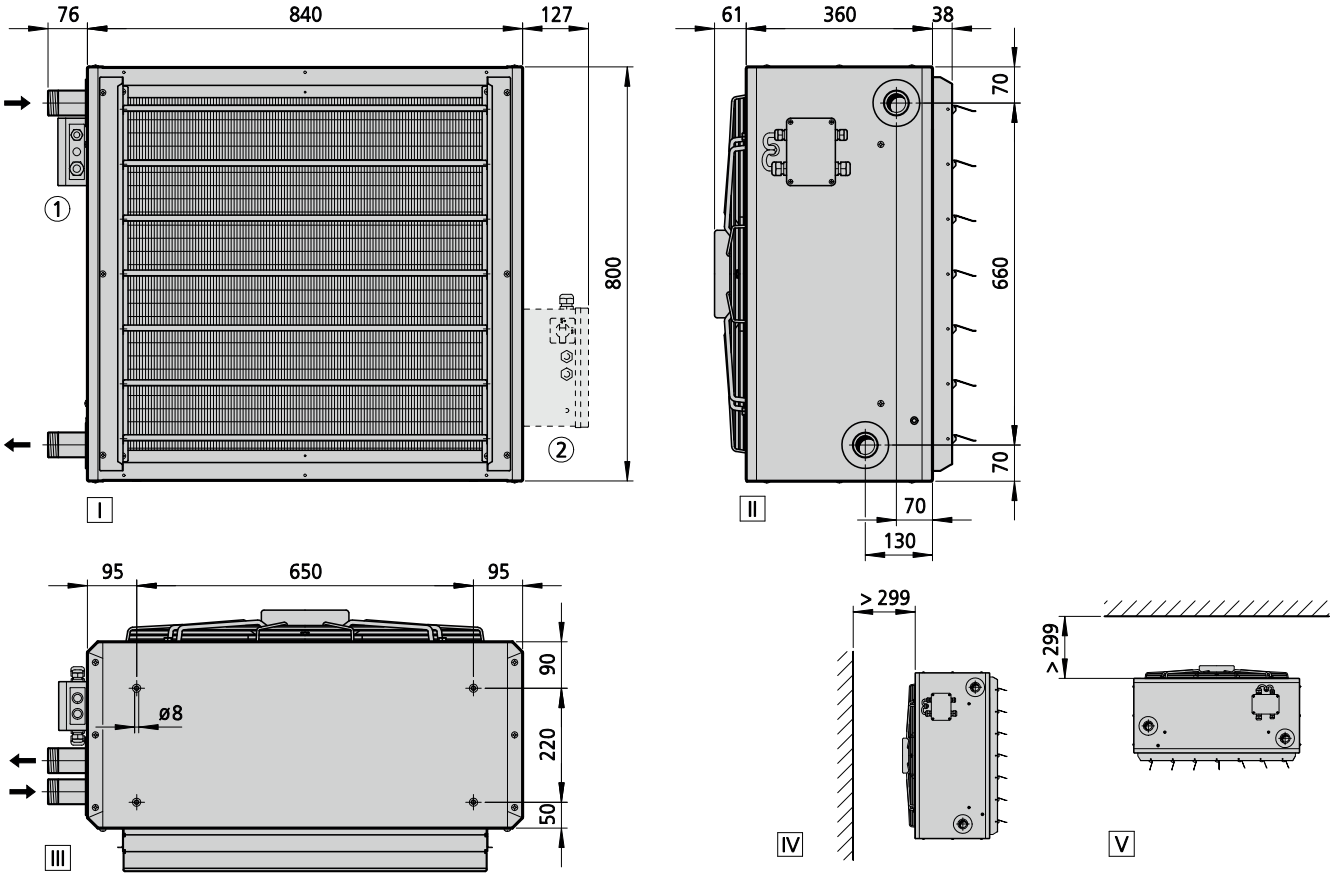
[1] at LPHW 75/65 °C, t_{L1} = 20 °C
[2] The maximum mounting heights only apply for a leaving air temperature of up to 15 K above room temperature (see also design information).
[3] The sound pressure levels were calculated with an assumed room insulation of 16 dB(A). This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

TOP, Heat exchanger copper/aluminium Model 7

EC fan, 200-240 V, high speed

Technical drawing (Dimensions in mm)



View

I Front view
II side view
III top view
IV Wall-mounted
V Ceiling-mounted

Further information

① Electrical connection for EC model, electromechanical
② Electrical connection for EC model with KaControl (optional)

Specifications

Type	Weight [kg]	Water content [l]	Connection
472058	55	4.8	1 1/2“
473058	59	6.2	1 1/2“
474058	61	7.6	1 1/2“

Performance data

Type	Inlet air temperature	Control voltage	Heat output[1]	Outlet air temperature	Air flow	Nominal fan speed	Power consumption	Amperage	Throw (wall-mounted)	Max. mounting height when ceiling-mounted					Sound pressure level[3]	Sound power level
										Louvre[2]	Diffuser	Outlet nozzle	Induction air outlet louvre	KaMAX, vertical slat position		
	[°C]	[V]	[kW]	[°C]	[m³/h]	[1/min]	[W]	[A]	[m]	[m]	[m]	[m]	[m]	[m]	[dB(A)]	[dB(A)]
472058	20	10	42.6	33.0	9900	1000	685	3.0	40.0	8.5	4.7	11.9	11.7	18.5	65	81
		8	37.0	33.8	8060	835	361	1.6	33.0	7.6	4.3	10.6	10.5	16.3	60	76
		6	30.3	35.4	5950	625	152	0.7	24.0	6.4	3.7	8.8	8.7	13.4	52	68
		4	22.7	38.9	3610	390	50	0.3	14.0	4.8	2.8	6.5	6.4	9.6	40	56
		2	15.1	40.5	1350	170	13	0.3	4.0	2.8	2.3	3.7	3.7	5.3	26	42
473058	20	10	51.8	38.1	8630	1000	685	3.0	35.0	7.9	4.4	11.1	11.0	17.1	63	79
		8	44.8	39.1	7080	835	361	1.6	29.0	7.1	4.0	9.9	9.8	15.1	58	74
		6	36.3	40.9	5240	625	152	0.7	21.0	6.0	3.4	8.2	8.1	12.3	50	66
		4	26.4	45.1	3170	390	50	0.3	12.0	4.4	2.6	6.0	5.9	8.8	38	54
		2	17.1	47.0	1290	170	13	0.3	3.0	2.6	2.3	3.3	3.3	4.7	24	40
474058	20	10	71.4	48.3	7600	1000	685	3.0	31.0	7.4	4.2	10.5	10.4	16.0	61	77
		8	60.3	49.1	6250	835	361	1.6	25.0	6.6	3.8	9.3	9.2	14.0	56	72
		6	46.4	50.3	4600	625	152	0.7	18.0	5.5	3.2	7.6	7.6	11.4	48	64
		4	30.2	53.1	2750	390	50	0.3	10.0	4.1	2.4	5.5	5.4	8.0	36	52
		2	16.5	54.4	1220	170	13	0.3	2.0	2.3	2.3	2.8	2.8	3.9	22	38

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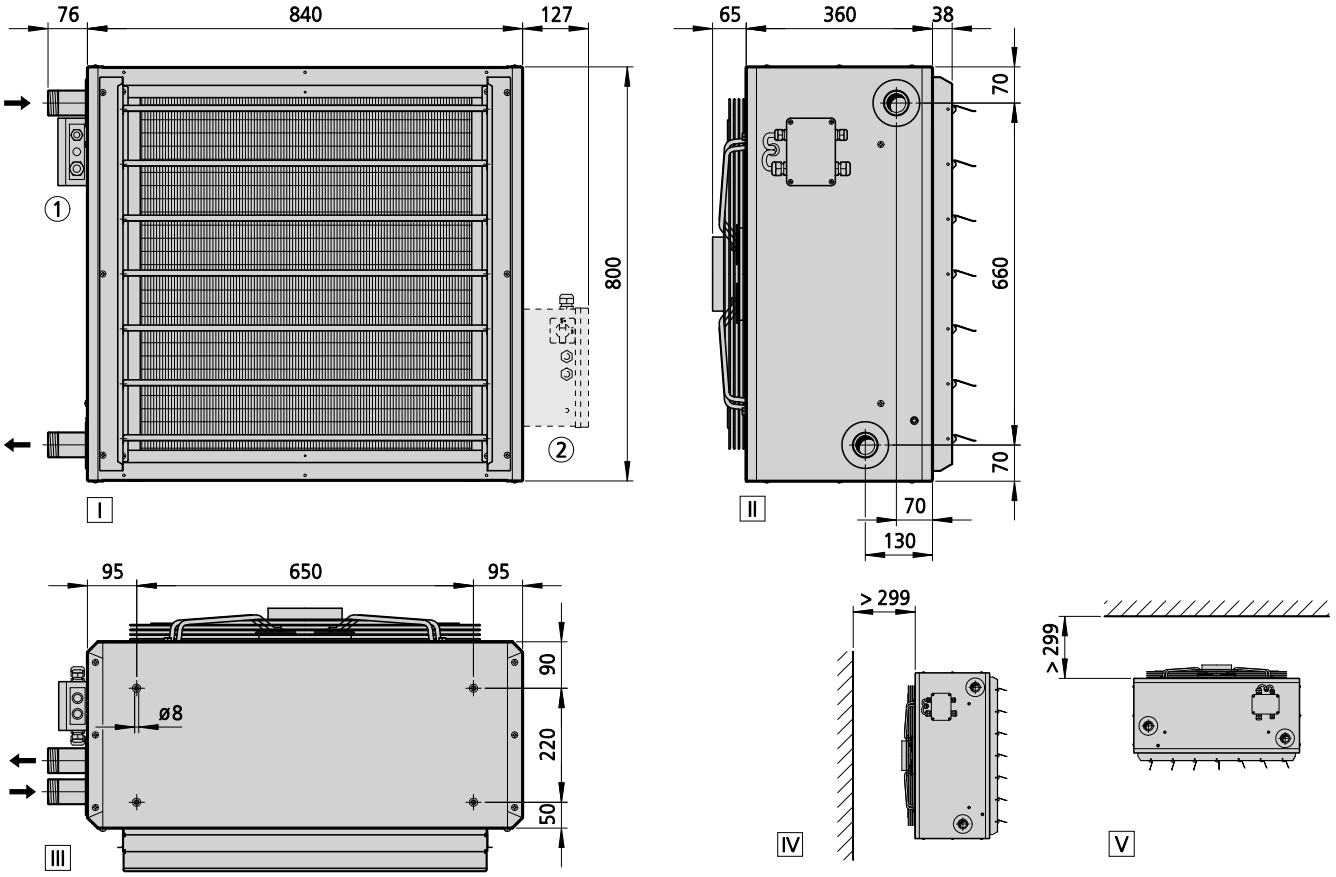
[1] at LPHW 75/65 °C, t_{L1} = 20 °C
[2] The maximum mounting heights only apply for a leaving air temperature of up to 15 K above room temperature (see also design information).
[3] The sound pressure levels were calculated with an assumed room insulation of 16 dB(A). This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

TOP, Heat exchanger copper/aluminium Model 7

EC fan, 200-240 V, reduced speed

Technical drawing (Dimensions in mm)



View

I Front view
II side view
III top view
IV Wall-mounted
V Ceiling-mounted

Further information

① Electrical connection for EC model, electromechanical
② Electrical connection for EC model with KaControl (optional)

Specifications

Type	Weight [kg]	Water content [l]	Connection
472056	58	4.8	1 1/2“
473056	62	6.2	1 1/2“
474056	64	7.6	1 1/2“

Performance data

Type	Inlet air temperature	Control voltage	Heat output[1]	Outlet air temperature	Air flow	Nominal fan speed	Power consumption	Amperage	Throw (wall-mounted)	Max. mounting height when ceiling-mounted					Sound pressure level[3]	Sound power level
										Louvre[2]	Diffuser	Outlet nozzle	Induction air outlet louvre	KaMAX, vertical slat position		
	[°C]	[V]	[kW]	[°C]	[m³/h]	[1/min]	[W]	[A]	[m]	[m]	[m]	[m]	[m]	[m]	[dB(A)]	[dB(A)]
472056	20	10	36.3	34.0	7830	780	340	1.5	32.0	7.5	4.2	10.1	10.0	15.7	59	75
		8	31.3	35.1	6250	630	170	0.8	25.0	6.6	3.8	8.8	8.7	13.5	54	70
		6	25.6	37.2	4480	460	71	0.3	17.0	5.4	3.2	7.1	7.0	10.7	45	61
		4	19.3	42.4	2600	295	24	0.1	10.0	4.0	2.4	5.2	5.1	7.7	33	49
		2	14.1	43.9	1070	145	9	0.1	3.0	2.4	2.3	3.0	3.0	4.3	19	35
473056	20	10	42.7	39.4	6630	780	340	1.5	27.0	6.8	3.9	9.3	9.2	14.3	57	73
		8	36.5	40.8	5280	630	170	0.8	21.0	6.0	3.4	8.1	8.0	12.2	52	68
		6	29.3	43.4	3770	460	71	0.3	14.0	4.9	2.9	6.5	6.4	9.6	43	59
		4	21.3	50.1	2140	295	24	0.1	7.0	3.6	2.3	4.7	4.6	6.8	31	47
		2	14.8	51.9	820	145	9	0.1	1.0	2.3	2.3	2.6	2.5	3.5	17	33
474056	20	10	55.5	49.4	5680	780	340	1.5	23.0	6.2	3.6	8.6	8.6	13.0	55	71
		8	45.6	50.4	4520	630	170	0.8	17.0	5.4	3.2	7.5	7.4	11.1	50	66
		6	34.3	52.1	3220	460	71	0.3	11.0	4.4	2.6	6.0	5.9	8.7	41	57
		4	21.7	56.4	1800	295	24	0.1	6.0	3.2	2.3	4.2	4.2	6.0	29	45
		2	11.3	57.6	660	145	9	0.1	0.0	2.3	2.3	2.3	2.3	2.9	15	31

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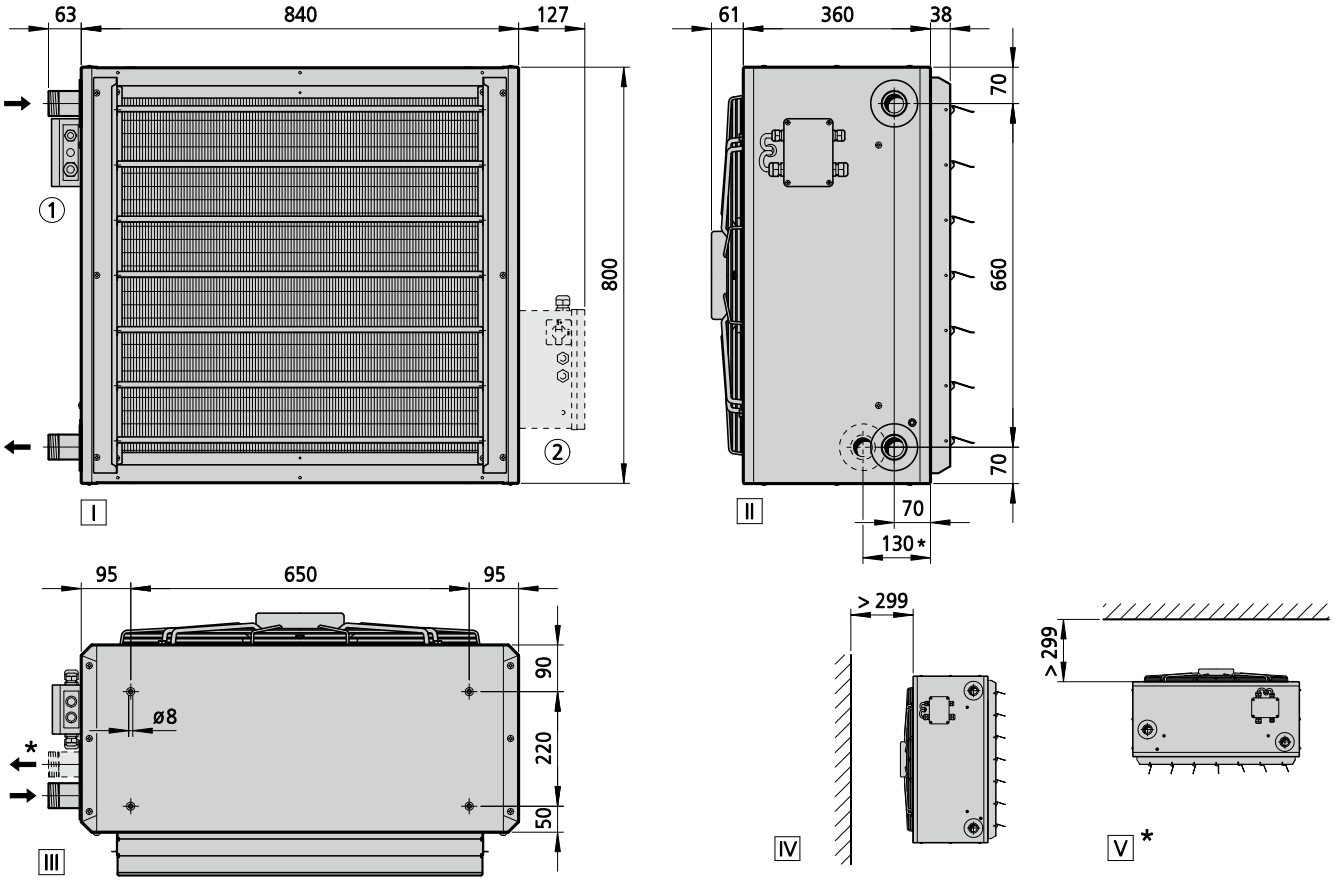
[1] at LPHW 75/65 °C, t_{L1} = 20 °C
[2] The maximum mounting heights only apply for a leaving air temperature of up to 15 K above room temperature (see also design information).
[3] The sound pressure levels were calculated with an assumed room insulation of 16 dB(A). This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

TOP, Heat exchanger steel galvanised Model 7

EC fan, 200-240 V, high speed

Technical drawing (Dimensions in mm)



View

Ⅰ Front view
Ⅱ Side view, 1-layer heat exchanger (* = 2-layer)
Ⅲ Top view, 1-layer heat exchanger (* = 2-layer)
Ⅳ Wall-mounted, 1-layer heat exchanger
Ⅴ Ceiling-mounted, 2-layer heat exchanger

Further information

① Electrical connection for EC model, electromechanical
② Electrical connection for EC model with KaControl (optional)

Specifications

Type	Weight [kg]	Water content [l]	Connection
472158	103	8.7	1 1/2“
473158	130	16.8	1 1/2“
474158	159	16.8	1 1/2“

Performance data

Type	Inlet air temperature	Control voltage	Heat output[1]	Outlet air temperature	Air flow	Nominal fan speed	Power consumption	Amperage	Throw (wall-mounted)	Max. mounting height when ceiling-mounted					Sound pressure level[3]	Sound power level
										Louvre[2]	Diffuser	Outlet nozzle	Induction air outlet louvre	KaMAX, vertical slat position		
	[°C]	[V]	[kW]	[°C]	[m³/h]	[1/min]	[W]	[A]	[m]	[m]	[m]	[m]	[m]	[m]	[dB(A)]	[dB(A)]
472158	20	10	38.1	32.8	8980	1000	685	3.0	37.0	8.1	4.5	11.4	11.3	17.6	66	82
		8	33.5	33.6	7420	835	361	1.6	30.0	7.3	4.1	10.2	10.1	15.6	61	77
		6	27.8	35.1	5570	625	152	0.7	22.0	6.2	3.5	8.5	8.4	12.8	53	69
		4	21.2	38.5	3450	390	50	0.3	13.0	4.7	2.8	6.3	6.3	9.4	41	57
		2	14.3	40.0	1350	170	13	0.3	5.0	2.9	2.3	3.8	3.8	5.4	27	43
473158	20	10	47.7	36.0	8980	1000	685	3.0	37.0	8.1	4.5	11.4	11.3	17.6	65	81
		8	41.5	36.9	7420	835	361	1.6	30.0	7.3	4.1	10.2	10.1	15.6	60	76
		6	34.0	38.4	5570	625	152	0.7	22.0	6.2	3.5	8.5	8.4	12.8	52	68
		4	25.1	41.9	3450	390	50	0.3	13.0	4.7	2.8	6.3	6.3	9.4	40	56
		2	16.0	43.5	1350	170	13	0.3	5.0	2.9	2.3	3.8	3.8	5.4	26	42
474158	20	10	58.8	46.0	6820	1000	685	3.0	28.0	7.0	4.0	9.9	9.9	15.0	63	79
		8	50.5	46.7	5700	835	361	1.6	23.0	6.3	3.6	8.9	8.8	13.3	58	74
		6	39.5	47.8	4290	625	152	0.7	17.0	5.3	3.1	7.4	7.3	10.9	50	66
		4	26.8	50.0	2690	390	50	0.3	10.0	4.0	2.4	5.5	5.4	7.9	38	54
		2	15.1	51.2	1260	170	13	0.3	3.0	2.5	2.3	3.2	3.2	4.5	24	40

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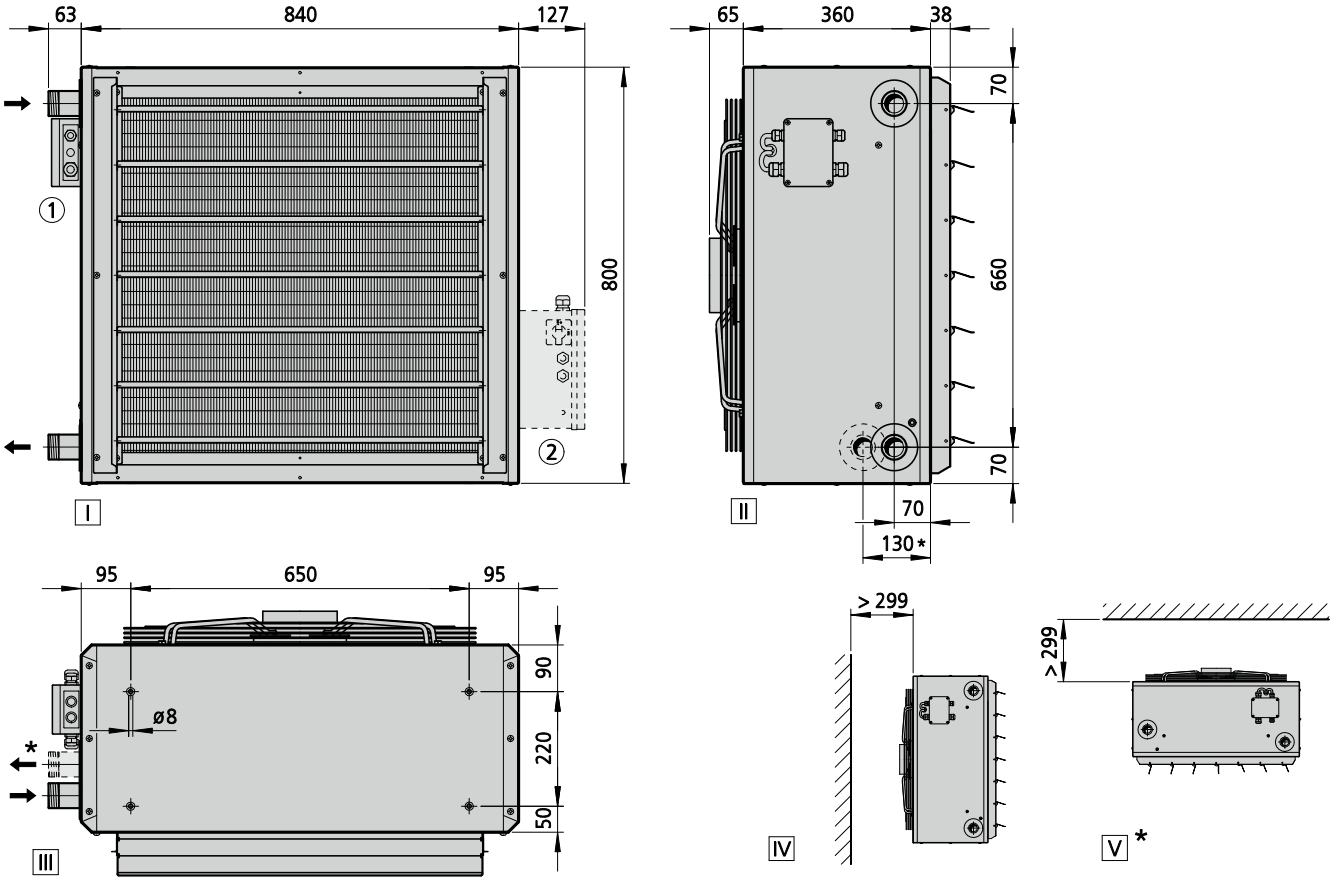
[1] at LPHW 75/65 °C, t_{L1} = 20 °C
[2] The maximum mounting heights only apply for a leaving air temperature of up to 15 K above room temperature (see also design information).
[3] The sound pressure levels were calculated with an assumed room insulation of 16 dB(A). This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

TOP, Heat exchanger steel galvanised Model 7

EC fan, 200-240 V, reduced speed

Technical drawing (Dimensions in mm)



View

I Front view
II Side view, 1-layer heat exchanger (* = 2-layer)
III Top view, 1-layer heat exchanger (* = 2-layer)
IV Wall-mounted, 1-layer heat exchanger
V Ceiling-mounted, 2-layer heat exchanger

Further information

① Electrical connection for EC model, electromechanical
② Electrical connection for EC model with KaControl (optional)

Specifications

Type	Weight [kg]	Water content [l]	Connection
472156	106	8.7	1 1/2“
473156	133	16.8	1 1/2“
474156	162	16.8	1 1/2“

Performance data

Type	Inlet air temperature	Control voltage	Heat output[1]	Outlet air temperature	Air flow	Nominal fan speed	Power consumption	Amperage	Throw (wall-mounted)	Max. mounting height when ceiling-mounted					Sound pressure level[3]	Sound power level
										Louvre[2]	Diffuser	Outlet nozzle	Induction air outlet louvre	KaMAX, vertical slat position		
	[°C]	[V]	[kW]	[°C]	[m³/h]	[1/min]	[W]	[A]	[m]	[m]	[m]	[m]	[m]	[m]	[dB(A)]	[dB(A)]
472156	20	10	32.4	33.8	7070	780	340	1.5	29.0	7.1	4.0	9.7	9.6	14.9	60	76
		8	28.2	34.9	5700	630	170	0.8	23.0	6.2	3.6	8.4	8.3	12.8	55	71
		6	23.3	37.0	4140	460	71	0.3	16.0	5.2	3.0	6.9	6.8	10.3	46	62
		4	17.9	42.0	2450	295	24	0.1	9.0	3.9	2.4	5.2	5.1	7.6	34	50
		2	13.4	43.5	1070	145	9	0.1	3.0	2.6	2.3	3.2	3.2	4.6	20	36
473156	20	10	40.1	37.1	7070	780	340	1.5	29.0	7.1	4.0	9.7	9.6	14.9	59	75
		8	34.5	38.3	5700	630	170	0.8	23.0	6.2	3.6	8.4	8.3	12.8	54	70
		6	28.0	40.4	4140	460	71	0.3	16.0	5.2	3.0	6.9	6.8	10.3	45	61
		4	20.8	45.6	2450	295	24	0.1	9.0	3.9	2.4	5.2	5.1	7.6	33	49
		2	14.7	47.0	1070	145	9	0.1	3.0	2.6	2.3	3.2	3.2	4.6	19	35
474156	20	10	46.3	47.0	5160	780	340	1.5	20.0	5.9	3.4	8.3	8.2	12.4	57	73
		8	38.6	47.9	4170	630	170	0.8	16.0	5.2	3.0	7.2	7.2	10.7	52	68
		6	29.7	49.4	3050	460	71	0.3	11.0	4.3	2.6	5.9	5.9	8.6	43	59
		4	19.6	52.7	1800	295	24	0.1	6.0	3.3	2.3	4.4	4.4	6.3	31	47
		2	10.9	53.8	760	145	9	0.1	2.0	2.3	2.3	2.8	2.7	3.8	17	33

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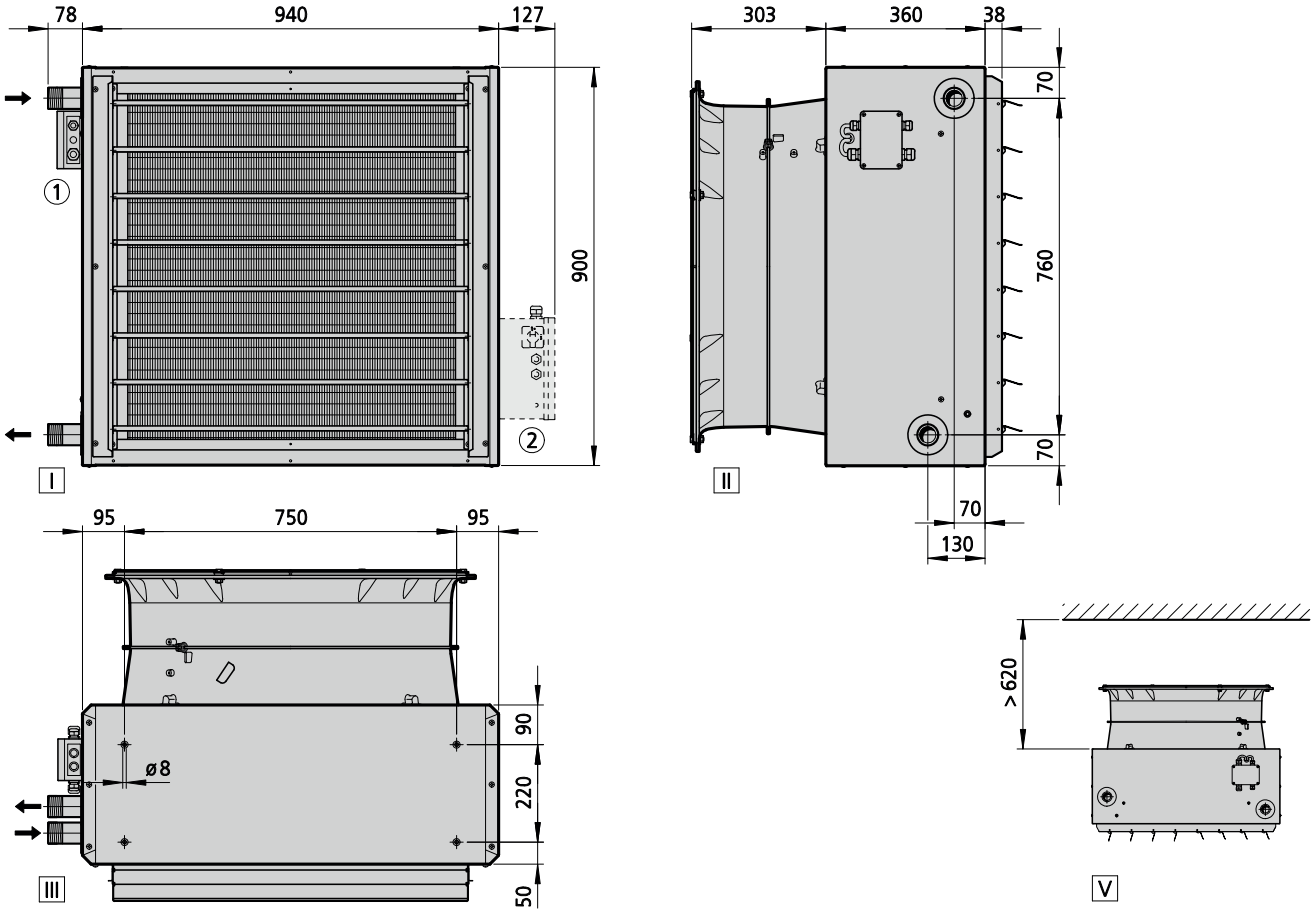
[1] at LPHW 75/65 °C, t_{L1} = 20 °C
[2] The maximum mounting heights only apply for a leaving air temperature of up to 15 K above room temperature (see also design information).
[3] The sound pressure levels were calculated with an assumed room insulation of 16 dB(A). This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

TOP, Heat exchanger copper/aluminium Model 8

EC fan, 200-240 V, high speed

Technical drawing (Dimensions in mm)



View

I View from below
II side view
III Front view
V Ceiling-mounted

Further information

① Electrical connection for EC model, electromechanical
② Electrical connection for EC model with KaControl (optional)

Specifications

Type	Weight [kg]	Water content [l]	Connection
482068	73	5.3	1 1/2"
483068	74	5.3	1 1/2"
484068	79	6.8	1 1/2"

Performance data

Type	Inlet air temperature	Control voltage	Heat output[1]	Outlet air temperature	Air flow	Nominal fan speed	Power consumption	Amperage	Max. mounting height when ceiling-mounted					Sound pressure level[3]	Sound power level
									Louvre[2]	Diffuser	Outlet nozzle	Induction air outlet louvre	KaMAX, vertical slat position		
	[°C]	[V]	[kW]	[°C]	[m³/h]	[1/min]	[W]	[A]	[m]	[m]	[m]	[m]	[m]	[dB(A)]	[dB(A)]
482068	20	10	50.4	32.9	11790	895	617	2.9	8.4	---	13.4	13.2	20.2	64	80
		8	43.0	33.9	9320	710	326	1.5	7.3	---	11.6	11.4	17.3	59	75
		6	35.5	35.5	6900	520	139	0.7	6.1	---	9.5	9.4	14.0	50	66
		4	26.9	39.2	4210	335	56	0.3	4.7	---	7.2	7.2	10.4	38	54
		2	20.0	40.5	2070	150	39	0.3	2.9	0.0	4.4	4.3	6.0	23	39
483068	20	10	68.0	39.4	10550	895	617	2.9	7.9	---	12.6	12.5	18.8	62	78
		8	57.1	40.6	8360	710	326	1.5	6.9	---	10.9	10.8	16.1	57	73
		6	45.9	42.5	6130	520	139	0.7	5.7	---	9.0	8.9	13.1	48	64
		4	33.8	46.9	3790	335	56	0.3	4.4	---	6.8	6.7	9.7	36	52
		2	23.7	48.5	1840	150	39	0.3	2.7	0.0	4.0	4.0	5.5	21	37
484068	20	10	89.5	49.4	9170	895	617	2.9	7.3	---	11.7	11.6	17.3	60	76
		8	73.3	50.4	7270	710	326	1.5	6.3	---	10.1	10.0	14.8	55	71
		6	55.5	51.9	5250	520	139	0.7	5.3	---	8.3	8.2	12.0	46	62
		4	38.0	54.5	3310	335	56	0.3	4.1	---	6.2	6.2	8.8	34	50
		2	21.8	55.8	1580	150	39	0.3	2.5	0.0	3.6	3.6	4.9	19	35

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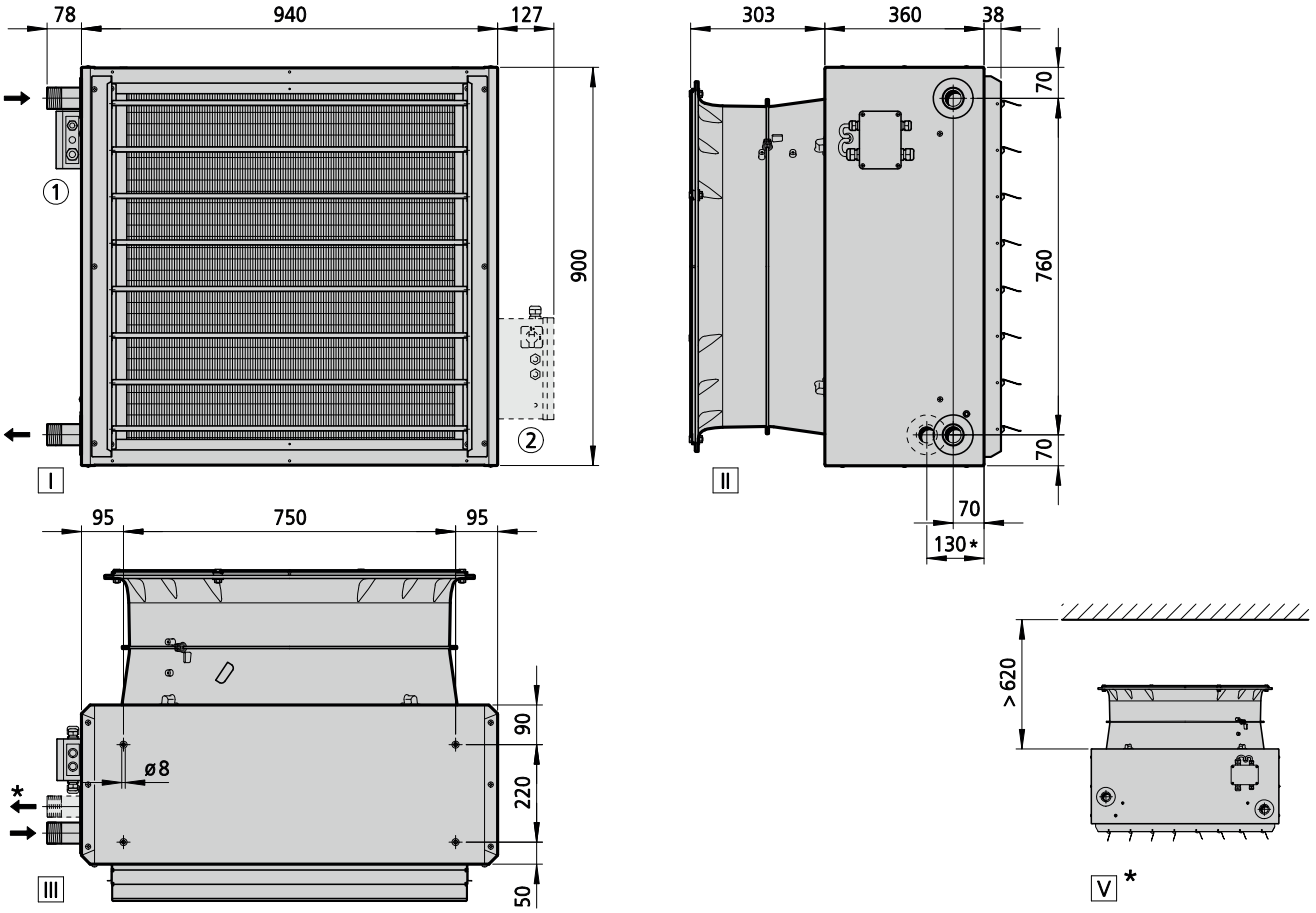
[1] at LPHW 75/65 °C, t_{L1} = 20 °C
[2] The maximum mounting heights only apply for a leaving air temperature of up to 15 K above room temperature (see also design information).
[3] The sound pressure levels were calculated with an assumed room insulation of 16 dB(A). This corresponds to a distance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

TOP, Heat exchanger steel galvanised Model 8

EC fan, 200-240 V, high speed

Technical drawing (Dimensions in mm)



View

I View from below
II side view
III Front view
V Ceiling-mounted

Further information

① Electrical connection for EC model, electromechanical
② Electrical connection for EC model with KaControl (optional)

Specifications

Type	Weight [kg]	Water content [l]	Connection
482168	132	8.9	1 1/2"
483168	166	17.0	1 1/2"
484168	203	17.0	1 1/2"

Performance data

Type	Inlet air temperature	Control voltage	Heat output[1]	Outlet air temperature	Air flow	Nominal fan speed	Power consumption	Amperage	Max. mounting height when ceiling-mounted					Sound pressure level[3]	Sound power level
									Louvre[2]	Diffuser	Outlet nozzle	Induction air outlet louvre	KaMAX, vertical slat position		
	[°C]	[V]	[kW]	[°C]	[m³/h]	[1/min]	[W]	[A]	[m]	[m]	[m]	[m]	[m]	[dB(A)]	[dB(A)]
482168	20	10	49.6	32.2	12220	895	617	2.9	8.5	---	13.7	13.5	20.7	65	81
		8	42.2	33.2	9670	710	326	1.5	7.5	---	11.9	11.7	17.7	60	76
		6	34.9	34.6	7200	520	139	0.7	6.3	---	9.8	9.7	14.5	51	67
		4	26.5	38.0	4430	335	56	0.3	4.9	---	7.5	7.5	10.9	39	55
		2	19.6	39.2	2210	150	39	0.3	3.1	0.0	4.7	4.7	6.5	24	40
483168	20	10	67.7	36.7	12220	895	617	2.9	8.5	---	13.7	13.5	20.7	64	80
		8	56.7	37.7	9670	710	326	1.5	7.5	---	11.9	11.7	17.7	59	75
		6	45.8	39.2	7200	520	139	0.7	6.3	---	9.8	9.7	14.5	50	66
		4	33.4	42.7	4430	335	56	0.3	4.9	---	7.5	7.5	10.9	38	54
		2	23.3	44.0	2210	150	39	0.3	3.1	0.0	4.7	4.7	6.5	23	39
484168	20	10	89.6	46.0	10380	895	617	2.9	7.8	---	12.5	12.4	18.7	62	78
		8	73.4	46.9	8240	710	326	1.5	6.8	---	10.9	10.8	16.1	57	73
		6	56.7	48.1	6090	520	139	0.7	5.8	---	9.0	9.0	13.2	48	64
		4	38.7	50.4	3830	335	56	0.3	4.5	---	7.0	6.9	10.0	36	52
		2	22.8	51.4	1900	150	39	0.3	3.0	0.0	4.4	4.4	6.2	21	37

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[1] at LPHW 75/65 °C, t_{L1} = 20 °C
[2] The maximum mounting heights only apply for a leaving air temperature of up to 15 K above room temperature (see also design information).
[3] The sound pressure levels were calculated with 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).

03 Design information

Information on planning and design

The selection and specification of TOP unit heaters depends on more than just the calculated heat load. Among other things, the required air circulation, structural and acoustic conditions, and unit-specific properties need to be taken into consideration.

Number and size of unit heaters

The number and size of unit heaters installed is based on the heat load calculated. This 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, design with a control voltage of 6 V has proved itself with EC fans. 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 in obtaining a reliable unit selection and uniform air distribution.

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

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

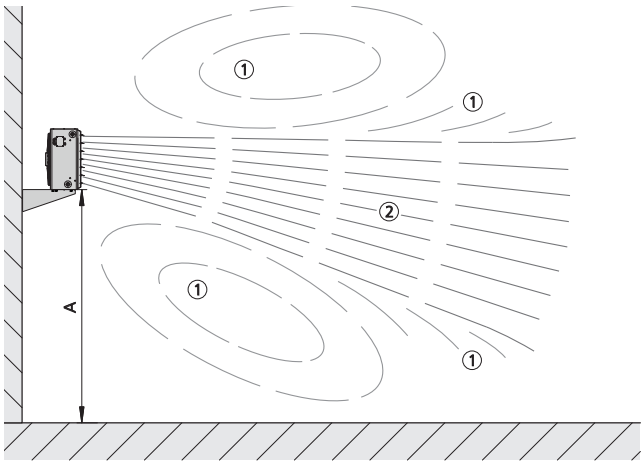
$V_{L\,eff}$ [m³/h] = effective air volume of the unit heater at the design stage

V [m³] = hall volume

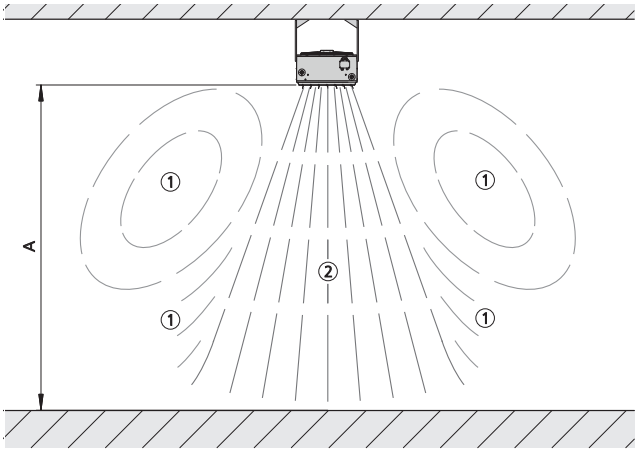
n [–] = number of unit heaters

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 not be possible with the selected unit heaters, as per the table below, then ceiling fans from the accessories range can also be used, refer to chapter "*Ceiling fans for additional air circulation" page 70*.

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



Wall-mounting
A = installation height min. 2.5 m
① = secondary vortex
② = primary air flow



Ceiling-mounting
A = max. mounting height H_{max}
① = secondary vortex
② = primary air flow

Layout of unit heaters

Existing equipment and fixtures in the hall, such as shelving, large production systems, machines, cranes etc., must be taken into consideration when positioning unit heaters in the hall. Workplaces and occupied zones should not be located in the primary air flow from a unit heater, rather in the secondary air vortices.

Wall-mounting

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-mounting

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 and heat losses are 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, provide for individual choice.
- The distance to the occupied zone enables the air outlets to be ideally positioned to ensure that air reaches the occupied zone essentially draught-free.

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

Throw

The throw is directly dependent on

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

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 louvre type 3*002. 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 into the occupied zone 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 space
- the air volume and air outlet of the unit heater, but especially the over-temperature of the discharged air stream

The maximum mounting heights given in the Technical data (see pages 14 – 59) apply to free-blowing operation at the respective fan speed. The maximum mounting heights dependent on the effective air volume, e.g. when using accessory components, can be seen on the diagrams on *page 67*.

All the stated 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 over-temperature of the discharged air is greater than 15 K:

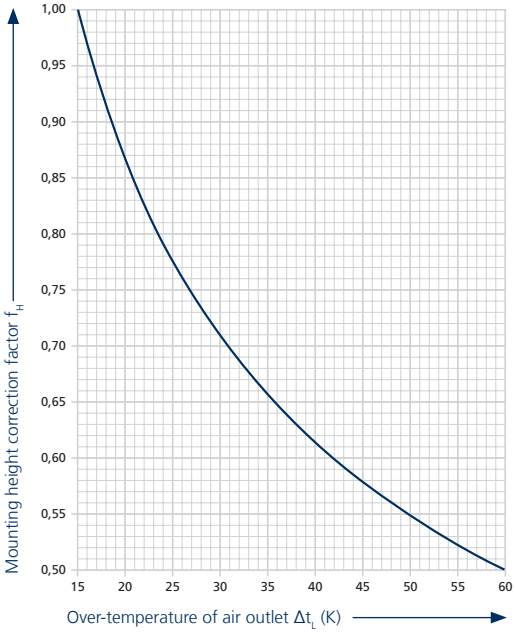
$H = H_{max.} \cdot f_H$

H	[m]	=	permitted mounting height
H_{max}	[m]	=	max. mounting height
f_H	[/]	=	mounting height correction factor (see diagram below)

Calculation of the over-temperature of the discharged air:

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

Δt_L	[°C]	=	over-temperature at air outlet
t_{L2}	[°C]	=	leaving air temperature
t_i	[°C]	=	inside temperature of the room



Outlet air temperatures

Please refer to the performance tables for the outlet air temperatures of the different unit heaters (*on pages 15 to 59*). If the use of additional components results in a reduced air volume and thus a lower heat output, or if a temperature difference Δt 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:

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

t_{L1}	[°C]	=	entering air temperature
t_{L2}	[°C]	=	leaving air temperature
$V_{L\,eff}$	[kW]	=	effective heat output of the unit heater (taking into account accessory components)
C	[Wh/m³ K]	=	multiplier for leaving air 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 leaving air 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. Select outlet air-side accessories to ensure that occupied zones are located in the secondary air stream if an air outlet temperature of approx. 40 °C cannot be achieved due to a low flow temperature. 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 up-current 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:

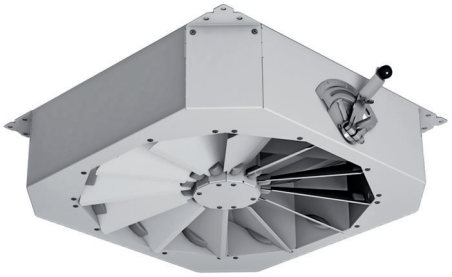
- transmission heat losses are minimised
- energy costs are reduced
- comfort is enhanced in the occupied zone

Design and effectiveness

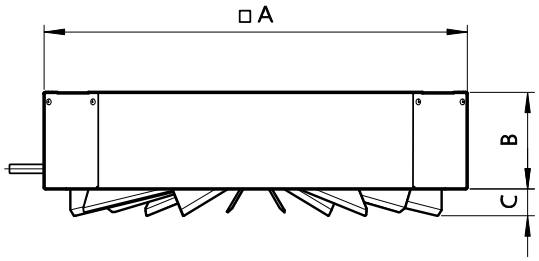
Circular slats have a bearing on the inside and outside. The slats are adjusted from the outside by an adjustment lever. The slats feature both a short and a long adjustment lever.
The slats are almost perpendicular to the flow of air in their horizontal position. The narrow air outlet gap between the slats is wide open at the same time 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 inducted.
In their maximum vertical position, two slats effectively form a nozzle with each other. A diffuser-like cavity thus forms between each nozzle-forming pair of slats. The negative pressure produced at this position causes secondary air to be drawn in which is entrained with the flow of outlet air. 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 entrained in the air circulation. A significantly larger volume of air at a pleasant temperature and low speed reaches the occupied zone.
Draughts are effectively avoided.
The vortex 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.



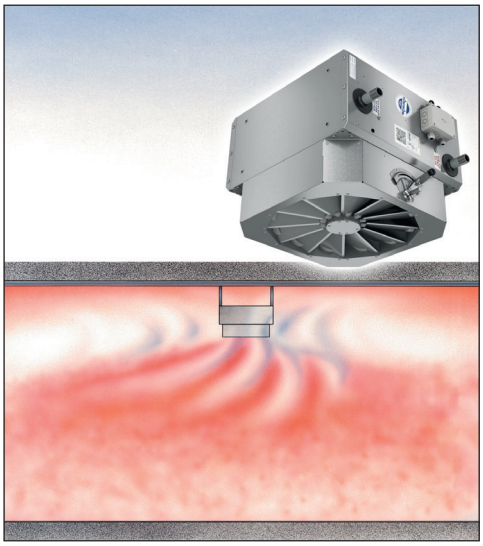
TOP unit heater with KaMAX in vertical position (cross-section)



KaMAX dimensions

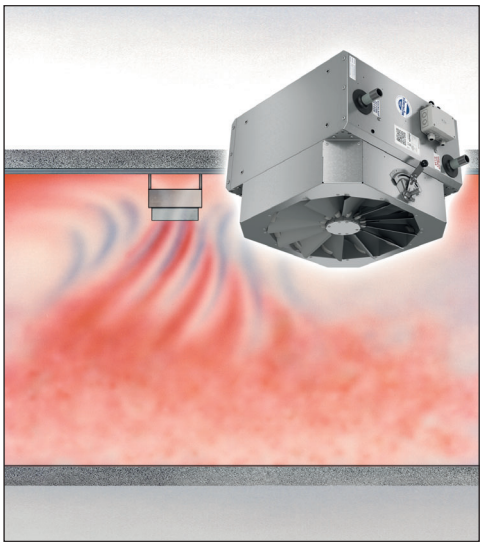
Dimensions in mm			
Type	A □	B	C
34111	500	165	35
35111	600	165	50
36111	700	165	65
37111	800	165	75
38111	900	165	85

Functions and applications



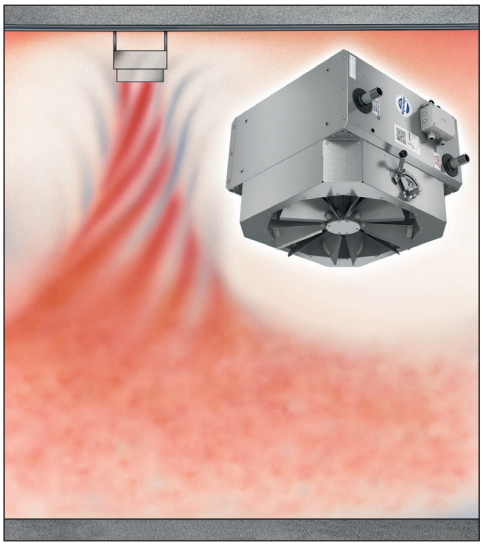
Example 1: Hall height 3–5 m

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



Example 2: Hall height 5–10 m

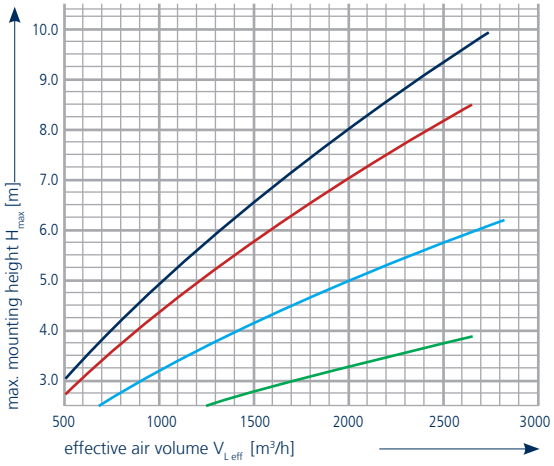
- The air can be discharged at any angle.
- Thanks to the slightly vertical arrangement of the slats, the percentage of induction air increases directly at the KaMAX air outlet.
- The entire volume of air in the room is drawn into the air exchange through a strong swirling movement.
- A direct primary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



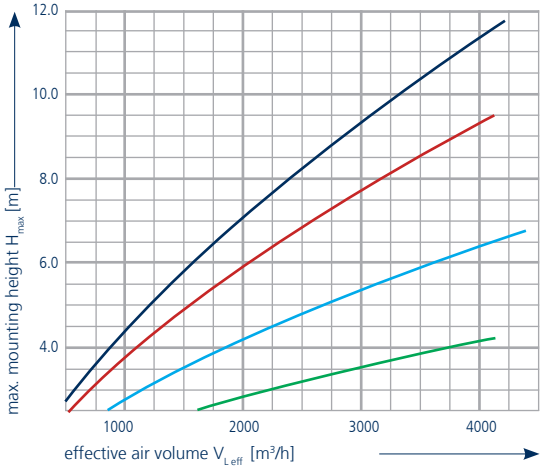
Example 3: Hall height up to 20 m

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

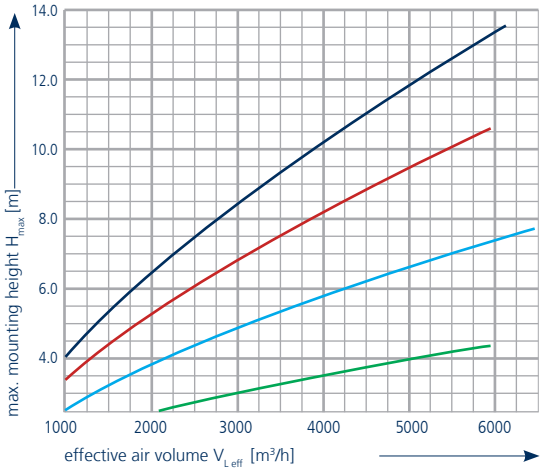
Max. mounting height* model 4



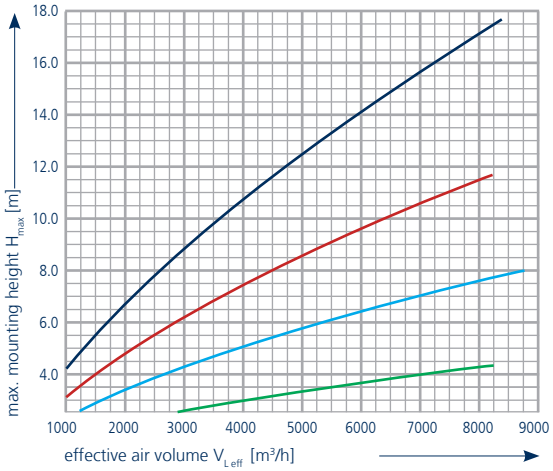
Max. mounting height* model 5



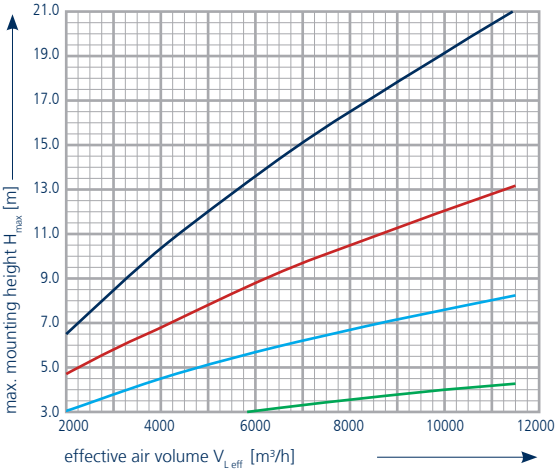
Max. mounting height* model 6



Max. mounting height* model 7



Max. mounting height* model 8



KaMAX, vertical slat position
Outlet nozzle; induction louvre
KaMAX, central position; louvre, one/two-row
KaMAX, horizontal slat position; 4-way diffuser

* all maximum mounting heights only apply to a leaving air temperature of up to 15 K above room temperature; with higher leaving air temperatures, refer to the air volume and heat output correction factors on *page 55*

Use of accessory components

Lower air volume and heat output is to be expected when accessory components are used.
Accessory components, such as mixing boxes, outside air suction accessories, for ventilation systems, are available on request.

Maximum permissible flow temperature Important:

Note the maximum flow temperatures to protect the fan!

Maximum flow temperatures*

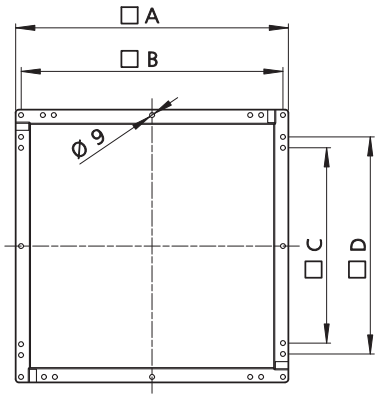
	Type of installation	
Use	Ceiling	Wall
without shut-off valve	100 °C	120 °C
with shut-off valve	160 °C	160 °C

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

Long periods of fan idleness with high water temperatures can lead to the impermissible heating up of the fan motor. The flow temperatures should therefore be limited depending on the application and the motor model. If temperature limitation is impossible or inappropriate for the purpose concerned, there is also the option of using suitable 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.

Connecting frame dimensions of outlet and intake accessories

All the accessory components for the outlet and intake side have standard frame dimensions (with the exception of model 48). The standardised duct connection profile simplifies installation.



	Dimensions			
Unit heater model	A	B	C	D
44____	500	480	360	400
45____	600	580	460	500
46____	700	680	560	600
47____	800	780	660	700
48____	900	(only discharge-side accessories can be used)		

Resistance figures

The use of accessory components reduces the air as a result of pressure losses and thus 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 following table.

Component	Type	Resistance figure Z
KaMAX, central position	3*111	0
KaMAX, vertical slat position	3*111	2
KaMAX, horizontal slat position	3*111	4
Induction louvre	3*101	4
4-way diffuser	3*004	2
Outlet nozzle	3*006	4

Air volume and heat output correction factors

Heat exchanger			Switching stage		Total resistance figures Z															
					2		4		6		8		10		12		14		16	
Copper/ aluminium	Galvanised steel	Cross-counter flow	Motor code 58	Motor code 56	f_L	f_Q	f_L	f_Q	f_L	f_Q	f_L	f_Q	f_L	f_Q	f_L	f_Q	f_L	f_Q	f_L	f_Q
4420	4421 4431	4433	10 V	--	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	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	--	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	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	--	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	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	--	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	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	--	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	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	--	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	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	--	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		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	--	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		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	--	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		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	--	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		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	--	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		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	--	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		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
4820	4821 4831	4833	10 V	--	0.92	0.94	0.84	0.90	outside the limits of use											
			6 V		0.92	0.95	0.85	0.91												
4830	--	--	10 V	--	0.92	0.95	0.86	0.90												
			6 V		0.68	0.95	0.63	0.91												
4840	4841	4843	10 V	--	0.94	0.95	0.88	0.90												
			6 V		0.94	0.95	0.89	0.90												

Calculation formulae

$V_{Leff} = V_L \cdot f_L$

$Q_{eff} = Q_N \cdot f_Q$

Symbols

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

Water resistance

Please use our online calculation programs to determine the water resistance:

- Kampmanngroup.com/top

The water resistance is formed from:

- the heat output Q_{eff}
- the heating medium temperature difference $\Delta t_w = t_{w1} - t_{w2}$
- the heating medium volumetric flow
- $m = \frac{Q_{eff}}{\Delta t_w} \times 0.86$

Noise

There is minimal noise from these units due to the aerodynamic design of the whisper-quiet sickle-blade 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.

Sound pressure level

The A-rated sound pressure levels given in the technical data *(pages 14 to 59)* have been calculated with an assumed room insulation of 16 dB(A). This corresponds to a clearance of 5 m, a room volume of 3000 m³ 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 levels can be calculated when the room geometry and absorption values are known. The sound power levels have been determined using the enveloping surface process according to DIN 45635-56.

Ceiling fans for additional air circulation

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 61*.

Technical data

Fan diameter	1420 mm
Max. speed	300 rpm
Moved air volume	15000 m³/h
Operating voltage	230 V/50 Hz
Power consumption	75 W
Max. current consumption	0.35 A
Sound pressure level (1 m distance)	52 dB(A)
Protection class	I20
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

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.

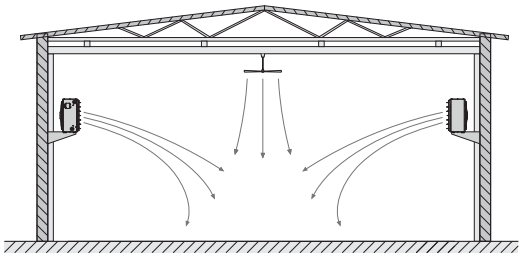
In summer:

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

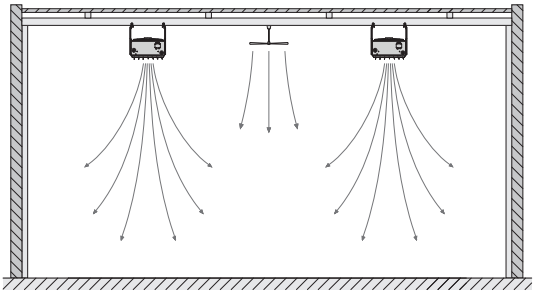
Position

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 always be installed at the highest point in the room. This avoids pocket of warm air. Varying the height of the ceiling fans with ceilings of over 10 metres in height helps to reduce vertical temperature stratification.
The use of TOP unit heaters without heat exchanger with special air outlets (e.g. KaMAX) help to balance the temperature down to the floor, 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.). 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

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 accessory components and long lengths of ductwork mean that they have to overcome high air-side resistance. What is more, the fans need a lot of energy. The surfaces of the air ducts are significantly larger and poorly insulated than pipes transporting water to generate energy. Too much energy is lost here as well. TOP unit heaters and the KaCompact ventilation unit, for example, have been designed to fulfil these two tasks, ventilation and temperature control, separately but here recovering heat as well.

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 rotary 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. In doing so, it obviates 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 the fact that the ventilation unit only needs to be operated with the required exchange of air. Only ultra-efficient TOP unit heaters are operated at times when only heating or cooling is needed.
The energy-saving principle of the separation of functions is known as the Kampmann "Hybrid ECO system" and has been used by many customers for many years.

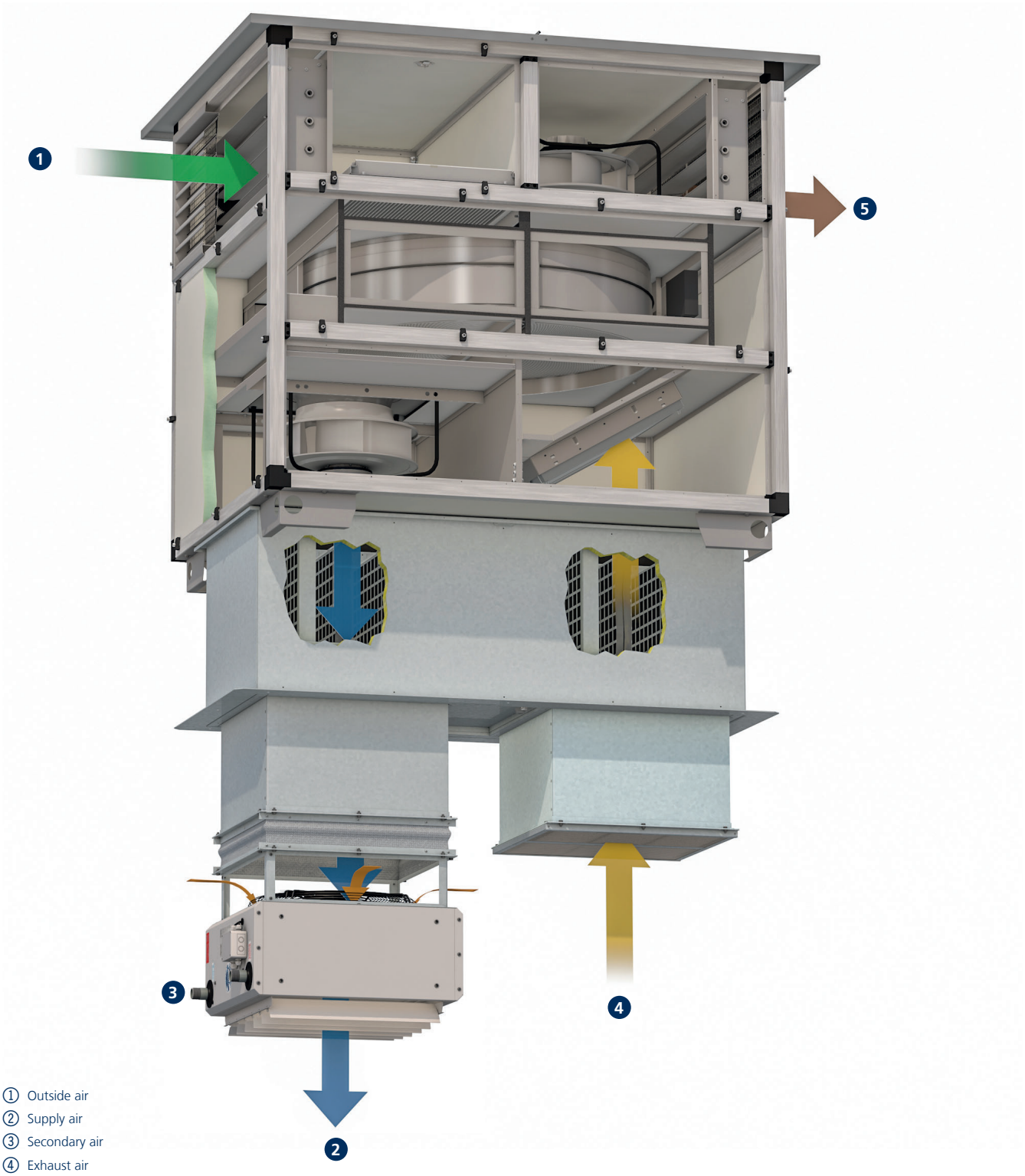
The ventilation units are extremely important in this system and are designated as "fresh ventilators" if they fulfil the following criteria:

- heat recovery by means of a rotary heat exchanger or counterflow plate heat exchanger
- energy-saving continuously variable EC fans for precise adjustment of the air volume
- KaControl AUL control panel for control of the ventilation units and the TOP unit heaters

Possible ventilation units for combining with TOP unit heaters include:

- Airblock FG
- Airblock KG
- KaCompact

Suggested 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

Control of TOP – electromechanical model

Product features

The EC fans used can be continuously variably controlled by a 0-10 V DC signal.
The "intelligent" motor electronics detects any possible motor fault and automatically switches the fan off. This fault can be externally evaluated. The entire group or individual units are shut down in the event of a motor fault, depending on the control version. The speed can be limited to approx. 50 % of the maximum speed by the potentiometer in the junction box. Actuation by Modbus-RTU instead of by a 0-10 V DC signal is possible depending on the type of unit heater.

Operating units

Four different controls are available for operation and control.

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 0-100%. 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 (type 30056; type 30076).

Room thermostat, type 30155

The EC recirculating air control type 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 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 variably in Automatic mode. The control is also equipped with a frost protection function.

Clock thermostat, type 30256

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

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 can be set for day and night mode. A digital timer, including day, night and week program, is also included. The room sensor supplied 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 set. Otherwise, among other things, 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.

Cabling

The following points need to be taken into account with the cabling and wiring diagrams below:

- Comply with the details on type of cable and cabling taking into consideration VDE 0100.
- None *: NYM-J. The requisite number of wires, including protective conductor, is stated on the cable. Cross-sections are not stated, as the cable length is involved in the calculation of the cross-section.
- With *: J-Y(ST)Y 0.8 mm, max. 100 m between the speed controller and the last unit heater; provide a shield on one side when longer than 20 m. Lay separately from power lines.
- With **: Sensor line 1.5 mm² e.g. J-Y(ST)Y, 4 x 2 x 0.8 mm, max. 100 m, lay separately from power lines.
- With ***: J-Y(ST)Y, 0.8 mm, max. 50 m, lay separately from power lines.
- With ****: J-Y(ST)Y, 0.8 mm, max. 100 m. Lay separately from power lines.
- If other types of cables are used, they must be at least equivalent.
- The terminals on the unit are suitable for a maximum wire cross-section of 2.5 mm², the mains plug for max. 4.0 mm².
- When using residual current circuit breakers, they need to be at least mixed frequency-sensitive (type F) for types 44xx5x and 45xx56, and all current-sensitive (type B) for all other types. Refer to the provisions of DIN VDE 0100 Parts 400 and 500 when designing the rated fault current.
- The electrical data listed in the following table needs to be considered when configuring the mains supply and fuses on site.

Maximum connectible unit heaters with EC fan per speed control

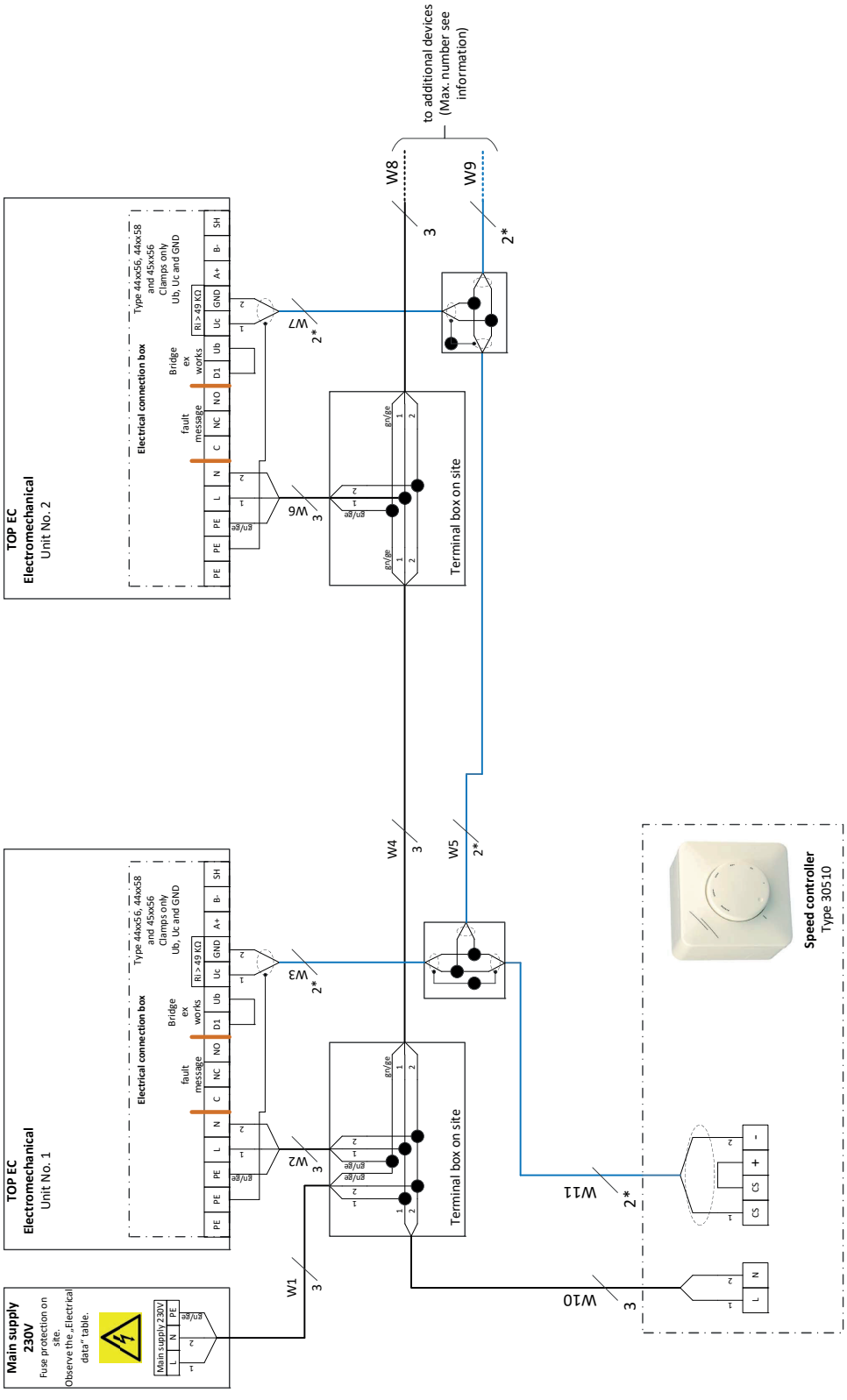
Speed control			
Type 30510	Type 30155	Type 30256	Type 30515
[Quantity]	[Quantity]	[Quantity]	[Quantity]
10	5	5	10

Electrical data for TOP, electromechanical model

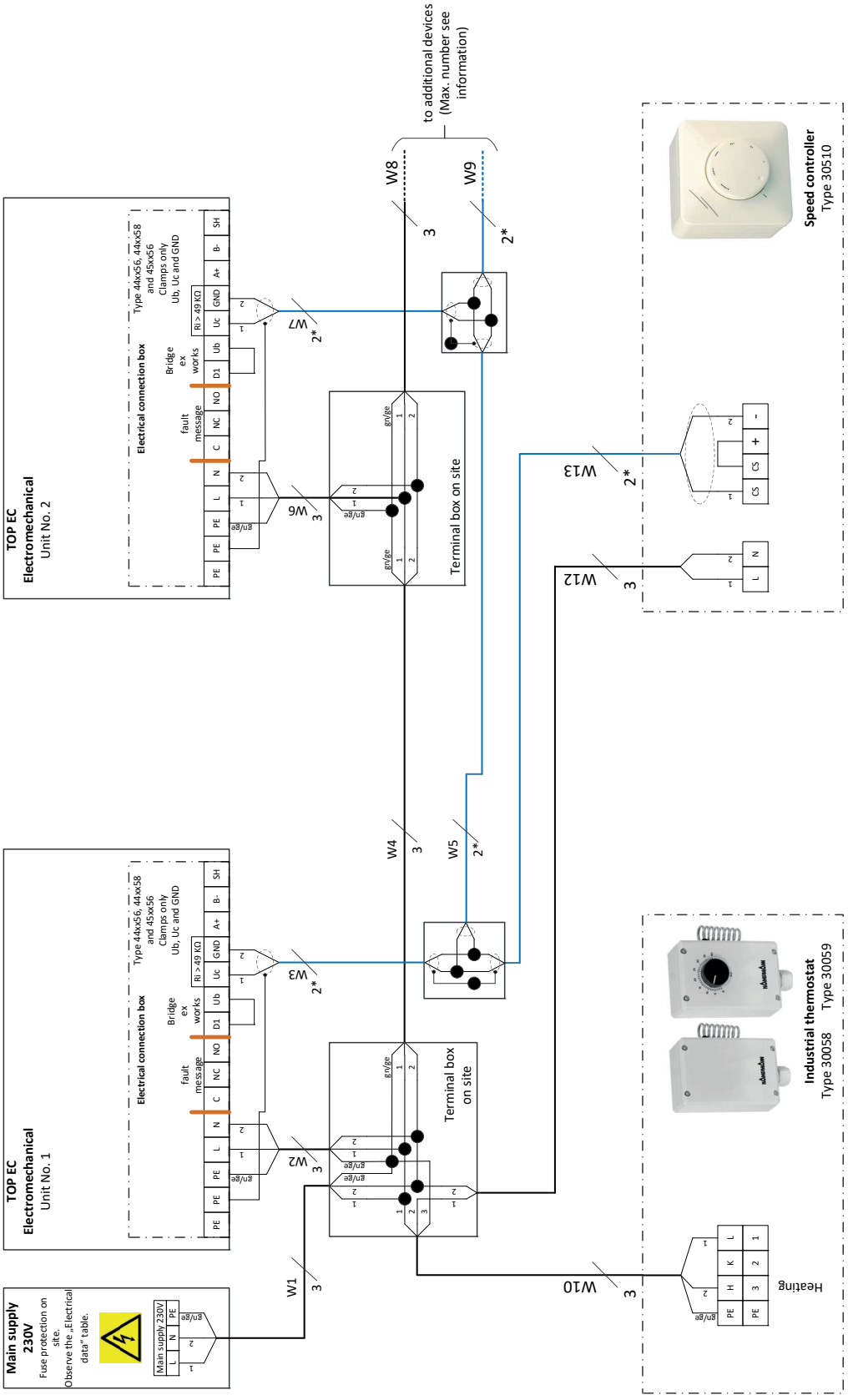
Unit heater type	Nominal voltage [V]	Mains frequency [Hz]	Active power [kW]	Nominal current [A]	Leakage current [mA]	Max. fuse [A]	IP protection rating	Protection class
44xx56	230	50/60	0.14	1.27	< 3.5	B10	54	I
44xx58	230	50/60	0.17	1.46	< 3.5	B10	54	I
45xx56	230	50/60	0.17	1.51	< 3.5	B10	54	I
45xx58	230	50/60	0.39	1.74	< 3.5	C16	54	I
46xx58	230	50/60	0.46	2.13	< 3.5	C16	54	I
47xx56	230	50/60	0.37	1.69	< 3.5	C16	54	I
47xx58	230	50/60	0.85	3.83	< 3.5	C16	54	I
48xx68	230	50/60	0.68	3.11	< 3.5	C16	54	I

xx Heat exchanger model

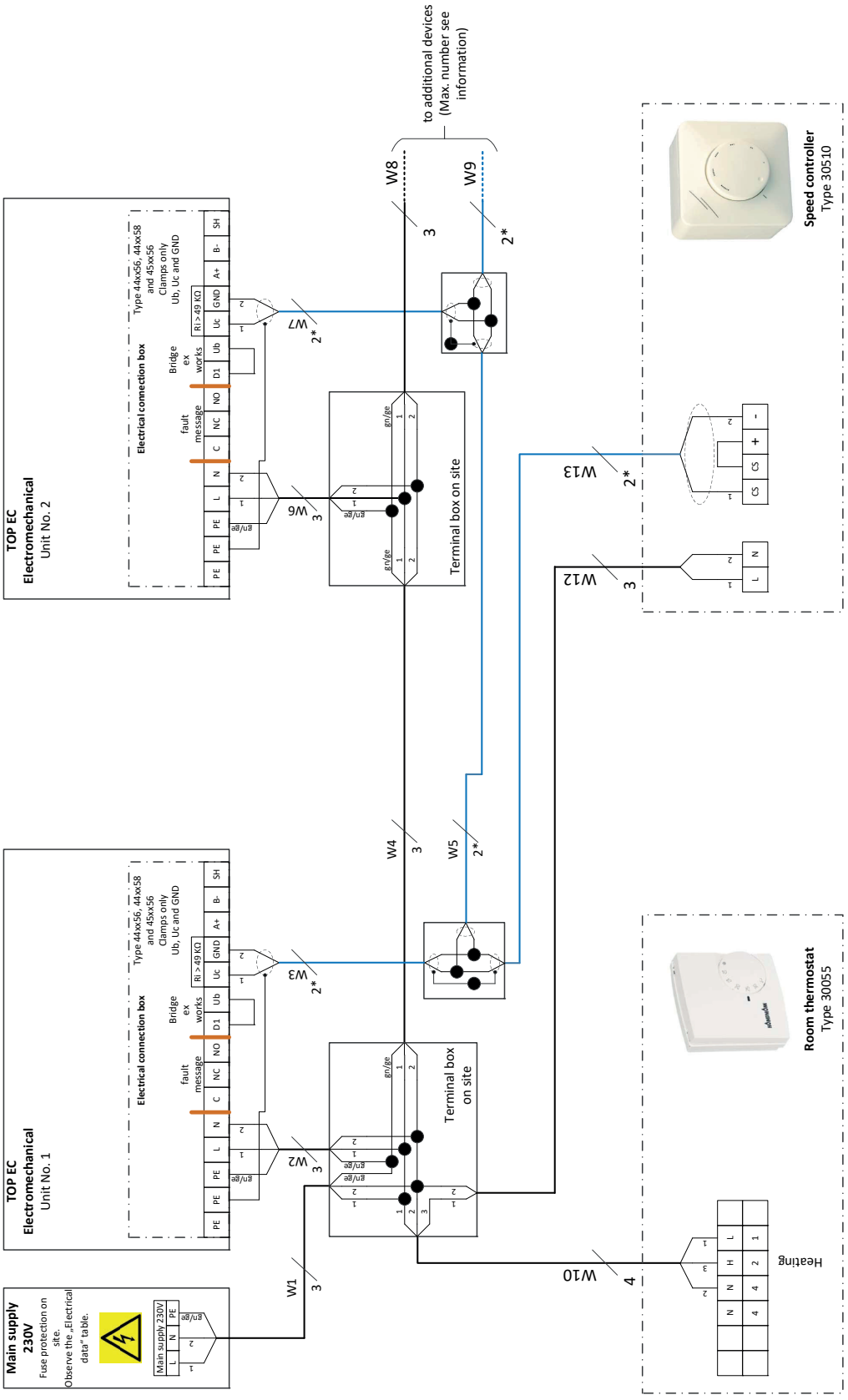
Cabling of TOP (**00), actuation by speed controller type 30510



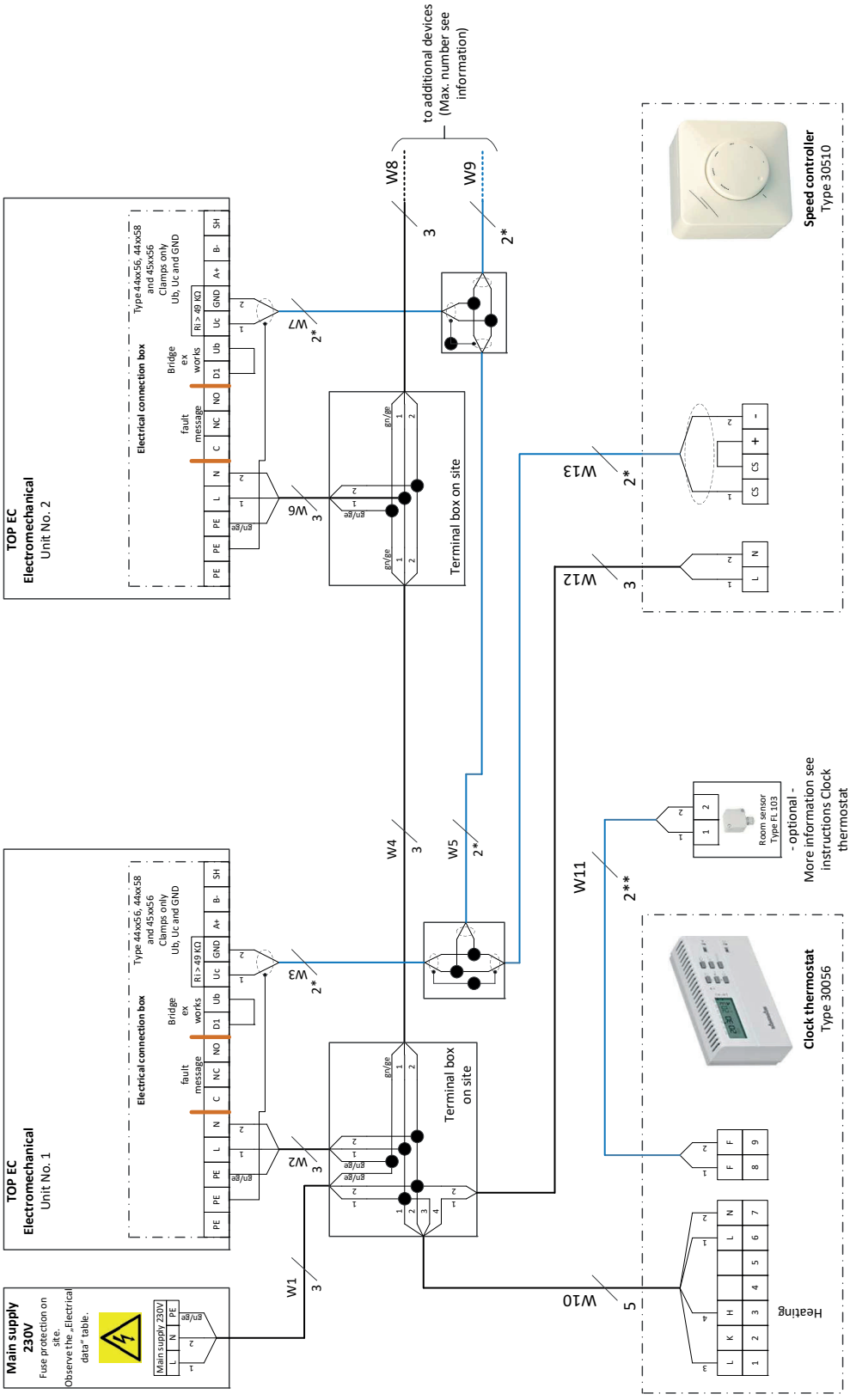
Cabling of TOP (**00), actuation by speed controller type 30510 with industrial thermostat type 30058/30059



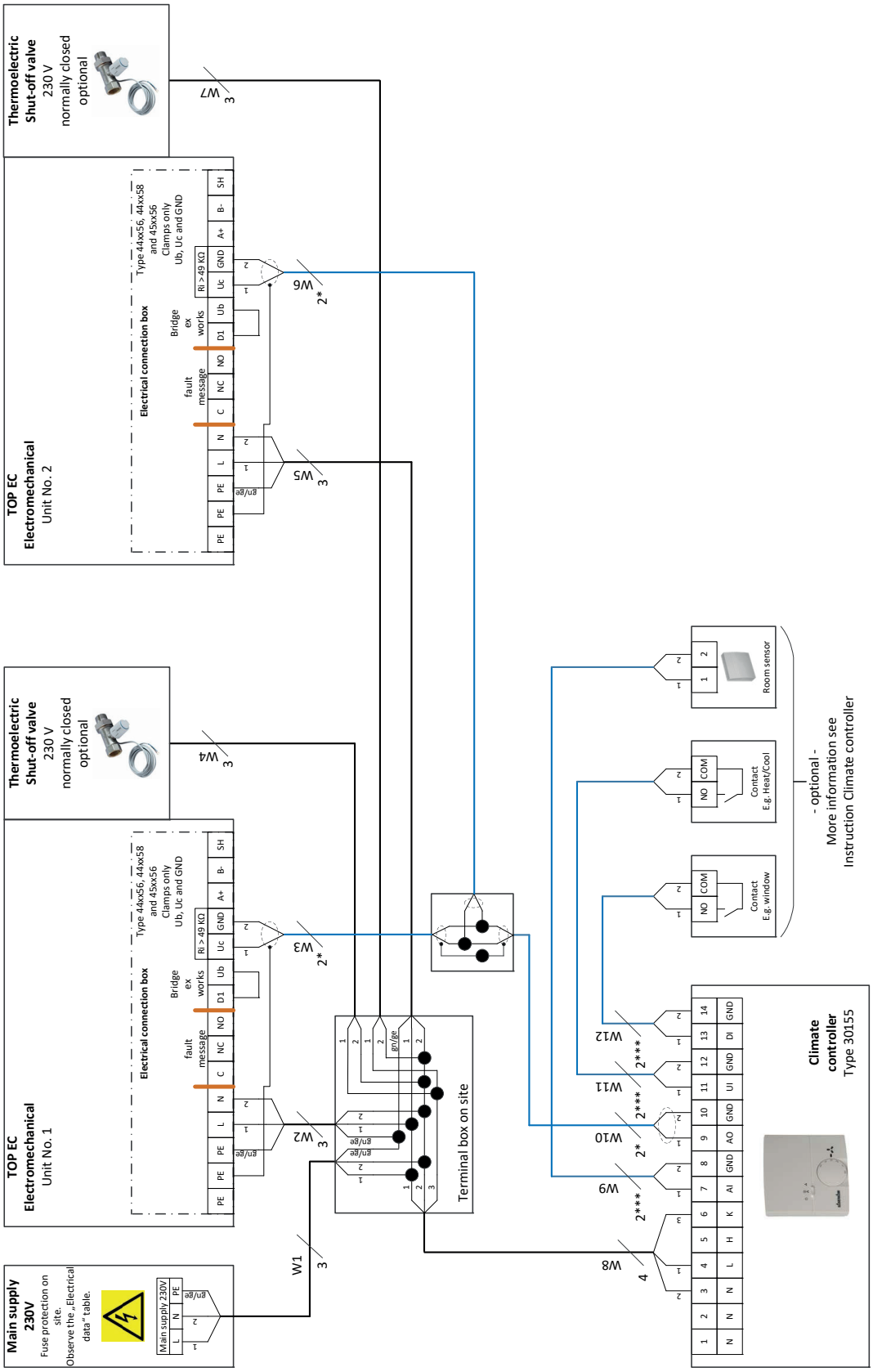
Cabling of TOP (**00), actuation by speed controller type 30510 with room thermostat type 30055



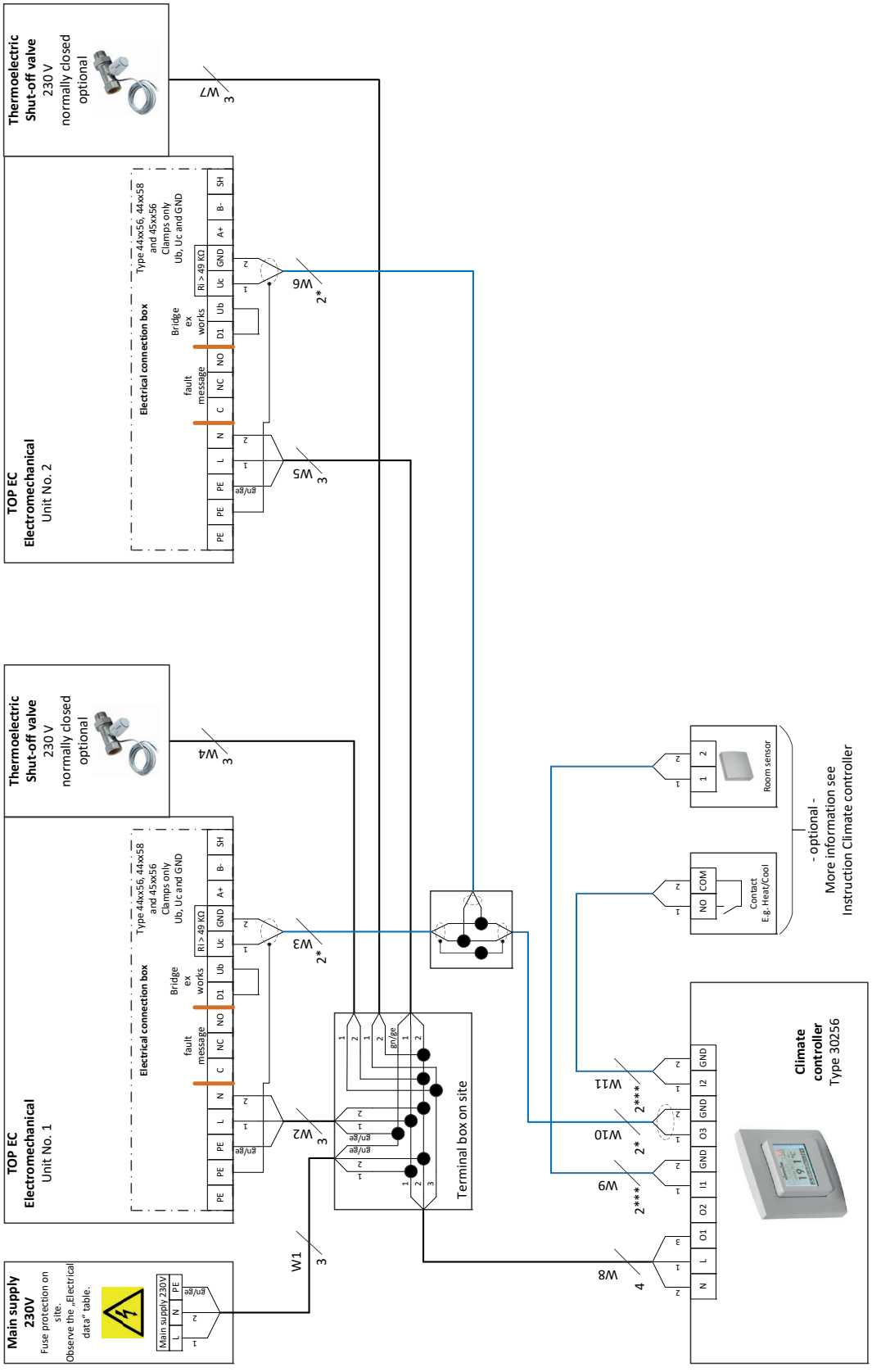
Cabling of TOP(**00), actuation by speed controller type 30510 with clock thermostat type 30056



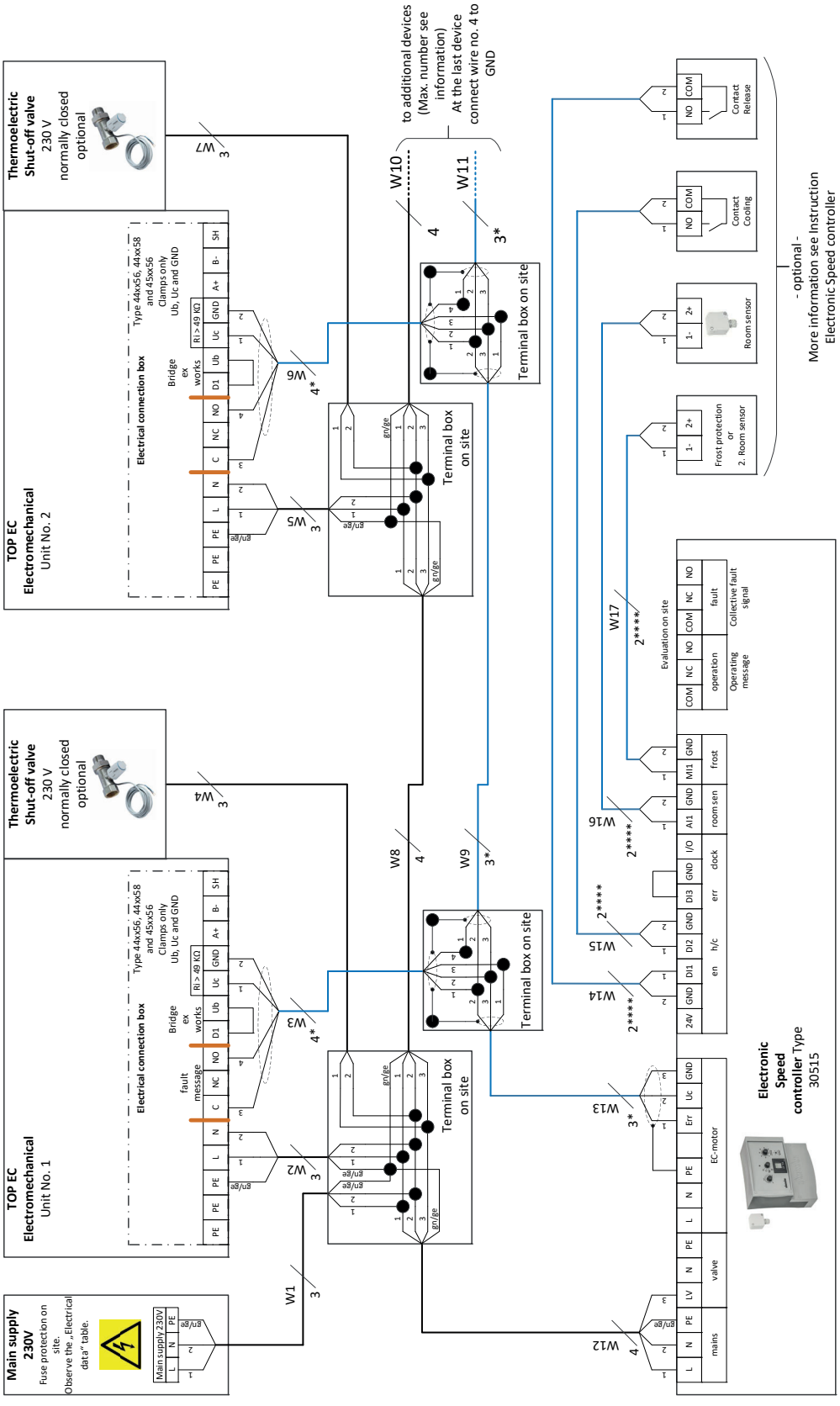
Cabling of TOP (**00), actuation by climate controller type 30155, 2-pipe valve actuator 230 V AC, Open/Close



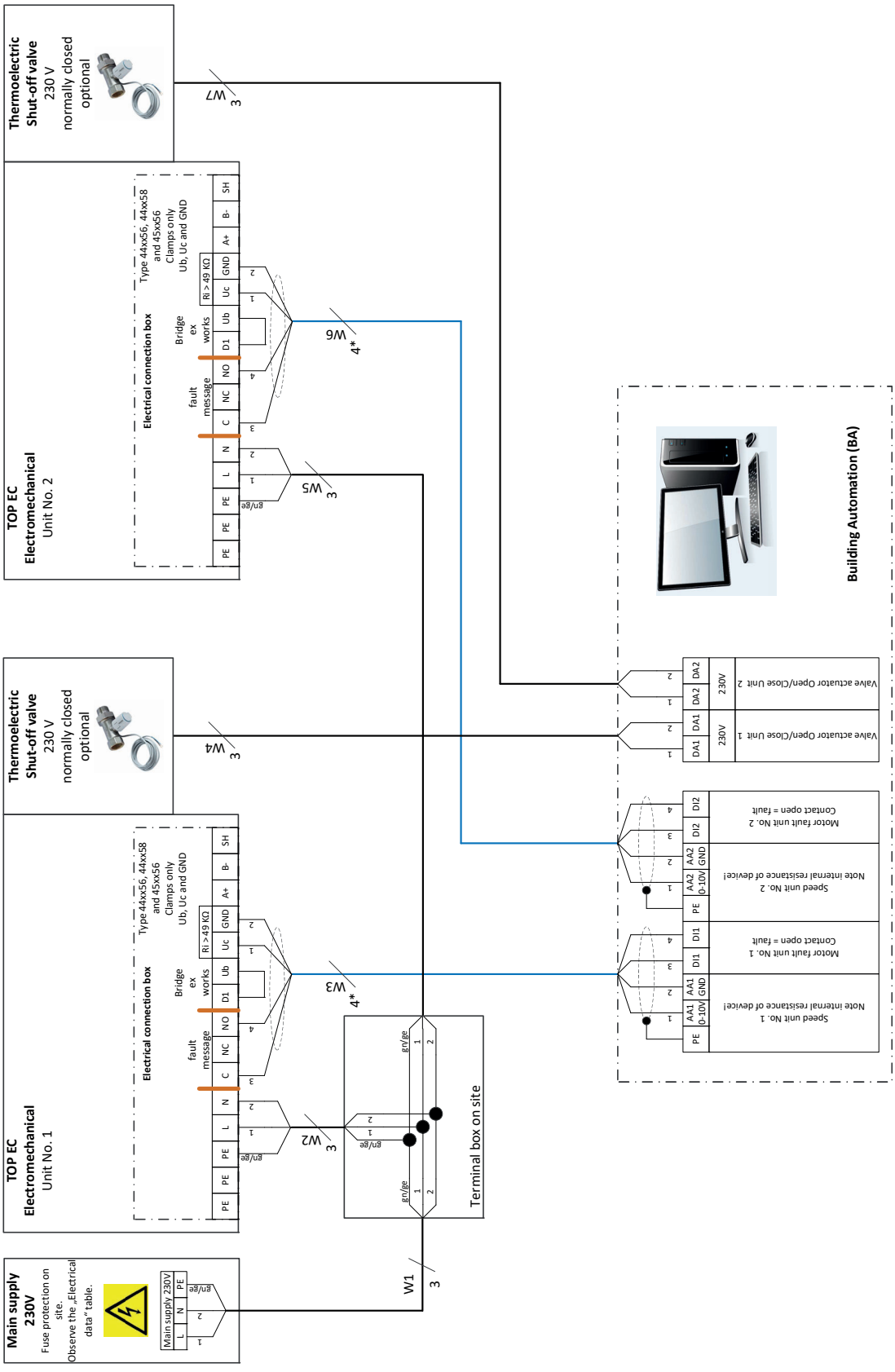
Cabling of TOP (**00), actuation by climate controller type 30256, 2-pipe valve actuator 230 V AC, Open/Close



Cabling of TOP (*00), actuation by speed controller type 30515



Cabling of TOP (**00), actuation by DDC/BMS, 2-pipe valve actuator 230 V AC, Open/Close



Control of TOP – KaControl model

The all-inclusive solution!

Product features

Units configured for operation with KaControl are fully wired and fitted with all electrical parts ready for connection (with the exception of optional accessories). The built-in, high-performance, parametrisable KaControl microprocessor control provides all the functions the TOP needs.
The "face" of the KaControl is the KaController operating unit. A group of up to two units can be formed using a KaController unit without the need for additional addressing.
Optional plug-in interface cards offer the option of connecting to higher-level control systems.

Fans

The speed of the EC fans used in the units is controlled by a 0-10 V DC signal from the KaControl. The "intelligent" motor electronics detects any possible motor fault and automatically switches the fan off. A motor fault on the unit to which the KaController is connected is displayed on the KaController.

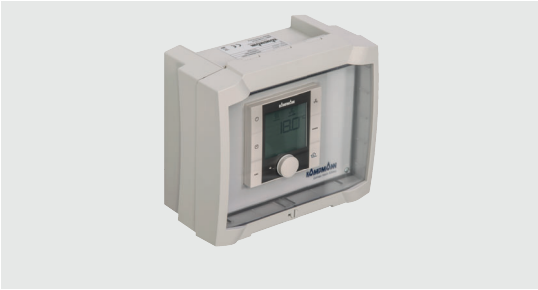
Control unit

Various versions of KaController operating unit are available for operation and control.

KaController

The KaController offers maximum operating convenience with a large display, one-touch operation and optionally also with side operating keys for quick access. Based on the principle of "as little as possible, as much as required", even untrained users can intuitively get to grips with the control options.

The displays are language-independent using pictograms. The basic functions are inputted in a user-friendly way using the KaController.



Type 196003214002

Type 196003210001

Type 196003210002

Type 196003210006

Product features of the KaController

- Plastic housing, colour similar to RAL 9010 (type 196003210001 and 196003210002) or black (type 196003210006) for surface-mounting on a flush back box or surface-mounting with a surface-mounted frame (accessory)
- high-quality design of room control units, large LCD multifunctional display with energy-saving, automatically switching LED backlight
- push-turn navigator dial with endless turn/lock function
- side function keys for quick access (only with type 196003210002)
- integral temperature sensor
  Important! The model in an industrial housing always needs a separate room temperature sensor
- individually adjustable basic display
- display of fault messages
- built-in weekly switching program
- password-protected parameter level

KaControl

The parametrisable KaControl microprocessor control offers a wealth of functions. The following default functions are factory-set for the TOP product:

- 2-pipe applications, thermal valve actuators 24 V AC Open/Close, normally closed
- room temperature control with 2-point valve control and demand-led fan control in automatic mode or optionally fixed stage selection
- optional use of the internal or external room temperature sensor (accessory)
- in the event of an alarm being triggered on a device to which the KaController room control unit is connected, e.g. a motor fault is detected by the KaControl and indicated on the KaController control unit
- control input heating/cooling changeover with 2-pipe systems
- control input can either be set to Comfort/ECO or ON/OFF changeover
- switching output 24 V DC/max. 0.5 A parametrisable to unit alarm, heat or cooling demand (only with 2-pipe applications)
- sequential valve actuation (Open/Close) and fan speed via a data point 0-10 V DC only with actuation without KaController
- one slot for optional interface cards for connection to a higher-level building automation system – optionally Modbus, KNX, BACnet (accessory)
- password-protected parameter level
- parallel operation of a maximum of 6 units is possible, extendible to a maximum of 30 units using an additional CANbus card type 3260301 (accessory) per unit

Any additional functions required can be parametrised and correspondingly coordinated.

Cabling

The following points need to be taken into account with the cabling and wiring diagrams below:

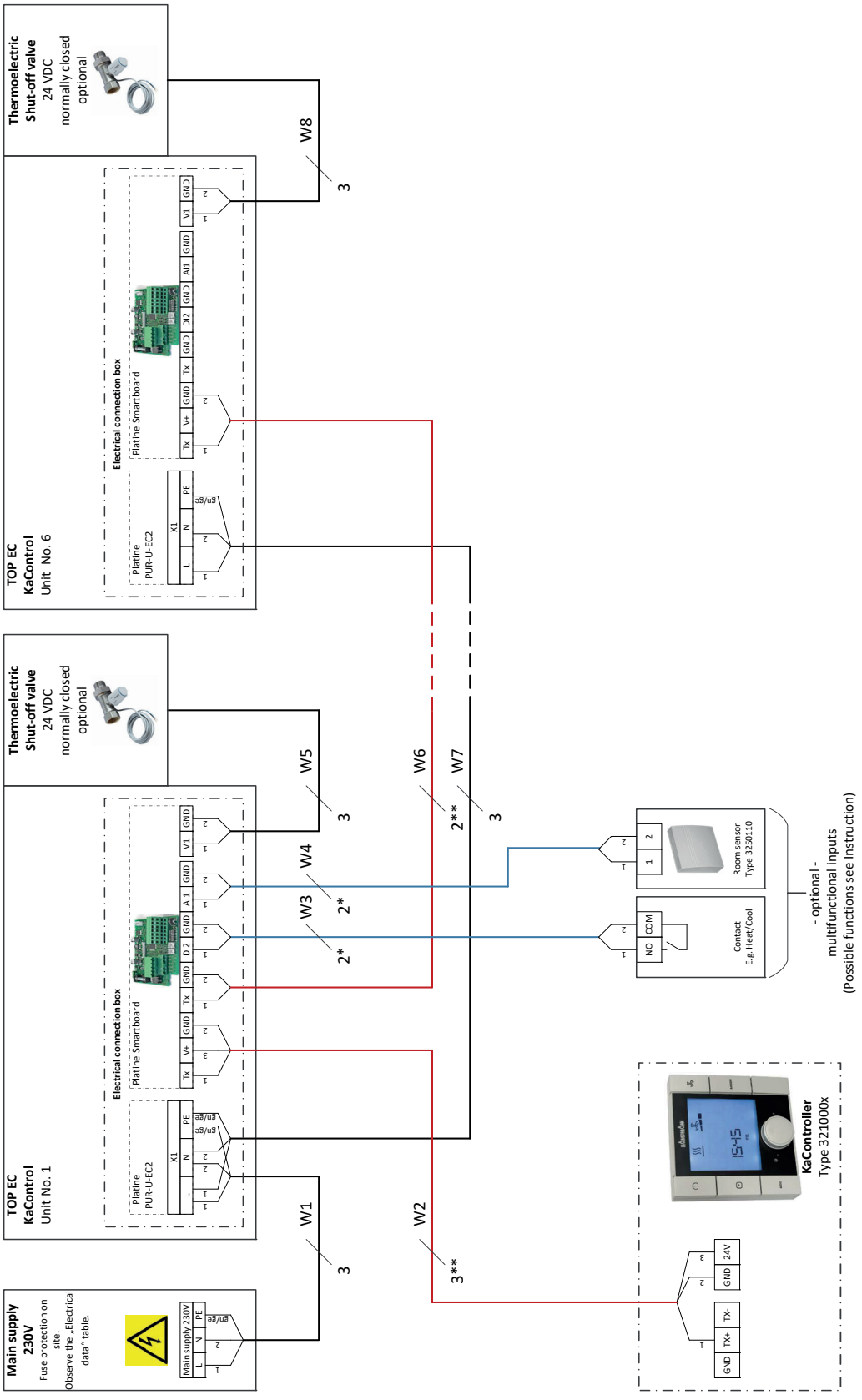
- Comply with the details on type of cable and cabling taking into consideration DE 0100.
- None *: NYM-J. The requisite number of wires, including protective conductor, is stated on the cable. Cross-sections are not stated, as the cable length is involved in the calculation of the cross-section.
- With *: J-Y(ST)Y 0.8 mm. Lay separately from power lines.
- With **: UNITRONIC® BUS LD 0.22 mm². Lay separately from power lines.
- If other types of cables are used, they must be at least equivalent.
- Length of BUS cable from the KaController to unit 1: max. 30 m.
- Maximum number of parallel units: 6 units. Maximum 30 units with a CANbus card type 3260301 (see accessories) required for each unit.
- Length of BUS cable from unit 1 to unit 6 max. 30 m. Max. 500 m with a CANbus card type 3260301 (see accessories) needed for each unit.
- Length of cable for room sensor and switching contact maximum 30 m, maximum 100 m from 1 mm².
- The terminals on the unit for the mains power supply are suitable for a maximum wire cross-section of 2.5 mm².
- When using residual current circuit breakers, they need to be at least mixed frequency-sensitive (type F) for types 44xx5x and 45xx56, and all current-sensitive (type B) for all other types. Refer to the provisions of DIN VDE 0100 Parts 400 and 500 when designing the rated fault current.
- The electrical data listed in the following table needs to be considered when configuring the on-site mains supply and fuses.

Electrical data for TOP, KaControl model

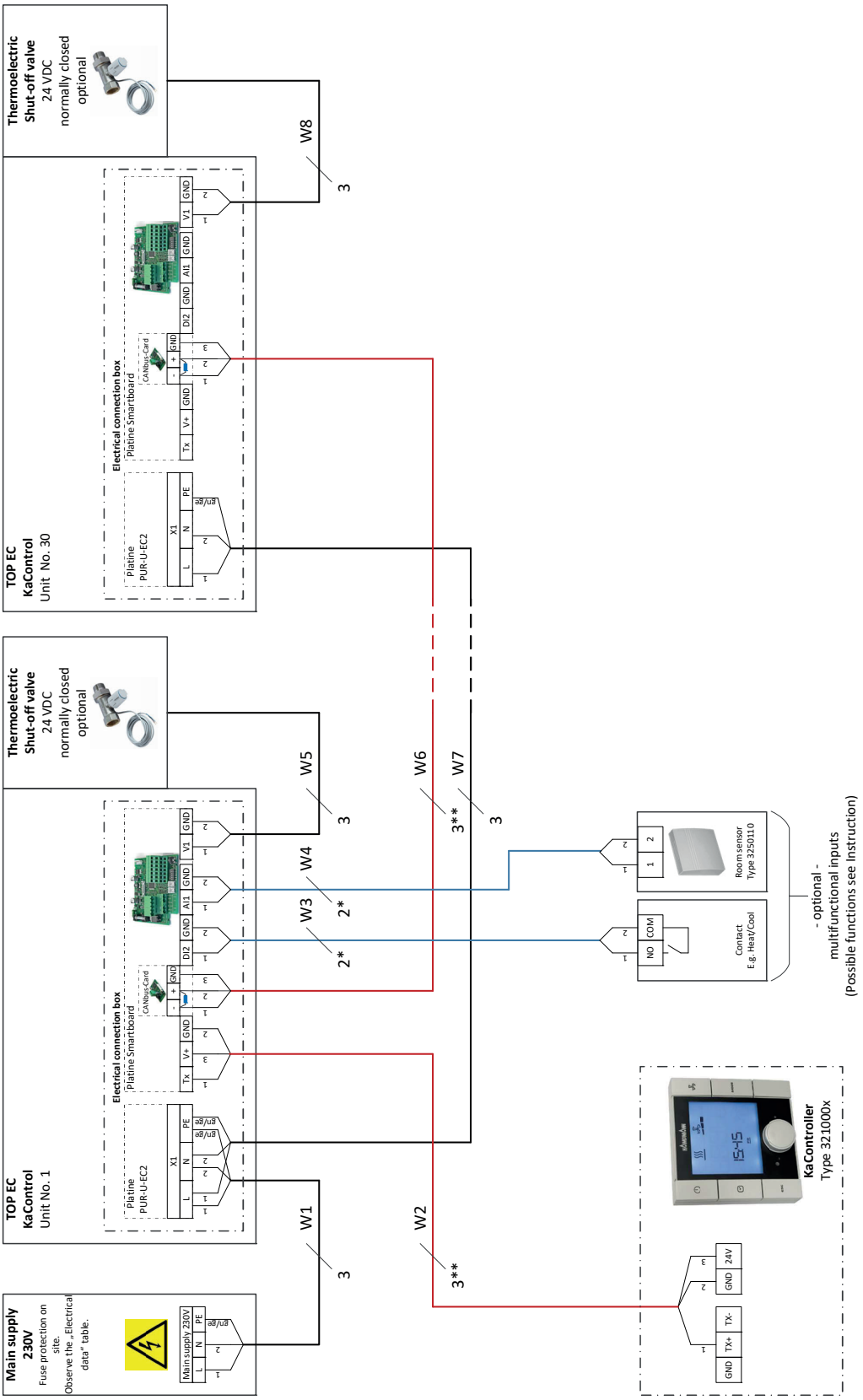
Unit heater type	Nominal voltage [V]	Mains frequency [Hz]	Active power [kW]	Nominal current [A]	Leakage current [mA]	Max. fuse [A]	IP protection rating	Protection class
44xx56C1	230	50/60	0.14	1.27	< 3.5	B10	54	I
44xx58C1	230	50/60	0.17	1.46	< 3.5	B10	54	I
45xx56C1	230	50/60	0.17	1.51	< 3.5	B10	54	I
45xx58C1	230	50/60	0.39	1.74	< 3.5	C16	54	I
46xx58C1	230	50/60	0.46	2.13	< 3.5	C16	54	I
47xx56C1	230	50/60	0.37	1.69	< 3.5	C16	54	I
47xx58C1	230	50/60	0.85	3.83	< 3.5	C16	54	I

Electrical data without KaControl and valve actuator
xx Heat exchanger model

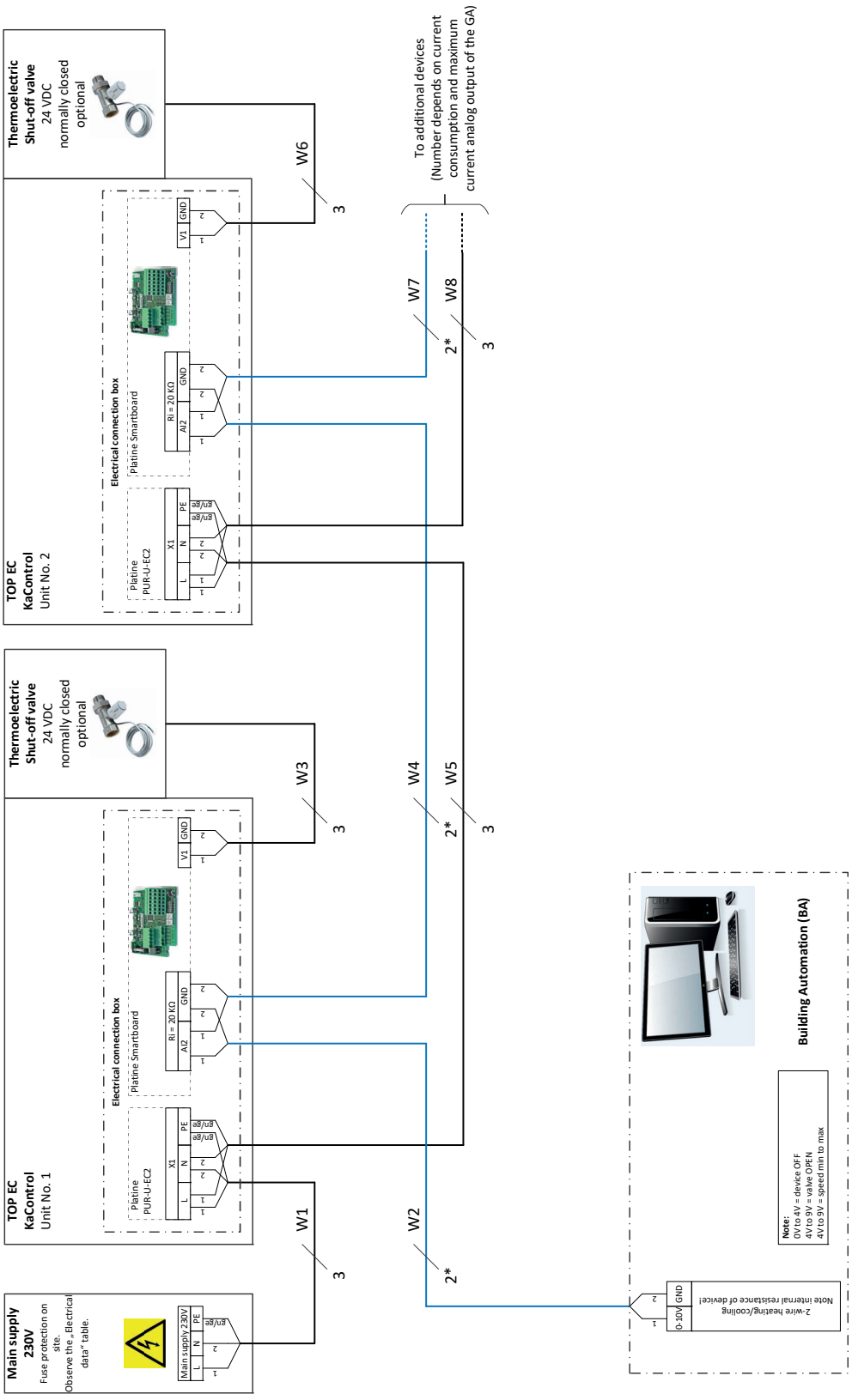
Cabling of TOP (*C1), actuation by KaController type 321000x, 2-pipe, 24 V DC valve, Open/Close



Cabling of TOP (*C1), actuation by KaController type 321000x, 2-pipe, 24 V DC valve, Open/Closes, with CANbus card



Cabling of TOP (*C1), actuation by a 0-10 V DC signal on site



KaControl – Integration into intelligent building networks (IoT)

KaControl offers a wealth of options for integration into established communication networks. Various building automation strategies can be configured using different options.

Individual switching of units

Units with KaControl configuration can be directly integrated into on-site networks using optional communication interfaces. Control and monitoring is provided by fixed data points. Operation is provided by the KaController or by the control units belonging to the network.

Switching of groups

Up to six units with KaControl configuration can be operated in a single group. Groups of units can be directly integrated into on-site networks using optional communication interfaces. Control and monitoring is provided by fixed data points. Operation of a group is provided by the KaController or by control units belonging to the network.

Communication interfaces

The following communication interfaces can be supplied separately or factory-fitted.

- Modbus RTU
- KNX
- BACnet IP

Note:

More information on integration into intelligent building networks and the associated communication interfaces is available on request!

KaControl – System controller

The optional Modbus interface allows units with KaControl configuration to be networked into systems individually or in groups with factory-programmed higher-level Kampmann system controllers.

KaControl SEL control panel

- up to 60 secondary air units or door air curtains split into up to 24 groups (zones), identical units required within a group, up to 6 units per group
- optional: KaController is possible for each group
- central heating (winter)/cooling (summer) switch-over of secondary air units or heating (winter)/ventilation (summer)
- 5 timer programs can be assigned to groups
- optional: BACnet IP gateway for connection to higher-level control systems for the units/zones

KaControl AUL control panel

- one Kampmann ventilation system
- up to 60 secondary air units or door air curtains divided into up to 10 groups (zones), identical units required within one group, up to 6 units per group
- optional: KaController unit for each group
- central heating (winter)/cooling (summer) switch-over of secondary air units or heating (winter)/ventilation (summer)
- 5 timer programs can be assigned to groups
- optional: BACnet IP gateway for connection to higher-level control systems for the units/zones

KaControl visualisation

- up to 100/300 units
- optional: KaController unit for each group
- central heating (winter)/cooling (summer) changeover of secondary air units or heating (winter)/ventilation (summer) of door air curtains
- central timer programs
- visualisation of Kampmann secondary air units, door air curtains and ventilation systems

Note:
More information on KaControl system controllers can be provided on request!

Wiring diagram for KaControl control panel SEL 4.0

KaControl SEL4.0 control panel

Ethernet

Outdoor temperature sensor

Return air temperature sensor

Chiller

Heat generator

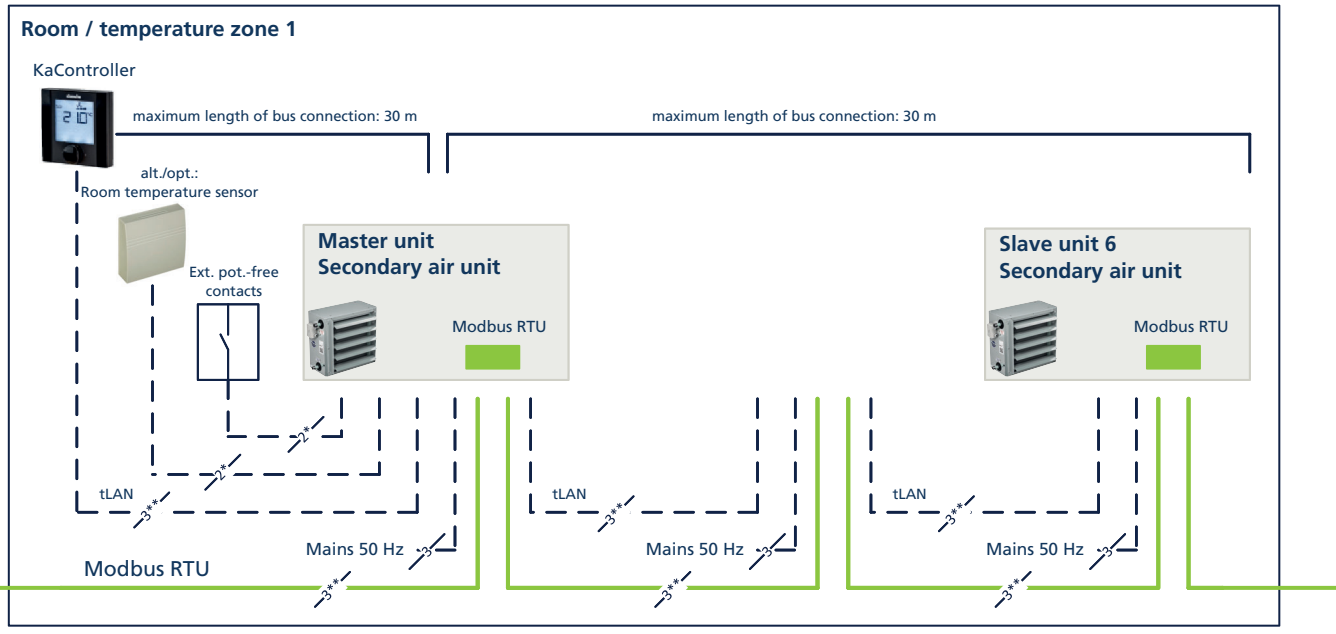
Heating pump Heating/cooling

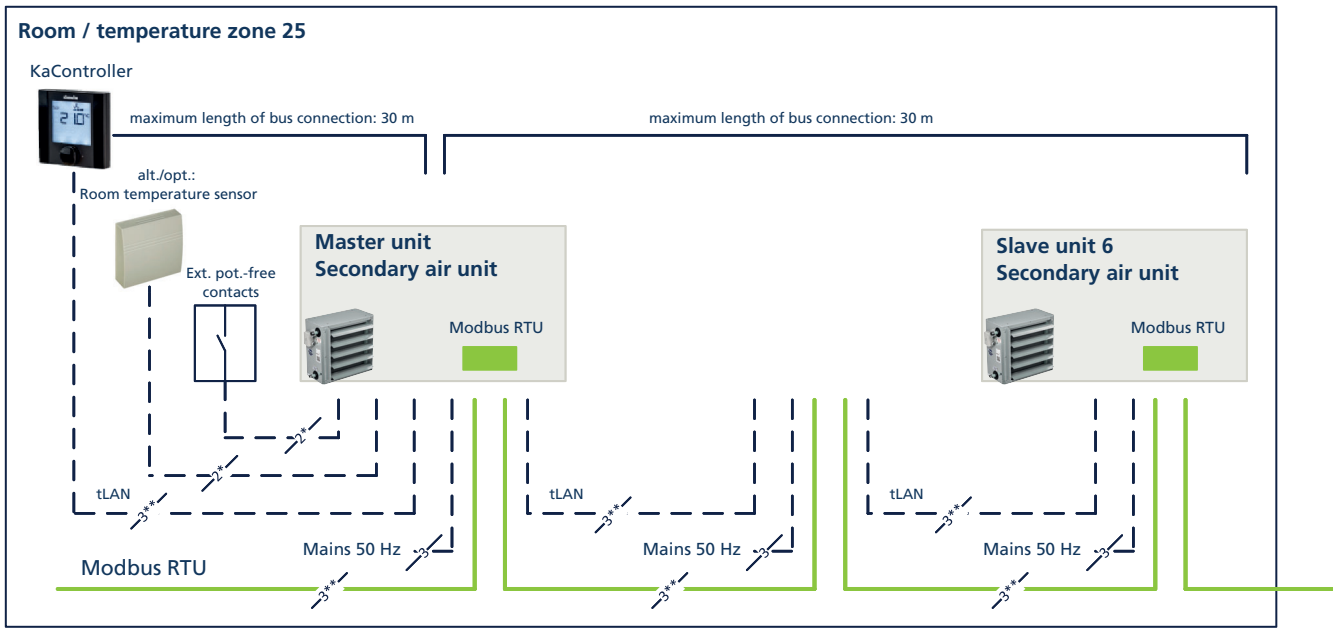
Heating/cooling switch-over valves

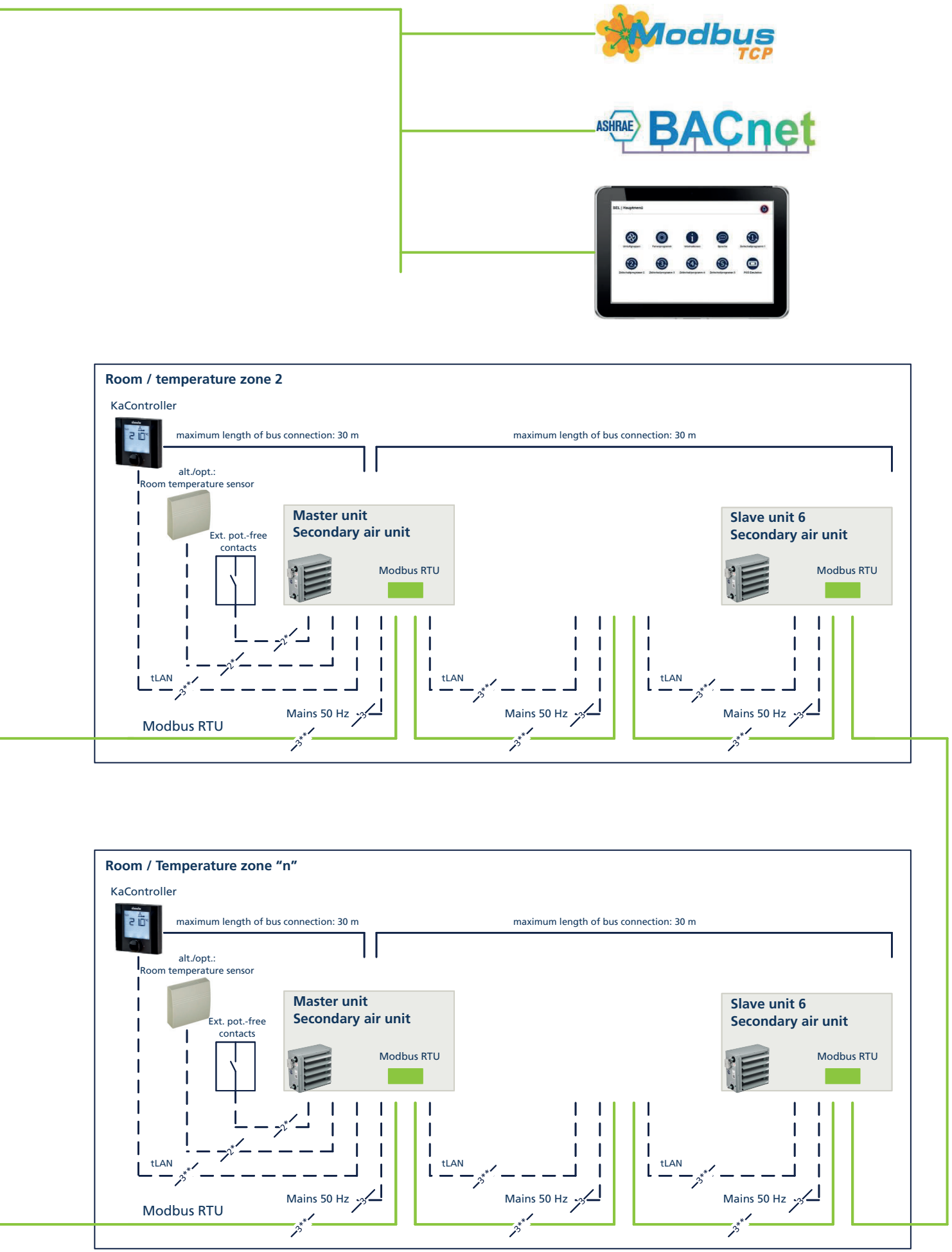
Faults

....

Mains 50 Hz





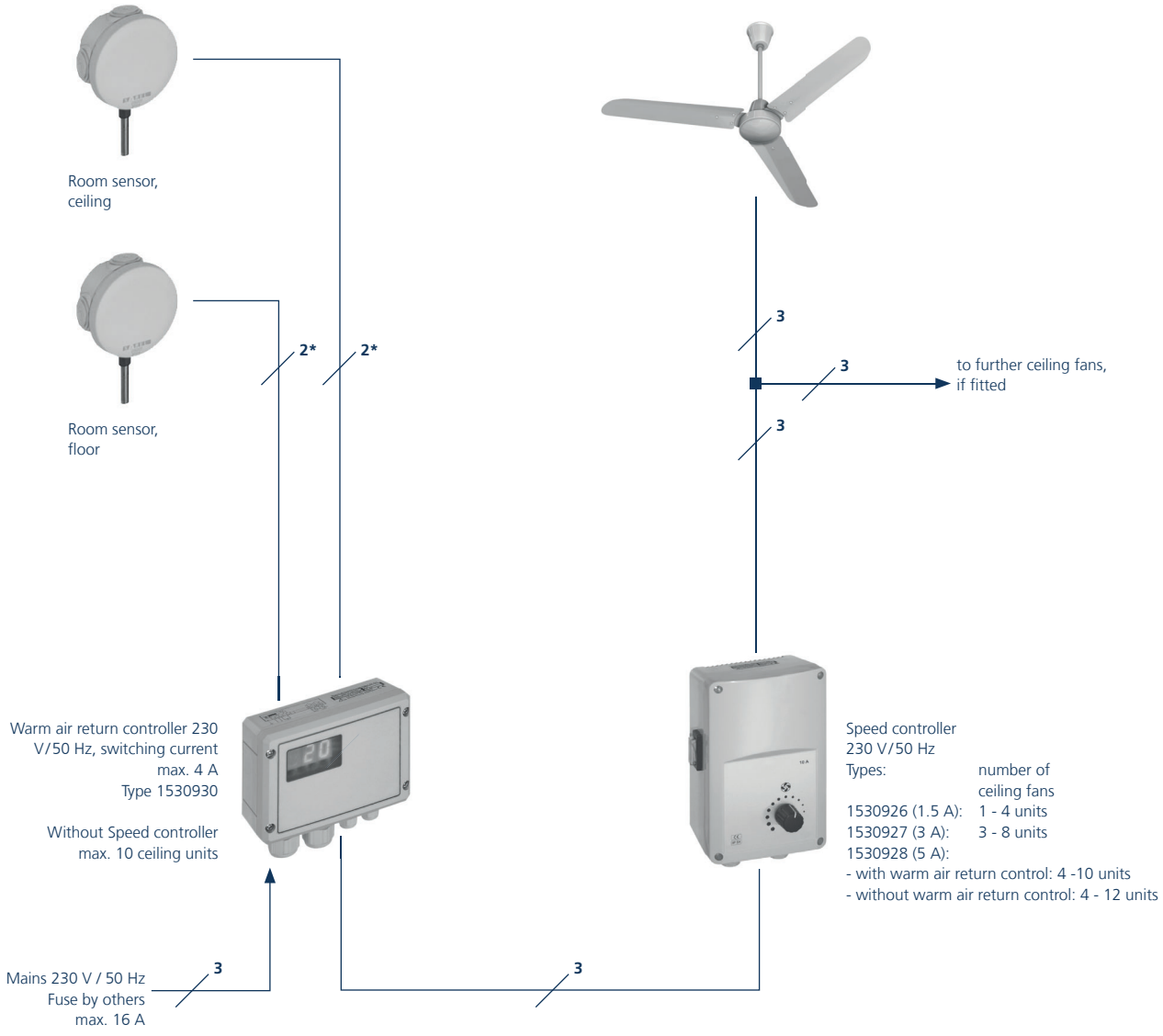

Modbus TCP
ASHRAE BACnet
Room / temperature zone 2
KaController
maximum length of bus connection: 30 m
maximum length of bus connection: 30 m
alt./opt.:
Room temperature sensor
Ext. pot.-free contacts
Master unit
Secondary air unit
Modbus RTU
Slave unit 6
Secondary air unit
Modbus RTU
tLAN
Mains 50 Hz
Modbus RTU
Room / Temperature zone "n"
KaController
maximum length of bus connection: 30 m
maximum length of bus connection: 30 m
alt./opt.:
Room temperature sensor
Ext. pot.-free contacts
Master unit
Secondary air unit
Modbus RTU
Slave unit 6
Secondary air unit
Modbus RTU
tLAN
Mains 50 Hz
Modbus RTU

Ceiling fan

Cabling

The following points need to be taken into account with the cabling and wiring diagrams below:

- Comply with the details on type of cable and cabling taking into consideration VDE 0100.
- None *: NYM-J. The requisite number of wires, including protective conductor, is stated on the cable. Cross-sections are not stated, as the cable length is involved in the calculation of the cross-section.
- With *: Sensor connection cable 0.75 mm² e.g. J-Y(ST)Y, 2 x 2 x 0.8 mm, max. 45 m cable length, lay separately from power lines!
- If other types of cables are used, they must be at least equivalent.
- The terminals on the fan are suitable for a maximum wire cross-section of 2.5 mm².
- Switching capacity of the warm air return control max. 4 A.



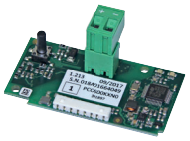
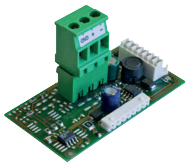
05 Ordering information

Accessories

Article	Article	Properties	Dimensions	Suitable for	Article no.
			[mm]		
Control accessories KaControl					
	KaController	with one-button operation, 24 V wall-mounted room control unit, with integral room temperature sensor, Protection class IP 30, Temperature setting range 8 - 35 °C, similar to RAL 9010 pure white, Type 3210001 plastic	86 x 52 x 86	all units with control option KaControl -C1	**196003210001**
	KaController	with one-button operation, 24 V wall-mounted room control unit, with integral room temperature sensor, Protection class IP 30, similar to RAL 9017 traffic black, Type 3210006 plastic	86 x 52 x 86	all units with control option KaControl -C1	**196003210006**
	KaController	with side operating keys, 24 V wall-mounted room control unit, with integral room temperature sensor, Protection class IP 30, similar to RAL 9010 pure white, Type 3210002 plastic	86 x 52 x 86	all units with control option KaControl -C1	**196003210002**
	Industry KaController	with side operating keys, industrial housing with hinged transparent cover, lockable, Surface-mounted, Protection class IP 65, grey, Type 3214002 plastic	200 x 110 x 195	all units with control option KaControl -C1, ProtecTor Door Air Curtains	**196003214002**
	Room temperature sensor	Wall-mounted, Surface-mounted, Protection class IP 30, similar to RAL 9010 pure white, Type 3250110 plastic Is the KaController installation site suitable for a temperature measurement? - If it is not suitable, e.g. behind a curtain, then a KaControl room temperature sensor should be chosen for each group!	101 x 110 x 23	all units with KaControl -C1 and climate controller art. no. 19600014894*	**196003250110**
	Outside temperature sensor/industrial temperature sensor	Surface-mounted, Protection class IP 65, similar to RAL 9010 pure white, Type 3250112	63 x 68 x 57	all units with control option KaControl -C1, ProtecTor Door Air Curtains	**196003250112**

CONTINUED

Accessories

Article	Article	Properties	Dimensions	Suitable for	Article no.
			[mm]		
	Clip-on pipe sensor	to detect the medium temperature, heating/cooling changeover function only in conjunction with 3-way valve!, Protection class IP 67, Temperature setting range -20 - 70 °C, black, Type 3250115 Is there a risk of frost, e.g. due to the ingress of cold air – if so, then a KaControl clip-on pipe sensor should be chosen for each unit!	5 x 6 x 3000	all units with KaControl -C1 and climate controller art. no. 19600014894*	**196003250115**
	Serial KNX card	for integration into a KNX/EIB network, interface PCOS00KXN0, Type 3260702 The communication card slots into the free interface on the PCB.	35 x 20 x 80	all units with control option KaControl -C1	**196003260702**
	Serial CANbus card	to increase the number of units in a single-circuit system from 7 to a maximum of 30 units, one required per unit, Extension of the cable length from the first to the last unit from 30 m to 500 m, Type 3260301 Can only be used with the KaControl configuration.	35 x 30 x 60	all units with control option KaControl -C1	**196003260301**
	Serial Modbus card	Type 3260101 Required for each device for connection to KaControl panels or on-site Modbus networks. The communication card slots into the free interface on the PCB.	31 x 12 x 61	all units with control option KaControl -C1	**196003260101**

CONTINUED

Accessories

Article	Article	Properties	Dimensions	Suitable for	Article no.
			[mm]		
Control accessories electromechanical 230 V					
	Room thermostat	Heating/Cooling, 2- and 4-pipe, 3-stage. Only in conjunction with valves/ valve kits with actuator, 230 V AC, Open/Closed, with OFF/Manual/Automatic fan switchover, Sur-face-mounted, Temperature setting range 5 - 30 °C, similar to RAL 9010 pure white, Type 30155	110 x 111 x 26	EC units electromechanical, 5 Katherm HK Trench Technology, 2 TOP or Ultra Unit Heaters, 5 Venkon Fan Coils, 2 KaCool D AF, KaCool W or KaDeck Fan Coils	**196000030155**
	Clock thermostat	Heating/Cooling, 2- and 4-pipe, 230 V AC, con-tinuously variable, with LCD operating menu and integrated timer program, 1 W, flush-mounted, Protec-tion class IP 30, similar to RAL 9010 pure white, Type 30256	85 x 46 x 81	EC units electromechanical, 2 TOP or Ultra Unit Heaters, 5 Venkon Fan Coils, 2 KaCool D AF, KaCool W or KaDeck Fan Coils	**196000030256**
	Speed controller	continuously variable fan operation, 0-100% presetta-ble, 230 V AC, 0-100%, On/ Off via room thermostat, surface-mounted protection class IP 54, flush-mounted protection class IP 44, Surface-mounted, Protection class IP 54, similar to RAL 9010 pure white, Type 30510 plastic	82 x 82 x 68	EC units electromechanical, 2 ProtecTor Door Air Curtains, 5 UniLine or Tandem Door Air Curtains, 10 TOP or Ultra Unit Heaters, 10 Venkon Fan Coils, 2 KaCool D AF or KaCool W Fan Coils	**196000030510**
	Electronic speed controller	microprocessor-controlled control with integrated digital timer, 230 V AC, with lockable transparent cover, with day, night, week programme, continuously variable fan operation 0 to 100 %, manual or automatic, 0-10 VDC, recirculation air, Protection class I, Protection class IP 40, including sensor IP 66, Type 30515	262 x 277 x 153	EC units electromechanical, 10 TIP, TOP or Ultra Unit Heaters, 10 Venkon Fan Coils, 2 KaCool D AF or KaCool W EC Fan Coils	**196000030515**
Switching and control units – Mixed air/fresh air, electro-mechanical					
	Servomotor	can be reversed, Open/ Closed, Protection class IP 54, Type 30262	88 x 64 x 205	KaMAX	**196000030262**

CONTINUED

Accessories

Article	Article	Properties	Dimensions	Suitable for	Article no.
			[mm]		
Thermostats					
	Room thermostat	with thermal feedback, 230 V AC, Sur-face-mounted, Protection class IP 30, Temperature setting range 5 - 30 °C, similar to RAL 9010 pure white, Type 30055	78 x 28 x 83	Unit Heaters	**196000030055**
	Industrial thermostat	with setpoint adjustment by tool, Protection class IP 54, Temperature setting range 5 - 30 °C, Type 30058	113 x 71 x 158	Unit Heaters, ProtecTor Door Air Curtains	**196000030058**
	Industrial thermostat	with setpoint adjustment using a dial, Protection class IP 54, Temperature setting range 40 °C, Type 30059	113 x 71 x 158	Unit Heaters, ProtecTor Door Air Curtains	**196000030059**
	Clock thermostat	with integral digital timer, with day/night/week programme, with night set-back, Protection class IP 20, Temperature setting range 5 - 40 °C, similar to RAL 9010 pure white, Type 30056	84 x 33 x 133	Unit Heaters	**196000030056**

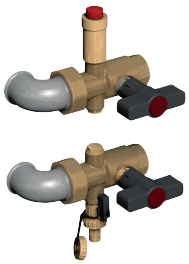
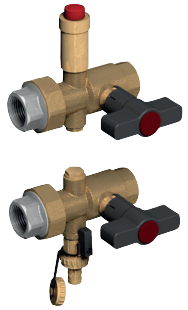
CONTINUED

Accessories

Article	Article	Properties	Dimensions	Suitable for	Article no.
			[mm]		
Valves					
	Thermoelectric shut-off valve	as a straight valve body with thermoelectric actuator 230 V / 50 Hz, 230 V AC, Connection 1“, kvs value 3.3 m³/h, max. operating pressure 10 bar, Type 30911	200 x 50 x 300	all unit heaters	**196000030911**
	Thermoelectric shut-off valve	as a straight valve body with thermoelectric actuator 230 V / 50 Hz, 230 V AC, Connection 1 1/4“, kvs value 4.1 m³/h, max. operating pressure 10 bar, Type 30912 Not in conjunction with 2-stage three-phase switch art. no. 196000030049!	200 x 50 x 300	all unit heaters	**196000030912**
		as a straight valve body with thermoelectric actuator 230 V / 50 Hz, 230 V AC, Connection 1 1/2“, kvs value 10 m³/h, max. operating pressure 16 bar, Type 30913 Not in conjunction with 2-stage three-phase switch art. no. 196000030049!	200 x 50 x 300	all unit heaters	**196000030913**
	Thermoelectric shut-off valve	as an angled valve with angled screw connection and thermoelectric actuator 24 V AC/DC / 50 Hz, 24 V AC/DC, Connection 1“, kvs value 3.3 m³/h, max. operating pressure 10 bar, Type 30931	200 x 50 x 300	Only to be used with KaControl!	**196000030931**
		as a straight valve body with thermoelectric actuator 24 V AC/DC, 24 V AC/DC, Connection 1 1/4“, kvs value 4.1 m³/h, max. operating pressure 10 bar, Type 30932	200 x 50 x 300	Only to be used with KaControl!	**196000030932**
		as a straight valve body with thermoelectric actuator 24 V AC/DC, 24 V AC/DC, Connection 1 1/2“, kvs value 10 m³/h, max. operating pressure 13 bar, Type 30933	200 x 50 x 300	Only to be used with KaControl!	**196000030933**
	Control shut-off valve	for automatic flow and temperature control, 230 V AC, Connection 1“, kvs value 3.1 m³/h, max. operating pressure 25 bar, Type 30950	140 x 120 x 140	Model 4 - 5, TOP or Ultra Unit Heaters, Flow volume Cooling (min./max.) 250 - 1800 l/h, DN 20	**196000030950**
		for automatic flow and temperature control, 230 V AC, Connection 1“, kvs value 4.1 m³/h, max. operating pressure 25 bar, Type 30951	140 x 120 x 140	Model 4 - 6, TOP or Ultra Unit Heaters, Flow volume Cooling (min./max.) 400 - 2500 l/h, DN 25	**196000030951**
	Control shut-off valve	with reducer 1 1/4 inch x 1 1/2 inch m/f, 230 V AC, for automatic flow and temperature control, kvs value 8.4 m³/h, max. operating pressure 25 bar, Type 30952	140 x 120 x 160	Model 6 - 8, TOP Unit Heaters, Flow volume Cooling (min./max.) 600 - 4800 l/h, DN 32	**196000030952**

CONTINUED

Accessories

Article	Article	Properties	Dimensions	Suitable for	Article no.
			[mm]		
	Control shut-off valve	24 V AC/DC, for automatic flow and temperature control, Connection 1“, kvs value 3.1 m³/h, max. operating pressure 25 bar, Type 30980	140 x 120 x 140	Model 4 - 5, TOP or Ultra Unit Heaters, Flow volume Cooling (min./max.) 250 - 1800 l/h, DN 20	**196000030980**
		24 V AC/DC, for automatic flow and temperature control, Connection 1“, kvs value 4.1 m³/h, max. operating pressure 25 bar, Type 30981	140 x 120 x 140	Model 4 - 6, TOP or Ultra Unit Heaters, Flow volume Cooling (min./max.) 400 - 2500 l/h, DN 25	**196000030981**
	Control shut-off valve	with reducer 1 1/4 inch x 1 1/2 inch m/f, 24 V AC/DC, for automatic flow and temperature control, kvs value 8.4 m³/h, max. operating pressure 25 bar, Type 30982	140 x 120 x 160	Model 6 - 8, TOP Unit Heaters, Flow volume Cooling (min./max.) 600 - 4800 l/h, DN 32	**196000030982**
	Unit heater shut-off set, angled version	Connection 1“, max. operating pressure 10 bar, Type 34976	150 x 95 x 188	Model 4	**198000034976**
		Connection 1“, max. operating pressure 10 bar, Type 35976	150 x 95 x 188	Model 5	**198000035976**
		Connection 1 1/4“, max. operating pressure 10 bar, Type 36976	145 x 160 x 170	Model 6	**198000036976**
		Connection 1 1/2“, max. operating pressure 10 bar, Type 37976	155 x 170 x 200	Model 7	**198000037976**
		Connection 1 1/2“, max. operating pressure 10 bar, Type 38976	155 x 170 x 200	Model 8	**198000038976**
	Unit heater shut-off set, straight version	Connection 1“, max. operating pressure 10 bar, Type 34977	140 x 95 x 185	Model 4	**198000034977**
		Connection 1“, max. operating pressure 10 bar, Type 35977	140 x 95 x 185	Model 5	**198000035977**
		Connection 1 1/4“, max. operating pressure 10 bar, Type 36977	165 x 100 x 220	Model 6	**198000036977**
		Connection 1 1/2“, max. operating pressure 10 bar, Type 37977	155 x 170 x 155	Model 7	**198000037977**
		Connection 1 1/2“, max. operating pressure 10 bar, Type 38977	155 x 170 x 155	Model 8	**198000038977**

Repair switch

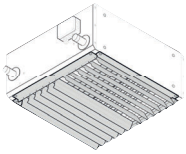
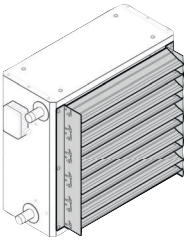
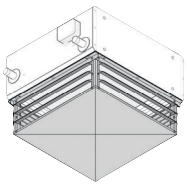
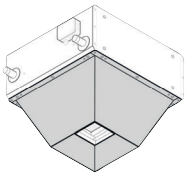
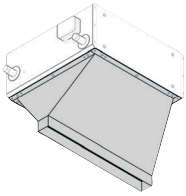
	Repair switch	EC, Enables individual units in a switching group to be decommissioned by voltage disconnection. The thermal contacts are bridged in advance, and subsequently opened on the motor side so that the other units in the group can continue to operate without interruption., Protection class IP 65, 25 A, supplied separately, Type 3160	82 x 127 x 82	all unit heaters, air curtains with EC-motors	**196000030160**

Air outlets

	KaMAX	Multi Air MiX for ceiling-mounted units, manual level adjustment	500 x 160 x 580	Model 4	**198000034111**
			600 x 160 x 680	Model 5	**198000035111**
			700 x 160 x 780	Model 6	**198000036111**
			800 x 160 x 880	Model 7	**198000037111**
			900 x 160 x 980	Model 8	**198000038111**

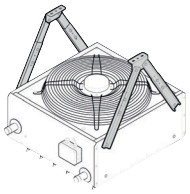
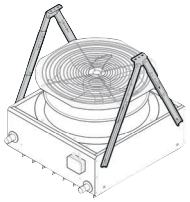
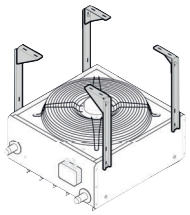
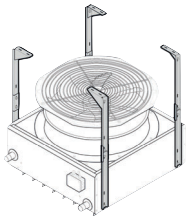
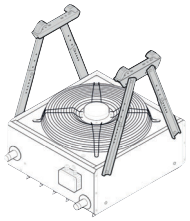
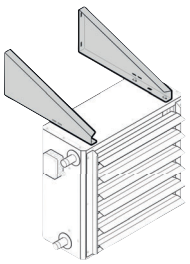
CONTINUED

Accessories

Article	Article	Properties	Dimensions [mm]	Suitable for	Article no.
	OPEN-STOP-CLOSE switch for KaMAX	for electrically actuated continuously variable manual adjustment of the KaMAX louvre	150 x 60 x 220		**196000030115**
	Louvre	two-row for wall- and ceiling-mounted units	495 x 35 x 495	Model 4	**198000034002**
			595 x 35 x 595	Model 5	**198000035002**
			695 x 35 x 695	Model 6	**198000036002**
			795 x 35 x 795	Model 7	**198000037002**
	Induction air outlet louvre	mainly used for wall-mounted units, for ceiling-mounted units with ceiling heights of more than 4.0 m	425 x 100 x 495	Model 4	**198000034101**
			525 x 100 x 595	Model 5	**198000035101**
			100 x 700 x 630	Model 6	**198000036101**
			800 x 100 x 720	Model 7	**198000037101**
	Diffuser	in four directions, for ceiling-mounted units	500 x 195 x 500	Model 4	**198000034004**
			600 x 195 x 600	Model 5	**198000035004**
			700 x 195 x 700	Model 6	**198000036004**
			800 x 195 x 800	Model 7	**198000037004**
	Outlet nozzle	for ceiling-mounted units, especially for high-ceilinged buildings	500 x 230 x 500	Model 4	**198000034006**
			600 x 260 x 600	Model 5	**198000035006**
			700 x 290 x 700	Model 6	**198000036006**
			800 x 320 x 800	Model 7	**198000037006**
			900 x 350 x 900	Model 8	**198000038006**
	Wide nozzle	recirculating air only, suitable for industrial door air curtains	500 x 300 x 600	Model 4	**198000034007**
			600 x 340 x 700	Model 5	**198000035007**
			700 x 380 x 800	Model 6	**198000036007**
			800 x 420 x 900	Model 7	**198000037007**

CONTINUED

Accessories

Article	Article	Properties	Dimensions	Suitable for	Article no.
			[mm]		
Brackets					
	Universal 2-point brackets	recirculating air only, 1 complete set	110 x 584 x 510	Model 4 - 7	**198000030041**
	Universal 2-point brackets	recirculating air only, 1 complete set	204 x 584 x 510	Model 8	**198000038041**
	Universal 4-point brackets	recirculating air only, made of sendzimir galvanised sheet steel, as a 4-point fixing for ceiling installation, 1 complete set	172 x 498 x 165	Model 4 - 7	**198000030042**
	Universal 4-point brackets	recirculating air only, made of sendzimir galvanised sheet steel, as a 4-point fixing for ceiling installation, 1 complete set	172 x 498 x 201	Model 8	**198000038042**
	Universal 2-point T-support brackets	recirculating air only, Ceiling-mounted	119 x 54 x 523	Model 4 - 7	**198000030047**
	Wall brackets	recirculating air only, made of sendzimir galvanised sheet steel for wall mounting, a complete set TIP and TOP unit heaters can be installed standing and also suspended. price for 1 complete set	251 x 50 x 585	Model 4	**198000034044**
				Model 5	**198000035044**
			268 x 50 x 635	Model 6	**198000036044**
			286 x 50 x 685	Model 7	**198000037044**

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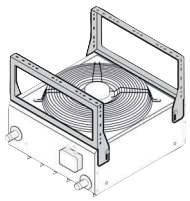
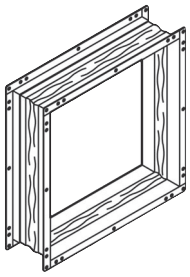
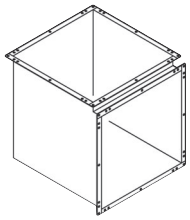
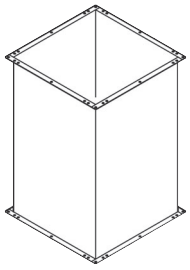
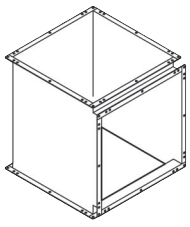
Accessories

Article	Article	Properties	Dimensions	Suitable for	Article no.
			[mm]		
	Ceiling-wall brackets	for ceiling or wall mounting, consisting of 2 multi-edged brackets with slotted holes and screws price for 1 complete set	420 x 100 x 510	Model 4	**198000034049**
			420 x 100 x 610	Model 5	**198000035049**
			470 x 100 x 710	Model 6	**198000036049**
			470 x 100 x 810	Model 7	**198000037049**
Galvanised steel components					
	Flexible connection	square	500 x 160 x 500	Model 4, Length 120 - 160 mm	**198000034013**
			600 x 170 x 600	Model 5, Length 120 - 160 mm	**198000035013**
			700 x 160 x 700	Model 6, Length 120 - 160 mm	**198000036013**
			800 x 155 x 800	Model 7, Length 120 - 160 mm	**198000037013**
	Filter box	ISO Coarse 90% (G4) filter, sendzimir galvanised	500 x 250 x 500	Model 4	**198000034010**
			600 x 250 x 600	Model 5	**198000035010**
			700 x 250 x 700	Model 6	**198000036010**
			800 x 250 x 800	Model 7	**198000037010**
	Air duct 90°		525 x 525 x 500	Model 4	**198000034021**
			625 x 625 x 600	Model 5	**198000035021**
			725 x 725 x 700	Model 6	**198000036021**
			825 x 825 x 800	Model 7	**198000037021**
	Air duct	square, fixed frame on both sides	450 x 450 x 1000	Model 4	**198000034015**
			550 x 550 x 1000	Model 5	**198000035015**
			650 x 650 x 1000	Model 6	**198000036015**
			750 x 750 x 1000	Model 7	**198000037015**
	Air duct T-section		500 x 525 x 550	Model 4	**198000034022**
			600 x 625 x 650	Model 5	**198000035022**
			700 x 725 x 750	Model 6	**198000036022**
			800 x 825 x 850	Model 7	**198000037022**

CONTINUED

Accessories

Article	Article	Properties	Dimensions	Suitable for	Article no.
			[mm]		
Ceiling fan					
	Ceiling fan	free-hanging axial fan, 3-blade,to increase air recir-culation and prevent accu-mulation of hot airfrom the ceiling area, 230 V 50 Hz, robust solid metal design, oscillating suspension, 60 W, Protection class IP 20, 0.35 A, white Further ceiling fans as supply air fans, see also under Product Selection: TOP without heat exchanger	1420 x 690 x 1420	TOP or TOP C Unit Heaters	**153001531421**
	Speed controller	continuously variable fan operation, 0-100%, 230 V Surface-mounted, Protection class IP 54, 1.5 A	96 x 75 x 162	Ceiling fan, 1 - 4 units	**196001530926**
		continuously variable fan operation, 0-100%, 230 V Surface-mounted, Protection class IP 54, 3 A	96 x 75 x 162	Ceiling fan, 3 - 8 units	**196001530927**
		continuously variable fan operation, 0-100%, 230 V Surface-mounted, Protection class IP 54, 5 A	96 x 93 x 162	Ceiling fan, 4 - 12 units	**196001530928**
	Warm air recirculation controller	including display and two separate temperature sensors, 230 V 50 Hz, Surface-mounted, Protection class II, Protection class IP 54, 4 A	150 x 60 x 200	Ceiling fan, 10 Units	**196001530930**
Services					
	Surcharge for powder-coating	Unit heater housing, powder coated RAL 9016 traffic-white or RAL 7035 grey		Model 4	**198000034040**
				Model 5	**198000035040**
				Model 6	**198000036040**
				Model 7	**198000037040**

TOP C – Heating and cooling in a 2-pipe system

The demand for cooling buildings is also continuing to increase in industrial climate control. In a system with chiller/heat pumps, the TOP C offers a simple solution to both: dissipating heating or cooling loads.

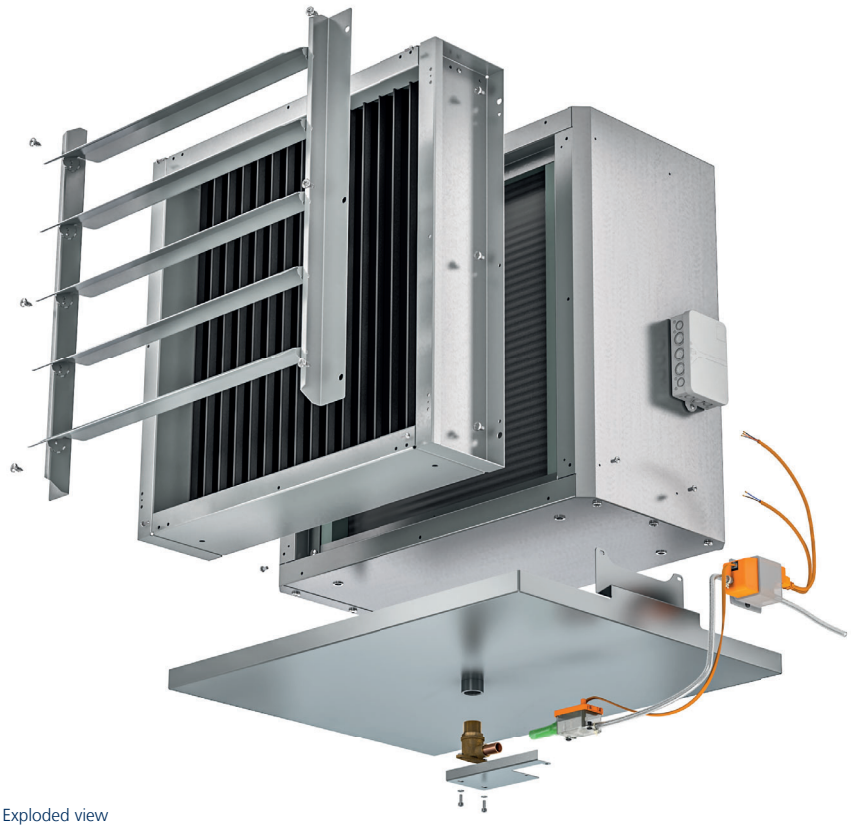
The most flexible climate control solution for storage, production, and sales. The fan support ensures fast-reacting heating and cooling of the hall.

Control of TOP C is continuously variable with the cost effective EC fans to supply the precise output actually required. This also means unnecessary sound emissions are avoided.

A version of the TOP C is available with a powerful condensate pump for delivery heights of up to 8 m or without a pump for free condensate drainage.

Product benefits;

- heating or cooling in a 2-pipe system with a single unit
- whisper-quiet sickle-blade fan with energy-efficient EC technology complies with ErP requirements
- two capacity levels of copper/aluminium heat exchanger
- fully equipped with condensate tray and droplet separator fitted
- optionally available with high-performance condensate pump installed
- either electromechanical control version or with decentralised KaControl configuration, depending on the unit
- decentralised intelligent KaControl for integration into BACnet, Modbus or KNX building automation systems
- single-row wall louvre and motor guard as standard
- recirculating air accessories are available for wall installation (mixed air or primary air accessories and ceiling-mounted version available on request)



Exploded view

Front view

Rear view

Find more information at:
▸ www.kampmanngroup.com/hvac/products/unit-heaters/top-c
Use our online calculation programs to calculate your heat outputs and technical data with a couple of clicks!

Kampmanngroup.com/top

Subject to technical changes. 407/06.2024 EN

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