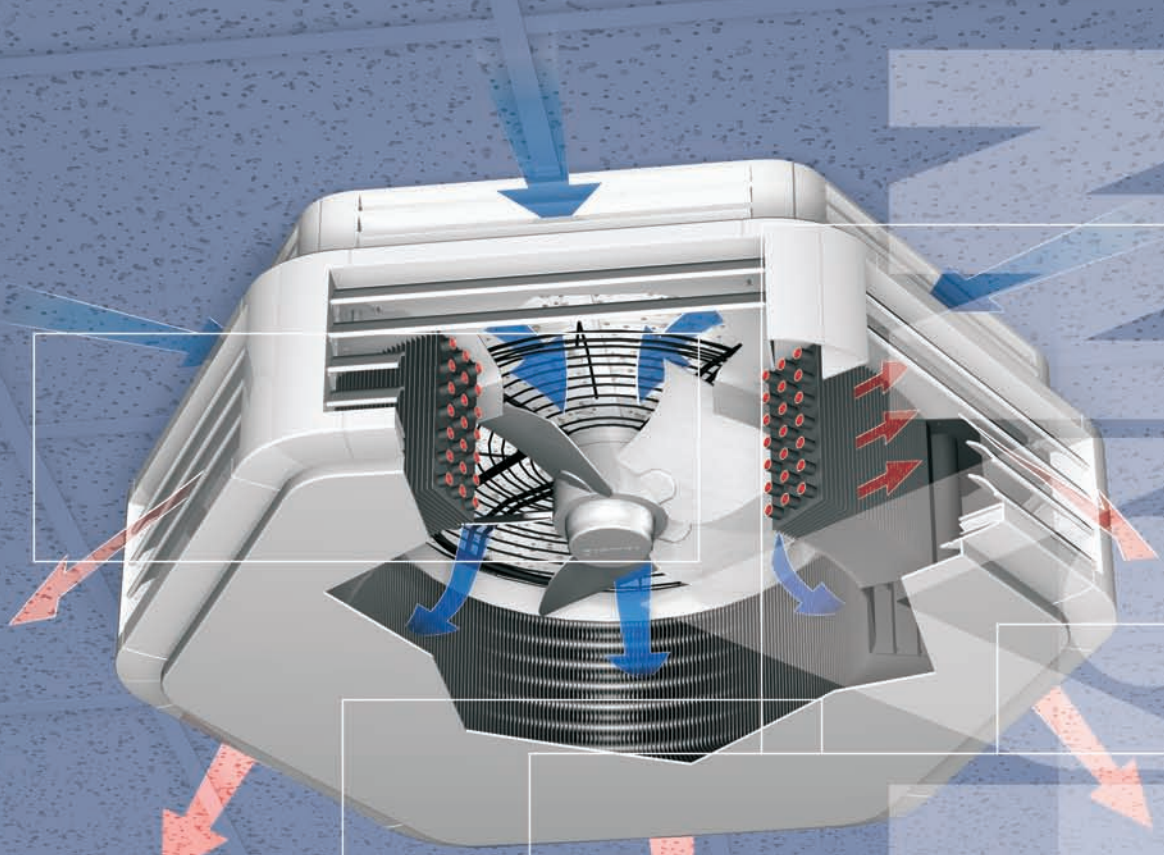
Article group
1.54

05/2006
GB



Ultra

KAMPMANN

Quality is our benchmark

Kampmann – the name today is synonymous with innovative and intelligent systems in the fields of heating, cooling and ventilation and, over the last 33 years, the Company has grown into an internationally-renowned group of companies.

Performance and quality are the benchmark for the continued success of Kampmann. Kampmann products are defined by their high performance capability, with guaranteed EN-tested heat outputs, materials fully rated to requirements, first-class workmanship, design-orientated form and shaping and fast delivery times. The quality management system has been documented for many years and is certified by DIN 9001:2000.

Kampmann systems for heating, cooling and ventilation:

- high-output convectors
- underfloor heating and cooling systems
- air handling systems
- door air curtains
- façade heating systems
- air conditioning systems
- radiant ceiling panels
- floor and façade ventilation systems
- fresh air climate with OXYCELL TECHNOLOGY

Versatility

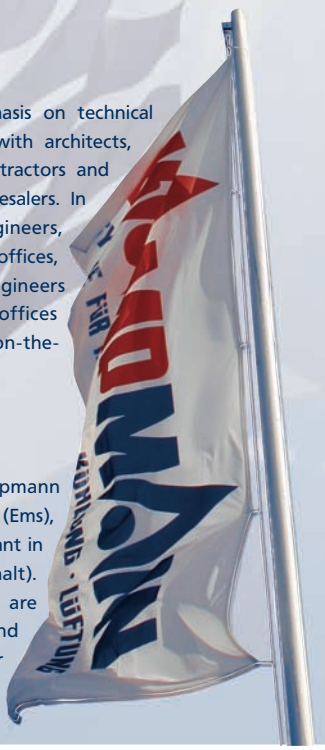
The wide product range comprises a mix of standard, non-standard and products tailor-made for specific projects. Kampmann systems are currently proving their reliability and efficiency in industrial, commercial and private buildings around the globe.

Sales

Kampmann places great emphasis on technical discussions and collaboration with architects, project engineers, heating contractors and builders, as well as with wholesalers. In Germany some 50 sales engineers, operating out of six regional offices, and a further 70 sales engineers working in 14 subsidiary offices throughout Europe provide on-the-spot technical assistance.

HQ and production

In addition to the Kampmann headquarters building in Lingen (Ems), there is a second production plant in Gräfenhainichen (Sachsen-Anhalt). The high-quality products are developed, manufactured and sold by a total workforce of over 550 employees in a production area of more than 55,000 m².



Contents

Ultra - the ultimate in air handling

KAMPMANN
SYSTEMS FOR HEATING · COOLING · VENTILATING

Ultra - the "ultimate" in air handling

With the development of the Ultra, Kampmann set new standards in the heating, cooling and ventilation of architectural interiors.

Introducing the new shape of the Ultra: an updated design with innovative engineering for even higher levels of comfort!

NEW:

- now fitted with whisper-quiet sickle-blade fans
- contemporary, innovative design
- only 330 mm high
- three unit sizes
- higher heat and cooling outputs
- enhanced performance
- air inlet crown supplied as standard
- extended louvre for improved air circulation
- louvre fins can now be adjusted to six defined positions
- identical styling, design and height for recirculating air, mixed air and cooling units
- lightweight design with plastic housing components
- traffic white RAL 9016 housing
- other paint finishes on request (at a surcharge)

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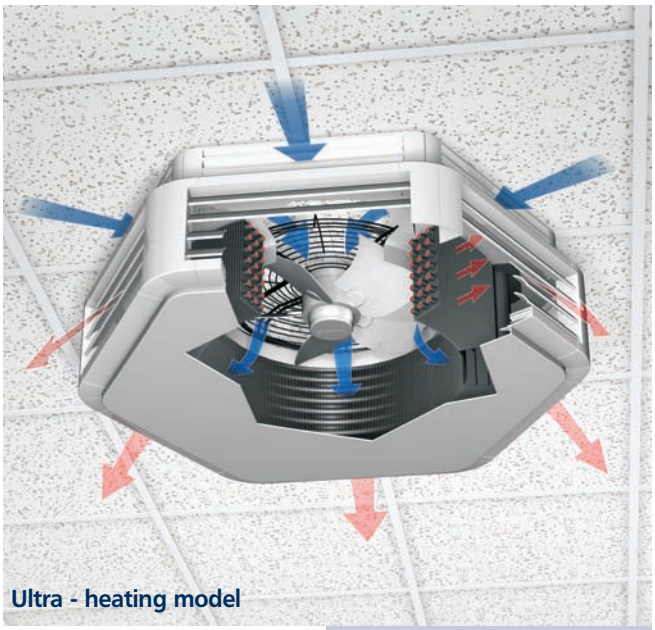
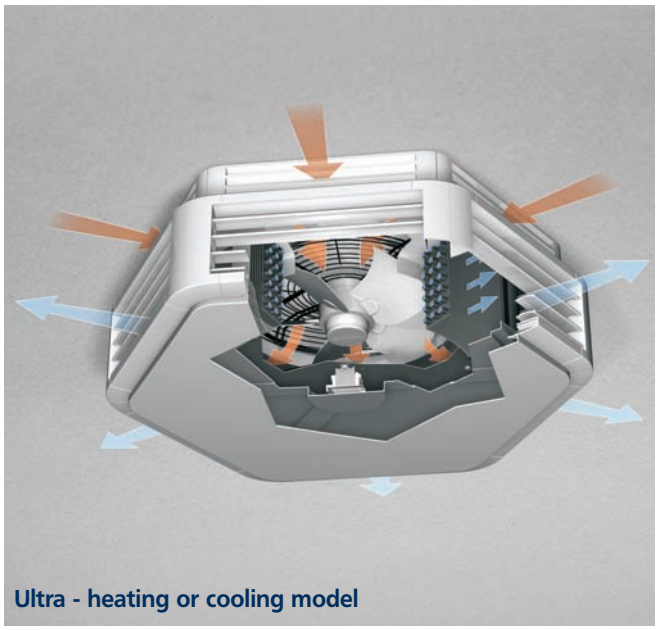
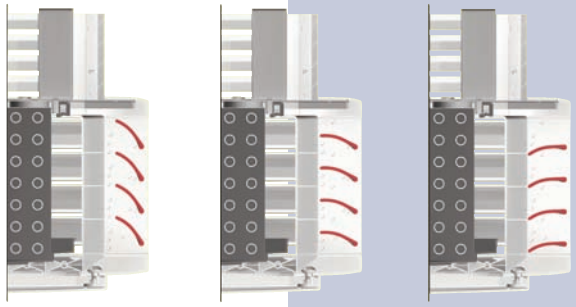
Description



Ultra - heating model



Ultra - heating or cooling model



Louvre positions

Base plate easily removable for servicing

Housing

The slimline, self-supporting, hexagonal Ultra housing has a visually contemporary styling.

Air is discharged from six outlet louvres and is guided by the louvre fins which slot into six defined positions.

The overall weight of the unit is reduced by the use of plastic housing components, simplifying installation.

- all housing components are powdercoated as standard in traffic white RAL 9016
- extended louvre fins (width 45 mm) for optimum directional control of air
- air inlet crown supplied as standard
- visually identical styling and height of heating or cooling units
- base plate easily removable for problem-free servicing
- only 330 mm high
- all visible components are manufactured from lightweight paintable material (other colours on request and at a surcharge)

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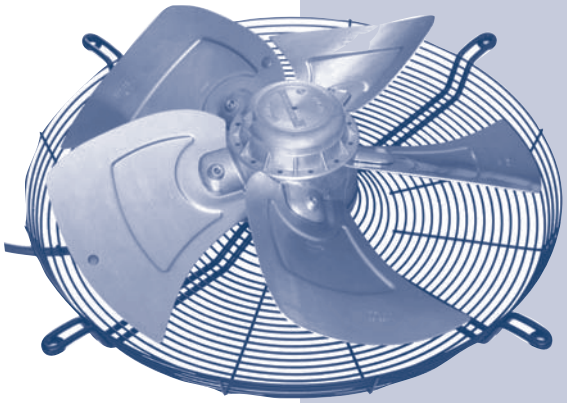
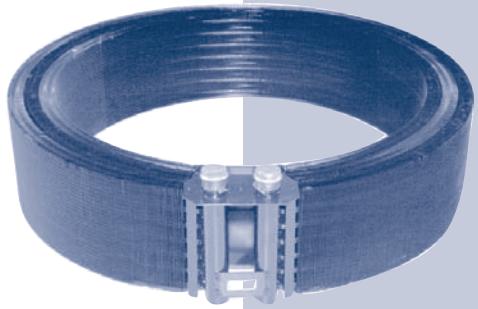
Description



Whisper-quiet, sickle-blade fan

Ziehl-Abegg whisper-quiet sickle-blade fans

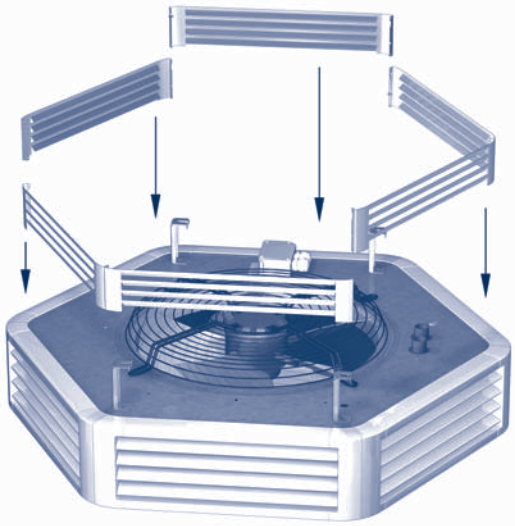
- Characteristic fan curves aligned to the Ultra itself, allows fan control by means of voltage reduction
- An external rotor motor in the hub of the fan provides 1-phase or 3-phase drive
- 5-blade, sickle-form, whisper-quiet fans
- Diagonal, high-pressure, whisper-quiet fan fitted in series 97 mixed air units
- Motor protection by thermal cut-outs in the windings of the motor



Heat exchanger

Heat exchanger

- Circular design, lightweight, high output levels from a slim-line unit
- Suitable for use with LPHW
- Aluminium fins expansion-jointed to copper pipes
- Steel distributor and collection vessel, 1" connection
- Suitable for use with LPHW up to 90 °C flow temperature and 16 bar continuous operating pressure
- Direct evaporator and condenser on request



Induction grille supplied as standard for fitting on site; brackets are ready-mounted

Applications

Some typical areas of application include:

- supermarkets,
- showrooms,
- conference facilities and
- foyers

with a ceiling height of between 2.2 m and 4 m - in fact Kampmann Ultra units are ideal for use wherever unit heaters do not fit in visually.

Delivery

Kampmann Ultra arrive on site packed in a cardboard box, factory-wired, complete with induction grille (in six sections) and four ready-fitted brackets. Ultra units are ideally suited to be stocked by wholesalers.

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Description

Type numbers

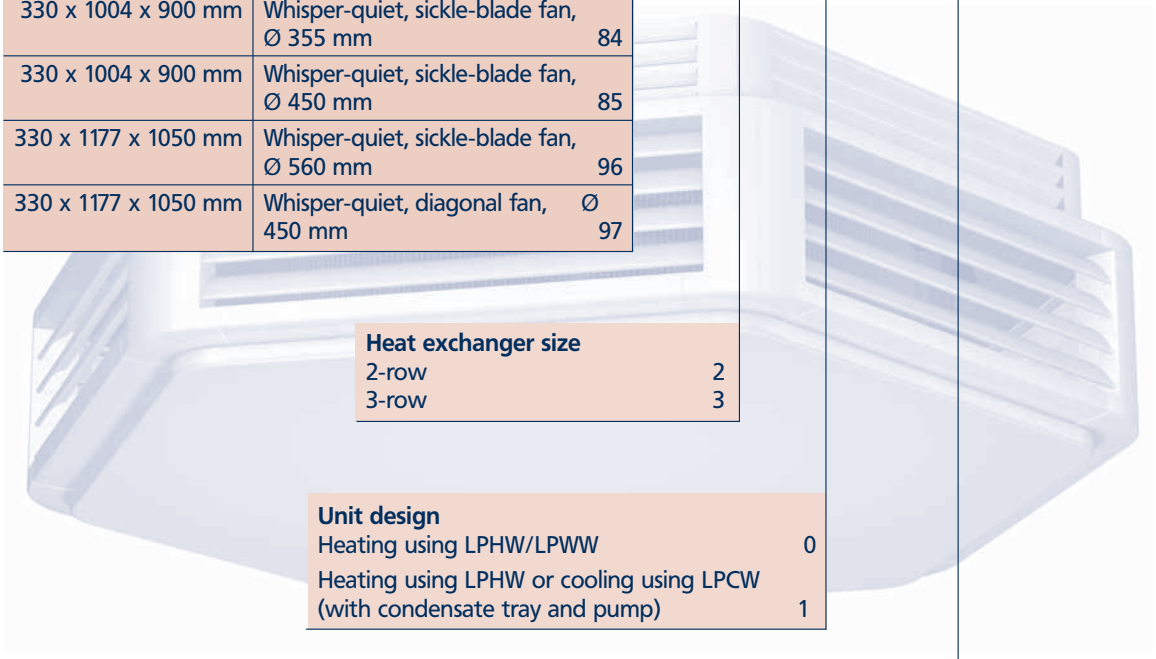
Unit type no.												Suffix		
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1	5	4	0	0	0	7	3	2	0	3	6	F	R	B

Ultra series

Article group

required to complete type no.

Housing dimensions (H x D x W):	Fan	
330 x 840 x 750 mm	Whisper-quiet, sickle-blade fan, Ø 315 mm	73
330 x 1004 x 900 mm	Whisper-quiet, sickle-blade fan, Ø 355 mm	84
330 x 1004 x 900 mm	Whisper-quiet, sickle-blade fan, Ø 450 mm	85
330 x 1177 x 1050 mm	Whisper-quiet, sickle-blade fan, Ø 560 mm	96
330 x 1177 x 1050 mm	Whisper-quiet, diagonal fan, Ø 450 mm	97



Heat exchanger size	
2-row	2
3-row	3

Unit design	
Heating using LPHW/LPWW	0
Heating using LPHW or cooling using LPCW (with condensate tray and pump)	1

Motor design	
Axial fan, 2-stage, 3-phase motor 400 V/3 ~, approx. 900/700 1/min	36
Axial fan, 2-stage, 3-phase motor 400 V/3 ~, approx. 600/500 1/min (series 96 only)	38
Axial fan, 1-stage, single phase motor 230 V/1 ~, approx. 900 1/min	16
Diagonal fan, 2-stage, single phase motor 400 V/3 ~, approx. 890/640 1/min	66
Diagonal fan, 1-stage, single phase motor 230 V/1 ~, approx. 640 1/min	60

Accessories (fitted as an option)	
Frost protection thermostat with frame	F
Repair switch	0R
Frost protection thermostat, frame and repair switch	FR
KaBUS *ECO* power module, recirc. air, 2-stage, 3-phase	00B
Repair switch and KaBUS *ECO* power module, recirc. air, 2-stage, 3-phase	0RB

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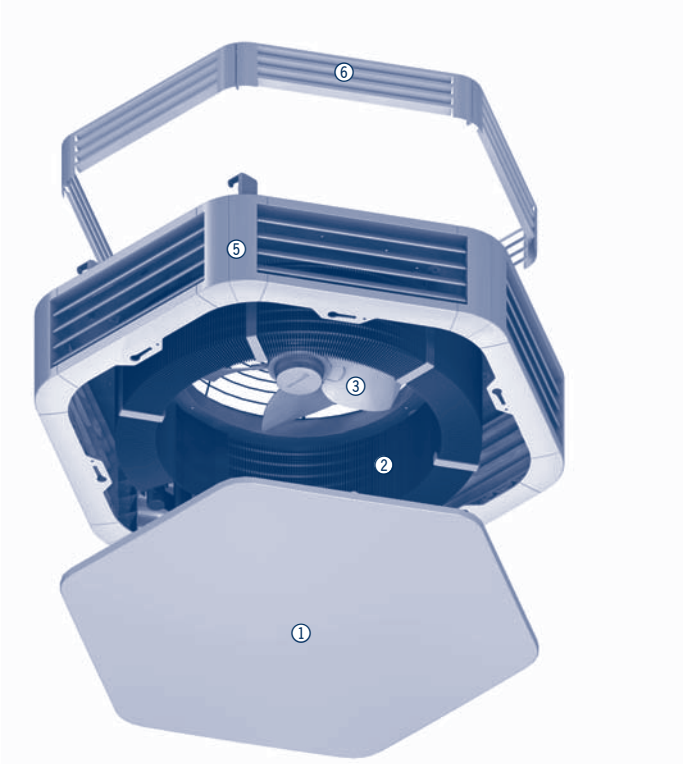
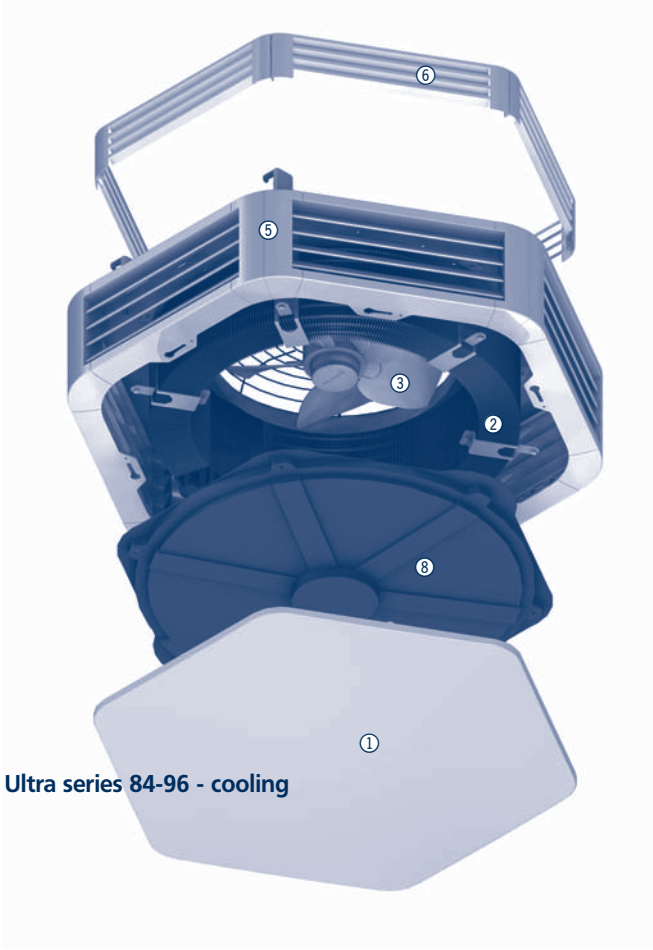
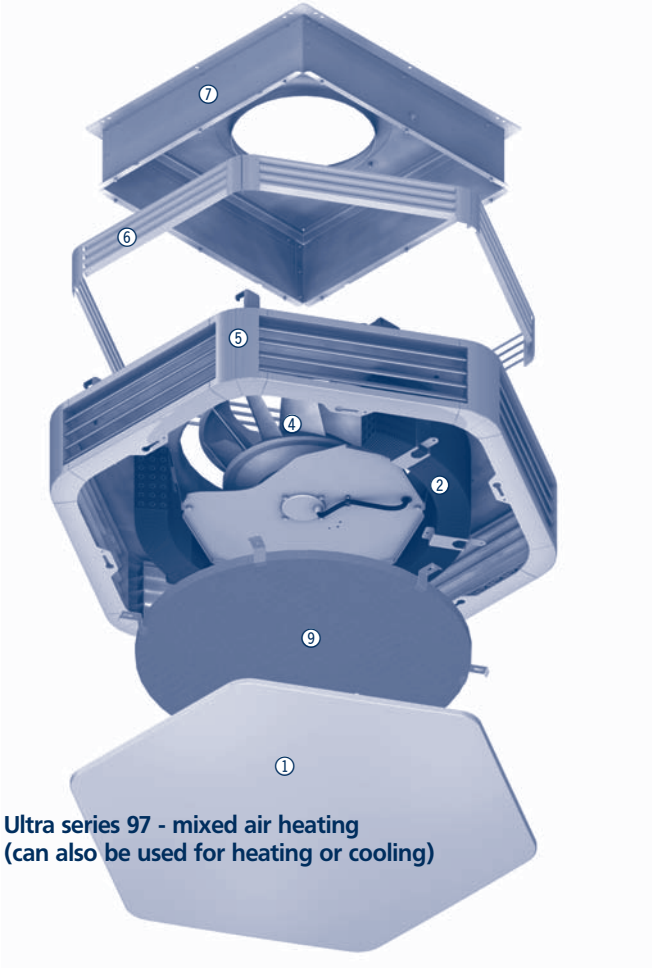


Ultra series 73-96 - heating



Ultra series 84-96 - cooling



Ultra series 97 - mixed air heating
(can also be used for heating or cooling)

① Base plate, removable by rotating through 6°
② Cu/al heat exchanger
③ Whisper-quiet, sickle-blade axial fan
④ Whisper-quiet, diagonal fan
⑤ Plastic housing, RAL 9016
⑥ Induction grille, fitted as standard
⑦ Connecting box
⑧ Condensate tray
⑨ Baffle plate

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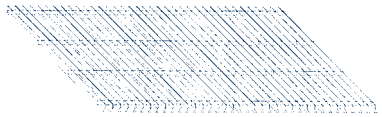
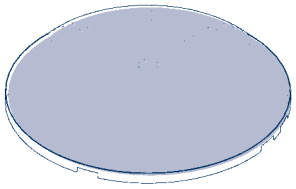
SYSTEMS FOR HEATING · COOLING · VENTILATING

Accessories - recirculating air

Recirculating air accessories (without ductwork)

	Description	for Ultra fan size	Weight kg
	**Induction grille, square, type 60988** the use of the induction grille enables air to be drawn through the grille, pass through the suspended ceiling and into the unit unseen. To prevent a drop in air flow, a minimum of one grille per unit is recommended.	/	3.0
	**Filter set, recirculating air, type 6*050** fits directly onto the induction side of recirculating air units without the need for ductwork. Filter set type 6*050 is laid on top of the unit if the Ultra is fitted visibly or within a suspended ceiling. **Replacement filter mat, type 6*051** **for use with recirculating air filter set, filter class G3**	4 5 6	0.5 0.5 1.0

The use of modular ductwork components

All components have a standardized frame connection profile so that all components can be joined in a modular manner.

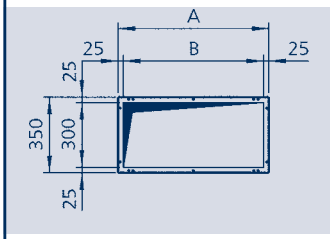
The 90° reducing angle section facilitates the transition to flatter components, such as those used within suspended ceilings.

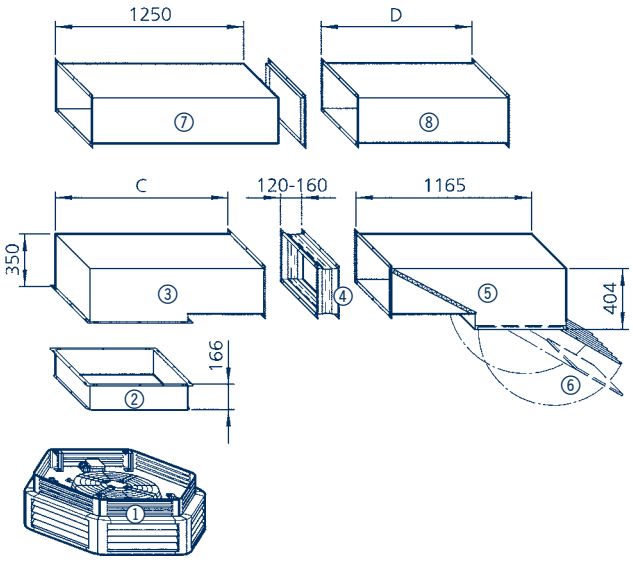
If there is sufficient ceiling or suspended ceiling height, square components from the range can be used as an alternative.

It should be noted that:

- the use of components, especially those with large airside resistance, can reduce the airflow and heat output (see pages 19 to 25 for further details).
- the use of flexible connections is recommended when fresh air is brought in through the wall or roof to prevent vibration transfer onto the components.
- provision must be allowed to replace the filter when the recirculating air filter set or filter box is used.

Recirculating air ductwork dimensions for use with 625 x 625 mm suspended ceilings





Model	5	6
Type no.	85_ _ _ _	96_ _ _ _
A	600	700
B	550	650
C	1145	1195
D	Please state duct length when ordering	

All dimensions are given in mm

① Ultra
② Connecting frame, square, type 6*002
③ Reducing angle section 90°, extended, type 6*104
④ Flexible connection, rectangular, type 6*034
⑤ Induction angle section 90°, with induction grille, type 60105
⑥ Filter insert with G3 filter, type 60126
⑦ Duct section, rectangular, 1250 mm long, type 6*130
⑧ Rectangular duct, type 6*030

Article no. for DataNorm/EDV entry: 198 0000 _ _ _ _ _ (insert type no.)

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Accessories for use within suspended ceilings

Heating and ventilation of retail outlets with 625 x 625mm[1] suspended ceiling grids

The benefits of using suspended ceiling grids in retail outlets are manifold.

A number of ductwork components, specifically designed for use with this type of suspended ceiling, are now available as part of the Ultra accessories range.

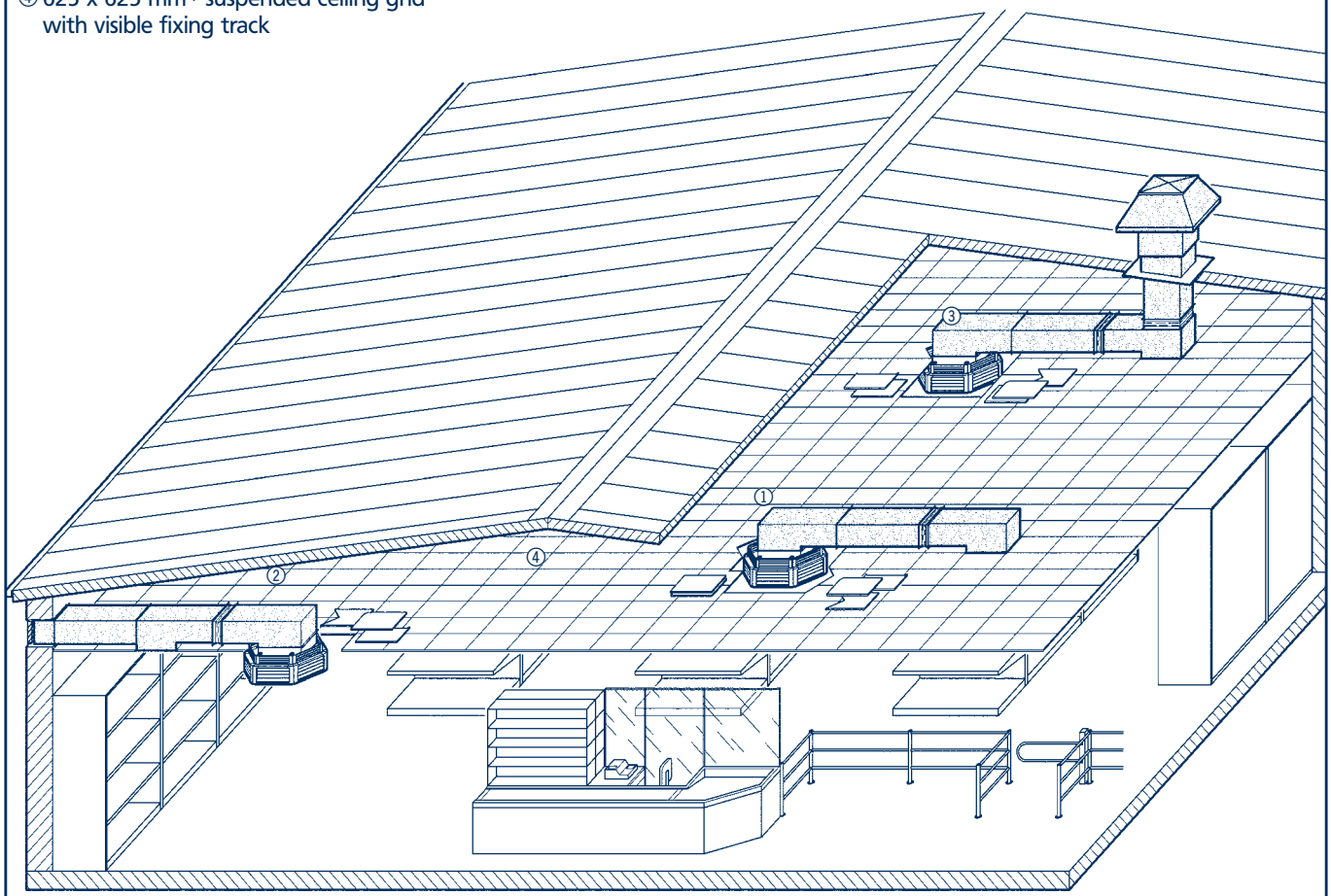
When designing a heating and ventilation system for a retail outlet, it is imperative that the components are integrated as inconspicuously as possible within the structure of the building. The slim-line form and compact design of the rectangular Ultra components makes them ideal for use within suspended ceilings.

- Ductwork for fresh air induction or recirculating or mixed air can be incorporated unseen within the suspended ceiling.
- Recirculating air/mixed air units with filter can also be fitted within the suspended ceiling and then be accessed, for service purposes or filter replacement, through the induction grille.
- All that is visible beneath the suspended ceiling is the Ultra unit and the square induction grille.
- 600 x 600 mm Ultra components are available on request

The components to fit each unit model are described on pages 10 to 13.

Ultra shown installed in a supermarket with components fitted within the suspended ceiling

① Ultra with recirculating air components
② Ultra with mixed air components, fresh air entry through wall
③ Ultra with mixed air components, fresh air entry through roof
④ 625 x 625 mm[1] suspended ceiling grid with visible fixing track



[1] 600 x 600 mm components available on request

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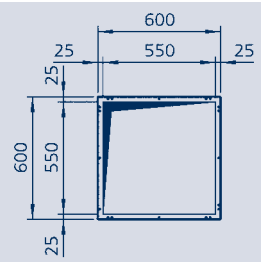
SYSTEMS FOR HEATING · COOLING · VENTILATING

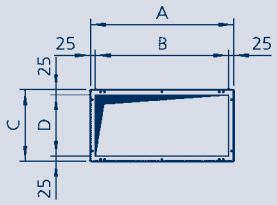
Accessories for use with suspended ceilings

Description

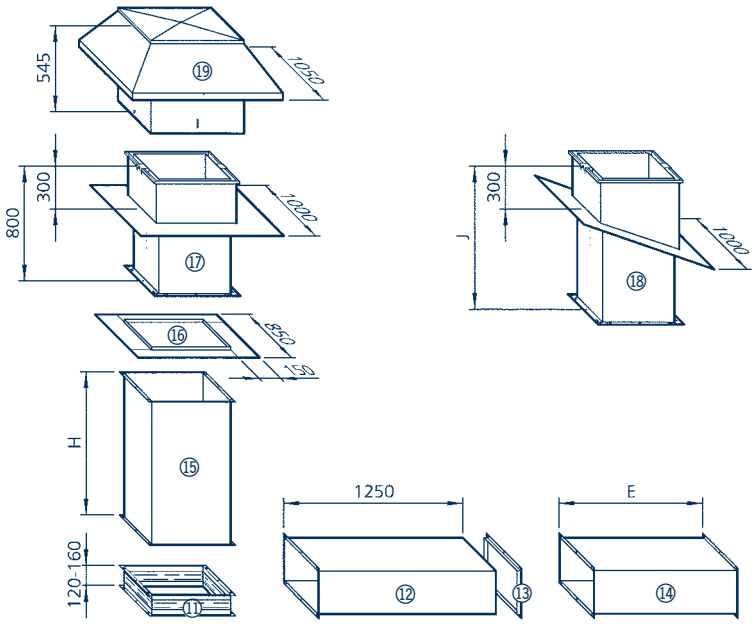
Mixed air ductwork dimensions for use with 625 x 625 mm suspended ceilings[1)]

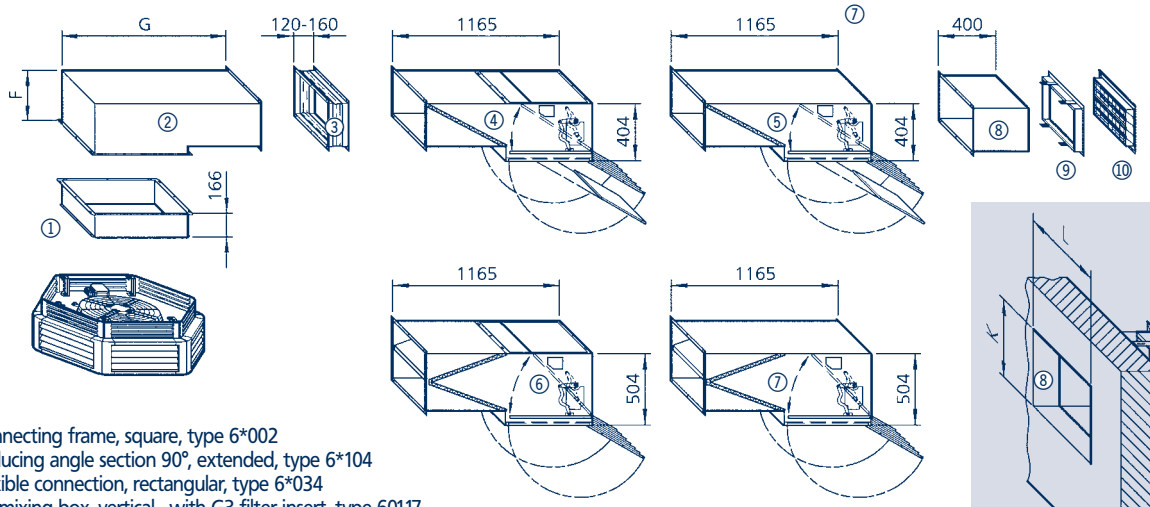


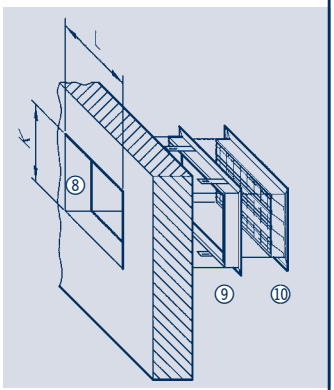
Square ductwork components for fresh air induction through the roof



Rectangular components







① Connecting frame, square, type 6*002
② Reducing angle section 90°, extended, type 6*104
③ Flexible connection, rectangular, type 6*034
④ Air mixing box, vertical, with G3 filter insert, type 60117
⑤ Air mixing box, horizontal, with G3 filter insert, type 60118
⑥ Air mixing box, vertical, with G3 filter insert, type 67117
⑦ Air mixing box, horizontal, with G3 filter insert, type 67118

Ultra series	85_ _ _ _	96 _ _ _ _	97 _ _ _ _
A	600	700	700
B	550	650	650
C	350	350	450
D	300	300	400
E	Please state duct length when ordering		
F	350	350	450
G	1145	1195	1195
H	Please state duct length when ordering		
J	Length dependant on angle of roof		
K	310	310	410
L	555	655	855

⑧ Wall insert, type 6*037
⑨ Weather grate frame, type 6*039
⑩ Weather grate, type 6*038
⑪ Flexible connection, square, type 35013
⑫ Duct section, rectangular, 1250 mm long, type 6*130
⑬ Duct connecting profile (with duct section type 6*130)
⑭ Duct section, rectangular, type 6*030
⑮ Duct section, square, type 35015
⑯ Cover plate to conceal visible roof opening for roof angle of **°, type 35118**
⑰ Roof socket for flat roof with roof duct for roof angle up to 4°, type 35119
⑱ Roof socket for sloping roof with roof duct for roof angle **°, type 35120**
⑲ Rain hood, type 35114

All dimensions are given in mm

See page **12-13 for descriptions of components**

* Insert fan size
**Insert figure for roof angle, see p 9

[1)] 600 x 600 mm ceiling grid components on request

Article no. for DataNorm/EDV entry: 198 0000 _ _ _ _ _ (insert type no.)

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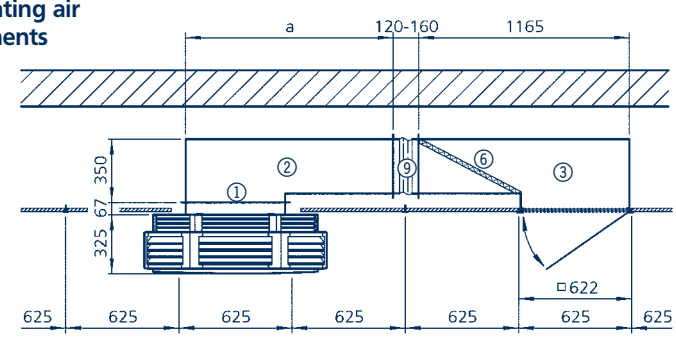
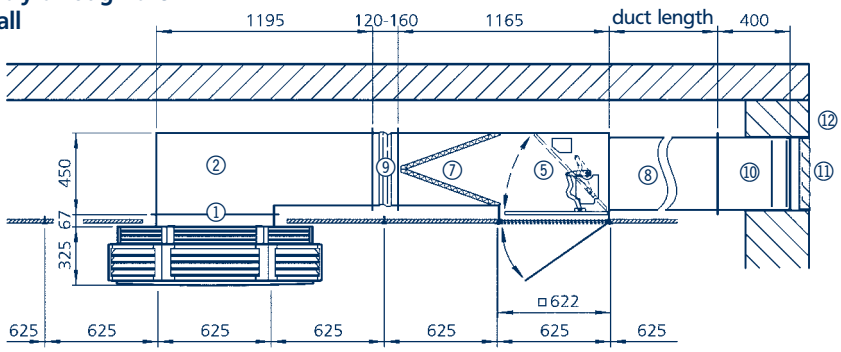
SYSTEMS FOR HEATING · COOLING · VENTILATING

Ultra layout complete with ductwork components

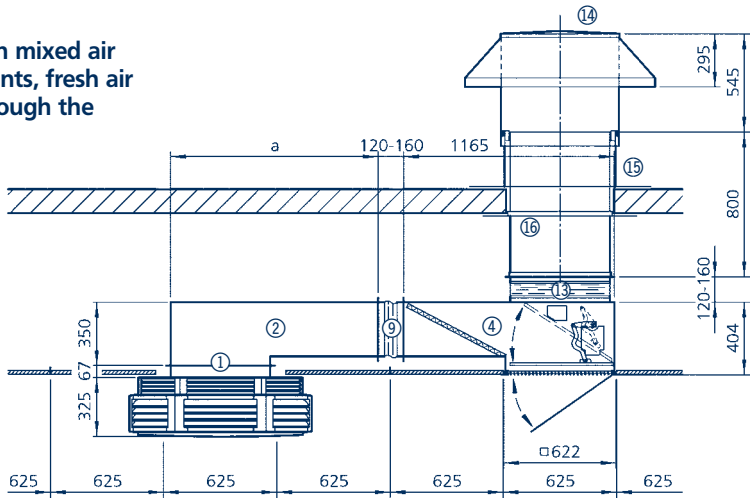
Ultra with recirculating air components



Ultra with mixed air components, fresh air entry through the wall



Ultra with mixed air components, fresh air entry through the roof



① Connecting frame, square, type 6*002
② Reducing angle section, 90°, extended, type 6*104
③ Induction angle section, 90°, with induction grille, type 60105
④ Air mixing box, vertical, with G3 filter insert, type 60117
⑤ Air mixing box, horizontal, with G3 filter insert, type 67118
⑥ Filter insert with G3 filter, type 60126
⑦ Filter insert with G3 filter, type 67126
⑧ Duct section, rectangular, 1250 mm long, type 6*130
⑨ Flexible connection, rectangular, type 6*034
⑩ Wall insert, type 6*037
⑪ Weather grate, type 6*038
⑫ Weather grate frame, type 6*039
⑬ Flexible connection, square, type 35013
⑭ Rain hood, type 35114
⑮ Roof socket for flat roof with roof duct for roof angle up to 4°, type 35119
⑯ Cover plate to conceal visible roof opening, type 3511800

See p 12-13 for description of components

Fan size	5	6	7
Ultra series	85_ _ _ _	96 _ _ _ _	97 _ _ _ _
a	1145	1195	1195

all dimensions are given in mm

*Insert fan size

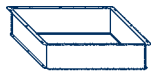
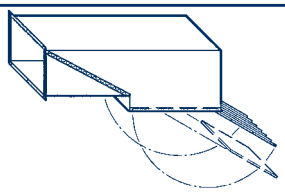
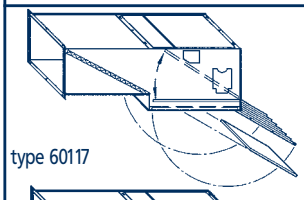
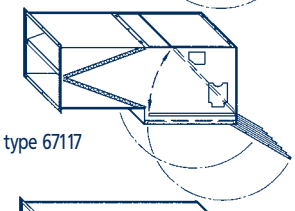
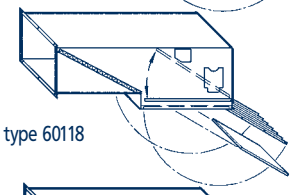
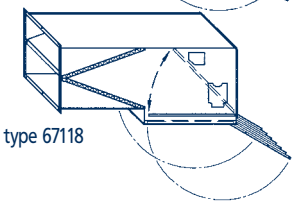
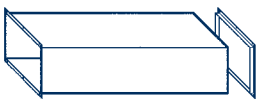
Prior to installation, the exact position of the units and ductwork should be discussed with the ceiling fitter.

Article no. for DataNorm/EDV entry: 198 0000 _ _ _ _ _ (insert type no.)

KAMPMANN
SYSTEMS FOR HEATING · COOLING · VENTILATING

Accessories for use with suspended ceilings

Mixed air ductwork components for use with 625 x 625 mm suspended ceilings[1)]

	Description	Connection	for Ultra fan size	Weight kg
	① **Connecting frame, square, type 6*002** galvanized steel transition section between Ultra unit and ductwork system	□	5 6	4 6
	② **Reducing angle section, 90°, extended, type 6*104** galvanized steel flat angle section; transition section between square and rectangular ductwork components, connecting profile at both ends	▭↓□	5 6 7	21,0 24,0 28,5
	③ **Induction angle section 90°, with induction grille, type 60105** - sendzimir galvanized steel induction section for use with 625 x 625 mm ceiling grid; accommodates G3 filter insert; concealed by black perforated plate; RAL 9016 aluminium induction grille	□↓▭	5 6	30,0 30,0
	④ **Air mixing box, vertical, type 60117 (Ultra series 95/96), type 67117 (Ultra series 97)** for vertical air induction through roof for use with 625 x 625 mm suspended ceiling grids; sendzimir galvanized steel; with G3 filter insert; RAL 9016 aluminium induction grille	□↓▭	5 6 7	35,0 35,0 38,0
	⑤ **Air mixing box, horizontal, type 60118 (Ultra series 95/96), type 67118 (Ultra series 97)** for horizontal air induction through external wall for use with 625 x 625 mm suspended ceiling grids; sendzimir galvanized steel; with G3 filter insert; RAL 9016 aluminium induction grille	▭↓▭	5 6 7	35,0 35,0 38,0
	⑥ **Filter insert with G3 filter, type 60126 (Ultra series 95/96),type 67126 (Ultra series 97)** for use in induction angle section or air mixing boxes; dry layer filter in steel frame	/	5 6 7	1,0 1,0 1,5
	⑦ **Replacement G3 filter mat, type 60127 (Ultra series 95/96), type 67127 (Ultra series 97)** for use in induction angle section or air mixing boxes; dry layer filter in steel frame	/	5 6 7	0,3 0,3 0,5
	⑧ **Duct section, rectangular, type 6*030** with connecting profile at both ends; please state length when ordering	▭	5 6 7	20,0/m 21,0/m 25,0/m
	⑨ **Duct section, rectangular, type 6*130, 1250 mm long** sendzimir galvanized with loose connecting profile at one end; for use as extension section or to adjust length	▭	5 6 7	25,0 27,0 31,0
	⑩ **Flexible connection, rectangular, type 6*034** with connecting profile at both ends and flexible canvas connection to provide sound attenuation and the possibility of adjusting length; length: 120–160 mm	▭	5 6 7	4,0 4,5 5,5

*Insert fan size (see also type nos. on page 6)
[1)] 600 x 600mm ceiling grid components available on request

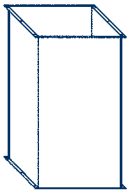
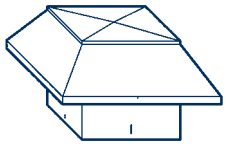
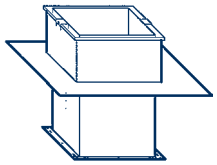
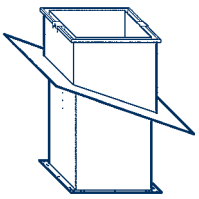
The sendzimir galvanized mixed air components can also be powdercoated in RAL 9016 if they are on view.

Article no. for DataNorm/EDV entry: 198 0000 _____ (insert type no.)

KAMPMANN
SYSTEMS FOR HEATING · COOLING · VENTILATING

Accessories for use with suspended ceilings

Mixed air ductwork components for use with 625 x 625 mm suspended ceilings[1)]

	Description	Connection	for Ultra fan size	Weight kg
	⑪ **Wall insert, type 6*037** sendzimir galvanized with connecting profile at one end, for embedding within the wall; length: 400 mm	▭	5 6 7	7,5 10,0 14,0
	⑫ **Weather grate, type 6*038** sendzimir galvanized construction with drip spout, drop collection ledge and galvanized bird grate	▭	5 6 7	5,5 8,8 11,0
	⑬ **Weather grate frame, type 6*039** sendzimir galvanized Z-profile construction with wall anchors	▭	4 5 6 7	3,8 5,5 8,8
	⑭ **Flexible connection, square, type 35013** with connecting profile at both ends and flexible canvas connection to provide sound attenuation and the possibility of adjusting length; length: 120–160 mm	□	5 6 7	3,7 3,7 3,7
	⑮ **Duct section, square, type 35015** with connecting profile at both ends; please state length when ordering	□	5 6 7	29,9/m 29,9/m 29,9/m
	⑯ **Rain hood, type 35114** square hood with removable cover; bird protection provided by perforated induction openings	□	5 6 7	33,0 33,0 33,0
	⑰ **Roof socket for flat roof with duct section, type 35199** suitable for use with roofs with an angle of less than 4° with bonding flange; the hollow between roof duct and roof socket can be filled with insulating material.	□	5 6 7	31,0 31,0 31,0
	⑱ **Roof socket for angled roof with duct section, type 3*120**** suitable for use with angled roofs; the hollow between roof duct and roof socket can be filled with insulating material.	□	Roof angle: 5–14° 15–24° 25–32° 33–40° 41–48°	 42,0 53,0 64,0 75,0 85,0
	⑲ **Cover plate, type 3*118**** used to cover visible opening through roof	□	0–4° 5–14° 15–24° 25–32° 33–40° 41–48°	4,0 4,5 5,0 5,5 6,0 6,5

Roof angle	5–14°	15–24°	25–32°	33–40°	41–48°	> 48°
Type	3512010	3512020	3512030	3512037	3512045	3512099

Roof angle	0–4°	5–14°	15–24°	25–32°	33–40°	41–48°	> 48°
Type	3511800	3511810	3511820	3511830	3511837	3511845	3511899

*Insert fan size (see also type nos. on page 6)
[1)] 600 x 600 mm ceiling grid components available on request

The sendizimir galvanized mixed air components can also be powdercoated in RAL 9016 if they are on view.

Article no. for DataNorm/EDV entry: 198 0000 _____ (insert type no.)

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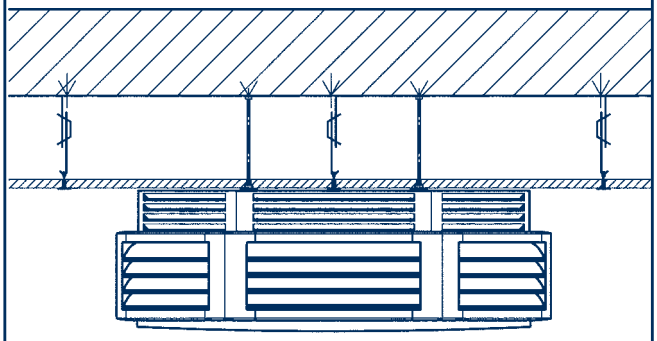
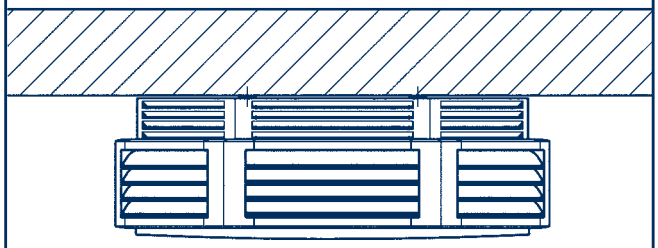
SYSTEMS FOR HEATING · COOLING · VENTILATING

Fixing options - recirculating air units

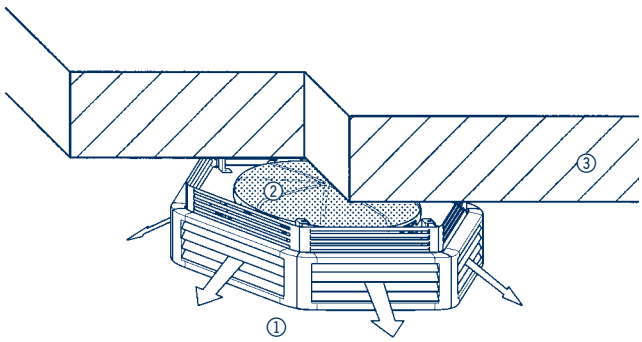
Recirculating air Ultra fixed to suspended ceiling



Recirculating air Ultra fixed to solid ceiling



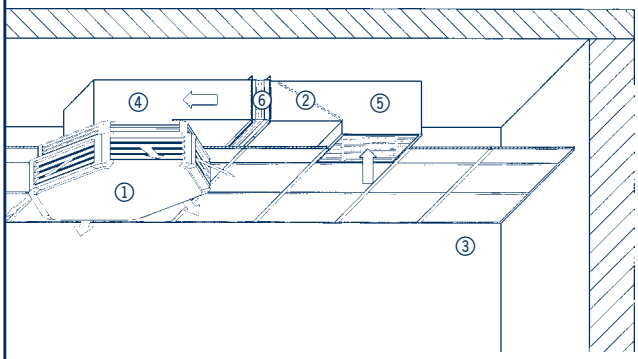
Recirculating air fixing options



Option 1: Ultra with recirculating air filter set fixed to solid ceiling

Ultra is fixed to solid ceiling and G3 filter set fitted on top of unit with air induction through air inlet crown

① Ultra
② Recirculating air G3 filter set, type 6*050
③ Solid ceiling



Option 2: Ultra with recirculating air ductwork components fixed to a suspended ceiling

Ultra is fitted beneath the suspended ceiling; inducted air is filtered by G3 filter insert in 90° induction angle section; air induction through square recirc. air induction grille which fits within 625 x 625 mm ceiling grid.

① Ultra
② Filter insert with G3 filter, type 60126
③ 625 x 625 mm suspended ceiling grid[1)],
with visible fixing tracks
④ 90° reducing angle section, type 60104
⑤ Induction angle section 90° with induction grille type 60105
⑥ Flexible connection, type 6*034

*Insert figure for unit model
[1)]600 x 600 mm ceiling grid components available on request

Article no. for DataNorm/EDV entry: 198 0000 _____ (insert type no.)

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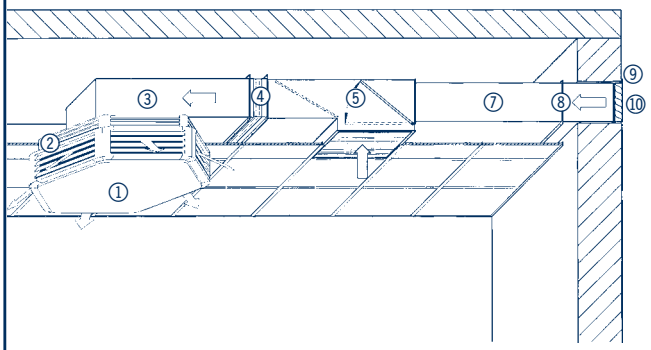
Fixing options - mixed air units

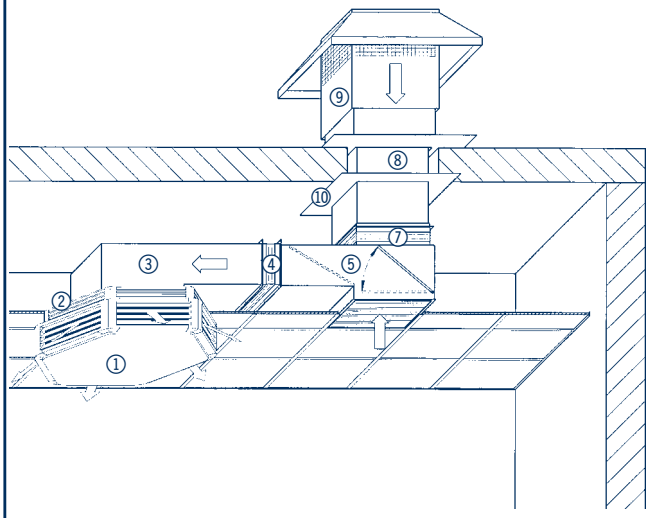
Mixed air fixing options



Option 3: Ultra with mixed air ductwork components fitted to a suspended ceiling, fresh air entry through the wall

Ultra is fitted beneath suspended ceiling grid with quantities of recirc. air and fresh air regulated by horizontal air mixing box; inducted air enters horizontally through external wall and is filtered by G3 filter insert; recirculated air enters through square induction grille which fits within 625 x 625 mm suspended ceiling grid[1)]

① Ultra with square connecting frame, (suffix . . . . . F)
② Air inlet crown (standard)
③ Reducing angle section 90°, extended, square - rectangular, type 6*104
④ Flexible connection, rectangular, type 6*034
⑤ Air mixing box horizontal, type 60118, with G3 filter insert, type 60126
⑦ Duct section, rectangular, type 6*030 or duct section, rectangular, 1250 mm long, type 6*130
⑧ Wall insert, type 6*037
⑨ Weather grate frame type 6*039
⑩ Weather grate, type 6*038



Option 4: Ultra with mixed air ductwork components fitted to a suspended ceiling, fresh air entry through roof

Ultra is fitted beneath suspended ceiling grid with quantities of recirc. air and fresh air regulated by vertical air mixing box; inducted air enters vertically through the roof and is filtered by G3 filter insert; recirculated air enters through square induction grille which fits within 625 x 625 mm suspended ceiling grid[1)]

① Ultra with square connecting frame (suffix . . . . . F)
② Air inlet crown (standard)
③ Reducing angle section 90°, extended, square-rectangular, type 6*104
④ Flexible connection rectangular, type 6*034
⑤ Air mixing box, vertical, type 60117 with G3 filter insert, type 60126
⑦ Flexible connection, square, type 35013
⑧ Roof socket for flat roof with duct section, type 35119
⑨ Rain hood, type 35114
⑩ Cover plate for roof opening, type 3511800

[1)]600 x 600 mm ceiling grid components available on request

Article no. for DataNorm/EDV entry: 198 0000 _____ (insert type no.)

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Layout

Design

The size of unit required is calculated in the same way as with conventional heaters using accepted standards and guidelines. The Ultra's dynamic air handling system is particularly suitable for transient operation. It is recommended that extra allowance is made for this in order to provide a heating system designed to meet the specific requirements of the users.

Planning and building permission documents often make reference to other standards and guidelines, such as VDI 2082 (2000.07).

It is recommended that the specific requirements of the planning and building permission are checked prior to design. Any queries should be referred immediately to the relevant buildings inspection authorities.

Mixed air operation

When designing the Ultra for use in mixed air mode, the following should be taken into consideration:

- The heating of the fresh air supply to room temperature must be included in the ventilation heat requirement figure (see also DIN 12831).
- The mixing temperature must be carefully selected to achieve the heat output based on the proportion of fresh air/ recirculating air used.
- Heat outputs are higher when using fresh air due to the greater temperature difference between the fresh air and the water temperature. The heat output must also be able to be met using natural ventilation in recirculating mode. The heat outputs at a variety of entering air temperatures are given in the tables on pages 38 to 43.
- Ductwork reduces the air volume and thus also the heat output of the Ultra; technical data and formulae are given on pages 19 to 25.

Fresh air rates

The following should be noted when calculating the volume of fresh air required:

- In areas where the air is polluted by the users of the room, the number of users is essential for an accurate calculation
- If there are toxic gases or vapours, the volume of air must be large enough to ensure that the Maximum Working space Concentration (MWC) values are not exceeded.
- Supply air and extracted air volumes within a system are identical unless a state of excess or low pressure is to be maintained.

Fresh air flow rates in retail outlets according to VDI 2082 (2000.07)

Area	Occupancy/m²	Deterioration in odour			
		without		with	
		occup./ m³/h	m³/h m²	occup/ m³/h	m³/h m²
Retail space	0.1 to 0.15	–	6	–	9
Retail space with low occupancy i.e. furniture store	0.05				
Service areas with some occupancy*)	dep. on occupancy	– 30	2	–	5
Staff rooms	dep. on occupancy	30	6	45	12
Staff changing rooms	–	–	–	40	–
Food processing/preparation areas*)	dep. on occupancy	–	–	–	18
Workshops *)	dep. on occupancy	30	–	45	12
Storage without cooling facilities*)		30 dep. on occupancy	6 3	45 45	12 9

*)The higher figure should always be taken (occupancy per m³/h rather than m³/h).

Air circulation

Designing the Ultra layout based on air circulation has proved a practical method of selecting the correct units and ensuring an even distribution of air.

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

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

$V_{L,\,eff}$ [m³/h] = effective air fow at design stage

V [m³] = volume of space

n [–] = number of Ultra units

Taking into account the maximum mounting height of the units, the correct spacing of the units can thus be easily achieved.

Air circulation (LU)

	LU [1/h]
minimum	2,0
better	2,5
good	3–3,5
very good	4–5

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Frost protection

Every Ultra supplied with fresh air must be fitted with a frost protection thermostat. This monitors the leaving air temperature and prevents the heat exchanger from freezing. The frost protection thermostat should be set to a minimum of +5 °C. A detailed description of the frost protection thermostat (integral and remote) is given on page 31.

The use of a frost protection controller ensures that the flap is closed in the event of frost and the fan is disabled. Automatic resetting is not possible.

A detailed description of the 0-100% or Open/Closed frost protection controllers is given on page 33.

Supply air temperature control

Supply air temperature controllers should be used to control the additional supply of fresh air if this is required once the room temperature has been reached. Supply air temperature controllers with lower temperature limiters and 3-way valves are described on page 34.

Extracted air

Provision must be made to extract polluted air if Ultras are fed with a supply of fresh air. Extraction fans (excess or low pressure) can be included in the design. Either roof extract fans with diagonal impellers (Kampmann article group 1.60), Airblock air handling units and radial impellers (Kampmann article group 1.50) or extracters with axial fans (Kampmann article group 1.52) can be used.

Leaving air temperatures

Leaving air temperatures can be found in the tables on pages 38 to 43 or calculated using formula (6) on page 19:

- if the use of additional ductwork reduces the air flow, it consequently also reduces the heat output,
- if using a temperature difference $\triangle t$ between the mean water temperature and the entering air temperature which is not shown in the technical data tables.

The leaving air temperature should be

- at least 35–40 °C (lower temperatures should only be considered at higher fan speeds) and,
- max. 50–55 °C.

If a leaving temperature of 40 °C cannot be achieved because of lower flow temperatures, the outlet louvre should be fixed so that the primary air flow does not blow directly into areas occupied by users. These areas are then heated by secondary air currents.

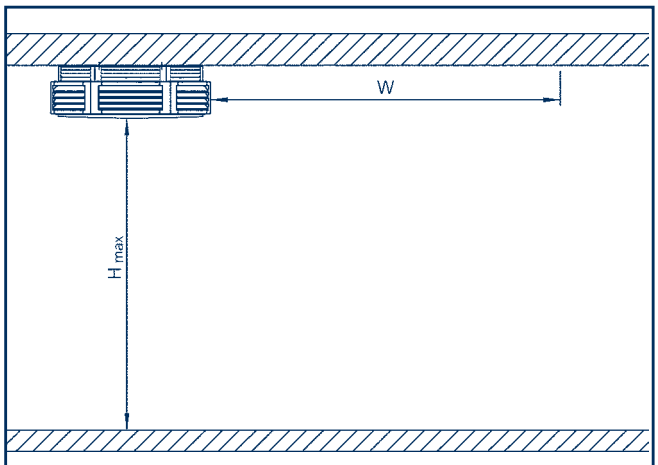
Maximum mounting height · Throw

The maximum mounting height and in particular the throw are dependent on the following factors:

- layout of the area,
- temperature rise of the air flow,
- fixings and fittings within the space,
- air flow and
- position of outlet louvre.

The throw of the Ultra is defined as the maximum penetration depth of the primary air stream in ideal conditions. The maximum mounting heights and throw data given in the tables only apply to outlet air temperatures up to 20 K above room temperature.

The throw in particular is very much dependent on the layout of the area, fixings and fittings within the space and lift from higher leaving air temperatures and so these figures should only be taken as a guide. Deeper spaces will be indirectly heated by secondary air currents pulled into the air exchange.



Maximum mounting height (H_{max}) · Throw (W)

Maximum mounting height · Throw (for more detailed information refer to technical data from page 38 onwards)

	3-phase												1-phase				
Ultra model	73_ _36		84_ _36		85_ _36		96_ _36		96_ _38		97_ _66		73_ _16	84_ _16	85_ _16	86_ _16	97_ _60
Fan stage	2	1	2	1	2	1	2	1	2	1	2	1	1	1	1	1	1
Approx. fan speed 1/min	900	700	900	700	900	700	900	700	650	500	920	710	900	900	900	900	940
Max. mounting height$_{max}$	2,4 m	2,3 m	2,8 m	2,6 m	3,4 m	3,0 m	3,9 m	3,5 m	3,7 m	3,3 m	3,7	3,3	2,4	2,8	3,4	3,9	3,7
Throw W	3,8 m	3,2 m	4,4 m	3,8 m	5,6 m	4,7 m	7,0 m	5,5 m	6,2 m	5,2 m	6,1	5,1	3,8	4,4	5,6	7,0	6,2

Layout

Cooling model

This Ultra model can be operated in heating mode using LPHW or alternatively in cooling mode using LPCW. A condensate tray is fitted across the entire underside of the heat exchanger. A collecting vessel with float is provided in the middle of the tray to draw off the condensate. Two pipes, flow and return (2-pipe system), are fed to the Ultra and, depending on the system used, a chiller may be required to provide LPCW.

The switch between heating and cooling is made centrally (in the boilerhouse) by switching the pipes to warm water for heating mode and cold water for cooling mode.

All pipework and fittings should be laid and insulated in accordance with guidelines relating to cold water pipes.

Condensate pump

The self-priming condensate pump is factory-connected to the pipe connection for the condensate discharge-line which is provided by others.

The quietly-operating, electromagnetically-operated pump and the pre-set condensate filter are both fitted to the top of the unit.

Max. delivery height:	8 m
Max. delivery volume:	3 l/h
Voltage:	230 V/50 Hz (separate mains supply required)
Power uptake:	20 w
Condensate discharge-line:	DN 6 mm (tube connection)
Warning contact for condensate overflow	change-over contact, potential-free breaking capacity 230 V/8 (5) A

Number of units

The number, size and design fan speed of the units required is based on the following factors:

- calculated heat requirement,
- max. mounting height,
- required air circulation,
- noise level to be observed,
- structural factors, such as occupancy, fixing points, fixtures and fittings.

As a general rule, the units are designed to operate at fan stage 1 (2-stage operation) or at medium fan speed (5- or 7-speed operation). There is thus some flexibility if the system has been switched off for some time.

Fixing to suspended ceiling grids

A detailed description, with fixing options and dimensions, is given on pages 9–15

Sound power levels · Sound pressure levels

The generously-proportioned fans with low basic speeds operate at very low sound levels. Nevertheless the permitted sound pressure level should be taken into consideration at the design stage. Disturbing noises may occur at higher fan speeds and thus the design fan speed should be set with regard to the type of environment in which the units are to be installed.

It is recommended that the maximum permissible noise levels, as specified by the planning/building permission, are checked prior to commencement of design. Reference is often made in this respect to other standards and guidelines, such as DIN 1946 or Workplace Directive VDI 2082. The subjective perception of sound or an increase in sound level is influenced to a large extent by the basic sound level of the space itself. It is recommended that this sound level is established in the first place before determining the permitted sound pressure level of the Ultra unit itself. If the sound pressure level of the unit lies below the room level, then the overall noise level will change imperceptibly.

If only very low sound pressure levels are permitted, the system should be designed to provide the required heat output at the lowest possible fan speed.
Further details relating to overall sound power levels and sound pressure levels are given in the technical data tables.

The sound power level required to calculate the differential level was established using the enveloping surface method according to DIN 45635 using the comparative method.

The sound pressure data based on the sound power level measurements are taken in non-reflective room with average sound absorption at a distance of 3 m at an angle of 45° from the air outlet of the unit without ductwork.

However, as the actual sound pressure level in a space is influenced by its acoustic characteristics, reflected sound and any ductwork connected, the actual values may differ in practice quite substantially.

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Conversion to other water temperatures

If the intended water temperatures are not shown in the performance data, they can be calculated using the following formulae and diagrams.

Formulae

$$Qact = Q_B \cdot f_{Q1} \qquad (1)$$

$$t_{wm} = \frac{t_{w1} + t_{w2}}{2} \qquad (2)$$

$$\triangle t_w = t_{w1} - t_{w2} \qquad (3)$$

$$\triangle t = t_{wm} - t_{L1} \qquad (4)$$

$$t_{L2} = t_{L1} + \frac{Qact \cdot 1000}{V_{Lact} \cdot C} \qquad (6)$$

$$m = \frac{Qact}{\triangle t_w} \cdot 0{,}86 \qquad (7)$$

Abbreviations

Qact	[kW]	= actual heat output (Ultra)
Q_B	[kW]	= base heat output (Ultra)* at LPHW: t_{w1} =75 °C, t_{w2} = 65 °C, t_{L1} = 20 °C
f_{Q1}	[/]	= heat output correction factor (water temp.)
f_{Q2}	[/]	= heat output correction factor (fan speed)
f_{L2}	[/]	= air flow correction factor (fan speed)
t_{wm}	[°C]	= mean water temperature
t_{w1}	[°C]	= flow temperature
t_{w2}	[°C]	= return temperature
$\triangle t_w$	[K]	= water temperature difference
$\triangle t$	[K]	= mean excess temperature
t_{L1}	[°C]	= entering air temperature
t_{L2}	[°C]	= leaving air temperature
V_{Lact}	[m³/h]	= actual air volume
V_L	[m³/h]	= nominal air volume from units*
C	[Wh/m³K]	= multiplier for leaving air temperature calculation

t_{L1}	C	t_{L1}	C
± 0 °C	0,36 Wh/m³K	+ 20 °C	0,34 Wh/m³K
– 10 °C	0,37 Wh/m³K	+ 10 °C	0,35 Wh/m³K

m	[m³/h]	= water flow rate
$\triangle P_w$	[kPa]	= water pressure
L_{PA}	[dB(A)]	= sound pressure level
L_{WA}	[dB(A)]	= sound power level

*see also technical data on pages 38-43

Calculation

given:
Ultra type 852036
flow temperature 65 °C
return temperature 55 °C
entering air temperature +22 °C

required:
heat output Q_{eff} at
fan stage 1
leaving air temperature t_{L2}
water pressure $\triangle P_w$

Calculation

(2) $t_{wm} = \frac{t_{w1} + t_{w2}}{2} = \frac{65 + 55}{2} = 60$ °C

(3) $\triangle t_w = t_{w1} - t_{w2} = 65 - 55 = 10$ K

(4) $\triangle t = t_{wm} - t_{L1} = 60 - 22 = 38$ K

from diagam 1: $f_{Q1} = 0.78$

from technical data table on page 40: type 852036, stage 1

Q_B (LPHW 75/65 °C t_{L1} = 20 °C) = 15.4 kW

V_{Lact} = 2080 m³/h

(1) $Qact = Q_B \cdot f_{Q1} = 15{,}4 \cdot 0{,}78 = 12.01$ kW

(6) $t_{L2} = t_{L1} + \frac{Qact \cdot 1000}{V_{Lact} \cdot C} = 22 + \frac{12{,}01 \cdot 1000}{2080 \cdot 0{,}34} = 39.0$ °C

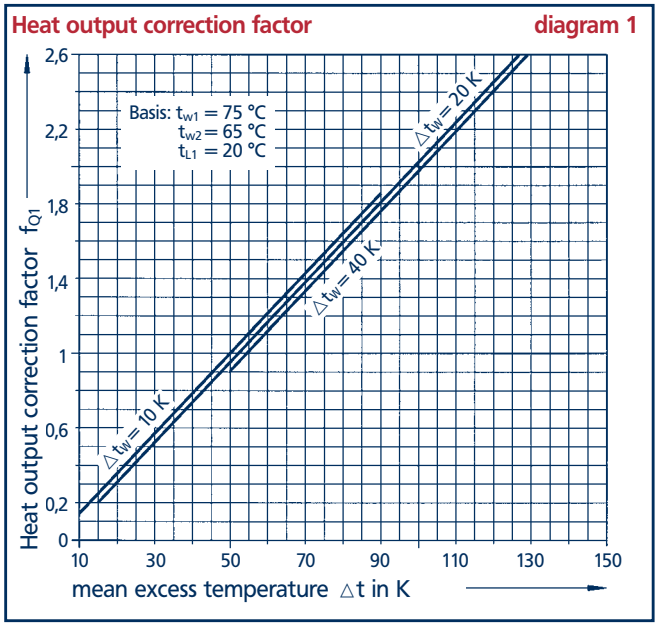
(7) $m = \frac{Qact}{\triangle t_w} \cdot 0{,}86 = \frac{12{,}01}{10} \cdot 0{,}86 = 1.03$ m³/h

from water pressure diagram 2, page 21:
$\triangle P_w$ = 4.5 kPa

Result

Heat output Qact = 12.01 kW
Leaving air temperature t_{L2} = 39.0 °C
Water pressure $\triangle P_w$ = 4.5 kPa

Heat output correction factor — diagram 1



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Conversion to other fan speeds

Conversion to other fan speeds

2-stage 3-phase motors can be connected to 5-stage 3-phase controllers at fan stages 1 or 2. The output voltage is reduced and ultra-quiet sound levels are produced (see table 1).

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

$V_{L,\,act} = V_L \cdot f_{L2}$ (8)

$Qact = Q \cdot f_{Q2}$ (9)

Abbreviations

see page 19

Calculation

given:
Ultra type 852036
5-stage operation
at fan stage 2

required:
air volume and heat output
at fan stage 3 using
LPHW 70/55 °C,
t_{L1}=20 °C

Calculation

from the technical data on page 40: type 852036, fan stage 2:
air flow V_L: 2860 m³/h
Q (LPHW 70/55 °C t_{L1} = 20 °C)= 15.3 kW

from table 1 (type 852036, fan stage 2) for switch position 3:

$f_{L2} = 0.81$ and $f_{Q2} = 0.87$

(8) $V_{Lact} = V_L \cdot f_{L2} = 2860 \cdot 0.81 = 2317$ m³/h

(9) $Qact = Q \cdot f_{Q2} = 15.3 \cdot 0.87 = 13.3$ kW

Result

actual air volume $V_{L,act}$ = 2320 m³/h
actual heat output Qact = 13.3 kW

Correction factor when using 5-stage, 3-phase controller (type 30052, type 30751) — Table 1

Base fan stage		2 (delta connection)					1 (star connection)				
Model	5-stage position	5	4	3	2	1	5	4	3	2	1
73 _ _ 36/84 _ _ 36 85 _ _ 36/96 _ _ 36	approx. fan speed [1/min]	900	800	730	600	490	700	550	460	360	280
	f_{L2}	1,0	0,89	0,81	0,67	0,54	1,0	0,79	0,66	0,51	0,40
	f_{Q2}	1,0	0,92	0,87	0,76	0,66	1,0	0,85	0,75	0,63	0,53
73 _ _ 36	L_{PA}/L_{WA} [dB(A)]	43/59	40/56	38/54	34/50	30/46	38/54	33/49	29/45*	24/40*	18/34*
84 _ _ 36	L_{PA}/L_{WA} [dB(A)]	50/66	47/63	45/61	41/57	37/53	44/60	39/55	35/51	30/46*	24/40*
85 _ _ 36	L_{PA}/L_{WA} [dB(A)]	52/68	49/65	47/63	43/59	39/55	45/61	40/56	36/52	31/47	25/41*
96 _ _ 36	L_{PA}/L_{WA} [dB(A)]	60/76	57/73	55/71	51/67	47/63	50/66	45/61	41/57	36/52	30/46*
96 _ _ 38	approx. fan speed[1/min]	650	540	490	400	320	500	360	310	250	190
	f_{L2}	1,0	0,83	0,75	0,62	0,49	1,0	0,72	0,62	0,50	0,38
	f_{Q2}	1,0	0,88	0,82	0,72	0,61	1,0	0,80	0,72	0,62	0,51
96 _ _ 38	L_{PA}/L_{WA} [dB(A)]	51/67	47/63	45/61	40/56	36/52	44/60	37/53	34/50	29/45*	23/39*
97 _ _ 66	approx. fan speed[1/min]	For actual air volume and noise levels, refer to diagrams 7 and 8 on page 24; for conversion to actual heat output, refer to page 19									
	f_{L2}										
	f_{Q2}										
97 _ _ 66	L_{PA}/L_{WA} [dB(A)]										

Correction factor when using 7-stage, single phase controller (type 30771, type 30772, type 30773, type 30774) — Table 2

Model	7-stage position	7	6	5	4	3	2	1
73 _ _ 16/84 _ _ 16 85 _ _ 16/96 _ _ 16	approx. fan speed[1/min]	900	770	640	500	370	290	220
	f_{L2}	1,0	0,86	0,71	0,56	0,41	0,32	0,24
	f_{Q2}	1,0	0,90	0,79	0,67	0,54	0,46	0,38
73 _ _ 16	L_{PA}/L_{WA} [dB(A)]	43/59	40/56	36/52	30/46*	24/40*	18/34*	12/28*
84 _ _ 16	L_{PA}/L_{WA} [dB(A)]	50/66	47/63	43/59	37/53	31/47	25/41*	19/35*
85 _ _ 16	L_{PA}/L_{WA} [dB(A)]	52/68	49/65	45/61	39/55	33/49	27/43*	21/37*
96 _ _ 16	L_{PA}/L_{WA} [dB(A)]	60/76	57/73	53/69	47/63	41/57	35/51	29/45*
97 _ _ 60	approx. fan speed[1/min]	for actual air volume and noise levels, refer to diagram 9 on page 24; for conversion to actual heat output, refer to page 19						
	f_{L2}							
	f_{Q2}							
97 _ _ 60	L_{PA}/L_{WA} [dB(A)]							

*computed figures as metrological figures cannot be measured

Water pressure rate - heating mode

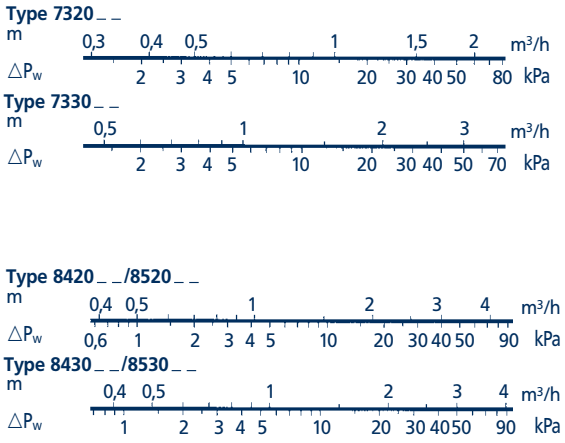
The water pressure rate can be calculated from the diagrams below showing
heat output Q_{act}, water temperature difference $\triangle t_w = t_{w1} - t_{w2}$ and water flow rate

$$m = \frac{Q_{act}}{\triangle t_w} \cdot 0.86$$

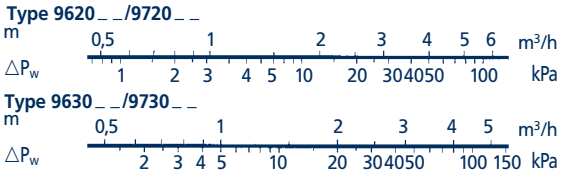
Abbreviations:

t_{w1}	[°C]	=	flow temperature
t_{w2}	[°C]	=	return temperature
$\triangle t_w$	[K]	=	water temperature difference
m	[m³/h]	=	flow rate
Qact	[kW]	=	actual heat output (Ultra)

Water pressure rate · heating mode



The figures apply to a mean water temperature of 80 °C but, owing to the minimal effect of the water temperature, can also be applied to other water temperatures.



Water pressure rate - cooling mode

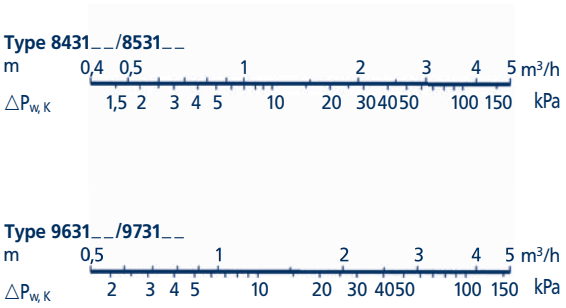
The water pressure rate can be calculated using the diagrams below showing cooling output Q_K,
cooling temperature difference $\triangle t_w = t_{w2} - t_{w1}$ and flow rate

$$m = \frac{Q_K}{\triangle t_w} \cdot 0.86.$$

Abbreviatioons:

t_{w1}	[°C]	=	flow temperature
t_{w2}	[°C]	=	return temperature
$\triangle t_w$	[K]	=	water temperature difference
Q_K	[kW]	=	cooling output (Ultra)
m	[m³/h]	=	flow rate
$\triangle P_{w,K}$	[kPa]	=	water pressure rate - cooling mode

The figures apply to a mean water temperature of 9 °C but, owing to the minimal effect of the water temperature, can also be applied to other water temperatures.



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Conversion to other air flow rates · Air resistance co-efficients

Conversion to other air flow rates

The actual air flow rate from an Ultra unit fitted with ductwork can be calculated using diagrams 3 to 9 on pages 23 and 24. The resistance co-efficients of the suspended ceiling ductwork components are given in table 3 below. Table 8 shows the heat output and air flow rate correction factors for some common arrangements. If ductwork is to be provided, the actual air flow rate can be calculated using the airside pressure losses from the duct system calculation.

Formulae

$V_{Lact} = V_L \cdot f_{L3}$ (1) or $f_{L3} = \frac{V_{Lact}}{V_L}$

$Qact = Q_N \cdot f_{Q3}$ (2)

$\triangle p = \Sigma Z \cdot 0{,}6 \cdot w^2$ (3) $w = \frac{V_{Lact}}{3600 \cdot A}$ (4)

Abbreviations

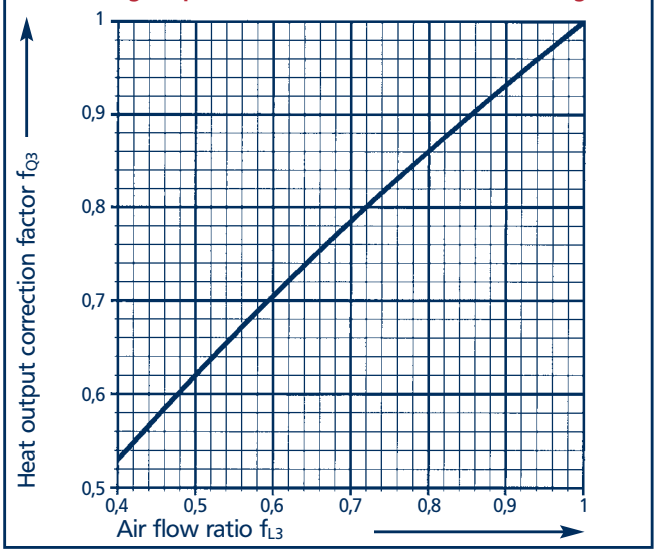
V_{Leff} [m³/h] = actual air flow
V_L [m³/h] = nominal output (Ultra)
f_{L3} [/] = air flow rate correction factor (air resistance) or air flow rate ratio
Q_{eff} [kW] = actual output of unit
Q_N [kW] = nominal output of unit
f_{Q3} [/] = output correction factor
w [m/s] = air velocity
A [m²] = free duct section
0.26 m² for recirc. air induction grille type 60988; for duct system by others, A should be calculated separately

Air resistance co-efficients Z — Table 3

Ductwork components		Z		
Description	Type	BG 5	BG 6	BG7
Recirc. air induction grille, square, 625 x 625 mm with recirc. air filter set	60988 6*050	3.0** 5.0**	3.0** 5.0**	- -
Connecting frame, square Reducing angle section 90°, extended Induction angle section 90°,c/w ind. grille Air mixing box, vertical (position: fresh air) Air mixing box, horizontal (position: fresh air) Filter insert with G3 filter	6*002 6*104 60105 60117 60118 60126	0.1** 1.1 2.4** 11** 10.8** 10.0**	0.1** 1.1 3.4** 15.4** 15.1** 14.0**	- 1.1 - 11** 10.8** -
Duct section, rectangular Duct section, rectangular, 1250 mm long Flexible connection, rectangular Wall insert Weather grate	6*030 6*130 6*034 6*037 6*038	0,1/m 0.1 0.1 0.1 5.0	0.1/m 0.1 0.1 0.1 5. 0	0.1/m 0.1 0.1 0.1 2.6
Flexible connection, square Rain hood Roof socket with duct section for flat roof for angled roof Duct section, square	35013 35114 6*119 6*120 35015	0,1** 0.4** 0.1** 0.1** 0.1/m**	0.2** 0.6** 0.2** 0.2** 0.2/m	0,1** 0.9** 0.1** 0.1** 0.1/m**

*Insert unit size.
**Air resistance co-efficients based on air velocity in a rectangular duct (exception type 60988). The air resistance of the square recirc. air induction grille type 60988 is calculated using formulae 3 and 4.

Heat/cooling output correction factors — diagram 2



Calculation

Given: Ultra type 962038, design fan stage 1
with induction airside ductwork with air resistance co-efficients in accordance with the table below,
flow temperature t_{w1} = 75 °C,
return temperature t_{w2} = 65 °C,
entering air temperature = – 10 °C
Required: air flow rate V_{Lact} and heat output Qact.

Calculation

Resistance co-efficients from table 3		Z
Connecting frame	Type 66002	0.1
Reducing angle section 90°, extended	Type 66104	1.1
Air mixing box, horizontal	Type 66118	15.1
Flexible connection	Type 66034	0.1
5 m duct section (5 • 0.1/m)	Type 66030	0.5
Wall insert	Type 66037	0.1
Weather grate	Type 66038	5.0
	Sum Z	22

from table 4: Ultra type 962038, design fan stage 1
Air flow rate diagram, curve 3

from diagram 6: Air flow rate co-efficient 22
cuts through air flow rate curve 3
at V_{Lact} = **1240 m³/h**

from the technical data on page 42, with LPHW 75/65 °C
t_{L1} = –10 °C
Q_N = 32,0 kW and V_L = 2630 m³/h

(1) $f_{L3} = \frac{V_{Leff}}{V_L} = \frac{1240}{2630} = 0.47$

from diagram 3 at f_{L3} = 0.56 is f_{Q3} = 0.59

(2) Qact = $Q_N \cdot f_{Q3}$ = 32.0 • 0.59 = **18.9 kW**

Result: Air flow rate V_{Lact} = 1240 m³/h
Heat output Qact = 18.9 kW

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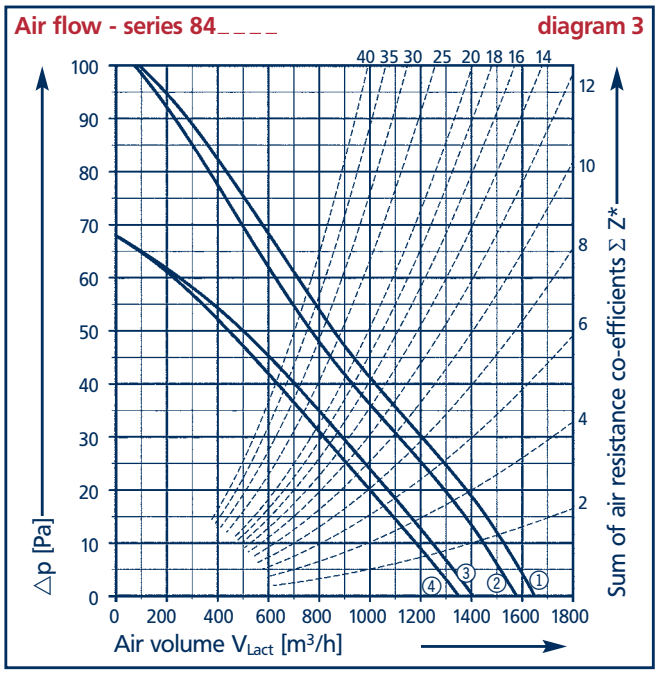
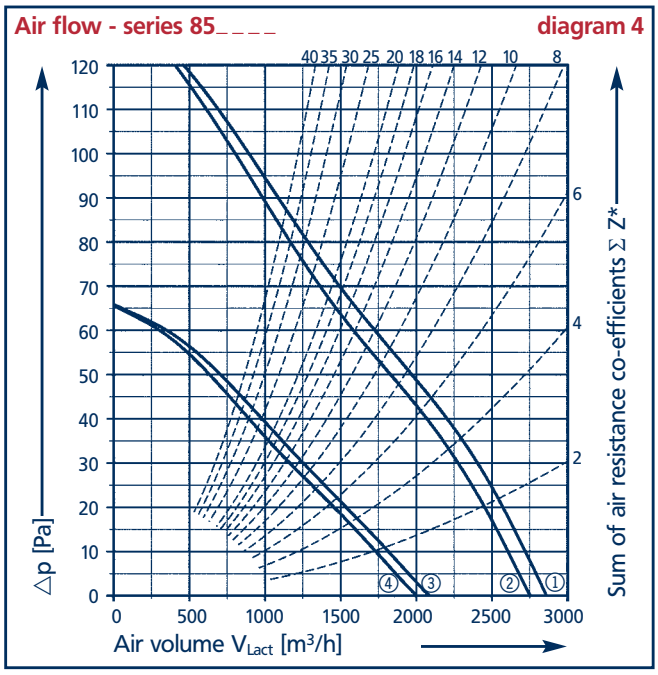
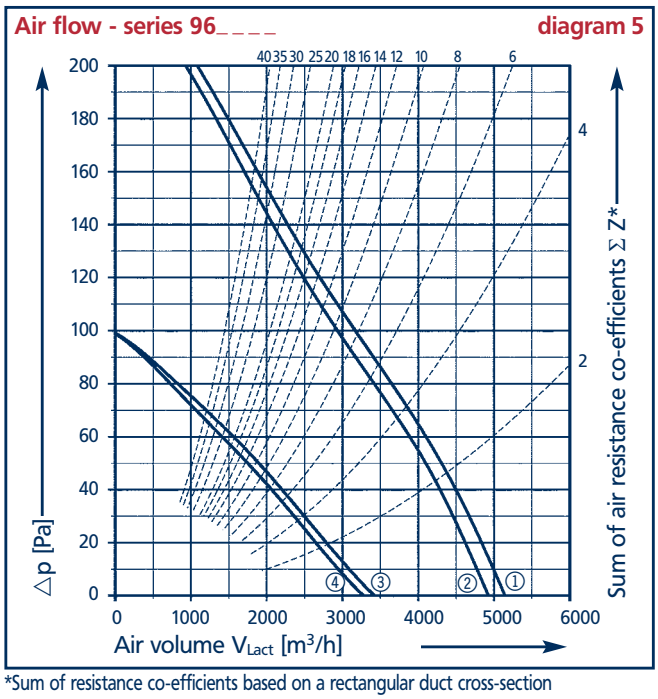
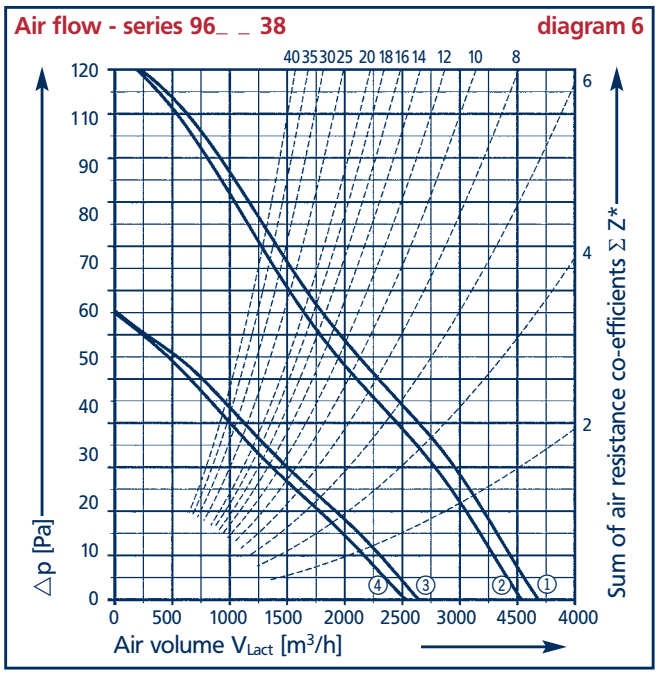
Air flow diagrams - Ultra series 84-96









*Sum of resistance co-efficients based on a rectangular duct cross-section

Overview · Type numbers · Graphs — Table 4

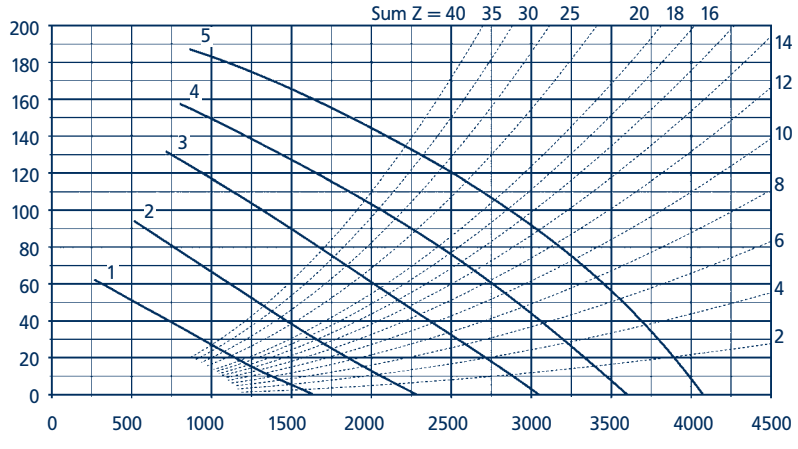
2-stage, 3-phase motor 400 V/3 ~ ref. no. 36					1-stage, single phase motor 230 V/1 ~ ref. no. 16				2-stage, 3-phase motor 400 V/3 ~ ref. no. 38		
type number			Graph line stage		type number			Graph line	type number	Graph line stage	
84_ _ _ _	**85**_ _ _ _	**96**_ _ _ _			**84**_ _ _ _	**85**_ _ _ _	**96**_ _ _ _		**96**_ _ **38**		
Type	Type	Type	2	1	Type	Type	Type		Type	2	1
842036	852036	962036	1	3	842016	852016	962016	1	962038	1	3
843036	853036	963036	2	4	843016	853016	963016	2	963038	2	4

Air flow diagrams - Ultra series 97

Type number 973_66, 5-stage operation, basic fan stage 2 (delta) — Table 5

Fresh air induction grille		Wall*		Roof*		Wall/ roof	
Sum Z		14,7		13,3		Noise level	
Correction factor		f_{L3}	f_{Q3}	f_{L3}	f_{Q3}	L_{PA} dB(A)	L_{WA} dB(A)
5-stage controller setting	5	0,74	0,81	0,75	0,82	55	71
	4	0,64	0,73	0,66	0,75	52	68
	3	0,54	0,65	0,55	0,66	48	64
	2	0,41	0,54	0,42	0,55	41	57
	1	0,31	0,45	0,31	0,45	35	51

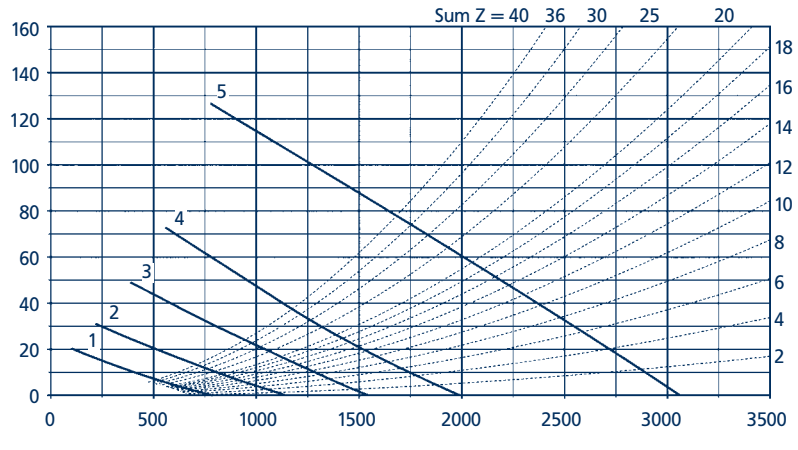
Air flow rate diagram - type number 973_66, basic fan stage 2 (delta) — diagram 7



Type number 973_66, 5-stage operation, basic fan stage 1 (star) — Table 6

Fresh air induction grille		Wall*		Roof*		Wall/ roof	
Sum Z		14,7		13,3		Noise level	
Correction factor		f_{L3}	f_{Q3}	f_{L3}	f_{Q3}	L_{PA} dB(A)	L_{WA} dB(A)
5-stage controller setting	5	0,72	0,80	0,74	0,81	48	64
	4	0,49	0,61	0,49	,61	39	55
	3	0,39	0,52	0,40	0,53	34	50
	2	0,29	0,43	0,30	0,44	31	45
	1	0,21	0,34	0,21	0,34	28	40

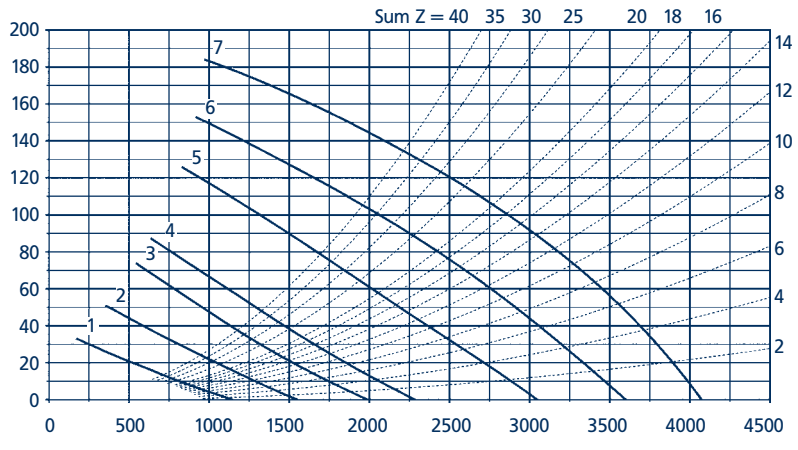
Air flow rate diagram - type number 973_66, basic fan stage 1 (star) — diagram 8



Type number 973_60, 7-stage operation — Table 7

Fresh air induction grille		Wall*		Roof*		Wall/ roof	
Sum Z		14,7		13,3		Noise level	
Correction factor		f_{L3}	f_{Q3}	f_{L3}	f_{Q3}	L_{PA} dB(A)	L_{WA} dB(A)
7-stage controller setting	7	0,74	0,81	0,75	0,82	55	71
	6	0,64	0,73	0,66	0,75	52	68
	5	0,54	0,65	0,55	0,66	48	64
	4	0,41	0,54	0,42	0,55	41	57
	3	0,36	0,49	0,37	0,50	39	55
	2	0,29	0,43	0,30	0,44	34	50
	1	0,22	0,35	0,22	0,35	31	45

Air flow rate diagram - type number 973_60, 7-stage operation — diagram 9



*Refer to page 25 for illustration

Article no. for DataNorm/EDV entry: 154 000 _ _ _ _ _ _ (insert type no.)

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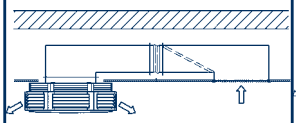
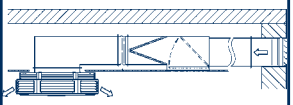
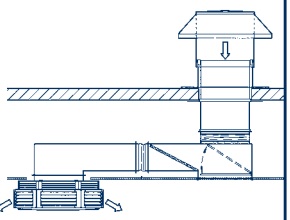
Heat output and air flow correction factors

Heat and cooling output correction factors for common layouts — Table 8

Ultra series 73-96	 Ultra with recirculating air filter set	 Ultra with connecting frame, reducing angle section, flexible connection and induction angle section with induction grille but with no filter insert*	 Ultra with connecting frame, reducing angle section, flexible connection (rectangular), air mixing box (horizontal), filter insert, wall insert and weather grate	 Ultra with connecting frame, reducing angle section, flexible connection (rectangular), air mixing box (vertical), filter insert, flexible connection (square) and rainhood
series 97	-	-	**Fresh air entry through wall**	**Fresh air entry through roof**
Air resistance co-efficients	Sum Z = 5	Type number / Sum Z 85 _ _ _ _ / 3,7 96 _ _ _ _ / 4,7 - / -	Type number / Sum Z 85 _ _ _ _ / 17,2 96 _ _ _ _ / 21,5 97 _ _ _ _ / 14,7	Type number / Sum Z 85 _ _ _ _ / 12,9 96 _ _ _ _ / 17,7 97 _ _ _ _ / 13,3

Motor design		Air volume		Heat output		Air volume		Heat output		Air volume		Heat output		Air volume		Heat output	
2-stage, 3-phase 400 V/3~	1-stage, single phase 230 V/1~	f_{L3}		f_{Q3}		f_{L3}		f_{Q3}		f_{L3}		f_{Q3}		f_{L3}		f_{Q3}	
		stage		stage		stage		stage		stage		stage		stage		stage	
Type	Type	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1
842036		0,81**	0,80**	0,86**	0,86**	on request											
	842016	0,81**	-	0,86**	-												
843036		0,81**	0,81**	0,86**	0,86**												
	843016	0,81**	-	0,86**	-												
852036		0,76	0,73	0,83	0,80	0,81	0,78	0,87	0,84	0,53	0,53	0,65	0,65	0,59	0,58	0,69	0,69
	852016	0,76	-	0,83	-	0,81	-	0,87	-	0,53	-	0,65	-	0,59	-	0,69	-
853036		0,77	0,75	0,83	0,82	0,81	0,79	0,87	0,85	0,54	0,54	0,65	0,65	0,59	0,58	0,70	0,69
	853016	0,77	-	0,83	-	0,81	-	0,87	-	0,54	-	0,65	-	0,59	-	0,70	-
962036		0,71	0,69	0,79	0,77	0,72	0,70	0,80	0,78	0,45	0,45	0,57	0,58	0,48	0,48	0,60	0,60
	962016	0,71	-	0,79	-	0,72	-	0,80	-	0,45	-	0,57	-	0,48	-	0,60	-
963036		0,72	0,70	0,79	0,78	0,73	0,71	0,80	0,79	0,46	0,45	0,58	0,58	0,49	0,48	0,61	0,60
	963016	0,72	-	0,79	-	0,73	-	0,80	-	0,46	-	0,58	-	0,49	-	0,61	-
962038		0,71	0,71	0,79	0,79	0,72	0,72	0,80	0,80	0,45	0,46	0,57	0,59	0,48	0,49	0,60	0,61
963038		0,71	0,71	0,79	0,79	0,72	0,72	0,80	0,80	0,45	0,46	0,58	0,59	0,48	0,49	0,61	0,61
973066***		/								0,74	0,72	0,81	0,80	0,75	0,74	0,82	0,81
	973060***									0,74	-	0,81	-	0,75	-	0,82	-

*The correction factors for the use of mixed air components for fresh air entry through the roof (right hand column) can also be used for units with recirculating air components and additional filter insert.
**Correction factors can also be used for Ultra type number 73_ _ _ _
***For further information relating to 5-stage, 3-phase or 7-stage, single phase operation, refer to page 24

Article no. for DataNorm/EDV entry: 154 000 _ _ _ _ _ _ (insert type no.)

KAMPMANN
SYSTEMS FOR HEATING · COOLING · VENTILATING

KaBUS-controller · KaBUS *ECO*-controller

KaBUS-controller

The KaBUS control system is a state-of-the-art development for the intelligent control of Ultra systems. It is capable of controlling units of similar or different design in two ways:

- Single circuit control,
- Multiple circuit control (up to eight independent groups).

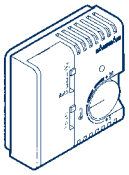
More detailed information on the KaBUS-System for recirculating air and mixed air units is available on request.

Components

The KaBUS*tronic* forms the central operating unit and, accommodated within the KaBUS controls cabinet, it controls the Ultra via Kampmann field BUS. Further components, such as air extract units or individual room controllers can be connected in.

Benefits

- Reduced cabling by digitalisation of all operating data and transfer through a single cable
- Increased operating security by individual control of Ultra units, independent of the whole system i.e. units shut down individually if they detect a fault
- Recirculating air, mixed air and extract air units can also be controlled within the same control grouping
- 5-stage control with automatic, temperature-sensitive fan speed change-over
- Whisper-quiet operation due to low fan speeds in the lowest switching stages as well as pre-settable fan stage limitation



KaBUS *ECO* operating unit

KaBUS *ECO*-controller

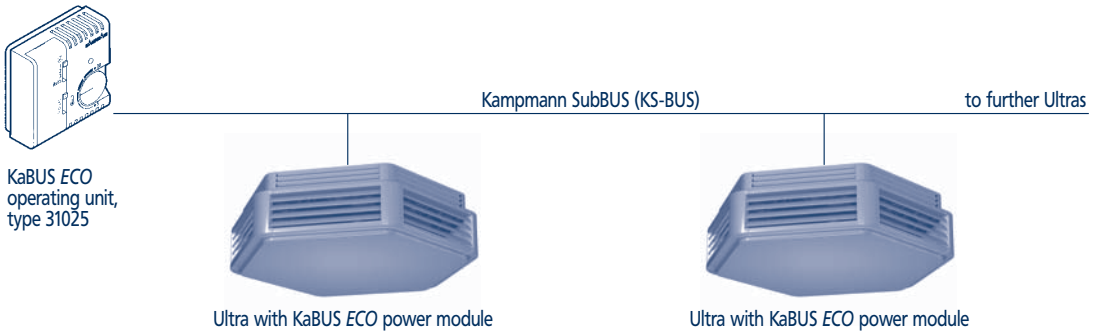
The KaBUS *ECO* control system has been designed solely for use with recirculating air systems and can control up to 8 units via one bus line. The system can be used with 2-pipe units operating in heating or cooling mode. The system has 2-point valve control, fan control and mode indicator. Digital inputs and outputs permit connection to an external BMS system.

Components

Every Ultra is fitted with a factory-fitted power module and up to eight power modules can be controlled with one operating unit via the Kampmann SubBUS. If required, a separate room temperature sensor can be connected up.

Benefits

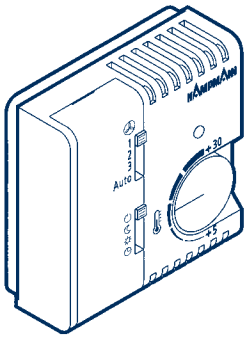
- Simple operation with sliding switches and dials
- Reduced cabling by digitalisation of all operating data and transfer through a single cable
- Increased operating security by individual monitoring and shutting down of units if a fault is detected.
- 2-stage fan control with automatic, temperature-sensitive fan speed change-over
- Visually unobtrusive by mounting all controls components directly on Ultra unit itself (with the exception of the operating unit)



KaBUS *ECO* control system

KaBUS *ECO* controller and accessories

KaBUS *ECO* controller - switches and controls

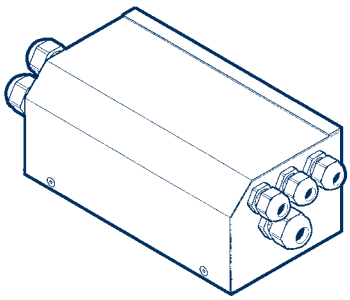


Operating unit, type 31025

The KaBUS *ECO* operating unit controls up to eight recirculating air units. Data transfer is via the Kampmann SubBUS protocol.

Day and setback data is set via a separate set point unit; the operating mode selector switch permits changeover between day and night operation and automatic operation via external time switches; a stage switch allows the fan stage to be selected; digital mode display; integral room temperature sensor

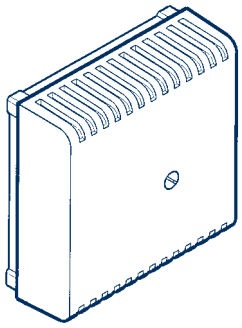
Housing	white, surface-mounted on 55 back-box
Protection class	III (safety low voltage)
Protection type	IP 20
Temperature range	5-30 °C
Night setback	1-10 K
Dimensions	W x H x D: 70 x 70 x 26 mm



Power module, type _ _ _ _ _ KB

The power unit is factory-fitted to the Ultra and is ready-wired; the motor thermal contact is monitored and when it is activated only the affected unit is switched off. Further digital inputs and outputs allow valves and fault indicators to be connected or for links to be made to a filter monitoring device or a window contact.

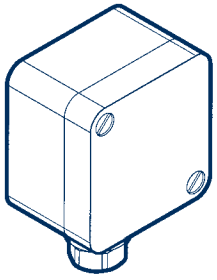
Housing	steel, white powdercoated
Protection class	I (protective earthing)
Protection type	IP 30
Voltage frequency	3 x 400 V/50 Hz
Max. amperage	4 A



Room temperature sensor, type 31056

The separate room temperature sensor type 31056 is required if the sensor within the operating unit cannot be used possibly because of an unsuitable fixing position.

Housing	white, surface-mounted on 55 back-box
Protection class	III (safety low voltage)
Protection type	IP 20
Dimensions	W x H x D: 70 x 70 x 26 mm



Industrial sensor, type 31057

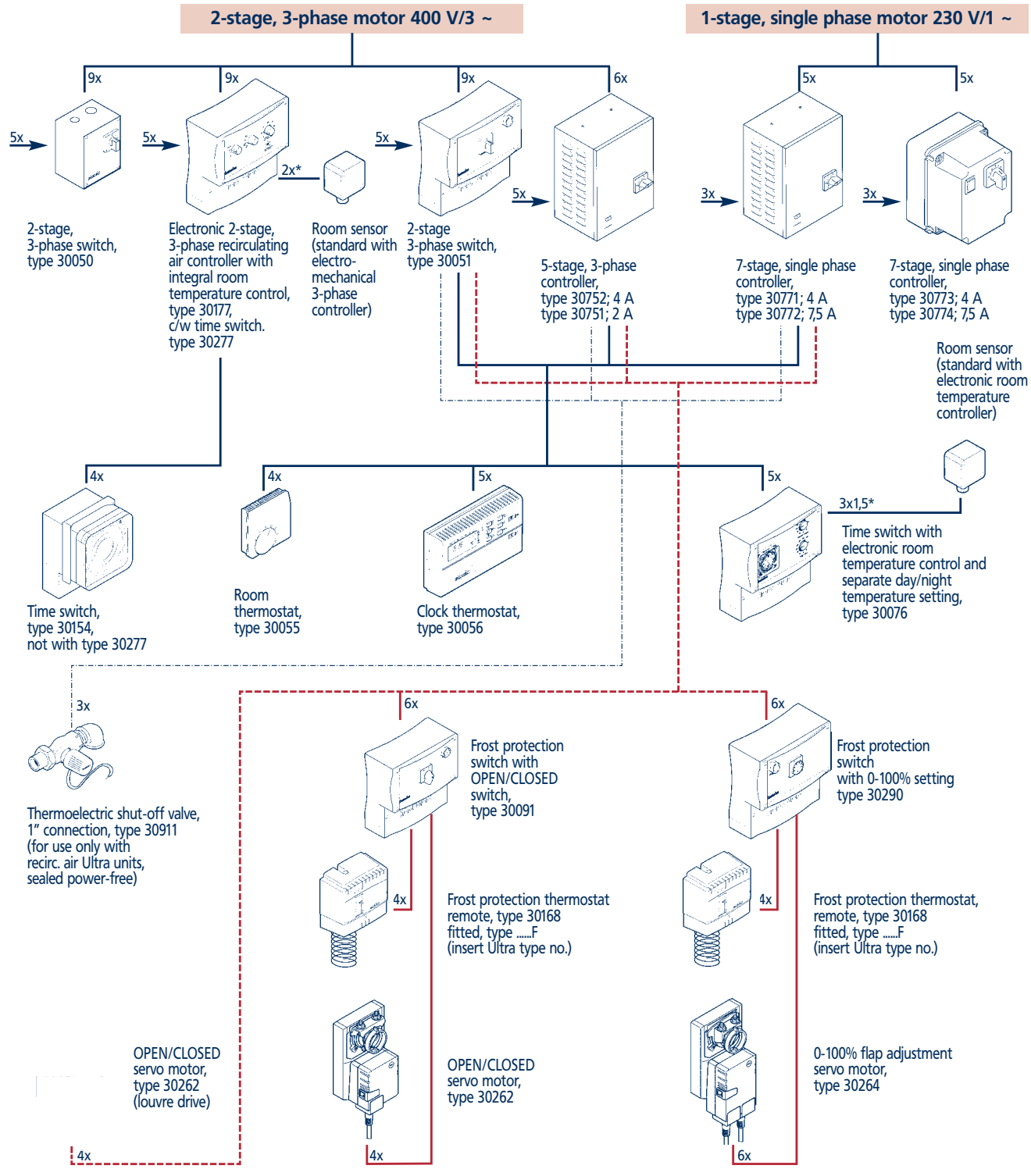
For use in areas with high levels of dust or humidity.

Housing	surface-mounted, wall-mounted
Protection class	III (safety low voltage)
Protection type	IP 54
Dimensions	W x H x D: 50 x 50 x 36 mm

Article no. for DataNorm/EDV entry: 196 0000 _ _ _ _ _ (insert type no.)

Electromechanical controls

Electromechanical cabling diagram



The number of connecting leads is given for each controller
i.e. 3x = 3 connecting leads.
---mixed air operation only
→ mains supply 3 x 400 V/50 Hz with 3-phase circuits or 230 V/50 Hz with single phase circuits

*Max. permissible sensor cable = 100 m,
do not lay with other high-voltage current cables

Important: Provide power to condensate pump in cooling systems (see page 18)

Article no. for DataNorm/EDV entry: 196 0000 (insert type no.)

KAMPMANN
SYSTEMS FOR HEATING · COOLING · VENTILATING

Electromechanical controls

Kampmann Ultra are fitted with 3-phase, 2-stage, 400 V/3~ or single phase, 1-stage 230V/1~ axial fans and external rotor motors.

- Parallel control of multiple units of various sizes is possible.
- Separate control groups should be provided for recirculating air and mixed air units.
- The total power of all connected Ultra units should not exceed the maximum breaking capacity of the controller.

3-phase motor

The 3-phase external rotor motor can be switched between two fan stages using a 2-stage, 3-phase switch (Y/△-switch). The 5-stage, 3-phase controller can switch the motor between five fan stages by means of voltage reduction in each of the two positions (Y or △).

The fans can be operated with a left hand rotating field!

Single phase motor

The fan motors (230 V/50 Hz single phase) are fitted with a single phase winding with capacitor auxiliary phase. The fan speed can be changed using a 7-stage, single phase controller by means of voltage reduction (transformer principle).

Motor protection

Thermal cut-outs (temperature monitors) are embedded in the motor winding. These open as soon as the maximum permitted winding temperature of 155 °C is exceeded.

If units are being controlled in a group, all thermal cut-outs must be connected in series and in this way any number of motors can theoretically be protected by a single motor protection device. In practice, however, the number of Ultra units is limited by the breaking capacity of the switch.

In the event of a fault (i.e. 2-phase running, mechanical blockage, bearing damage), it should be ensured that the motor does not automatically re-start. A re-start block is incorporated in all Kampmann stage switches.

Thermal cut-outs meet the requirements of VDE 0730 relating to the protection against over-loading of devices with electromechanical drive. Conventional circuit breakers or bimetal trip switches cannot be used with multi-stage motors.

Switches and controllers

- All switches and controllers comply with the provisions of VDE 0660 Part 5 relating to factory-manufactured switch combinations.
- All switches (except type 30050) have a mode indicator
- In the event of a fault, the fan is switched off in a locked position to prevent the defective motor being continuously switched on and off (with the exception of type nos. 30773 and 30774). The motor can be re-started by switching the stage switch to the "0" setting.
- After a power-cut , all switches which have a connection to a room thermostat, automatically re-start.
- The switches and controllers should not be used in areas where there is some risk of explosion.

Non-standard units

The following stage switches are available on request:

- switch fitted to a mounting plate for integration within a switch cabinet (cam switch and indicator provided separately)
- additional relays for other applications
- switches for connection to **DDC-systems (by others)**

Controls

Maximum number of connectable Ultra units

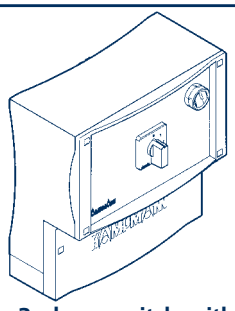
2-stage, 3-phase motor 400 V/3 ~						1-stage, single phase motor 230 V/1 ~		
Ultra	2-stage, 3-phase switch (without room thermostat connection)	2-stage, 3-phase switch (with room thermostat connection)	Electronic 2-stage, 3-phase recirculating air controller with integral room temp. control	5-stage, 3-phase controller, 2 A	5-stage, 3-phase controller, 4 A	Ultra	7-stage single phase controller, 4 A	7-stage singe phase controller, 7.5 A
Type	Type 30050	Type 30051	Type 30177	Type 30751	Type 30052	Type	Type 30771 Type 30773	Type 30772 Type 30774
73 _ _ 36	100	100	100	20	40	73 _ _ 16	10	19
84 _ _ 36	50	50	50	10	20	84 _ _ 16	6	11
85 _ _ 36	28	28	28	5	10	85 _ _ 16	3	7
96 _ _ 36	11	11	11	2	4	96 _ _ 16	1	2
96 _ _ 38	21	21	21	4	8	/	/	/
97 _ _ 66	12	12	12	2	4	97 _ _ 60	1	2

Article no. for DataNorm/EDV entry: 196 0000 _ _ _ _ _ (insert type no.)

KAMPMANN
SYSTEMS FOR HEATING · COOLING · VENTILATING

Controls accessories for 2-stage, 3-phase motors

Switches for 2-stage, 3-phase motor[1)]

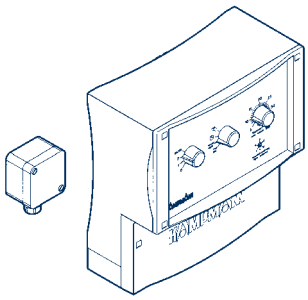


2-stage, 3-phase switch with room thermostat connection, type 30051

For use with 2-stage, 3-phase motors with thermal cut-outs

- cable entry from below, in separate junction box
- with all requisite input terminals and multiple zero and earth terminals
- terminals for room thermostats, frost protection thermostats, thermal cut-outs and outgoing lines from the motor
- terminals for time clock and servo motor for louvre
- fuse accessible from outside unit

Housing	polystyrene, wall-mounted
Protection class	IP 44
Max. amperage	10 A
Dimensions	W x H x D: 257 x 215 x 108 mm

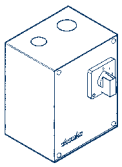


Electronic 2-stage, 3-phase controller, type 30177, with time switch, type 30277

With microprocessor-regulated control; all components are accommodated on a base plate; for the control of recirculating air units only

- 2-stage, 3-phase control with motor protection and locking shut-down
- digital switch (not with type 30177)
- day/night/clock/manual mode switch
- integral room temperature control with day / setback setting
- automatic fan speed selection, regulated by room thermostat
- digital input to external day/night change-over (not with type 30277)
- digital input to external heating/cooling change-over
- digital outputs for valve or pump/boiler control

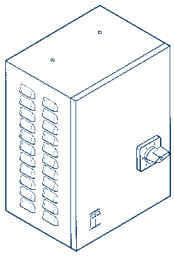
Housing	polystyrene, wall-mounted
Protection class	IP 42
Sensor protection class	IP 54
Max. amperage	10 A
Temperature range	5-30 °C
Night setback range	1-10 K
Housing dimensions	W x H x D: 257 x 215 x 108 mm
Sensor dimensions	W x H x D: 50 x 50 x 35 mm



2-stage, 3-phase switch without room thermostat connection, type 30050

A cost-effective alternative to the 2-stage, 3-phase switch type 30051 which can be used for the manual control of recirculating air units; connection to room thermostats, frost protection thermostats, frost protection switches and flap adjustment devices is possible. If multiple units are connected, the thermal cut-outs must be switched in series. With all requisite input terminals, zero and earth terminals and output terminals for thermal cut-outs.

Housing	polystyrene, wall-mounted
Protection class	IP 43
Max. amperage	10 A
Dimensions	W x H x D: 127 x 160 x 100 mm



5-stage, 3-phase controller 4A type 30052; 5-stage, 3-phase controller 2 A, type 30751

For the 5-stage control of 2-stage, 3-phase motors. The voltage is regulated via an integral transformer.

- 5-stage transformer
- complete with all input terminals and multiple zero and earth terminals
- connection to room thermostats, frost protection thermostats or frost protection switches, time switches, servo motors and thermoelectric shut-out valves is possible.
- re-start after power failure

Housing	painted steel, wall-mounted
Protection class	IP 20
Dimensions	W x H x D: 220 x 300 x 165 mm
Refer to pages 38-43 for technical data and fan speeds	

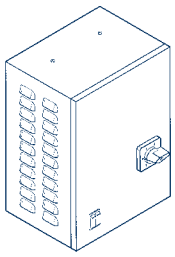
[1)] refer to page 29 for maximum number of Ultras which can be connected

Article no. for DataNorm/EDV entry: 196 0000 _ _ _ _ _ (insert type no.)

KAMPMANN
SYSTEMS FOR HEATING · COOLING · VENTILATING

Controls accessories for 1-stage, single phase motors · Thermostats

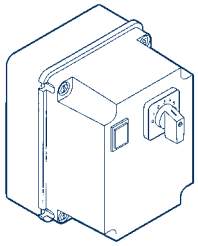
Controllers for 1-stage, single phase motor[1)]



7-stage, single phase controller 4 A, type 30771; 7.5 A, type 30772

- Connection points for room thermostats, thermal cut-outs, connecting cables to motors, servo motors and frost protection thermostats and switches, time switches and thermoelectric shut-off valves.
- Re-start following power failure

Housing	painted steel, wall-mounted
Protection class	IP 20
Dimensions	W x H x D: 257 x 215 x 108 mm



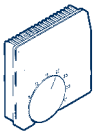
7-stage, single phase controller 4 A, type 30773; 7.5 A, type 30774

A cost-effective alternative to controller type nos. 30771 and 30072 for the control of recirculating air units. There are no connection points for frost protection thermostats or switches and there is no provision for flap adjustment.

- The room thermostat can be connected to the input lead. The breaking capacity of the thermostat is critical vis a vis the maximum loading.
- The thermal cut-outs are switched in series in the motor winding; there is no automatic cut-off or fault indication.

Housing	plastic, wall-mounted
Protection class	IP 44
Dimensions	W x H x D: 150 x 200 x 170 mm

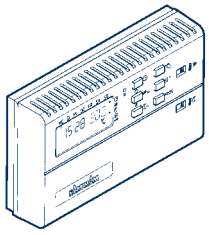
Thermostats



Room thermostat, type 30055

with thermal setback and adjustable temperature control.

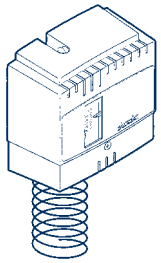
Housing	white plastic, surface-mounted
Temperature range	5-30 °C
Switching differential	approx. 0.6 K
Protection class	IP 30



Clock thermostat, type 30056

Attractive combination of clock and room thermostat with electronic 2-point control and digital weekly time switch; 1 month's power reserve, party function, mode indicator and automatic/day/night/off switch

Housing	white plastic, surface-mounted
Protection class	IP 20
Temperature range	5-40 °C, night setback can also be set
Switching differential	2-10 K can be set
Dimensions	W x H x D: 132 x 82 x 32 mm



Frost protection thermostat, type 30168, separate type . . .*. . . **F,** fitted

Type . . .*. . . , mounted with square frame;

Systems with fresh air inlet must be provided with a frost protection thermostat which is fitted to the outlet air side of the heat exchanger and set to approx. +8 to +10 °C (minimum 5 °C). If the temperature falls below this level, the frost protection switch (type 30290 or 30091) or the supply air temperature controller (type 30294 or 30095) are activated and the air mixing box flap is closed and the fan shuts down. The fan must be manually restarted.

- with sensor monitoring
- thermostat type F . . .*. . .is supplied with a square frame. Both units are fitted to the unit.

Temperature range	-10/+12 °C
Protection class	IP 40
Capillary tube length	3 m

[1)] refer to page 29 for maximum number of Ultras which can be connected

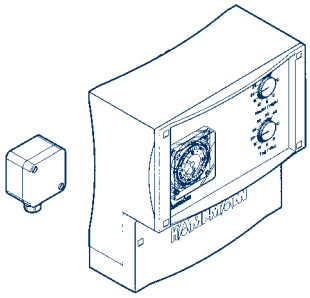
*Insert Ultra type no.

Article no. for DataNorm/EDV entry: 196 0000 (insert type no.) _ _ _ _ _

KAMPMANN
SYSTEMS FOR HEATING · COOLING · VENTILATING

Controls accessories: Time switches · Servo motors

Time switches

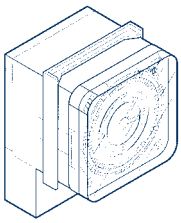


Time switch with electronic room temperature control and temperature sensor, type 30076

Electronic 2-point controller for the remote setting of room temperature

- with two separate adjustable temperature potentiometers for day and night temperature
- time switch with 150 hours power reserve and day/night and week programme
- with temperature sensor in separate housing

Housing	polystyrene, wall-mounted
Temperature range	0-40 °C
Time switch protection class	IP 20
Sensor protection class	IP 54
Time switch dimensions	W x H x D: 257 x 215 x 108 mm
Sensor dimensions	W x H x D: 50 x 50 x 30 mm

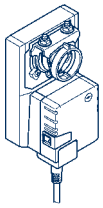


Time switch, type 30154

For use with electronic 2-stage, 3-phase controller type 30177 and the KaBUS *ECO* controller; to switch between day and night setback mode, with day/night/week programme; surface-mounted housing

Housing	polystyrene, wall-mounted
Protection class	IP 20
Power reserve	150 h
Dimensions	W x H x D: 72 x 104 x 69 mm

Servo motors

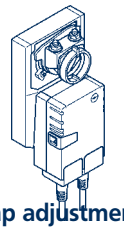


Open/closed flap adjustment servo motor, type 30262

For activation via the frost protection switch type 30091 or supply air temperature controller type 30095; sits underneath the rotation of the drive motor on a completely sealed segment; it is clamped to the drive shaft.

- protected against overloading; limit switch is not required
- automatically stops when flap/motor stop is reached
- drive can be stopped with a button for hand adjustment

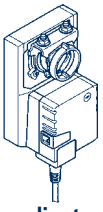
Control voltage	230 V~/50 Hz
Time delay	approx. 150 sec
Protection class	IP 54



0-100% flap adjustment servo motor, 230 V, type 30264

As type 30262, but activation is via potentiometer in the frost protection switch type 30290 or supply air temperature controller type 30294

Operating voltage	230 V~/50 Hz
Control voltage	0-10 V
Time delay	150 sec
Protection class	IP 54



0-100% flap adjustment servo motor, 24 V, type 30464

Activation via 24V controller (by others); otherwise as type 30264;
not suitable for use with type 30290 and type 30294

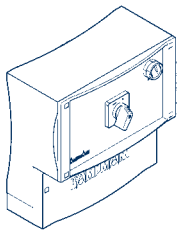
Operating voltage	24 V~/50 Hz
Control voltage	0-10 V
Time delay	150 s
Protection class	IP 54
Protection class	III

Article no. for DataNorm/EDV entry: 196 0000 _ _ _ _ _ (insert type no.)

KAMPMANN
SYSTEMS FOR HEATING · COOLING · VENTILATING

Controls accessories: Frost protection switches · Valves · Switches

Frost protection switches

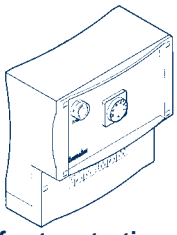


Open/closed frost protection switch, type 30091

For "Open/Closed" flap adjustment for use with servo motor type 30262 and frost protection thermostat type 30168 or type . . .*. . . F; shuts off the supply of fresh air when there is risk of frost or when the Ultra is stopped by the room temperature controller or manually. In the event of frost, the system is switched to fault mode. When it restarts, the servo motor moves to the "Open" or "Closed" position on the frost protection switch.

- "Frost risk" indicator
- operates max. 10 servo motors
- one frost protection thermostat and servo motors are required per Ultra

Housing	polystyrene, wall-mounted
Dimensions	W x H x D: 257 x 215 x 108 mm

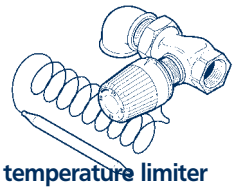


0-100% frost protection switch, type 30290

As type 30091, but for 0-100% flap adjustment with servo motor type 30264 and frost protection thermostat type 30168 or type . . .*. . . F; When it restarts, the servo motor moves to the "Open" or "Closed" position on the frost protection switch.

Housing	polystyrene, wall-mounted
Dimensions	W x H x D: 257 x 215 x 108 mm

Valves

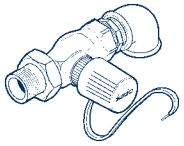


Leaving air temperature limiter valve, 1", type 30966

Straight valve body with elbow connection, thermostatic valve head and remote sensor with capillary tube for controlling the leaving air temperature at a constant level

Fixing for fitting sensor in air stream is included.

Temperature range	20-50 °C
Capillary tube length	2,0 m

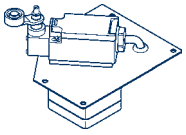


Thermoelectric shut-off valve, 1", type 30911

Straight valve with elbow connection and thermoelectric actuator

Operating voltage	230 V~/50 Hz
Power uptake	approx. 5 w
Cable length	approx. 1 m

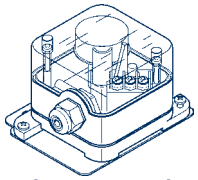
Limit switches · Differential pressure switches



Limit switch, type 30166

For fitting within the air mixing box; the limit switch serves to signal (on-site analysis) when the fresh air/recirculating air flap has reached its stop position.

Switching contact	Open/Closed 230 V
Protection class	IP 65



Differential press. switch, type 30167

To monitor the filter when using a filter unit, a recirculating air induction duct or an air mixing box with filter insert; connect to a signalling device on site

Setting range	40-600 Pa
Protection class	IP 54

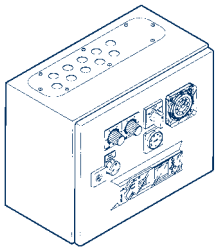
*insert Ultra type no.

Article no for DataNorm/EDV entry: 196 0000 _____ (insert type no.)

KAMPMANN
SYSTEMS FOR HEATING · COOLING · VENTILATING

Supply air temperature control

Supply air temperature controls · 3-way valves



Supply air temperature controller, type 30294

Supply air temperature controller, type 30095

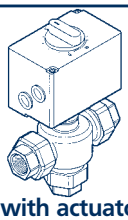
Type 30294 with 0-100% continuous flap adjustment, for use with 0-100% flap adjustment motors type 30264

Type 30095 with Open/Closed flap adjustment, for use with Open/Closed flap adjustment motors type 30262

- The continuous temp. controller compares the temperature measured by the room temp. sensor with the temperature set on the day/night potentiometer and adjusts the 3-way valve accordingly.
- The integral supply air controller prevents the supply air falling below the set level.
- The frost protection switch shuts the air mixing box in the event of frost or if the fan is switched off and opens the 3-way valve in the event of frost.
- Terminal points for: 3-phase or single phase supply air stage switches, frost protection thermostats, flap adjustment motors, room temperature sensors supply air duct sensors and 3-way valve actuators.

Switching cabinet model - painted RAL 7032, door with locking door, complies with VDE (German Electrical) standards, terminal strips on base plate. The front panel has:

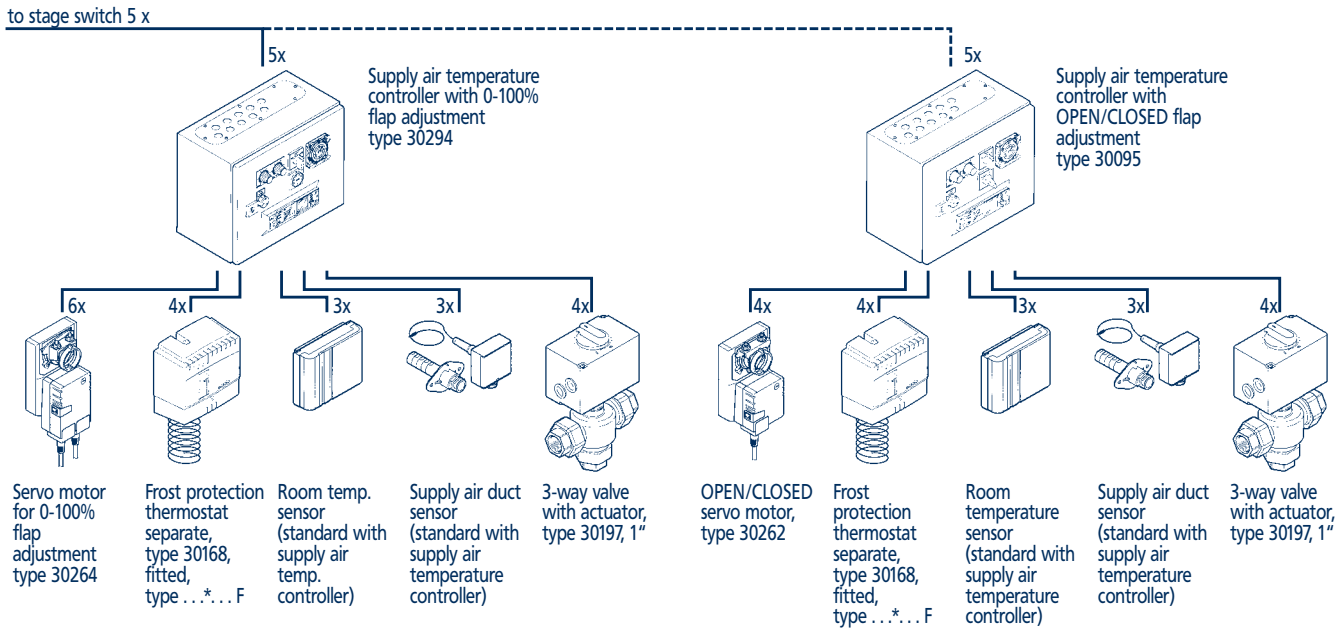
- Time switch with day/night/week programme and power reserve,
- Day/night/clock switch (in "Night" position, the mixed air flap runs in "recirc. air" mode),
- Operating and fault indicators, unlocking button, day and night temperature dial.
- 1 no. room temperature sensor is included
- 1 no. air duct sensor to monitor lower limit of supply air is included



3-way valve with actuator, 1", type 30197

For use with supply air temperature controller (24V supply)

Overview of supply air temperatrure controller



The number of wires, incl fuse, is given for each control unit i.e. 4 x = 4 wires

*insert Ultra type no.

Article no. for DataNorm/EDV entry: 196 0000 _ _ _ _ _ (insert type no.)

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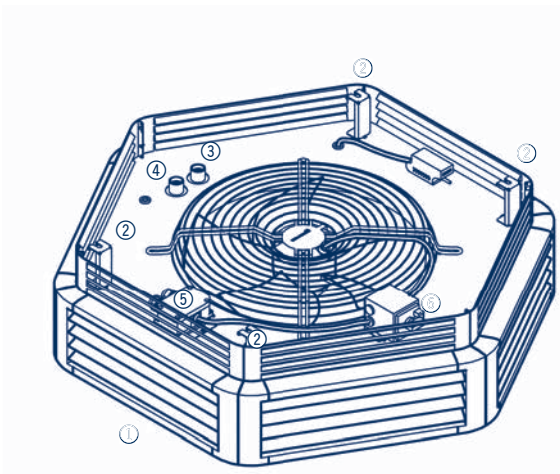
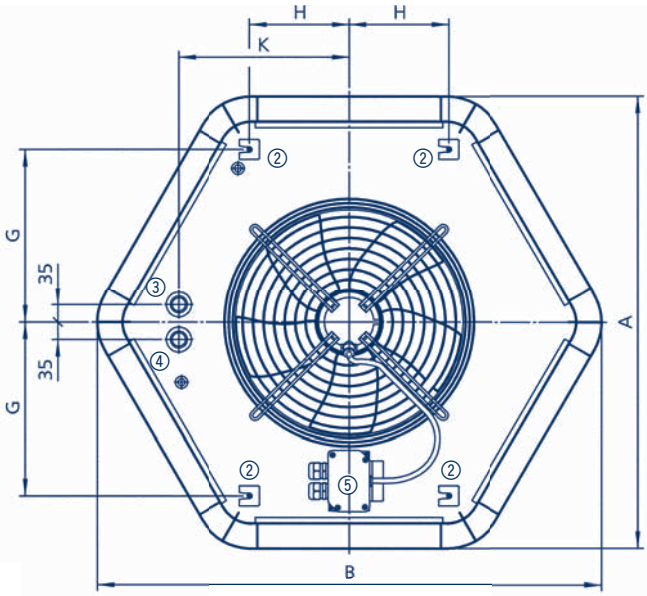
SYSTEMS FOR HEATING · COOLING · VENTILATING

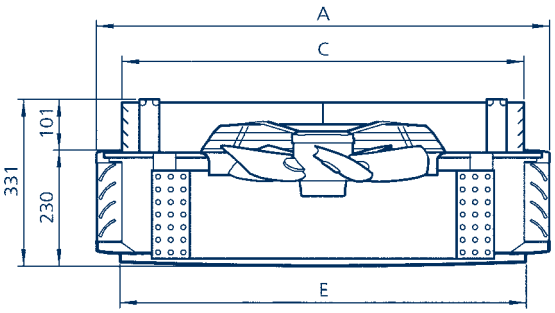
Ultra series 73 - 96 dimensions

Ultra series 73 - 96 (heating, cooling) dimensions

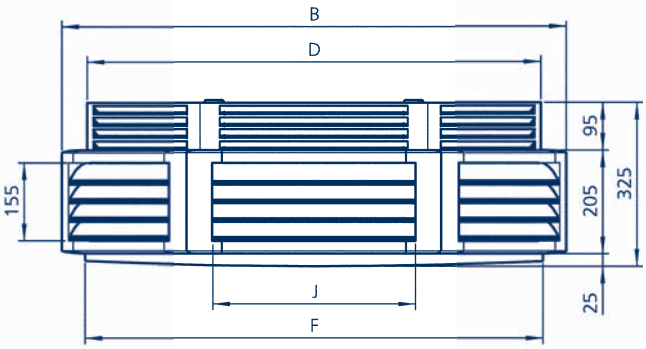


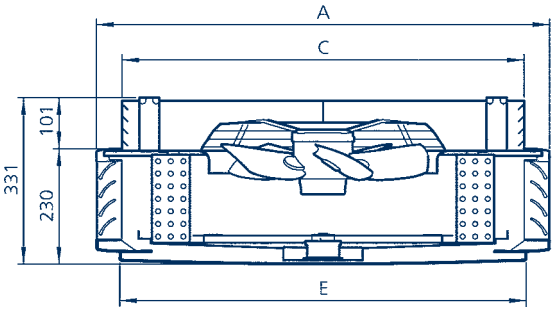
Heating model with factory-fitted repair switch (suffix . . . . . 0R)





Cross-section through heating model





Cross-section through cooling model

① Housing with adjustable louvre fins
② Brackets (4 no. included as standard)
③ Flow connection 1“
④ Return connection 1“
⑤ Electrical junction box for valve connection
⑥ Repair switch, factory-fitted
(suffix . . . . . 0R)

Ultra dimensions (heating, cooling)

Ultra series	A	B	C	D	E	F	G	H	J	K
73	750	840	650	729	658	739	270	155	315	275
84/85	900	1004	800	904	808	912	345	198	401	340
96	1050	1177	950	1077	958	1085	420	243	488	380

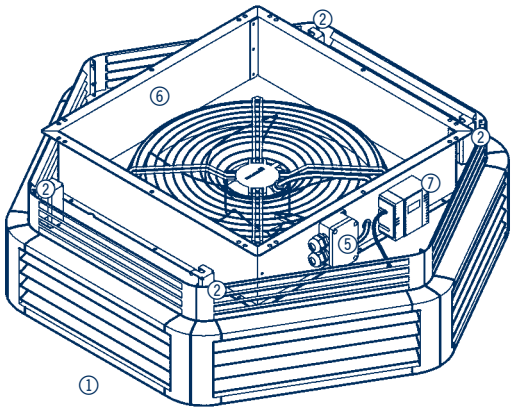
All dimensions are given in mm

Article no. for DataNorm/EDV entry: 196 0000 (insert type no.) _____

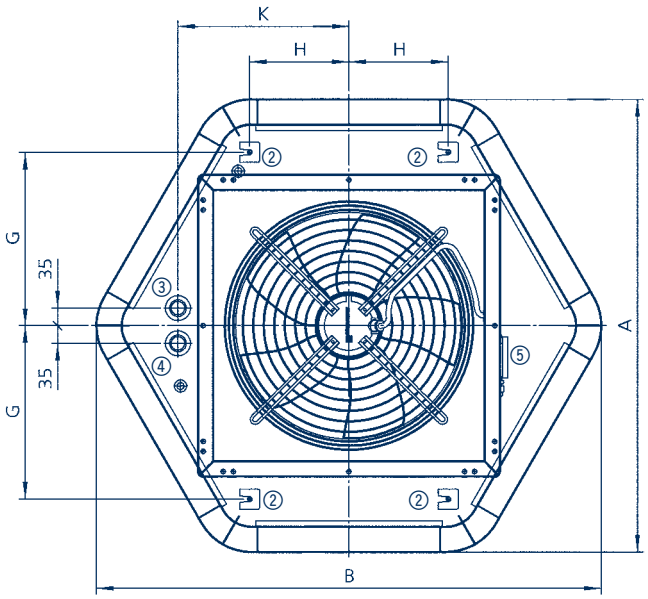
KAMPMANN
SYSTEMS FOR HEATING · COOLING · VENTILATING

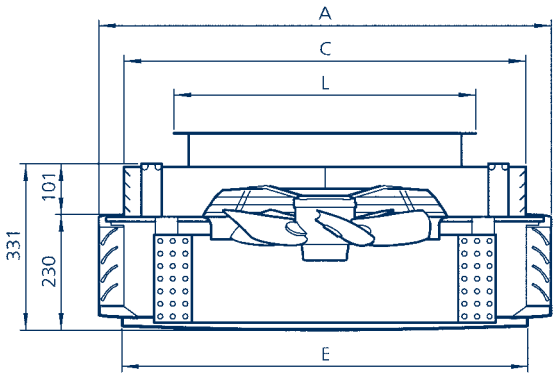
Ultra series 85 and 96 dimensions (with connecting frame)

Ultra dimensions with connecting frame and frost protection thermostat (heating, cooling)

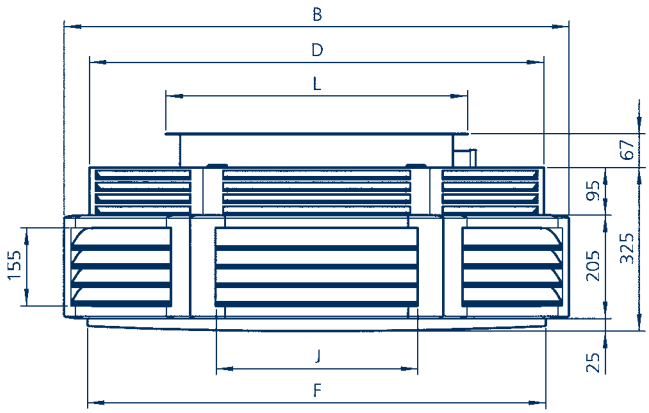


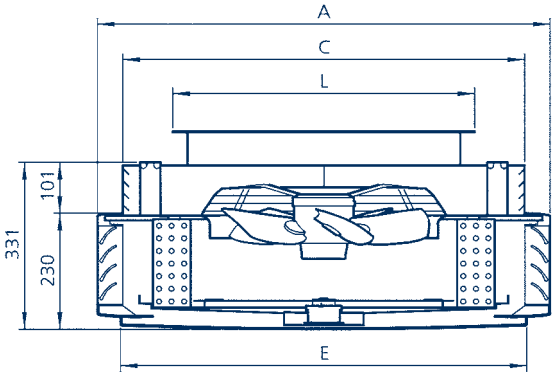
Heating model with factory-fitted connecting frame and frost protection thermostat (suffix . . . . . F)





Cross-section through heating model





Cross-section through cooling model

① Housing with adjustable louvre fins
② Brackets (4 no. included as standard)
③ Flow connection 1“
④ Return connection 1“
⑤ Electrical junction box for valve connection
⑥ Square connecting frame, suffix . . . . . F
⑦ Frost protection thermostat

Ultra dimensions with connecting frame (heating, cooling)

Ultra series	A	B	C	D	E	F	G	H	J	K	L
85	900	1004	800	904	808	912	345	198	401	340	600
96	1050	1177	950	1077	958	1085	420	243	488	380	700

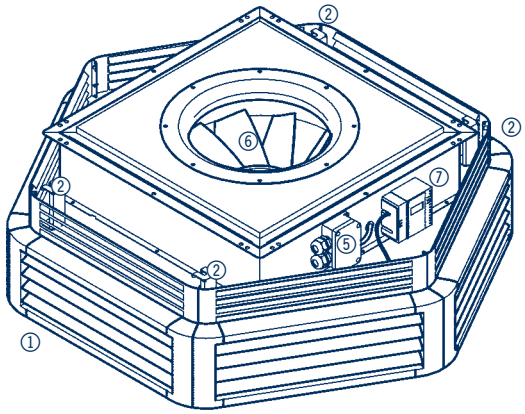
All dimensions are given in mm

Article no. for DataNorm/EDV entry: 196 0000 (insert type no.) _____

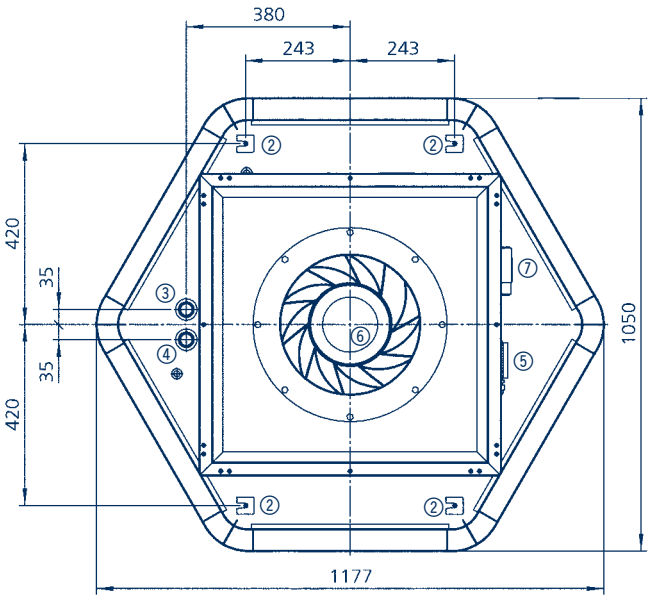
KAMPMANN
SYSTEMS FOR HEATING · COOLING · VENTILATING

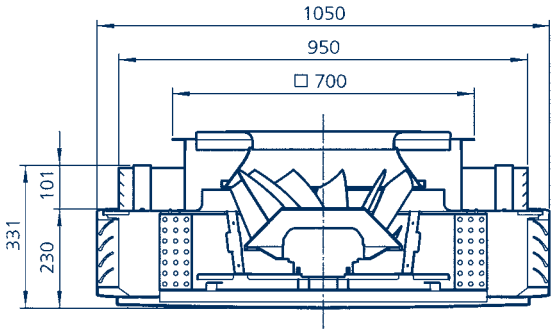
Ultra serie 97 dimensions

Ultra series 97 (heating, cooling) dimensions

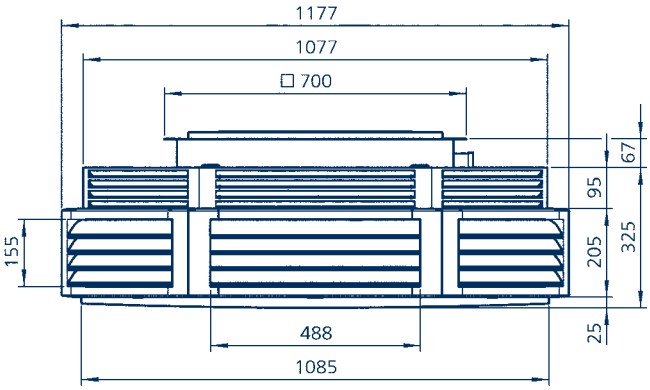


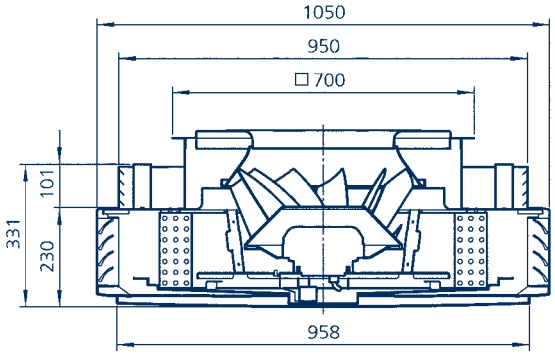
Heating model with factory-fitted frost protection thermostat (suffix . . . . . F)





Cross-section through heating model





Cross-section through cooling model

① Housing with adjustable louvre fins
② Brackets (4 no. included as standard)
③ Flow connection 1“
④ Return connection 1“
⑤ Electrical junction box for valve connection
⑥ Diagonal, whisper-quiet fan
⑦ Frost protection thermostat

All dimensions are given in mm

Article no. for DataNorm/EDV entry: 196 0000 (insert type no.) _ _ _ _ _

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SYSTEMS FOR HEATING · COOLING · VENTILATING

Technical data

Ultra series 73 performance data

Type no.		7320_ _				7330_ _			
2-stage, 3-phase motor 400 V/3 ~	Type	732036 30 W/0,07 A		20 W/0,04 A		733036 30 W/0,07 A		20 W/0,04 A	
1-stage, single phase motor 230 V/1 ~	Type	732016 50 W/0,23 A		-		733016 50 W/0,23 A		-	
Fan stage		**2**		**1**		**2**		**1**	
Fan speed (approx.)	1/min	900		700		900		700	
Air volume	**m³/h**	**1180**		**890**		**1150**		**880**	
Sound pressure level[1)]	dB(A)	43		38		43		38	
Sound power level	dB(A)	59		54		59		54	
Weight	kg	29,0		29,0		30,0		30,0	
Water content	L	1,6		1,6		2,3		2,3	
Throw	m	3,8		3,2		3,7		3,2	
Max. mounting height	m	2,4		2,3		2,4		2,3	
Heat outputs									
Water temp.	t_{L1} °C	Q kW	t_{L2} °C	Q kW	t_{L2} °C	Q kW	t_{L2} °C	Q kW	t_{L2} °C
LPWW 55/45 °C	-15	11,9	11,9	9,8	14,3	15,2	20,2	12,4	22,6
	-10	10,9	15,0	9,0	17,3	14,0	22,8	11,4	25,1
	-5	10,0	18,1	8,2	20,2	12,7	25,3	10,4	27,4
	0	9,0	21,2	7,4	23,1	11,5	27,8	9,4	29,7
	5	8,0	24,2	6,6	25,9	10,3	30,2	8,4	31,9
	10	7,1	27,1	5,8	28,7	9,0	32,4	7,4	34,0
	15	6,1	30,0	5,0	31,4	7,8	34,7	6,4	36,0
	18	5,5	31,7	4,5	32,9	7,1	36,0	5,8	37,2
	20	5,1	32,8	4,2	34,0	6,6	36,8	5,4	38,0
LPHW 70/55 °C	-15	14,0	16,6	11,5	19,4	17,9	26,4	14,6	29,3
	-10	13,0	19,8	10,7	22,5	16,6	29,1	13,6	31,8
	-5	12,1	23,0	9,9	25,5	15,4	31,7	12,6	34,2
	0	11,1	26,1	9,1	28,5	14,2	34,2	11,6	36,6
	5	10,1	29,2	8,3	31,3	12,9	36,7	10,6	38,9
	10	9,2	32,2	7,5	34,2	11,7	39,1	9,6	41,1
	15	8,2	35,1	6,7	36,9	10,5	41,4	8,6	43,2
	18	7,6	36,9	6,3	38,6	9,7	42,7	8,0	44,4
	20	7,2	38,0	5,9	39,6	9,2	43,6	7,6	45,2
LPHW 70/60 °C	-15	14,8	18,4	12,2	21,4	18,9	28,8	15,4	31,8
	-10	13,8	21,7	11,4	24,5	17,7	31,5	14,4	34,3
	-5	12,9	24,9	10,6	27,5	16,4	34,1	13,4	36,8
	0	11,9	28,0	9,8	30,5	15,2	36,7	12,4	39,2
	5	10,9	31,1	9,0	33,4	14,0	39,2	11,4	41,5
	10	10,0	34,1	8,2	36,3	12,7	41,6	10,4	43,8
	15	9,0	37,1	7,4	39,1	11,5	44,0	9,4	46,0
	18	8,4	38,9	6,9	40,7	10,8	45,4	8,8	47,2
	20	8,0	40,0	6,6	41,8	10,3	46,3	8,4	48,1
LPHW 75/65 °C	-15	15,8	20,6	13,0	23,8	20,1	31,7	16,5	34,8
	-10	14,8	23,9	12,2	26,9	18,9	34,4	15,4	37,4
	-5	13,8	27,1	11,4	30,0	17,7	37,1	14,4	39,9
	0	12,9	30,3	10,6	33,0	16,4	39,7	13,4	42,4
	5	11,9	33,4	9,8	36,0	15,2	42,2	12,4	44,8
	10	10,9	36,5	9,0	38,8	14,0	44,7	11,4	47,1
	15	10,0	39,5	8,2	41,7	12,7	47,1	10,4	49,3
	18	9,4	41,3	7,7	43,4	12,0	48,5	9,8	50,6
	20	9,0	42,4	7,4	44,5	11,5	49,4	9,4	51,4
LPHW 82/71 °C	-15	17,0	23,4	14,0	26,9	21,7	35,4	17,8	38,8
	-10	16,0	26,7	13,2	30,0	20,5	38,2	16,8	41,5
	-5	15,1	30,0	12,4	33,2	19,3	40,9	15,7	44,0
	0	14,1	33,2	11,6	36,2	18,0	43,6	14,7	46,5
	5	13,1	36,4	10,8	39,2	16,8	46,1	13,7	49,0
	10	12,2	39,5	10,0	42,2	15,6	48,7	12,7	51,3
	15	11,2	42,6	9,2	45,0	14,3	51,1	11,7	53,6
	18	10,6	44,4	8,7	46,7	13,6	52,6	11,1	54,9
	20	10,3	45,6	8,4	47,9	13,1	53,5	10,7	55,8
LPHW 90/70 °C	20	10,5	46,2	8,6	48,5	13,4	54,3	11,0	56,7

[1)]Sound pressure level measured in a highly sound-absorbent (anechoic) room at a distance of 3 m

Article no. for DataNorm/EDV entry: 196 0000 _____ (insert type no.)

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Ultra series 84 performance data

Type no.		8420_ _				8430_ _			
2-stage, 3-phase motor 400 V/3 ~	Type	842036				843036			
		60 W/0,18 A		40 W/0,08 A		60 W/0,18 A		40 W/0,08 A	
1-stage, single phase motor 230 V/1 ~	Type	842016		-		843016		-	
		80 W/0,41 A				80 W/0,41 A			
Fan stage		**2**		**1**		**2**		**1**	
Fan speed (approx)	1/min	900		700		900		700	
Air volume	**m³/h**	**1650**		**1410**		**1580**		**1350**	
Sound pressure level [1]	dB(A)	50		44		50		44	
Sound power level	dB(A)	66		60		66		60	
Weight	kg	35,0		35,0		37,0		37,0	
Water content	L	2,0		2,0		2,9		2,9	
Throw	m	4,4		3,8		4,3		3,7	
Max. mounting height	m	2,8		2,6		2,8		2,5	
Heat outputs									
Water temp.	t_{L1} °C	Q kW	t_{L2} °C	Q kW	t_{L2} °C	Q kW	t_{L2} °C	Q kW	t_{L2} °C
LPWW 55/45 °C	-15	16,1	11,1	14,4	12,2	20,9	20,2	18,5	21,5
	-10	14,8	14,3	13,2	15,4	19,2	22,8	17,0	24,0
	-5	13,5	17,4	12,1	18,4	17,5	25,3	15,5	26,5
	0	12,2	20,5	10,9	21,5	15,8	27,8	14,0	28,8
	5	10,9	23,6	9,7	24,4	14,1	30,2	12,5	31,1
	10	9,6	26,6	8,6	27,4	12,4	32,4	11,0	33,3
	15	8,3	29,5	7,4	30,2	10,7	34,7	9,5	35,4
	18	7,5	31,3	6,7	31,9	9,7	36,0	8,6	36,6
	20	7,0	32,4	6,2	33,0	9,0	36,8	8,0	37,4
LPHW 70/55 °C	-15	19,0	15,6	16,9	17,0	24,5	26,4	21,8	28,0
	-10	17,6	18,9	15,8	20,2	22,9	29,1	20,2	30,5
	-5	16,3	22,1	14,6	23,4	21,2	31,7	18,7	33,1
	0	15,0	25,3	13,4	26,5	19,5	34,2	17,2	35,5
	5	13,7	28,4	12,3	29,5	17,8	36,7	15,7	37,9
	10	12,4	31,5	11,1	32,5	16,1	39,1	14,2	40,2
	15	11,1	34,5	9,9	35,4	14,4	41,4	12,7	42,4
	18	10,3	36,3	9,2	37,1	13,4	42,7	11,8	43,7
	20	9,8	37,5	8,8	38,3	12,7	43,6	11,2	44,5
LPHW 70/60 °C	-15	20,0	17,4	17,9	18,9	26,0	23,0	23,0	30,4
	-10	18,7	20,7	16,7	22,1	24,3	21,5	21,5	33,0
	-5	17,4	23,9	15,6	25,3	22,6	20,0	20,0	35,6
	0	16,1	27,1	14,4	28,4	20,9	18,5	18,5	38,1
	5	14,8	30,3	13,2	31,4	19,2	17,0	17,0	40,5
	10	13,5	33,4	12,1	34,5	17,5	15,5	15,5	42,8
	15	12,2	36,4	10,9	37,4	15,8	14,0	14,0	45,1
	18	11,4	38,2	10,2	39,2	14,8	13,1	13,1	46,4
	20	10,9	39,4	9,7	40,3	14,1	12,5	12,5	47,2
LPHW 75/65 °C	-15	21,4	19,5	19,1	21,1	27,7	31,7	24,5	33,4
	-10	20,0	22,8	17,9	24,3	26,0	34,4	23,0	36,0
	-5	18,7	26,1	16,7	27,5	24,3	37,1	21,5	38,6
	0	17,4	29,3	15,6	30,7	22,6	39,7	20,0	41,2
	5	16,1	32,5	14,4	33,8	20,9	42,2	18,5	43,6
	10	14,8	35,7	13,2	36,8	19,2	44,7	17,0	46,0
	15	13,5	38,7	12,1	39,8	17,5	47,1	15,5	48,3
	18	12,7	40,5	11,4	41,6	16,5	48,5	14,6	49,6
	20	12,2	41,7	10,9	42,7	15,8	49,4	14,0	50,5
LPHW 82/71 °C	-15	23,1	22,3	20,6	23,9	29,9	35,4	26,5	37,2
	-10	21,7	25,6	19,4	27,2	28,2	38,2	25,0	40,0
	-5	20,4	28,9	18,3	30,5	26,5	40,9	23,5	42,6
	0	19,1	32,2	17,1	33,7	24,8	43,6	22,0	45,2
	5	17,8	35,4	15,9	36,8	23,1	46,1	20,5	47,7
	10	16,5	38,6	14,8	39,9	21,4	48,7	19,0	50,1
	15	15,2	41,7	13,6	42,9	19,7	51,1	17,5	52,5
	18	14,4	43,6	12,9	44,7	18,7	52,6	16,6	53,8
	20	13,9	44,8	12,4	45,9	18,0	53,5	16,0	54,7
LPHW 90/70 °C	20	14,2	45,4	12,7	46,5	18,4	54,3	16,3	55,6

[1] Sound pressure level measured in a highly sound-absorbent (anechoic) room at a distance of 3 m

Article no. for DataNorm/EDV entry: 196 0000 _ _ _ _ _ (insert type no.)

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Ultra series 85 performance data

Type no.		8520_ _				8530_ _			
2-stage, 3-phase motor 400 V/3 ~	Type	852036				853036			
		140 W/0,30 A		80 W/0,15 A		140 W/0,30 A		80 W/0,15 A	
1-stage, single phase motor 230 V/1 ~	Type	852016		-		853016		-	
		130 W/0,56 A				130 W/0,56 A			
Fan stage		**2**		**1**		**2**		**1**	
Fan speed (approx.)	1/min	900		700		900		700	
Air volume	**m³/h**	**2860**		**2080**		**2750**		**1990**	
Sound pressure level [1]	dB(A)	52		45		52		45	
Sound power level	dB(A)	68		61		68		61	
Weight	kg	35,0		35,0		37,0		37,0	
Water content	L	2,0		2,0		2,9		2,9	
Throw	m	5,6		4,7		5,5		4,6	
Max. mounting height	m	3,4		3,0		3,3		3,0	
Heat outputs									
Water temp.	t_{L1} °C	Q kW	t_{L2} °C	Q kW	t_{L2} °C	Q kW	t_{L2} °C	Q kW	t_{L2} °C
LPWW 55/45 °C	-15	25,1	8,4	20,4	11,1	33,2	17,2	26,4	20,4
	-10	23,1	11,8	18,7	14,3	30,5	20,0	24,3	23,0
	-5	21,0	15,2	17,1	17,5	27,8	22,7	22,1	25,5
	0	19,0	18,5	15,4	20,6	25,1	25,4	20,0	27,9
	5	17,0	21,7	13,7	23,6	22,4	28,0	17,9	30,3
	10	14,9	24,9	12,1	26,6	19,7	30,5	15,7	32,6
	15	12,9	28,1	10,4	29,6	17,0	33,0	13,6	34,8
	18	11,7	29,9	9,5	31,3	15,4	34,4	12,3	36,1
	20	10,9	31,2	8,8	32,4	14,3	35,3	11,4	36,9
LPHW 70/55 °C	-15	29,5	12,5	23,9	15,7	39,0	22,8	31,1	26,6
	-10	27,5	16,0	22,3	18,9	36,3	25,7	28,9	29,3
	-5	25,4	19,4	20,6	22,2	33,6	28,5	26,8	31,9
	0	23,4	22,7	19,0	25,3	30,9	31,2	24,6	34,4
	5	21,4	26,1	17,3	28,5	28,2	33,9	22,5	36,8
	10	19,3	29,3	15,7	31,5	25,5	36,5	20,4	39,2
	15	17,3	32,5	14,0	34,5	22,9	39,1	18,2	41,5
	18	16,1	34,4	13,0	36,3	21,2	40,6	16,9	42,9
	20	15,3	35,7	12,4	37,5	20,2	41,6	16,1	43,8
LPHW 70/60 °C	-15	31,2	14,1	25,3	17,4	41,2	25,0	32,9	29,0
	-10	29,2	17,6	23,7	20,7	38,5	27,9	30,7	31,7
	-5	27,1	21,0	22,0	24,0	35,9	30,7	28,6	34,3
	0	25,1	24,4	20,4	27,2	33,2	33,5	26,4	36,9
	5	23,1	27,7	18,7	30,3	30,5	36,2	24,3	39,4
	10	21,0	31,0	17,1	33,4	27,8	38,9	22,1	41,8
	15	19,0	34,3	15,4	36,5	25,1	41,5	20,0	44,1
	18	17,8	36,2	14,4	38,3	23,5	43,0	18,7	45,5
	20	17,0	37,4	13,7	39,4	22,4	44,0	17,9	46,4
LPHW 75/65 °C	-15	33,3	16,0	27,0	19,6	43,9	27,6	35,0	31,9
	-10	31,2	19,5	25,3	22,9	41,2	30,5	32,9	34,6
	-5	29,2	23,0	23,7	26,2	38,5	33,4	30,7	37,3
	0	27,1	26,4	22,0	29,4	35,9	36,2	28,6	39,9
	5	25,1	29,7	20,4	32,6	33,2	39,0	26,4	42,4
	10	23,1	33,0	18,7	35,7	30,5	41,7	24,3	44,9
	15	21,0	36,3	17,1	38,8	27,8	44,3	22,1	47,3
	18	19,8	38,3	16,1	40,6	26,2	45,8	20,9	48,6
	20	19,0	39,5	15,4	41,8	25,1	46,8	20,0	49,6
LPHW 82/71 °C	-15	35,9	18,5	29,1	22,3	47,4	31,0	37,8	35,6
	-10	33,9	22,0	27,4	25,7	44,7	34,0	35,6	38,4
	-5	31,8	25,5	25,8	29,0	42,0	36,9	33,5	41,1
	0	29,8	28,9	24,1	32,2	39,4	39,8	31,4	43,8
	5	27,8	32,3	22,5	35,5	36,7	42,6	29,2	46,4
	10	25,7	35,7	20,8	38,6	34,0	45,3	27,1	48,9
	15	23,7	39,0	19,2	41,7	31,3	48,0	24,9	51,3
	18	22,5	41,0	18,2	43,6	29,7	49,5	23,6	52,7
	20	21,6	42,3	17,5	44,8	28,6	50,6	22,8	53,7
LPHW 90/70 °C	20	22,2	42,8	18,0	45,4	29,3	51,3	23,3	54,5

[1] Sound pressure level measured in a highly sound-absorbent (anechoic) room at a distance of 3 m

Article no. for DataNorm/EDV entry: 196 0000 _ _ _ _ _ (insert type no.)

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Type no.		9620_ _				9630_ _			
2-stage, 3-phase motor 400 V/3 ~	Type	962036				963036			
		360 W/0,83 A		220 W/0,46 A		360 W/0,83 A		220 W/0,46 A	
1-stage, single phase motor 230 V/1 ~	Type	962016		-		963016		-	
		360 W/1,65 A				360 W/1,65 A			
Fan stage		**2**		**1**		**2**		**1**	
Fan speed (approx.)	1/min	900		700		900		700	
Air volume	**m³/h**	**5130**		**3410**		**4920**		**3270**	
Sound pressure level [1]	dB(A)	60		50		60		50	
Sound power level	dB(A)	76		66		76		66	
Weight	kg	44,0		44,0		47,0		47,0	
Water content	L	2,2		2,2		3,3		3,3	
Throw	m	7,0		5,5		6,9		5,4	
Max. mounting height	m	3,9		3,5		3,9		3,4	

Heat outputs

Water temp.	t_{L1} °C	Q kW	t_{L2} °C	Q kW	t_{L2} °C	Q kW	t_{L2} °C	Q kW	t_{L2} °C
LPWW 55/45 °C	-15	39,4	5,5	30,5	8,9	52,9	13,6	40,2	17,8
	-10	36,2	9,1	28,1	12,2	48,6	16,7	36,9	20,5
	-5	33,0	12,6	25,6	15,5	44,3	19,7	33,7	23,2
	0	29,8	16,1	23,1	18,8	40,0	22,6	30,4	25,8
	5	26,6	19,6	20,6	22,0	35,7	25,4	27,1	28,4
	10	23,4	23,0	18,1	25,2	31,4	28,3	23,9	30,9
	15	20,2	26,4	15,7	28,3	27,1	31,0	20,6	33,3
	18	18,3	28,4	14,2	30,2	24,6	32,6	18,7	34,7
	20	17,0	29,8	13,2	31,4	22,9	33,7	17,4	35,6
LPHW 70/55 °C	-15	46,3	9,1	35,9	13,1	62,1	18,7	47,2	23,5
	-10	43,1	12,7	33,4	16,5	57,9	21,8	44,0	26,3
	-5	39,9	16,3	30,9	19,9	53,6	24,8	40,7	29,1
	0	36,7	19,9	28,5	23,2	49,3	27,8	37,5	31,8
	5	33,5	23,4	26,0	26,5	45,0	30,8	34,2	34,5
	10	30,3	26,9	23,5	29,7	40,7	33,6	30,9	37,0
	15	27,1	30,3	21,0	32,9	36,4	36,5	27,7	39,5
	18	25,2	32,4	19,6	34,8	33,9	38,1	25,7	41,0
	20	23,9	33,7	18,6	36,0	32,1	39,2	24,4	42,0
LPHW 70/60 °C	-15	49,0	10,4	38,0	14,7	65,7	20,6	49,9	25,7
	-10	45,8	14,1	35,5	18,1	61,4	23,7	46,7	28,6
	-5	42,6	17,7	33,0	21,5	57,1	26,8	43,4	31,4
	0	39,4	21,3	30,5	24,9	52,9	29,8	40,2	34,1
	5	36,2	24,9	28,1	28,2	48,6	32,8	36,9	36,8
	10	33,0	28,4	25,6	31,4	44,3	35,7	33,7	39,4
	15	29,8	31,8	23,1	34,6	40,0	38,6	30,4	41,9
	18	27,9	33,9	21,6	36,5	37,4	40,2	28,4	43,4
	20	26,6	35,3	20,6	37,8	35,7	41,3	27,1	44,4
LPHW 75/65 °C	-15	52,2	12,1	40,4	16,6	70,0	22,9	53,2	28,4
	-10	49,0	15,8	38,0	20,1	65,7	26,1	49,9	31,3
	-5	45,8	19,4	35,5	23,5	61,4	29,2	46,7	34,1
	0	42,6	23,1	33,0	26,9	57,1	32,3	43,4	36,9
	5	39,4	26,6	30,5	30,2	52,9	35,3	40,2	39,6
	10	36,2	30,2	28,1	33,5	48,6	38,2	36,9	42,3
	15	33,0	33,6	25,6	36,7	44,3	41,1	33,7	44,8
	18	31,1	35,7	24,1	38,7	41,7	42,8	31,7	46,3
	20	29,8	37,1	23,1	39,9	40,0	43,9	30,4	47,3
LPHW 82/71 °C	-15	56,3	14,3	43,6	19,1	75,6	26,0	57,4	31,8
	-10	53,1	18,0	41,2	22,6	71,3	29,2	54,2	34,8
	-5	49,9	21,7	38,7	26,1	67,0	32,3	50,9	37,7
	0	46,7	25,3	36,2	29,5	62,7	35,4	47,7	40,5
	5	43,5	28,9	33,7	32,9	58,4	38,5	44,4	43,3
	10	40,3	32,5	31,3	36,2	54,1	41,4	41,1	46,0
	15	37,1	36,0	28,8	39,5	49,9	44,4	37,9	48,6
	18	35,2	38,1	27,3	41,4	47,3	46,1	35,9	50,1
	20	34,0	39,5	26,3	42,7	45,6	47,2	34,6	51,2
LPHW 90/70 °C	20	34,8	39,9	27,0	43,2	46,7	47,9	35,5	51,9

[1] Sound pressure level measured in a highly sound-absorbent (anechoic) room at a distance of 3 m

Article no. for DataNorm/EDV entry: 196 0000 _ _ _ _ _ (insert type no.)

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Ultra series 96 performance data

Type no.		962038				963038			
2-stage, 3-phase motor, 400 V/3 ~	Type	962038				963038			
		170 W/0,47 A		100 W/0,21 A		170 W/0,47 A		100 W/0,21 A	
1-stage, single phase motor, 230 V/1 ~	Type	-		-		-		-	
Fan stage		**2**		**1**		**2**		**1**	
Fan speed (approx.)	1/min	650		500		650		500	
Air volume	**m³/h**	**3670**		**2630**		**3520**		**2520**	
Sound pressure level [1]	dB(A)	51		44		51		44	
Sound power level	dB(A)	67		60		67		60	
Weight	kg	44,0		44,0		47,0		47,0	
Water contect	L	2,2		2,2		3,3		3,3	
Throw	m	6,2		5,2		6,0		5,0	
Max. mounting height	m	3,7		3,3		3,6		3,2	
Heat outputs									
Water temp.	t_{L1} °C	Q kW	t_{L2} °C	Q kW	t_{L2} °C	Q kW	t_{L2} °C	Q kW	t_{L2} °C
LPWW 55/45 °C	-15	32,0	8,2	25,8	11,1	42,3	17,0	33,4	20,4
	-10	29,4	11,6	23,7	14,3	38,9	19,8	30,7	22,9
	-5	26,8	15,0	21,6	17,5	35,4	22,6	28,0	25,5
	0	24,2	18,3	19,5	20,6	32,0	25,3	25,3	27,9
	5	21,6	21,6	17,4	23,6	28,6	27,9	22,6	30,3
	10	19,0	24,8	15,3	26,6	25,1	30,4	19,9	32,5
	15	16,4	28,0	13,2	29,6	21,7	32,9	17,2	34,7
	18	14,9	29,8	12,0	31,3	19,7	34,3	15,5	36,0
	20	13,8	31,1	11,1	32,5	18,3	35,3	14,5	36,9
LPHW 70/55 °C	-15	37,6	12,3	30,3	15,7	49,7	22,7	39,3	26,6
	-10	35,0	15,8	28,2	19,0	46,3	25,5	36,6	29,2
	-5	32,4	19,2	26,1	22,2	42,9	28,4	33,9	31,8
	0	29,8	22,6	24,0	25,4	39,4	31,1	31,2	34,4
	5	27,2	25,9	21,9	28,5	36,0	33,8	28,5	36,8
	10	24,6	29,2	19,8	31,6	32,6	36,4	25,8	39,2
	15	22,0	32,4	17,8	34,6	29,1	39,0	23,0	41,5
	18	20,5	34,3	16,5	36,3	27,1	40,5	21,4	42,8
	20	19,4	35,6	15,7	37,5	25,7	41,5	20,3	43,7
LPHW 70/60 °C	-15	39,8	13,9	32,0	17,5	52,6	24,8	41,6	29,0
	-10	37,2	17,4	29,9	20,8	49,1	27,7	38,9	31,7
	-5	34,6	20,8	27,9	24,0	45,7	30,6	36,1	34,3
	0	32,0	24,2	25,8	27,2	42,3	33,4	33,4	36,9
	5	29,4	27,6	23,7	30,4	38,9	36,1	30,7	39,3
	10	26,8	30,9	21,6	33,5	35,4	38,8	28,0	41,8
	15	24,2	34,1	19,5	36,5	32,0	41,4	25,3	44,1
	18	22,6	36,0	18,2	38,3	29,9	42,9	23,7	45,5
	20	21,6	37,3	17,4	39,5	28,6	43,9	22,6	46,4
LPHW 75/65 °C	-15	42,4	15,8	34,1	19,6	56,0	27,4	44,3	31,9
	-10	39,8	19,3	32,0	22,9	52,6	30,4	41,6	34,6
	-5	37,2	22,7	29,9	26,2	49,1	33,3	38,9	37,2
	0	34,6	26,2	27,9	29,4	45,7	36,1	36,1	39,8
	5	32,0	29,5	25,8	32,6	42,3	38,8	33,4	42,4
	10	29,4	32,9	23,7	35,7	38,9	41,5	30,7	44,8
	15	26,8	36,2	21,6	38,8	35,4	44,2	28,0	47,2
	18	25,2	38,1	20,3	40,6	33,4	45,7	26,4	48,6
	20	24,2	39,4	19,5	41,8	32,0	46,7	25,3	49,5
LPHW 82/71 °C	-15	45,7	18,2	36,8	22,4	60,5	30,8	47,8	35,6
	-10	43,1	21,8	34,8	25,7	57,0	33,8	45,1	38,4
	-5	40,5	25,3	32,7	29,0	53,6	36,7	42,4	41,1
	0	37,9	28,7	30,6	32,3	50,2	39,6	39,7	43,7
	5	35,4	32,1	28,5	35,5	46,7	42,4	37,0	46,3
	10	32,8	35,5	26,4	38,7	43,3	45,2	34,2	48,8
	15	30,2	38,8	24,3	41,8	39,9	47,8	31,5	51,3
	18	28,6	40,8	23,1	43,6	37,8	49,4	29,9	42,7
	20	27,6	42,1	22,2	44,8	36,5	50,5	28,8	53,6
LPHW 90/70 °C	20	28,2	42,6	22,8	45,4	37,3	51,2	29,5	54,4

[1] Sound pressure level measured in a highly sound-absorbent (anechoic) room at a distance of 3 m

Article no. for DataNorm/EDV entry: 196 0000 (insert type no.) _ _ _ _ _

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Ultra series 97 performance data

Type no.		9730_ _			
2-stage, 3-phase motor 400 V/3 ~	Type	973066 310 W/0,72 A		200 W/0,41 A	
1-stage, single phase motor 230 V/1 ~	Type	973060 400 W/2,10 A		-	
Fan stage		**2**		**1**	
Fan speed (approx.)	1/min	890		640	
Air volume* (without ductwork)	m³/h	**4090**		**3060**	
Sound pressure level [1]	dB(A)	55		48	
Sound power level	dB(A)	71		64	
Weight	kg	64,0		64,0	
Water content	L	3,3		3,3	
Throw	m	6,1		5,1	
Max. mounting height	m	3,7		3,3	
Heat outputs					
Water temp.	t_{L1} °C	Q kW	t_{L2} °C	Q kW	t_{L2} °C
LPWW 55/45 °C	-15	46,8	15,5	38,3	18,4
	-10	43,0	18,4	35,2	21,1
	-5	39,2	21,3	32,1	23,7
	0	35,4	24,0	29,0	26,3
	5	31,6	26,8	25,9	28,8
	10	27,8	29,4	22,8	31,3
	15	24,0	32,0	19,7	33,6
	18	21,7	33,5	17,8	35,0
	20	20,2	34,5	16,6	35,9
LPHW 70/55 °C	-15	55,0	20,9	45,1	24,3
	-10	51,2	23,8	41,9	27,0
	-5	47,4	26,8	38,8	29,8
	0	43,6	29,6	35,7	32,4
	5	39,8	32,4	32,6	35,0
	10	36,0	35,2	29,5	37,6
	15	32,2	37,8	26,4	40,0
	18	30,0	39,4	24,5	41,5
	20	28,4	40,5	23,3	42,4
LPHW 70/60 °C	-15	58,2	22,9	47,6	26,5
	-10	54,4	25,9	44,5	29,3
	-5	50,6	28,9	41,4	32,1
	0	46,8	31,8	38,3	34,8
	5	43,0	34,6	35,2	37,4
	10	39,2	37,4	32,1	40,0
	15	35,4	40,1	29,0	42,5
	18	33,1	41,7	27,1	43,9
	20	31,6	42,7	25,9	44,9
LPHW 75/65 °C	-15	62,0	25,4	50,8	29,2
	-10	58,2	28,4	47,6	32,1
	-5	54,4	31,4	44,5	34,9
	0	50,6	34,3	41,4	37,6
	5	46,8	37,2	38,3	40,3
	10	43,0	40,0	35,2	42,9
	15	39,2	42,8	32,1	45,4
	18	36,9	44,4	30,2	46,9
	20	35,4	45,5	29,0	47,9
LPHW 82/71 °C	-15	66,9	28,6	54,8	32,7
	-10	63,1	31,7	51,7	35,6
	-5	59,3	34,7	48,6	38,5
	0	55,5	37,7	45,5	41,3
	5	51,7	40,6	42,4	44,0
	10	47,9	43,5	39,3	46,7
	15	44,1	46,3	36,1	49,2
	18	41,8	47,9	34,3	50,8
	20	40,3	49,0	33,0	51,8
LPHW 90/70 °C	20	41,3	49,7	33,8	52,5

[1]Sound pressure level measured in a highly sound-absorbent (anechoic) room at a distance of 3 m

Article no. for DataNorm/EDV entry: 196 0000 _ _ _ _ _ (insert type no.)

KAMPMANN
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Technical data

Ultra series 84 and 85 cooling outputs

Type no.		8431_ _		8531_ _	
2-stage, 3-phase motor 400 V/3 ~	Type	843136		853136	
		60 W/ 0,18 A	40 W/ 0,08 A	140 W/ 0,30 A	80 W/ 0,15 A
1-stage, single phase motor 230 V/1 ~	Type	843116	-	853116	-
		80 W/ 0,41 A		130 W/ 0,56 A	
Fan stage		**2**	**1**	**2**	**1**
Fan speed (approx.)	1/min	900	700	900	700
Air volume	**m³/h**	**1580**	**1350**	**2750**	**1990**
Sound pressure level[1)]	dB(A)	50	44	52	45
Sound power level	dB(A)	66	60	68	61
Weight	kg	42,0	42,0	42,0	42,0
Water content	L	2,9	2,9	2,9	2,9

Cooling outputs

Water temp.	t_{L1} °C	rel. F. %	Q_K kW	t_{L2} °C	Q_K kW	t_{L2} °C	Q_K kW	t_{L2} °C	Q_K kW	t_{L2} °C
LPCW 4/8 °C	32	40	11,0	17,5	9,9	16,9	16,9	18,7	13,8	17,3
	30	45	10,5	16,8	9,4	16,2	16,1	18,0	13,2	16,7
	28	50	9,8	16,1	8,8	15,5	15,1	17,1	12,4	15,9
	26	50	8,3	15,2	7,5	14,7	12,8	16,1	10,5	15,0
	24	50	6,9	14,3	6,2	13,9	10,6	15,1	8,7	14,2
LPCW 5/10 °C	32	40	9,7	18,6	8,8	18,0	14,9	19,7	12,2	18,4
	30	45	9,2	17,8	8,3	17,3	14,1	18,9	11,6	17,7
	28	50	8,6	17,1	7,7	16,6	13,2	18,0	10,8	17,0
	26	50	7,1	16,2	6,4	15,7	10,9	17,0	8,9	16,1
	24	50	5,7	15,3	5,1	14,9	8,7	16,0	7,1	15,2
LPCW 6/12 °C	32	40	8,5	19,6	7,6	19,0	12,9	20,6	10,6	19,4
	30	45	7,9	18,9	7,2	18,3	12,1	19,8	9,9	18,7
	28	50	7,3	18,1	6,6	17,6	11,1	18,9	9,1	18,0
	26	50	5,8	17,2	5,3	16,8	8,8	17,9	7,3	17,1
	24	50	4,4	16,4	4,0	16,0	6,6	16,9	5,5	16,2
LPCW 8/12 °C	32	40	8,3	19,7	7,5	19,2	12,7	20,7	10,4	19,5
	30	45	7,8	19,0	7,0	18,5	11,9	19,9	9,8	18,8
	28	50	7,2	18,2	6,4	17,8	10,9	19,0	9,0	18,1
	26	50	5,7	17,3	5,1	17,0	8,6	18,0	7,1	17,2
	24	50	4,2	16,5	3,8	16,2	6,4	17,0	5,3	16,3
LPCW 8/14 °C	32	40	7,0	20,7	6,3	20,2	10,6	21,5	8,8	20,5
	30	45	6,5	19,9	5,9	19,5	9,8	20,7	8,1	19,8
	28	50	5,9	19,2	5,3	18,8	8,9	19,9	7,3	19,1
	26	50	4,4	18,3	4,0	18,0	6,5	18,9	5,4	18,2
	24	50	3,6	17,2	3,2	17,0	5,6	17,9	4,5	17,2
LPCW 10/16 °C	32	40	5,5	21,8	5,0	21,3	8,6	22,4	6,8	21,6
	30	45	5,0	21,0	4,5	20,6	7,6	21,5	6,2	20,9
	28	50	4,3	20,3	3,9	20,0	6,6	20,7	5,4	20,1
	26	50	3,6	19,2	3,2	18,9	5,6	19,8	4,5	19,2
	24	50	2,9	18,4	2,6	18,2	4,6	19,0	3,7	18,4
LPCW 12/18 °C	32	40	4,8	22,6	4,3	22,3	7,6	23,5	6,1	22,6
	30	45	4,2	21,9	3,7	21,6	6,6	22,6	5,3	21,9
	28	50	3,6	21,1	3,2	20,9	5,6	21,8	4,5	21,1
	26	50	2,9	20,4	2,6	20,2	4,6	20,9	3,7	20,4
	24	50	2,3	19,7	2,0	19,5	3,6	20,1	2,9	19,7

[1)]Sound pressure level measured in a highly sound-absorbent (anechoic) room at a distance of 3 m

Article no. for DataNorm/EDV entry: 196 0000 _ _ _ _ _ (insert type no.)

KAMPMANN
SYSTEMS FOR HEATING · COOLING · VENTILATING

Ultra series 96 and 97 cooling outputs

Type no.		9631_ _		963138		9731_ _	
2-stage, 3-phase motor 400 V/3 ~	Type	**963136** 360 W/ 0,83 A	220 W/ 0,46 A	**963138** 170 W/ 0,47 A	100 W/ 0,21 A	**973166** 310 W/ 0,72 A	200 W/ 0,41 A
1-stage, single phase motor 230 V/1 ~	Type	**963116** 360 W/ 1,65 A	-	-	-	**973160** 400 W/ 2,10 A	-
Fan stage Fan speed (approx.) **Air volume**	1/min **m³/h**	**2** 900 **4920**	**1** 700 **3270**	**2** 650 **3520**	**1** 500 **2520**	**2** 890 **4090**	**1** 640 **3060**
Sound pressure level [1] Sound power level Weight Water content	dB(A) dB(A) kg L	60 76 53,0 3,3	50 66 53,0 3,3	51 67 53,0 3,3	44 60 53,0 3,3	55 71 67,0 3,3	48 64 67,0 3,3

Cooling outputs

Water temp.	t_{L1} °C	rel. F. %	Q_K kW	t_{L2} °C	Q_K kW	t_{L2} °C	Q_K kW	t_{L2} °C	Q_K kW	t_{L2} °C	Q_K kW	t_{L2} °C	Q_K kW	t_{L2} °C
LPCW 4/8 °C	32	40	25,9	20,3	20,5	18,5	21,4	18,8	17,4	17,4	23,4	19,5	19,7	18,2
	30	45	24,7	19,4	19,5	17,7	20,4	18,0	16,6	16,7	22,3	18,6	18,8	17,5
	28	50	23,2	18,4	18,4	16,9	19,2	17,2	15,6	15,9	20,9	17,7	17,6	16,7
	26	50	19,7	17,2	15,6	15,9	16,3	16,2	13,2	15,0	17,8	16,6	15,0	15,7
	24	50	16,4	16,1	12,9	14,9	13,5	15,1	11,0	14,1	20,6	15,6	12,4	14,7
LPCW 5/10 °C	32	40	22,8	21,1	18,1	19,4	18,9	19,7	15,5	18,4	20,6	20,3	17,4	19,2
	30	45	21,6	20,1	17,2	18,6	18,0	18,9	14,7	17,7	19,6	19,5	16,5	18,4
	28	50	20,2	19,2	16,0	17,8	16,7	18,1	13,7	16,9	18,2	18,6	15,4	17,6
	26	50	16,7	18,0	13,3	16,8	13,8	17,0	11,3	16,0	15,1	17,5	12,7	16,6
	24	50	13,4	16,9	10,6	15,8	11,1	16,0	9,1	15,2	12,1	16,4	10,2	15,7
LPCW 6/12 °C	32	40	19,7	21,8	15,7	20,3	16,4	20,6	13,4	19,4	17,8	21,1	15,1	20,1
	30	45	18,5	20,9	14,8	19,6	15,4	19,8	12,6	18,7	16,8	20,3	14,2	19,3
	28	50	17,0	19,9	13,6	18,7	14,2	19,0	11,6	17,9	15,4	19,4	13,1	18,5
	26	50	13,5	18,8	10,8	17,7	11,3	17,9	9,3	17,1	12,3	18,3	10,4	17,6
	24	50	10,5	17,6	8,2	16,8	8,5	16,9	7,0	16,2	9,3	17,3	7,9	16,6
LPCW 8/12 °C	32	40	19,4	21,9	15,4	20,4	16,1	20,7	13,2	19,5	17,5	21,2	14,8	20,2
	30	45	18,2	21,0	14,5	19,7	15,1	19,9	12,3	18,8	16,4	20,4	13,9	19,4
	28	50	16,7	20,0	13,3	18,8	13,9	19,1	11,3	18,1	15,1	19,5	12,8	18,7
	26	50	13,2	18,9	10,5	17,8	11,0	18,0	9,0	17,2	12,0	18,4	10,1	17,7
	24	50	10,3	17,7	7,9	16,9	8,3	17,0	6,8	16,3	9,1	17,3	7,6	16,7
LPCW 8/14 °C	32	40	16,2	22,6	13,0	21,3	13,6	21,5	11,2	20,4	14,7	22,0	12,5	21,1
	30	45	15,0	21,7	12,1	20,5	12,6	20,7	10,3	19,7	13,6	21,2	11,6	20,3
	28	50	13,6	20,7	10,9	19,7	11,3	19,9	9,3	19,0	12,3	20,3	10,5	19,5
	26	50	10,6	19,5	8,1	18,7	8,4	18,9	7,0	18,1	9,4	19,1	7,8	18,6
	24	50	9,0	18,5	6,9	17,7	7,2	17,8	5,7	17,2	8,0	18,2	6,6	17,6
LPCW 10/16 °C	32	40	13,7	23,4	10,5	22,1	11,0	22,3	8,7	21,5	12,2	22,8	10,0	21,9
	30	45	12,2	22,4	9,2	21,5	9,8	21,5	7,9	20,8	10,8	21,9	8,8	21,3
	28	50	10,6	21,5	8,0	20,7	8,3	20,8	6,9	20,1	9,4	21,0	7,7	20,5
	26	50	9,0	20,5	6,9	19,6	7,2	19,8	5,7	19,1	8,0	20,1	6,6	19,5
	24	50	7,4	19,5	5,6	18,8	5,9	18,9	4,7	18,4	6,5	19,2	5,4	18,7
LPCW 12/18 °C	32	40	12,2	24,4	9,3	23,2	9,8	23,4	7,7	22,5	10,8	23,9	8,9	23,1
	30	45	10,6	23,4	8,1	22,4	8,5	22,6	6,7	21,8	9,4	23,0	7,7	22,3
	28	50	9,0	22,4	6,9	21,6	7,2	21,7	5,7	21,1	8,0	22,1	6,6	21,5
	26	50	7,4	21,5	5,7	20,8	5,9	20,9	4,7	20,3	6,6	21,2	5,4	20,7
	24	50	5,7	20,5	4,4	19,9	4,6	20,0	3,7	19,6	5,1	20,3	4,2	19,9

[1] Sound pressure level measured in a highly sound-absorbent (anechoic) room at a distance of 3 m

Article no. for DataNorm/EDV entry: 196 0000 _____ (insert type no.)

KAMPMANN
SYSTEMS FOR HEATING · COOLING · VENTILATING

Specifications

Ultra series 73-96

Qty.	Article no.	Description	Price/each	Total price
pc.	154 000 **73 2 0 36**	**Kampmann Ultra** an extremely slimline unit, suitable for the heating of architectural interiors and spaces with low ceiling height; ceiling-mounted, hexagonal with rounded flanges, self-supporting plastic housing, white RAL 9016, with hexagonal air discharge through 6 discharge openings through 45mm wide louvre fins which can be adjusted into six defined positions; heating and cooling models have the same overall visual styling and height; base plate is easily removable for ease of service; complete with motor guard, fully-compliant with DIN EN 294 (Safety of machinery), with brackets for quick and easy installation; supplied as standard with hexagonal air inlet crown		
	36 **38**	**2-stage Ziehl-Abegg whisper-quiet, sickle-blade fan**, 5-bladed with maintenance-free 3-phase outer rotor motor, 400 V, 50 Hz, protection class IP 54; electrics comply with VDE (Ger. standard), heating class F; motor protection via integral thermal cut-outs		
	16	**1-stage Ziehl-Abegg whisper-quiet, sickle-blade fan**, 5-bladed, with maintenance-free single phase outer rotor motor, 230 V, 50 Hz, protection class IP 54, with operating capacitor; electrical wiring complies with VDE (German standard), heating class F; motor protection via integral thermal cut-outs		
		Design		
	0	heating with LPHW or LPWW		
	1	heating or cooling with LPHW, LPWW or LPCW (the latter c/w plastic condensate tray and integral condensate pump)	not for series 73	
	2	**Heat exchanger with copper pipes**		
	3	circular design with expansion-joined aluminium fins; steel collection vessel and distributor, corrosion-proof, suitable for use with LPHW up to 90 °C and 16 bar continuous operating pressure; connections made through top of unit		
		Housing dimensions - Fan		
	73	Height/Depth/Width: 330/840/750 mm axial fan, fan characteristic 3		
	84	Height/Depth/Width: 330/1004/900 mm axial fan, fan characteristic 4		
	85	Height/Depth/Width: 330/1004/900 mm axial fan, fan characteristic 5		
	96	Height/Depth/Width: 330/1177/1050 mm axial fan, fan characteristic 6		
		Technical data Fan stage _____ Fan speed _____ 1/min Air volume _____ m^3/h Heat output _____ kW (Cooling output) _____ kW Leaving air temperature _____ °C Power uptake _____ W Sound pressure level _____ dB(A) Sound power level _____ dB(A) Water temp. LPHW/LPWW ____ /____ °C (Water temp. LPCW) ____ /____ °C Entering air temperature _____ °C Weight _____ kg Connection _____ " Type Kampmann, article no. 154000_ _ _ _ _ _, type _ _ _ _ _ _		
	154 000 _ _ _ _ _ _ **F**	**Frost protection thermostat and connecting frame, fitted** temperature range -10/12 °C, 3 m capillary tube sensor monitoring, fitted within Ultra; type Kampmann, article no. 154000_ _**_ _ _ F, type _ _**_ _ _ F	only for series 85 and 96 (series 84 on request)	
	154 000 _ _ _ _ _ _ **0R**	**Repair switch, fitted,** for the shut-down of motors with thermal cut-outs; connection of parallel units is possible; thermal cut-outs must be linked in advance and open afterwards; protection class IP 55; type Kampmann, article no. 154000_ _ _ _ _**0R, type _ _**_ _ _ 0R		
	required to complete DataNorm/EDV article no.			

**Insert Ultra type no.

Qty.	Article no.	Description	Price/each	Total price
pc.	154 000 **97 3 0 66**	**Kampmann Ultra** an extremely slimline unit, suitable for the heating of architectural interiors and spaces with low ceiling height; ceiling-mounted, hexagonal with rounded flanges, self-supporting plastic housing, white RAL 9016, with hexagonal air discharge through 6 discharge openings through 45mm wide louvre fins which can be adjusted into six defined positions; heating and cooling models have the same overall visual styling and height; base plate is easily removable for ease of service; complete with motor guard, fully-compliant with DIN EN 294 (Safety of machinery), with brackets for quick and easy installation; supplied as standard with hexagonal air inlet crown		
	66	**2-stage Ziehl-Abegg whisper-quiet diagonal fan**, for maximum pressure to overcome resistance within the system; impeller with complex, 3-dimensional paddle blade for minimum energy consumption and maximum performance; motor and impeller statically and dynamically balanced to comply with quality category G6, 3 DIN ISO 1940 part 1; mixed air units are provided as standard with a square duct connecting frame for air induction from above; motor is accessible by rotating base plate of housing.		
	60	**1-stage Ziehl-Abegg whisper-quiet, diagonal fan**, for maximum pressure to overcome resistance within the system; impeller with complex, 3-dimensional paddle blade for minimum energy consumption and maximum performance; motor and impeller are statically and dynamically balanced to comply with quality category G6, 3 DIN ISO 1940 part 1; mixed air units are provided as standard with a square duct connecting frame for air induction from above; motor is accessible by rotating base plate of housing.		
		Design		
	0	heating with LPHW or LPWW		
	1	heating or cooling with LPHW, LPWW or LPCW (the latter c/w plastic condensate tray and integral condensate pump)		
	3	**Heat exchanger with copper pipes** circular design with expansion-joined aluminium fins; steel collection vessel and distributor, corrosion-proof, suitable for use with LPHW up to 90 °C and 16 bar continuous operating pressure; connections made through top of unit		
	97	**Housing dimensions - Fan** Height (visible height)/Depth/Width: 330/1177/1050 mm diagonal fan, fan characteristic 7		
		Technical data Fan stage _____ Fan speed _____ 1/min Air volume _____ m^3/h Heat output _____ kW (Cooling output) _____ kW Leaving air temperature _____ °C Power uptake _____ W Sound pressure level _____ dB(A) Sound power level _____ dB(A) Water temp. LPHW/LPWW ____/____ °C (Water temp. LPCW) ____/____ °C Entering air temperature _____ °C Weight _____ kg Connection _____ " Type Kampmann, article no. 154000_ _ _ _ _ _, type _ _ _ _ _ _		
	154 000 _ _ _ _ _ _ **F**	**Frost protection thermostat and connecting frame, fitted** temperature range -10/12 °C, 3 m capillary tube sensor monitoring, fitted within Ultra; type Kampmann, article no. 154000_ _ **_ _ _ F, type _ _ **_ _ _ F		
	154 000 _ _ _ _ _ _ **0R**	**Repair switch, fitted,** for the shut-down of motors with thermal cut-outs; connection of parallel units is possible; thermal cut-outs must be linked in advance and open afterwards; protection class IP 55; type Kampmann, article no. 154000_ _ **_ _ _ 0R, type _ _ **_ _ _ 0R		
	required to complete DataNorm/EDV article no.			

**Insert Ultra type no.

Ductwork accessories for Ultra series 85 and 96

Qty.	Article no.	Description	Price/each	Total price
pc.	198 000 0 6*002	**Connecting frame, square** sendzimir galvanized, for use as transition duct from Ultra to ductwork system; Type Kampmann, article no. 19800006*002, type 6*002	only for series 85 and 96 (series 84 on request, not required for series 97)	
pc.	198 000 0 6*104 5 6	**Reducing angle section 90°, extended** for use with 625 x 625 mm suspended ceiling grids; sendzimir galvanized steel, for use as transition duct from square connecting frame to rectangular ductwork components; Type Kampmann, article no. 19800006*104, type 6*104 Overall component frame dimensions: Height x Width Fan characteristic 5: square 600 x 600 mm recangular 350 x 600 mm Fan characteristic 6: square 700 x 700 mm rectangular 350 x 700 mm		
pc.	198 000 0 60105	**Induction angle section 90° with induction grille** for use with 625 x 65 mm suspended ceiling grids; galvanized steel with provision for G3 filter insert, concealed by black painted perforated plate; square induction grille manufactured from parallel, aluminium tear-shaped profiles providing enhanced air flow, surrounded by a frame, powdercoated traffic white RAL 9016, hinged for ease of filter removal, fits 625 x 625 mm ceiling grids; can be connected to rectangular ductwork components with overall frame width (W x H): 600 x 350 mm and 700 x 350 mm; Type Kampmann, article no. 198000060105, type 60105	600 x 600 mm component on request	
pc.	198 000 0 60117	**Air mixing box, vertical** for use with 625 x 625 mm suspended ceiling grids and vertical air induction through the roof; galvanized steel with G3 filter insert; fresh air/recirculating air flap, concealed behind black painted perforated plate; square induction grille manufactured from parallel, aluminium tear-shaped profiles providing enhanced air flow, surrounded by a frame, powdercoated traffic white RAL 9016, hinged for ease of filter removal, fits 625 x 625 mm ceiling grids; with duct connecting frame on the outlet air side: rectangular, to fit components with overall frame dimensions (W x H): 600 x 350 mm and 700 x 350 mm; duct connecting frame on the fresh air induction side: square, to fit components with overall frame dimensions (W x H): 600 x 600 mm; Type Kampmann, article no. 198000060117, type 60117	600 x 600 mm component on request	
pc.	198 000 0 60118	**Air mixing box, horizontal** for use with 625 x 625 mm suspended ceiling grids and horizontal air induction through the wall; galvanized steel with G3 filter insert; fresh air/recirculating air flap, concealed behind black painted perforated plate; square induction grille manufactured from parallel, aluminium tear-shaped profiles providing enhanced air flow, surrounded by a frame, powdercoated traffic white RAL 9016, hinged for ease of filter removal, fits 625 x 625 mm ceiling grids; with duct connecting frame on the outlet air side and fresh air induction side: rectangular to fit components with overall frame dimensions (W x H): 600 x 350 mm and 700 x 350 mm; Type Kampmann, article no. 198000060118, type 60118	600 x 600 mm component on request	
pc.	198 000 0 60126	**Filter insert with G3 filter** for use in 90° induction air duct, vertical and horizontal air mixing boxes; a dry layer filter in a steel metal frame, easy to remove and re-use, filter quality category: G3 in accordance with DIN EN 779; Type Kampmann, article no. 198000060126, type 60126		
pc.	198 000 0 60127 required to complete DataNorm/EDV article no.	**Replacement filter mat** for filter insert type 60126, filter quality category G3; Type Kampmann, article no. 198000060127, type 60127		

*Insert unit size

Ductwork accessories for Ultra series 85 and 96

Qty.	Article no.	Description	Price/each	Total price
pc.	198 000 0 6*0300	**Duct section, rectangular** sendzimir galvanized, with duct connecting profile at both ends; length = _____ mm; Type Kampmann, article no. 19800006*030, type 6*030		
pc.	198 000 0 6*1300	**Duct section, rectangular, 1250 mm long** sendzimir galvanized, with loose duct connecting profile at one end; can be used as an extension section or to adjust duct length with 625 x 625 mm suspended ceiling grids; Type Kampmann, article no. 19800006*130, type 6*130		
pc.	198 000 0 6*0340	**Flexible connection, rectangular** length 120 - 160 mm; Type Kampmann, article no. 19800006*034, type 6*034		
pc.	198 000 0 6*0370	**Wall insert** sendzimir galvanized, with connecting profile at one end; length 400 mm; Type Kampmann, article no. 19800006*037, type 6*037		
pc.	198 000 0 6*0380	**Weather grate** sendzimir galvanized, with drip spout, drop collection ledge and galvanized bird grate; Type Kampmann, article no. 19800006*038, type 6*038		
pc.	198 000 0 6*0390	**Weather grate frame** sendzimir galvanized, with anchoring lugs; overall duct frame dimensions, (H x W) _____ x _____ mm overall duct frame dimensions: height x width Type Kampmann, article no. 19800006*039, type 6*039 5 Fan characteristic 5: rectangular 350 x 600 mm 6 Fan characteristic 6: rectangular 350 x 700 mm;		
pc.	198 000 0 35013	**Flexible connection, square** length 120 - 160 mm; Type Kampmann, article no. 198000035013, type 35013		
pc.	198 000 0 35015	**Duct section, square** sendzimir galvanized, with connecting profile at both ends; length = _____ mm; Type Kampmann, article no. 198000035015, type 35015		
pc.	198 000 0 35114	**Rain hood** square, removable top cover, bird protection with perforated induction openings on all sides; Type Kampmann, article no. 198000035114, type 35114		
pc.	198 000 0 351800	**Cover plate** sendzimir galvanized, to conceal visible roof opening; Type Kampmann, article no. 19800003*118**, model for 00 0 - 4° roof angle, type 3*11800 10 5 - 14° roof angle, type 3*11810 20 15 - 24° roof angle, type 3*11820 30 25 - 32° roof angle, type 3*11830 37 33 - 40° roof angle, type 3*11837 45 41 - 48° roof angle, type 3*11845 99 _____° roof angle, type 3*11899	insert angle for roofs with an angle of more than 48°	
pc.	198 000 0 35119	**Roof socket for flat roof with duct section** with bonding flange, for angled roofs up to 4°; Type Kampmann, article no. 198000035119, type 35119		
pc.	198 000 0 351210	**Roof socket for angled roof with duct section** with bonding flange; Type Kampmann, article no. 198000035120**, for roofs with: 10 5 - 14° roof angle, type 3512010 20 15 - 24° roof angle, type 3512020 30 25 - 32° roof angle, type 3512030 37 33 - 40° roof angle, type 3512037 45 41 - 48° roof angle, type 3512045 99 _____° roof angle, type 3512099	insert angle for roofs with an angle of more than 48°	

required to complete DataNorm/EDV article no.

*Insert unit size

Ductwork accessories for Ultra series 97

Qty.	Article no.	Description	Price/each	Total price
pc.	198 000 0 **6 7 1 0 4**	**Reducing angle section 90°, extended** for use with 625 x 625 mm suspended ceiling grids; sendzimir galvanized steel, for use as transition duct from square connecting frame to rectangular ductwork components; Type Kampmann, article no. 198000067104, type 67104	600 x 600 mm component on request	
pc.	198 000 0 **6 7 1 1 7**	**Air mixing box, vertical** for use with 625 x 625 mm suspended ceiling grids and vertical air induction through the roof; galvanized steel with G3 filter insert; fresh air/recirculating air flap, concealed behind black painted perforated plate; square induction grille manufactured from parallel, aluminium tear-shaped profiles providing enhanced air flow, surrounded by a frame, powdercoated traffic white RAL 9016, hinged for ease of filter removal, fits 625 x 625 mm ceiling grids; with duct connecting frame on the outlet air side: rectangular, to fit components with overall frame dimensions (W x H): 600 x 450 mm and 700 x 450 mm; duct connecting frame on the fresh air induction side: square, to fit components with overall frame dimensions (W x H): 600 x 600 mm; Type Kampmann, article no. 198000067117, type 67117	600 x 600 mm component on request	
pc.	198 000 0 **6 7 1 1 8**	**Air mixing box, horizontal** for use with 625 x 625 mm suspended ceiling grids and horizontal air induction through the wall; galvanized steel with G3 filter insert; fresh air/recirculating air flap, concealed behind black painted perforated plate; square induction grille manufactured from parallel, aluminium tear-shaped profiles providing enhanced air flow, surrounded by a frame, powdercoated traffic white RAL 9016, hinged for ease of filter removal, fits 625 x 625 mm ceiling grids; with duct connecting frame on the outlet air side and fresh air induction side: rectangular to fit components with overall frame dimensions (W x H): 600 x 450 mm and 700 x 450 mm; Type Kampmann, article no. 198000067118, type 67118	600 x 600 mm component on request	
pc.	198 000 0 **6 7 1 2 6**	**Filter insert with G3 filter** for use in 90° induction air duct, vertical and horizontal air mixing boxes; a dry layer filter in a steel metal frame, easy to remove and re-use, filter quality category: G3 in accordance with DIN EN 779; Type Kampmann, article no. 198000067126, type 67126		
pc.	198 000 0 **6 7 1 2 7**	**Replacement filter mat** for filter insert type 60126, filter quality category G3; Type Kampmann, article no. 198000067127, type 67127		
	required to complete DataNorm/EDV article no.			

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Ductwork components for Ultra series 97

Qty.	Article no.	Description	Price/each	Total price
pc.	198 000 0 67030	**Duct section, rectangular** sendzimir galvanized, with connecting profile at both ends; length = _____ mm; Type Kampmann, article no. 198000067030, type 67030		
pc.	198 000 0 67130	**Duct section, rectangular, 1250 mm long** sendzimir galvanized, with loose duct connecting profile at one end; can be used as an extension section or to adjust duct length with 625 x 625 mm suspended ceiling grids; Type Kampmann, article no. 198000067130, type 67130		
pc.	198 000 0 67034	**Flexible connection, rectangular** length 120 - 160 mm; Type Kampmann, article no. 198000067034, type 67034		
pc.	198 000 0 67037	**Wall insert** sendzimir galvanized, with connecting profile at one end; length 400 mm; Type Kampmann, article no. 198000067037, type 67037		
pc.	198 000 0 67038	**Weather grate** sendzimir galvanized, with drip spout, drop collection ledge and galvanized bird grate; Type Kampmann, article no. 198000067038, type 67038		
pc.	198 000 0 67039	**Weather grate frame** sendzimir galvanized, with anchoring lugs; Type Kampmann, article no. 198000067039, type 67039		
pc.	198 000 0 35013	**Flexible connection, square** length 120 - 160 mm; Type Kampmann, article no. 198000035013, type 35013		
pc.	198 000 0 35015	**Duct section, square** sendzimir galvanized, with connecting profile at both ends; length = _____ mm; Type Kampmann, article no. 198000035015, type 35015		
pc.	198 000 0 35114	**Rain hood** square, removable top cover, bird protection with perforated induction openings on all sides; Type Kampmann, article no. 198000035114, type 35114		
pc.	198 000 0 35118 00	**Cover plate** sendzimir galvanized, to conceal visible roof opening; Type Kampmann, article no. 19800003*118**, model for 00 0 - 4° roof angle, type 3*11800 10 5 - 14° roof angle, type 3*11810 20 15 - 24° roof angle, type 3*11820 30 25 - 32° roof angle, type 3*11830 37 33 - 40° roof angle, type 3*11837 45 41 - 48° roof angle, type 3*11845 99 _____° roof angle, type 3*11899	insert angle for roofs with an angle of more than 48°	
pc.	198 000 0 35119	**Roof socket for flat roof with duct section** with bonding flange, for angled roofs up to 4°; Type Kampmann, article no. 198000035119, type 35119		
pc.	198 000 0 35120 10	**Roof socket for angled roof with duct section** with bonding flange; Type Kampmann, article no. 198000035120**, for roofs with: 10 5 - 14° roof angle, type 3512010 20 15 - 24° roof angle, type 3512020 30 25 - 32° roof angle, type 3512030 37 33 - 40° roof angle, type 3512037 45 41 - 48° roof angle, type 3512045 99 _____° roof angle, type 3512099	insert angle for roofs with an angle of more than 48°	

required to complete DataNorm/EDV article no.

Stage switches · 5-stage, 3-phase controller · Time switches · Thermostats

Qty.	Article no.	Description	Price/each	Total price
pc.	196 000 0 **30050**	**2-stage, 3-phase switch** with 0-1-2- stage switch, no connection to room thermostat is possible, for the manual control of recirculating air or separate extract units with protective relays to monitor the thermal cut-outs in the motor, restart block; polystyrene casing, protection class IP 43; max. amperage 10 A; dimensions W x H x D: 127 x 160 x 100 mm; Type Kampmann, article no. 196000030050, type 30050	only for use with motor characteristics 36 and 38	
pc.	196 000 0 **30051**	**2-stage, 3-phase switch** with 0-1-2 stage switch, with possible connection to room and frost protection thermostats, time switches and flap servor motors; with protective relays to monitor the thermal cut-outs in the motor, mode indicator, control relay, restart block, automatic restart after power failure; polystyrene casing in accordance with VDE 0100 insulated, protection class IP 44; max. amperage 10 A; dimensions W x H x D: 257 x 215 x 108 mm; Type Kampmann, article no. 198000030051, type 30051	only for use with motor characteristics 36 and 38	
pc.	196 000 0 **30_*_** **751** **752**	**5-stage, 3-phase controller** with 0-1-2-3-4-5 stage switch via transformer, possible connection to room thermostats, time switches and flap servo motors; with protective relays to monitor thermal cut-outs in motor; with mode indicator, restart block, automatic restart after power failure; painted steel casing; protection class IP 20; dimensions W x H x D: 220 x 300 x 165 mm; Type Kampmann, article no. 19800003075*: max. ampergae 2.0 A, type 30751 max. amperage 4.0 A, type 30752	only for use with motor characteristics 36 and 38	
pc.	196 000 0 **30154**	**Time switch** with day/night/week programme, with clearly laid out programme screen; pins can be used to set each hour (minimum setting period 3 hours), 150 hours power reserve, plastic housing with transparent cover, separate terminal cover; time switch 230 V/50 Hz, switching contact is a potential-free change-over contact; protection class IP 20; dimensions H x W x D: 104 x 72 x 69 mm; Type Kampmann, article no. 198000030154, type 30154	only for use with 2-stage stage switch type 30177	
pc.	196 000 0 **30055**	**Room thermostat** in slim-line, white housing with thermal setback, temperature range: 5-30 °C, range limitation is also possible; protection class IP 30; switching capacity 250 V~, 50 Hz, 10 (4) A; Type Kampmann, article no. 198000030055, type 30055		
pc.	196 000 0 **30056**	**Clock thermostat** in attractive white housing, with electronic 2-point room temperature control and digital weekly time switch, power reserve approx. 15 min, party function, mode indicator, with automatic/day/night/off operating indicator, adjustable switching differential; temperature range 5-40 °C, night setback 2-10 K; protection class IP 20; switching capacity 250 V~, 50 Hz, 10 (4) A, dimensions W x H x D: 132 x 82 x 32 mm; Type Kampmann, article no. 198000030056, type 30056		
pc.	196 000 0 **30076** required to complete DataNorm/EDV article no.	**Time switch with electronic room temperature control and temperature sensor** time switch with day/night/week programme, with clearly laid-out programme screen and 12 hour day screen, with 150 hours power reserve, room temp. control with day and night set value potentiometer, switched via time switch; room temperature sensor in separate housing (max. distance 100 m); protection class IP 54; switching capacity 250 V~, 50 Hz, 8 (3) A, temperature range 0-40 °C; dimensions W x H x D: 257 x 215 x 108 mm; Type Kampmann, article no. 198000030076, type 30076		

2-stage controllers

Qty.	Article no.	Description	Price/each	Total price
pc.	196 000 0 **3 0 1 7 7**	**Electronic 2-stage, 3-phase controller - recirculating air** microprocessor-controlled controller, all components accommodated on base plate within polystyrene wall-mounted housing, factory-wired: - 0-1-2-automatic stage switch (room temperature-sensitive fan stage change-over) - day/night/clock/manual mode switch - integral room temperature control with day mode indicator - night setback indicator - adjustable hysteresis - adjustable automatic fan mode switching delay - 2 digital inputs for external day/night and heating/cooling change-over - 230 V output to thermoelectric shut-off valve or to request heat - analogue room temperature sensor input - motor protection with locking shut-down and release by switching to zero - automatic restart after power failure - LED to show standby, operation and malfunction - potential-free open contact for fan operation - potential-free open contact for malfunction - control fuse 230 V - room temperature sensor in separate housing Operating voltage: 3 x 400 V/50 Hz Amperage: 10 A Day mode temperature range: 5 - 35 °C Setback: 1 - 10 K Protection class: IP 42 Dimensions W x H x D: 257 x 215 x 108 mm Sensor protection class: IP 54 Type Kampmann, article no. 196000030177, type 30177		
pc.	196 000 0 **3 0 2 7 7**	**Electronic 2-stage controller** recirculating air 3-phase controller, integral digital time switch with day/night/week programme, all components accommodated on base plate within polystyrene housing, factory-wired: - 0-1-2-automatic stage switch (room temperature-sensitive fan stage change-over) - day/night/clock/manual mode switch - integral room temperature control with day mode indicator - night setback indicator - adjustable hysteresis - adjustable automatic fan mode switching delay - 2 digital inputs for external day/night and heating/cooling change-over - 230 V output to thermoelectric shut-off valve or to request heat - analogue room temperature sensor input - motor protection with locking shut-down and release by switching to zero - automatic restart after power failure - LED to show standby, operation and malfunction - potential-free open contact for fan operation - potential-free open contact for malfunction - control fuse 230 V - room temperature sensor in separate housing Operating voltage: 3 x 400V/50 Hz Amperage: 10 A Day mode temperature range: 5 - 30 °C Setback: 2 - 10 K Protection class: IP 44 Dimensions W x H x D: 257 x 215 x 108 mm Sensor protection class: IP 54 Dimensions W x H x D: 50 x 50 x 35 mm Type Kampmann, article n. 196000030277, type 30277		

required to complete DataNorm/EDV article no.

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Flap servo motors · Frost protection · Valves

Qty.	Article no.	Description	Price/each	Total price
pc.	196 000 0 30262	**Open/closed flap servo motor** oscilllating, provides motor-overload protection, opens/closes flap; operating voltage 230 V, 50 Hz; 90 degree run time - 150 sec; protection class IP 54, (cable entry from below), power uptake 11 VA; Type Kampmann, article no. 196000030262, type 30262		
pc.	196 000 0 30264	**0 - 100% flap servo motor, 230 V** 0-100% flap adjustment, provides motor-overload protection, operating voltage 230 V, 50 Hz; control voltage 0-9 V, 90 degree run time -150 sec; protection class IP 54, (cable entry from below), power uptake 5 VA; Type Kampmann, article no. 196000030264, type 30264		
pc.	196 000 0 30464	**0 - 100% flap servo motor, 24 V** 0-100% flap adjustment, provides motor-overload protection, operating voltage 24 V, 50 Hz; control voltage 0-10 V, 90 degree run time -150 sec; protection class IP 54, (cable entry from below), power uptake 5 VA; Type Kampmann, article no. 196000030464, type 30464	Activation by controller (by others) with 24 V power supply	
pc.	196 000 0 30166	**Stop position switch** for use within an air mixing box; the stop position switch indicates the stop position of the fresh air/recirculating air flap. Protection class IP 65; Switching capacity 240 V~, 50 Hz, 6 A, Type Kampmann, article no. 196000030166, type 30166	For connection to signalling device (by others)	
pc.	196 000 0 30167	**Differential pressure switch** to monitor the filter when using a filter unit, recirculating air induction angle or air mixing box with filter insert; Range 30-300 Pa Switching differential 20 Pa Switching capacity 250 V~, 50 Hz, 1,5 (0,4) A, Protection class IP 54; Type Kampmann, article no. 196000030167, type 30167	For connection to signalling device (by others)	
pc.	196 000 0 30168	**Frost protection thermostat, remote** temperature range -10/+12 °C, 3 m capillary tube with sensor monitoring; switching capacity 250 V~, 50 Hz, 15 (8) A; Type Kampmann, article no. 196000030168, type 30168	Frost protection thermostat ready-fitted, see pages 46-47	
pc.	196 000 0 30290	**Frost protection switch with 0-100 % indicator** to shut the air mixing box in the event of frost or if the fan is disabled; with frost warning indicator; Type Kampmann, article no. 196000030290, type 30290		
pc.	196 000 0 30091	**Frost protection switch with Open/closed option** to shut the air mixing box in the event of frost if the fan is disabled; with frost warning indicator; Type Kampmann, article no. 196000030091, type 30091	only for use with flap servo motor type 30062	
pc.	196 000 0 30911	**Thermoelectric shut-off valve, 1"** straight valve body with elbow connection and thermoelectric actuator 230 V, 50 Hz; Type Kampmann, article no. 196000030911, type 30911		
pc.	196 000 0 30966	**Leaving air temperature limiter valve, 1"** straight valve body with elbow connection, thermostatic head and remote sensor, with 2 m capillary tube, c/w fixing to fit sensor in air stream; temperature range: 20-50 °C; Type Kampmann, article no. 196000030966, type 30966		
	required to complete DataNorm/EDV article no.			

Supply air temperature control

Qty.	Article no.	Description	Price/each	Total price
pc.	196 000 0 **3 0 2 9 4**	**Supply air temperature controller** control box in a rigid lockable housing, painted RAL 7032, complies with VDE (German electrical) standards, terminal strips on base plate with possible connection to: - 3-phase or single phase supply air stage switches - frost protection thermostats - flap servo motors c/w the following internals and functions: - constant temperature controller, comparing the temperature measured by the room sensor with the set temperature and regulating the valve - integral supply air controller, preventing the supply air temperature falling below the set temperature - frost protection switch to shut the air mixing box in the event of frost or if the fan is disabled and open the 3-way valve in the event of frost integrated in the front door panel are: - time switch with day/night/week programme and power reserve - day/night/clock switch. In "night" position, the air mixing flap is run in "recirculating air" mode - mode and fault indicator with **0-100** % indicator for flap servo motor, type 30264 Type Kampmann, article no. 196000030294, type 30294	Non-standard items, such as constant temperature control or control cabinets for multiple control groups are available on request	
pc.	196 000 0 **3 0 0 9 5**	**Supply air temperature controller** control box in a rigid lockable housing, painted RAL 7032, complies with VDE (German electrical) standards, terminal strips on base plate with possible connection to: - 3-phase or single phase supply air stage switches - frost protection thermostats - flap servo motors c/w the following internals and functions: - constant temperature controller, comparing the temperature measured by the room sensor with the set temperature and regulating the valve - integral supply air controller, preventing the supply air temperature falling below the set temperature - frost protection switch to shut the air mixing box in the event of frost or if the fan is disabled and open the 3-way valve in the event of frost integrated in the front door panel are: - time switch with day/night/week programme and power reserve - day/night/clock switch. In "night" position, the air mixing flap is run in "recirculating air" mode - mode and fault indicator with **Open/Closed switch** for Open/Closed flap servo motor, type 30262 c/w the following separate components: 1 no. room temperature sensor 1 no. air duct sensor to limit the lower supply air temperature; Type Kampmann, article no. 196000030095, type 30095		
pc.	196 000 0 **3 0 0 9 7**	**3-way valve** with 24 V actuator, nominal width 1"; Type Kampmann, article no. 196000030097, type 30097		
	required to complete DataNorm/EDV article no.			

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Quotation form

Quotation for: _____
Quotation by: _____
Project: _____ Page: _____

	Pos.	No.	Description	Type no.	Price/each	Total price
Basic unit			**Kampmann Ultra** ceiling-mounted, hexagonal with rounded edges, self-supporting plastic housing, white RAL 9016; with hexagonal outlet louvre through 6 discharge openings, 45 mm wide profiled louvre fins adjustable to 6 definite positions; with brackets for ease of installation; supplied as standard with simple-to-install hexagonal air inlet crown **Design** ☐ heating with LPHW/LPWW ☐ heating with LPHW/LPWW or cooling with LPCW **Ziehl-Abegg whisper-quiet, sickle blade axial fan** with maintenance-free outer rotor motor, protection class IP 54, motor protection via integral thermal cut-outs ☐ 2-stage, 3-phase 400 V, 50 Hz ☐ 1-stage, single phase 230 V, 50 Hz **Ziehl-Abegg whisper-quiet, diagonal fan** for maximum pressure to overcome resistance in the system ☐ 2-stage, 3-phase 400 V, 50 Hz ☐ 1-stage, single phase 230 V, 50 Hz **Heat exchanger** circular design with expansion-jointed aluminium fins, steel collection vessel and distributor, corrosion-proof Accessories, factory-fitted ☐ frost protection thermostat ☐ repair switch **Technical data:** Fan stage _____ _____ Fan speed _____ _____ 1/min Air volume _____ _____ m³/h Heat/cooling output _____ _____ kW Leaving air temperature _____ _____ °C Sound pressure level _____ _____ dB(A) Water temperature _____ / _____ °C Entering air temperature _____ °C	_____		
					Total price/ carry over	

Quotation no.: _____
Town: _____ Date: _____
Signature:

KAMPMANN
SYSTEMS FOR HEATING · COOLING · VENTILATING

Quotation form

Quotation to: _____

Quotation by: _____

Project: _____ Page: _____

		Pos.	No.	Article	Type	Price/each	Total price
Accessories for use with 625 x 625 mm suspended ceiling grids	Ultra series 85 and 86			**Connecting frame, square**	6*002		
				Induction angle section 90° with induction grille	60105		
				Air mixing box, vertical, with G3 filter insert	60117		
				Air mixing box, horizontal, with G3 filter insert	60118		
				Filter insert with G3 filter	60126		
				Replacement G3 filter mat	60127		
	Ultra series 97			**Air mixing box, vertical,** with G3 filter insert	67117		
				Air mixing box, horizontal, with G3 filter insert	67118		
				Filter insert with G3 filter	67126		
				Replacement G3 filter mat	67127		
	All Ultra series			**Reducing angle section 90°** extended, square-rectangular	6*104		
				Ductwork components, rectangular:			
				Duct section, rectangular	6*030		
				Duct section, rectangular, 1250 mm long	6*130		
				Flexible connection	6*034		
				Wall insert	6*037		
				Weather grate, galvanized	6*038		
				Weather grate frame, galvanized	6*039		
				Ductwork components, square:			
				Flexible connection	35013		
				Duct section, square	35015		
				Rain hood	35114		
				Roof socket for flat roof with duct section for roof angle up to 4°	35119		
				Roof socket for angled roof with duct section for: 5 - 14° roof angle 15 - 24° roof angle 25 - 32° roof angle 33- 40° roof angle 41 - 48° roof angle roof angle of greater than 48°	 3512010 3512020 3512030 3512037 3512045 3512099		
				Cover plate, to conceal visible roof opening for: 0 - 4° roof angle 5 - 14° roof angle 15 - 24° roof angle 25 - 32° roof angle 33- 40° roof angle 41 - 48° roof angle roof angle of greater than 48°	 3511800 3511810 3511820 3511830 3511837 3511845 3511899		
					Total price/ Carry over		

Quotation no.: _____

Town: _____ Date: _____

Signature:

*Insert unit size

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SYSTEMS FOR HEATING · COOLING · VENTILATING

Quotation form

Quotation for: _____

Quotation by: _____

Project: _____ Page: _____

	Pos.	No.	Article	Type	Price/each	Total price
Switches and controllers for mixed air and fresh air units, and Valves			**Servo motor for flap adjustment, 230 Volt,** oscillating, protection class IP 42	30262		
			Servo motor for 0-100% flap adjustment, 230 Volt, protection class IP 42	30264		
			Servo motor for 0-100% flap adjustment, 24 Volt, protection class IP 42	30464		
			Stop position switch, remote, for air mixing box (connected to signalling device by others)	30166		
			Differential pressure switch, remote, to monitor the filter (connected to signalling device by others)	30167		
			Frost protection thermostat, remote	30168		
			Frost protection switch, to close the air mixing box in the event of frost; only for use in conjunction with frost protection thermostat type 30168 or Ultra ending in . . . . . F (frost protection thermostat fitted)			
			- with 0-100% fresh air indicator, only for use with servo motor 30264	30290		
			- with Open/Closed switch, only for use with servo motor 30262	30091		
			Thermoelectric shut-off valve 1", (only for use with recirc. air Ultra units)	30911		
			Leaving air temperature limiting valve 1", temperature range 20-50 °C	309 66		
Factory-fitted accessories			**Frost protection thermostat** and connecting frame, square	. . . . . F		
			Repair switch	. . . . . 0R		
			Frost protection thermostat, connecting frame, square and repair switch	. . . . . FR		
			KaBUS *ECO* power module, recirc. air, 2-stage, 3-phase factory-fitted, one required per Ultra	. . . . . 00B		
			Repair switch and KaBUS *ECO* power module recirc. air, 2-stage, 3-phase	. . . . . 0RB		
Recirc. air accessories			**Filter set, recirculating air,** filter class G3 for direct fitting to air inlet of recirculating air units	6*050		
			Replacement filter mat, filter class G3, 1 set = 5 mats	6*051		
			Recirculating air induction grille, square, powdercoated RAL 9016 to fit 625 x 625 mm with visible fixing track	60988		
Stage switches			**2-stage, 3-phase switch,** with possible connection to thermostats, time switches etc.	30051		
			Electronic 2-stage, 3-phase controller, recirculating air, with integral room temperature control and room temperature sensor in a separate housing	30177		
			Electronic 2-stage, 3-phase controller, recirculating air with integral digital time switch with day/night/week programme, room temperature control and room temperature sensor in a separate housing	30277		
			5-stage, 3-phase controller 2 A, with possible connection to thermostats, time switches etc.	30751		
			5-stage, 3-phase controller 4 A, with possible connection to thermostats, time switches etc.	30752		
			7-stage, single phase controller 4 A, with possible connection to thermostats, time switches etc.	30771		
			7-stage, single phase controller 7,5 A, with possible connection to thermostats, time switches etc.	30772		
Thermostats/ Time switches			**Time switch,** wall-mounted with day/night/week programme, only for use with electronic 2-stage, 3-phase recirc. air controller, type 30177	30154		
			Room thermostat with thermal setback, 230 V	30055		
			Clock thermostat, digital clock with day/night/week programme with adjustable night setback, 230 V	30056		
			Time switch with electronic room temperature control and room temperature sensor	30076		
				Total price/ Carry over		

Quotation no.: _____

Town: _____ Date: _____

Signature:

Please list other accessories, such as recirc. air or mixed air ductwork components and associated controllers separately!

*Insert unit size

KAMPMANN
SYSTEMS FOR HEATING · COOLING · VENTILATING

Notes

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