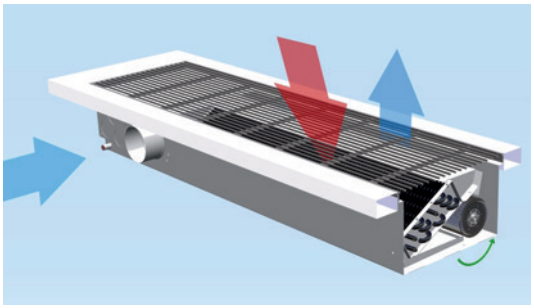
AIR TECH SYSTEMS

Technical Brochure

LTG Air-Water Systems

LTG FanPower

Fan coil units VKB



Floor installation

www.LTG.net

Technical brochure • Fan coil units VKB, floor installation

LTG Comfort Air Technology

Air Diffusers

Air Distribution

Content

	Page
LTG Connected Intelligence	4
General description	5
Type VKB-0/...	6
Type VKB-N/... (low height)	21
Type VKB-S/... (slim)	32
Nomenclature, ordering code	39
Operation with LTG Connected Intelligence	40
Installation in line	44
Special constructions	47
Static heating convector SKB	48

Notes

Dimensions stated in this brochure are in mm.

Dimensions stated in this brochure are subject to General Tolerances according to DIN ISO 2768-vL. For the outlet grille special tolerances stated in the drawing apply.

Straightness and twist tolerances for extruded aluminium profiles according to DIN EN 12020-2.

The surface finish is designed to meet the requirements for applications in buildings - room climate according to DIN 1946 part 2. Other requirements on request.

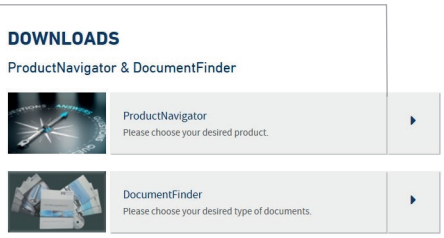
The actual tender documentations are available in word format at your local dealership or at www.LTG.net.

Type VKB-0 *Type VKB-N* *Type VKB-S*

LTG planning tools – we support you!

Visit the download area on our website www.LTG.net with helpful tools, such as dimensioning programs, streaming videos and product information!

Also available: Our product overviews about air diffusers, air-water systems and air distribution products.



LTG FanPower

Fan Coil Units

The air conditioning classic – energy efficient and low noise

The principle: A fan conveys room air through a heat exchanger and cools or heats the room.

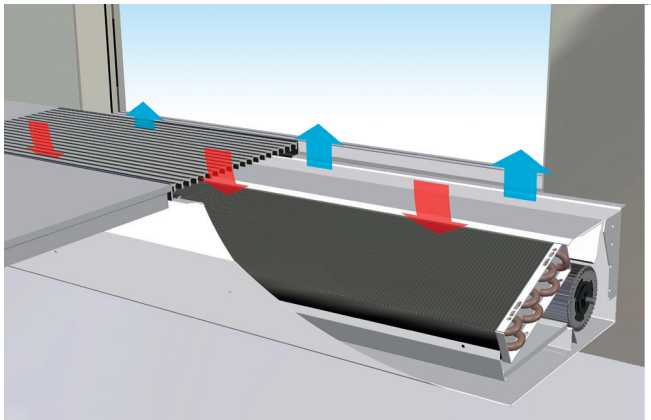
LTG fan coil units use both radial and tangential fans to implement the best flow and acoustics for different installation situations. Flexible and high-performance.

LTG fan coil units with tangential technology are characterised by a particularly even and large-area flow through the heat exchanger. Low pressure loss and low noise level with high cooling or heating output.

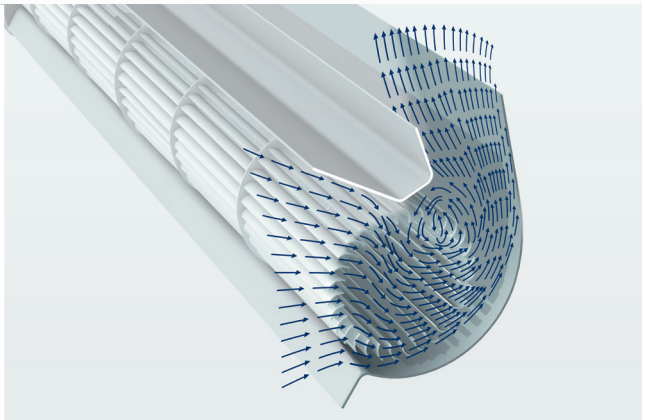
The latest drive technology generation (EC-technology) also permits capacity modulation at the lowest electrical energy consumption.

Benefits

- Best flow form, e.g. with mixed/displacement ventilation
- Demand-controlled air conditioning
- Low power consumption of the fan by smart EC-technology
- Rapid response for cooling and heating output
- Primary air supply possible



Fan coil unit chart



Air flow in the fan coil unit with tangential fan

LTG Connected Intelligence

Decentralised control intelligence

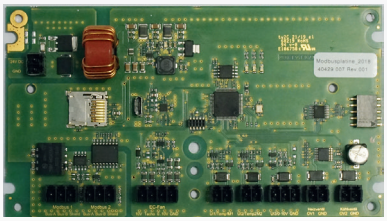
Intelligent bus-capable control.
Solution of automation and control tasks directly on the unit.

Demand-controlled ventilation even without building management systems.
Efficient, scalable, bus-compatible.

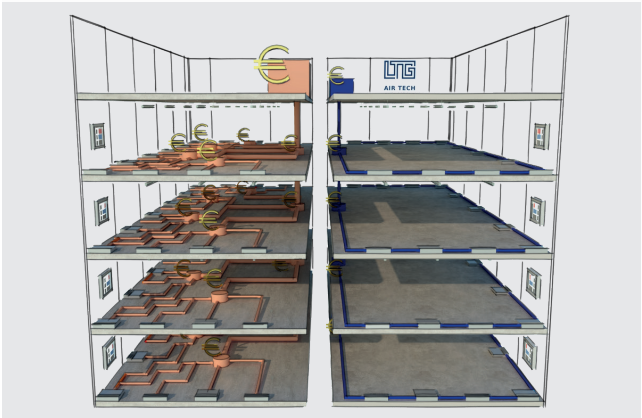
Advantages

- Cost-effective, simple, and flexible solution for your room automation tasks with LTG systems
- Innovative automation solution for at least 50% savings for investment/installation costs for the ICE
- Cost-effective or reduced installation/operating costs
- Open bus system, manufacturer-independent
- Flexible for retrofits, extensions, stand-alone solutions

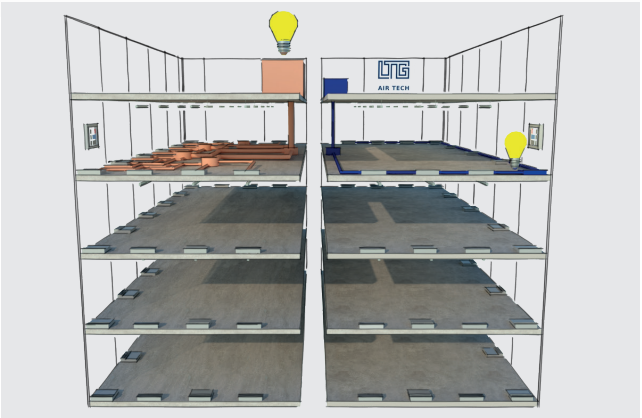
Specifications



- Unit plug-on board
- Modbus RTU interface
- 24 V DC supply
- Direct connection of thermal valves
- Connection of up to three sensors (room temperature, outdoor temperature, CO_2-concentration, condensate, window contact, presence, ...)
- Quick parametrisation via SD card



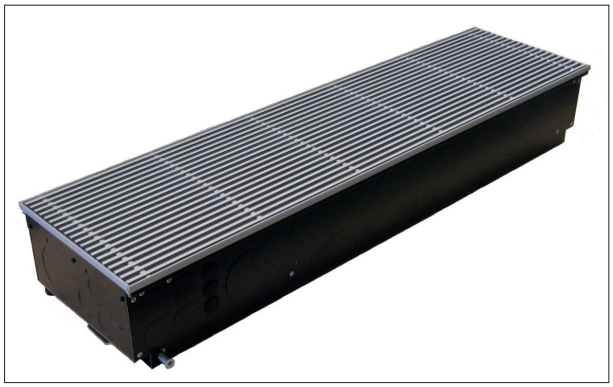
Cost reduction



Decentralised control intelligence

Technical brochure • Fan coil units VKB, floor installation
General description

View of unit



VKB with stainless steel linear grille

Application

Specifically designed for hotels and office buildings with strict acoustic requirements.

Designed and approved for an ambient temperature of +5...+50 °C and a max. relative humidity of 90 % (non-condensing operation).

Installation, placement

Installation in false floors with a recommended clearance of 200...250 mm (VKB-N: 130...180 mm).

Since all the components are below floor level the fan coil unit VKB may also be used with full height facade glazing.

Installation example VKB-N

Function

An integrated fan draws in draws in the ambient air. In a water-fed heat exchanger this air is cooled or heated and returned to the room.
The system uses low-noise, maintenance-free tangential fans. Speed control is realised using a stepless high-efficiency EC motor (standard) or a 5-speed AC motor (optional) that may be triggered through individual switches (see brochure "Accessories for LTG air-water systems"). Group triggering of several units with one switch is also possible.
The fan coil units recirculate room air. However, on request they may also be delivered with a connection for primary air. The solid construction and finish of the fan coil units ensure both reliability and long-term functional safety.

Specification

The airflow optimised stainless steel or aluminium air grille is foot traffic resistant and does not require any additional supporting cross members.
Visible parts of the housing are coated black.

Accessories, special versions

- Special fan insert for mixed air/displacement air
- Condensate tray with drainage spigot
- For water-side unit connection: coupling 1/2" or air bleed fitting,
- flexible connection hoses with or without venting
- Air outlet grille
- Primary air supply
- Control accessories
- Control valves optionally with continuous, thermal or 3-point drives
- Insulated and flexible hoses, ½" internal thread

See brochure "Accessories for LTG air-water systems"

Room air flow

The supply air is discharged from the air grille close to the facade and vertically upwards, then mixes in summer with the hot room air in front of the facade, in winter with the falling cold air in front of the window (mixed air flow close to the facade).
In the cooling mode, the supply air, having passed the mixing air zone, flows through the room by displacement.

Example of room air flow VKB

Technical brochure • Fan coil units VKB, floor installation

Type VKB-./4 and VKB-./2, 4-pipe and 2-pipe system

Specification

Fan coil unit with one heat exchanger and two separate circuits for heating and cooling the ambient air. Installation in access floors with a recommended clearance of 200...250 mm.

Precise adjustment of the units is realised via vibration-isolated, height-adjustable feet.
Water-side control by valves (accessories separate).
Grille width 320 mm.

Unit configuration

(1) Air grille
Aluminium linear grille,
Aluminium roller grille (on request)
Stainless steel linear grille, roller grille of wood

(2) Heat exchanger
2-pipe, 4-pipe

(3) Mixed/displacement insert (optional)

(4) Tangential fan

(5) Fan motor
EC motor

(6) Connecting plug for EC motor

(7) Fresh air connections (pre-cut)
7a = on the face, 7b = room side

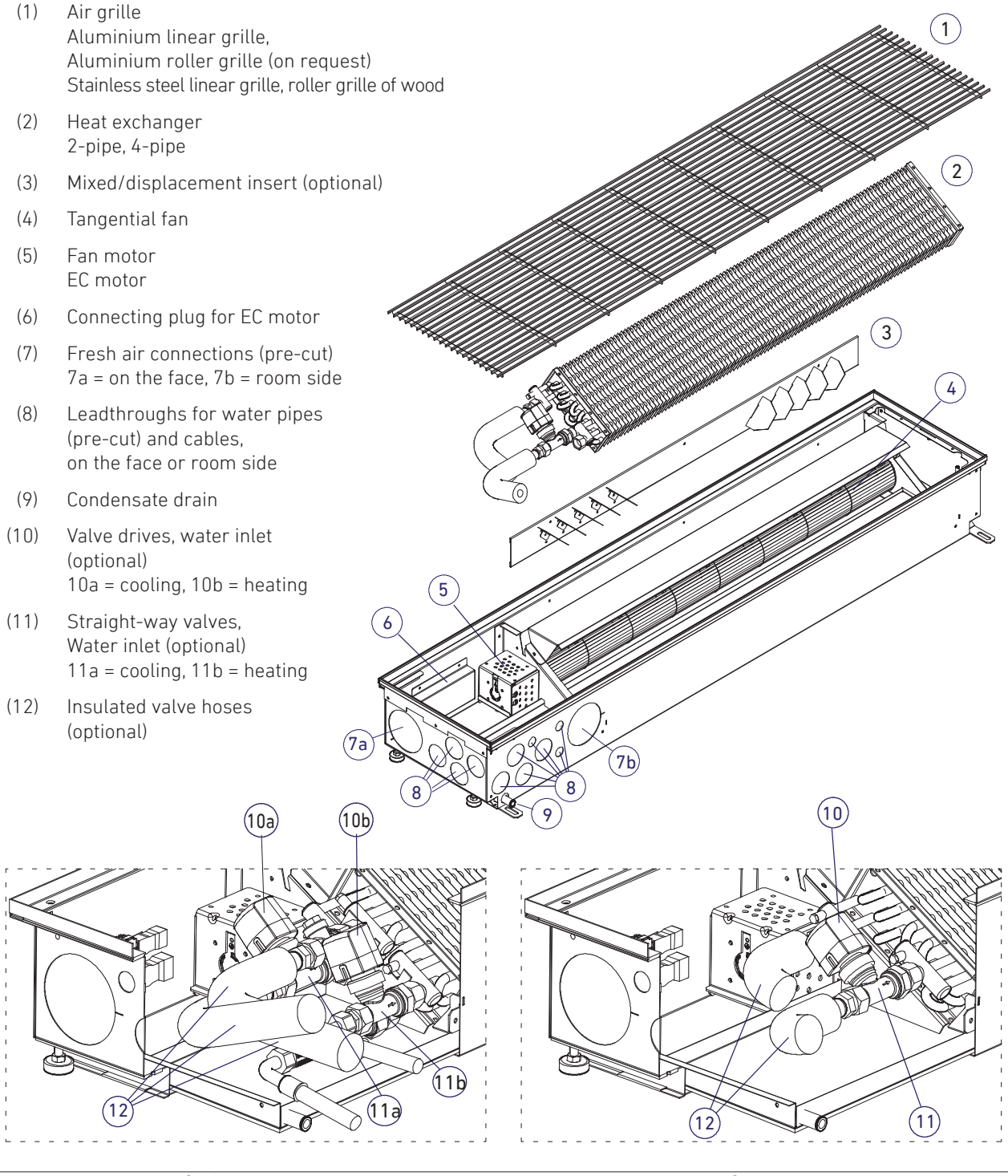
(8) Leadthroughs for water pipes (pre-cut) and cables, on the face or room side

(9) Condensate drain

(10) Valve drives, water inlet (optional)
10a = cooling, 10b = heating

(11) Straight-way valves, Water inlet (optional)
11a = cooling, 11b = heating

(12) Insulated valve hoses (optional)



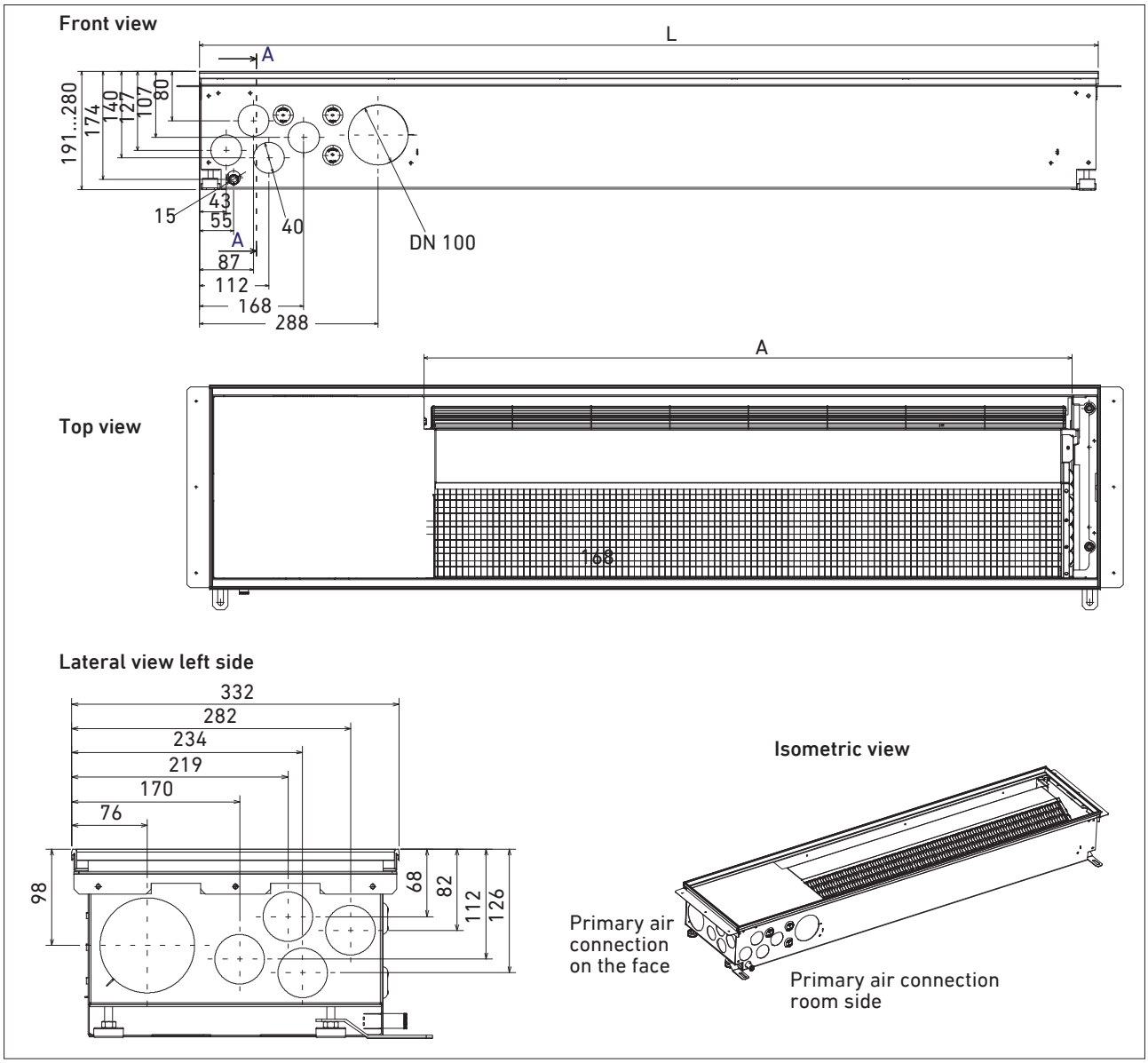
4-pipe system **2-pipe system**

Technical brochure • Fan coil units VKB, floor installation
Type VKB-0/2 and VKB-0/4, 2-pipe and 4-pipe system

Dimensions, weights

Size	Total length L	Air outlet width A	Weight	Water content		
				4-pipe		2-pipe
	[mm]	[mm]	[kg]	Cooling circuit [l]	Heating circuit [l]	
630	1020	625	27	0.6	0.16	0.8
800	1200/1250 *	855	31	0.9	0.21	1.1
1000	1450	1055	37	1.1	0.26	1.4
2000	2450	2038	65	2.1	0.53	2.8

* Length depending on the desired connection type



1 socket (DN 100), with grille, with integrated displacement air diffuser, separated (type VKB-0/.../FQ)

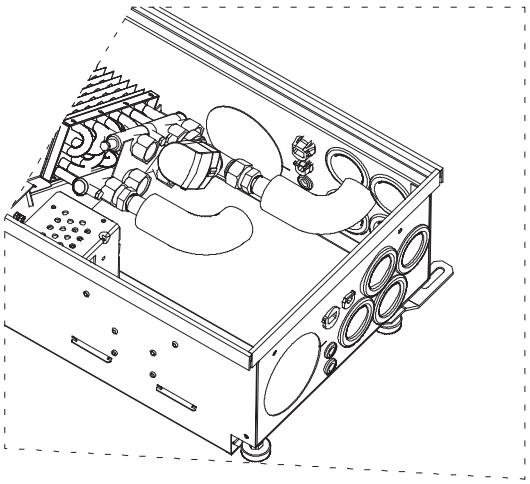
Primary air flow rate	V_P	[m³/(h)]	50	70	90	110	130
Acoustic power level	$L_{wA\,P}$	[dB(A)]	26	27	29	34	39
Pressure loss		[Pa]	2	4	6	11	13

The total acoustic power level may be calculated as follows:
$L_{wA} = 10 * \log (10^{0,1*LwA\,P} + 10^{0,1\,*\,LwA,VKB})$

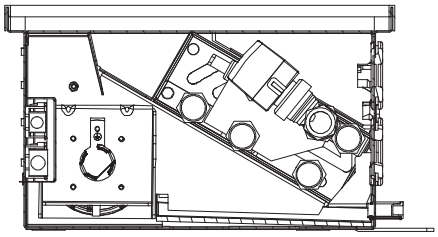
Technical brochure • Fan coil units VKB, floor installation
Type VKB-0/2 and VKB-0/4, 2-pipe and 4-pipe system

Dimensions

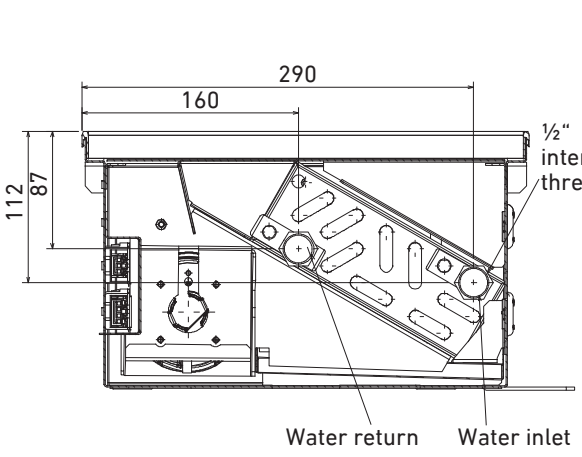
2-pipe system



Isometric view

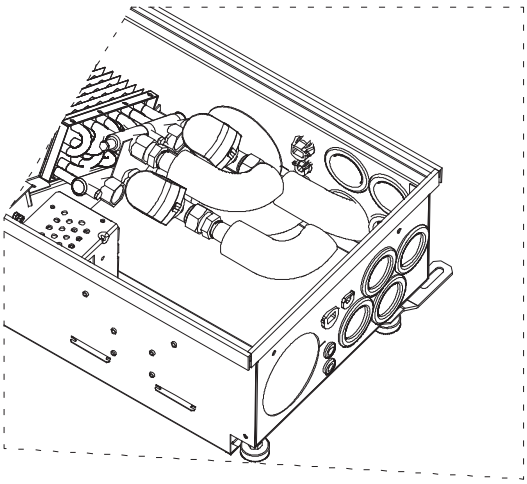


Cut A-A (see previous page)

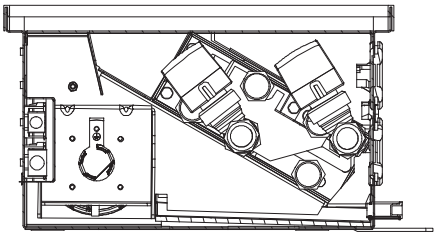


Cut A-A (see previous page)

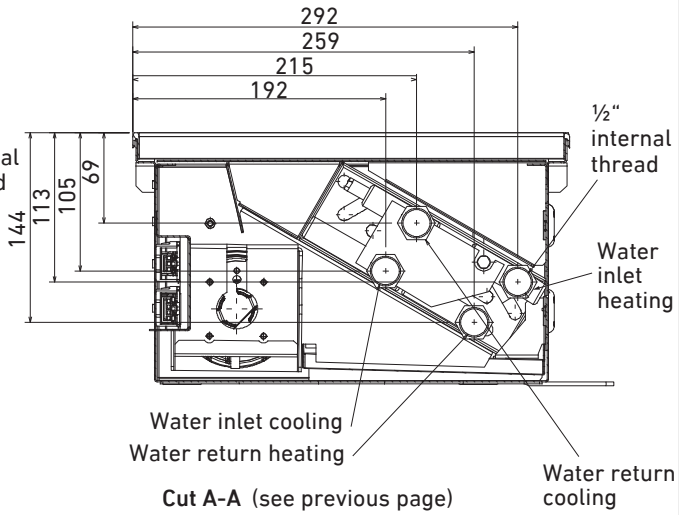
4-pipe system



Isometric view



Cut A-A (see previous page)



Cut A-A (see previous page)

Technical brochure • Fan coil units VKB, floor installation
Type VKB-0/4/.../FL and VKB-0/2/.../FL, primary air supply (in front)

Specification

Fan coil unit with one heat exchanger and two separate circuits for heating and cooling the room air. Fresh air supply with flow rates up to 400 m^3/h while maintaining low noise levels.

Separate primary air connection integrated in the housing.

Installation in access floors with a recommended clearance of 230...280 mm.

Precise adjustment of the units is realised via vibration-isolated, height-adjustable feet.

Water-side control by valves (accessories separate).

Acoustic power level for separate socket for primary air supply

(must be added to the unit's power level)

1 socket (DN 100), with aluminium linear grille

	V_P	[m^3/(h)]	40	60	80	100
Size 630	$L_{wA\,P}$	[dB(A)]	29	38	-	-
	Pressure loss	[Pa]	1	3	-	-
Size 800	$L_{wA\,P}$	[dB(A)]	27	30	37	47
	Pressure loss	[Pa]	1	1	2	4
Size 1000	$L_{wA\,P}$	[dB(A)]	27	28	31	37
	Pressure loss	[Pa]	0	1	2	3

2 sockets (DN 100), with aluminium linear grille

	V_P	[m^3/(h)]	50	100	150	200	250
Size 630	$L_{wA\,P}$	[dB(A)]	27	31	41	-	-
	Pressure loss	[Pa]	2	7	16	-	-
Size 800	$L_{wA\,P}$	[dB(A)]	27	28	32	40	-
	Pressure loss	[Pa]	2	4	9	16	-
Size 1000	$L_{wA\,P}$	[dB(A)]	27	28	30	36	43
	Pressure loss	[Pa]	2	3	5	9	15

4 sockets (DN 100), with aluminium linear grille

	V_P	[m^3/(h)]	100	200	300	400
Size 2000	$L_{wA\,P}$	[dB(A)]	30	31	33	39
	Pressure loss	[Pa]	2	3	5	9

The total acoustic power level may be calculated as follows:

$$L_{wA} = 10 * \log (10^{0,1 * L_{wA\,P}} + 10^{0,1 * L_{wA,VKB}})$$

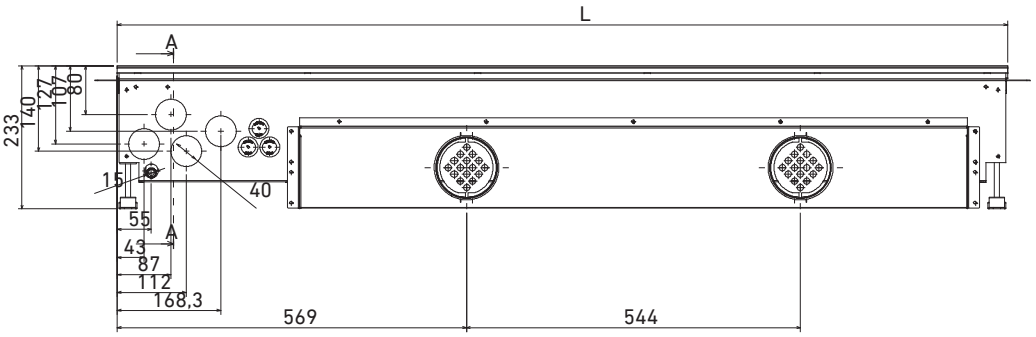
Dimensions, weights

Size	Total length L	Air outlet width A	Weight	Water content		
				4-pipe		2-pipe
	[mm]	[mm]	[kg]	Cooling circuit [l]	Heating circuit [l]	
630	1020	625	28	0.6	0.16	0.8
800	1250	855	32	0.9	0.21	1.1
1000	1450	1055	38	1.1	0.26	1.4
2000	2450	2038	66	2.1	0.53	2.8

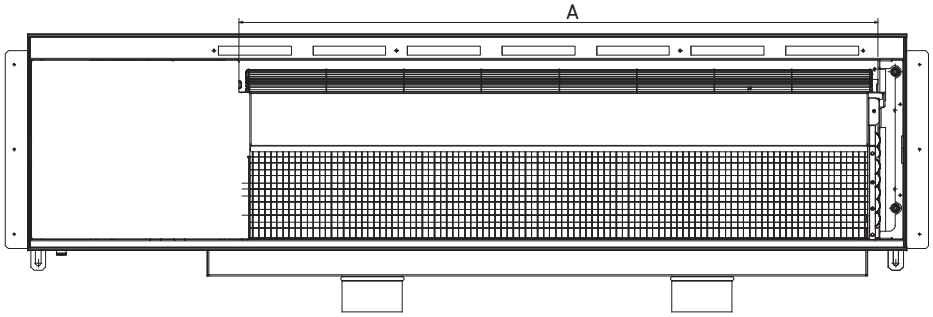
Technical brochure • Fan coil units VKB, floor installation
Type VKB-0/4/.../FL and VKB-0/2/.../FL, primary air supply (in front)

Dimensions

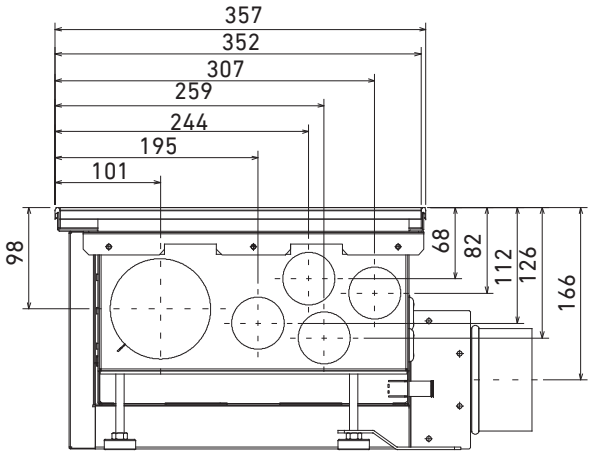
Front view



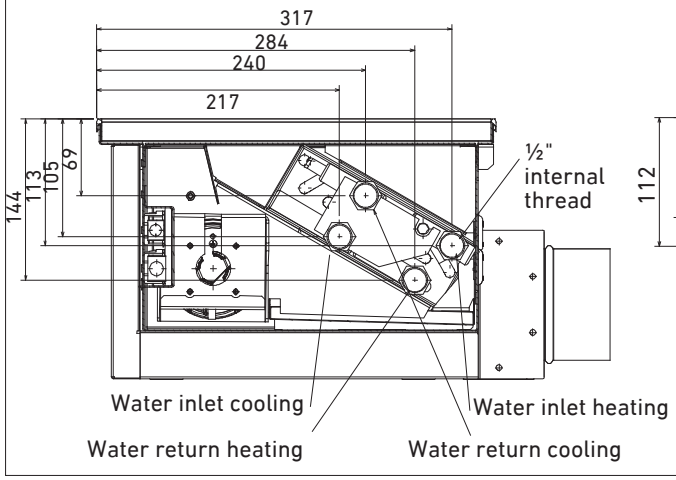
Top view



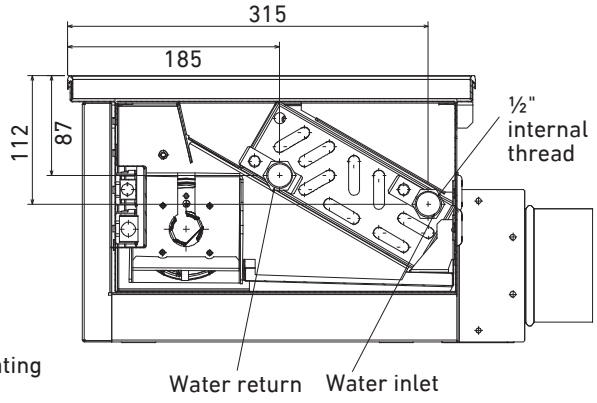
Lateral view left side



Cut A-A (4-pipe system)



Cut A-A (2-pipe system)



Technical brochure • Fan coil units VKB, floor installation
Type VKB-0/4/.../T, 4-pipe system, non condensing

Technical data size 630

U [V DC]	V [m³/h]	L_{A18} [dB(A)]	L_{wA} [dB(A)]	Q_k 1) /Δt [W/K]	Q_k 1) [W]	Q_h/Δt [W/K]	Q_{st} 2) [W]	$w_{ok}/\Delta p_w$ [kg/h]/[kPa]	$w_{oh}/\Delta p_w$ [kg/h]/[kPa]	P_{el} [W]
3	180	25	31	37	370	22				3
4	240	30	36	50	500	25				4
5	290	33	39	58	580	27	120	200 / 18	100 / 1.3	5
6	360	38	44	66	660	29				7
8	460	46	52	76	760	32				11

Technical data size 800

U [V DC]	V [m³/h]	L_{A18} [dB(A)]	L_{wA} [dB(A)]	Q_k 1) /Δt [W/K]	Q_k 1) [W]	Q_h/Δt [W/K]	Q_{st} 2) [W]	$w_{ok}/\Delta p_w$ [kg/h]/[kPa]	$w_{oh}/\Delta p_w$ [kg/h]/[kPa]	P_{el} [W]
3	250	25	31	52	520	30				3
4	330	30	36	67	670	33				4
5	410	33	39	78	780	36	160	200 / 23	100 / 1.6	5
6	510	38	44	88	880	39				8
8	640	46	52	100	1000	43				15

Technical data size 1000

U [V DC]	V [m³/h]	L_{A18} [dB(A)]	L_{wA} [dB(A)]	Q_k 1) /Δt [W/K]	Q_k 1) [W]	Q_h/Δt [W/K]	Q_{st} 2) [W]	$w_{ok}/\Delta p_w$ [kg/h]/[kPa]	$w_{oh}/\Delta p_w$ [kg/h]/[kPa]	P_{el} [W]
3	310	27	33	64	640	37				3
4	410	29	35	80	800	40				5
5	510	34	40	93	930	43	200	200 / 26	100 / 1.8	7
6	630	39	45	103	1030	46				10
8	790	47	53	115	1150	51				19

Technical data size 2000

U [V DC]	V [m³/h]	L_{A18} [dB(A)]	L_{wA} [dB(A)]	Q_k 1) /Δt [W/K]	Q_k 1) [W]	Q_h/Δt [W/K]	Q_{st} 2) [W]	$w_{ok}/\Delta p_w$ [kg/h]/[kPa]	$w_{oh}/\Delta p_w$ [kg/h]/[kPa]	P_{el} [W]
3	510	27	33	100	1000	68				8
4	680	32	38	128	1280	74				10
5	830	37	43	154	1540	78	400	400 / 28	150 / 6.2	13
6	870	42	48	169	1690	82				18
8	1210	51	57	203	2030	92				32

Values are given for the unit including the air outlet grille, without spreading vanes, without filter. The spreading vanes have the effect of reducing capacity by max. 10 %

Nominal water flow rate cooling 200 kg/h.

1) For 16 °C water supply temperature
   26 °C suction air temp.before entering the heat exchanger (may vary from the room air temp.)
   non-condensing operation

2) For 55 °C water supply temperature
   20 °C room air temperature

U - Control voltage fan
V - Flow rate (± 10 %)
L_{A18} - Sound pressure level
L_{wA} - Sound power level ± 3 dB(A)
Q_k - Total cooling capacity
Q_h - Total heating capacity
Δt - Temp. difference between suction air temp. before entering the heat exchanger and water supply
Q_{st} - Heating capacity for natural convection
w_{ok} - Standard water flow rate (cooling) *
w_{oh} - Standard water flow rate (heating) *
Δp_w - Water-side pressure loss
P_{el} - Electric power consumption (± 10 %)

* Correction for other water flow rates see pages 13...15

Technical brochure • Fan coil units VKB, floor installation
Type VKB-0/4/.../E, 4-pipe system, condensing

Technical data size 630

U [V DC]	V [m³/h]	L_{A18} [dB(A)]	L_{wA} [dB(A)]	Q_k 1)/Δt [W/K]	Q_k 1) [W]	Q_k 2) [W]	Q_{ksens} 2) [W]	Q_h/Δt [W/K]	Q_{st} 3) [W]	w_{ok}/Δpw [kg/h]/[kPa]	w_{oh}/Δpw	P_{el} [W]
3	180	25	31	36	360	949	636	22				3
4	240	30	36	48	480	1165	848	24				4
5	290	33	39	56	560	1304	990	26	120	200 / 18	100 / 1.3	5
6	360	38	44	64	640	1446	1131	28				7
8	460	46	52	73	730	1552	1290	31				11

Technical data size 800

U [V DC]	V [m³/h]	L_{A18} [dB(A)]	L_{wA} [dB(A)]	Q_k 1)/Δt [W/K]	Q_k 1) [W]	Q_k 2) [W]	Q_{ksens} 2) [W]	Q_h/Δt [W/K]	Q_{st} 3) [W]	w_{ok}/Δpw [kg/h]/[kPa]	w_{oh}/Δpw	P_{el} [W]
3	250	25	31	50	500	1318	884	29				3
4	330	30	36	65	650	1577	1149	32				4
5	410	33	39	76	760	1769	1343	35	160	200 / 22	100 / 1.6	6
6	510	38	44	85	850	1920	1502	38				8
8	640	46	52	97	970	2062	1714	42				14

Technical data size 1000

U [V DC]	V [m³/h]	L_{A18} [dB(A)]	L_{wA} [dB(A)]	Q_k 1)/Δt [W/K]	Q_k 1) [W]	Q_k 2) [W]	Q_{ksens} 2) [W]	Q_h/Δt [W/K]	Q_{st} 3) [W]	w_{ok}/Δpw [kg/h]/[kPa]	w_{oh}/Δpw	P_{el} [W]
3	310	27	33	62	620	1634	1096	36				3
4	410	29	35	78	780	1893	1379	39				5
5	510	34	40	90	900	2095	1591	42	200	200 / 26	100 / 1.8	7
6	630	39	45	100	1000	2259	1767	45				10
8	790	47	53	112	1120	2381	1980	49				19

Technical data size 2000

U [V DC]	V [m³/h]	L_{A18} [dB(A)]	L_{wA} [dB(A)]	Q_k 1)/Δt [W/K]	Q_k 1) [W]	Q_k 2) [W]	Q_{ksens} 2) [W]	Q_h/Δt [W/K]	Q_{st} 3) [W]	w_{ok}/Δpw [kg/h]/[kPa]	w_{oh}/Δpw	P_{el} [W]
3	510	27	33	95	950	2500	1680	65				8
4	680	32	38	122	1220	2960	2160	70				10
5	830	37	43	146	1460	3400	2580	74	400	400 / 28	150 / 6.3	13
6	870	42	48	161	1610	3640	2850	78				18
8	1210	51	57	193	1930	4100	3411	87				32

Values are given for the unit with air outlet grille, without spreading vanes, without filter. The spreading vanes have the effect of reducing capacity by max. 10 %.

1) For 16 °C water supply temperature, 26 °C suction air temp. before entering the heat exchanger (may vary from the room air temp.), non-condensing operation

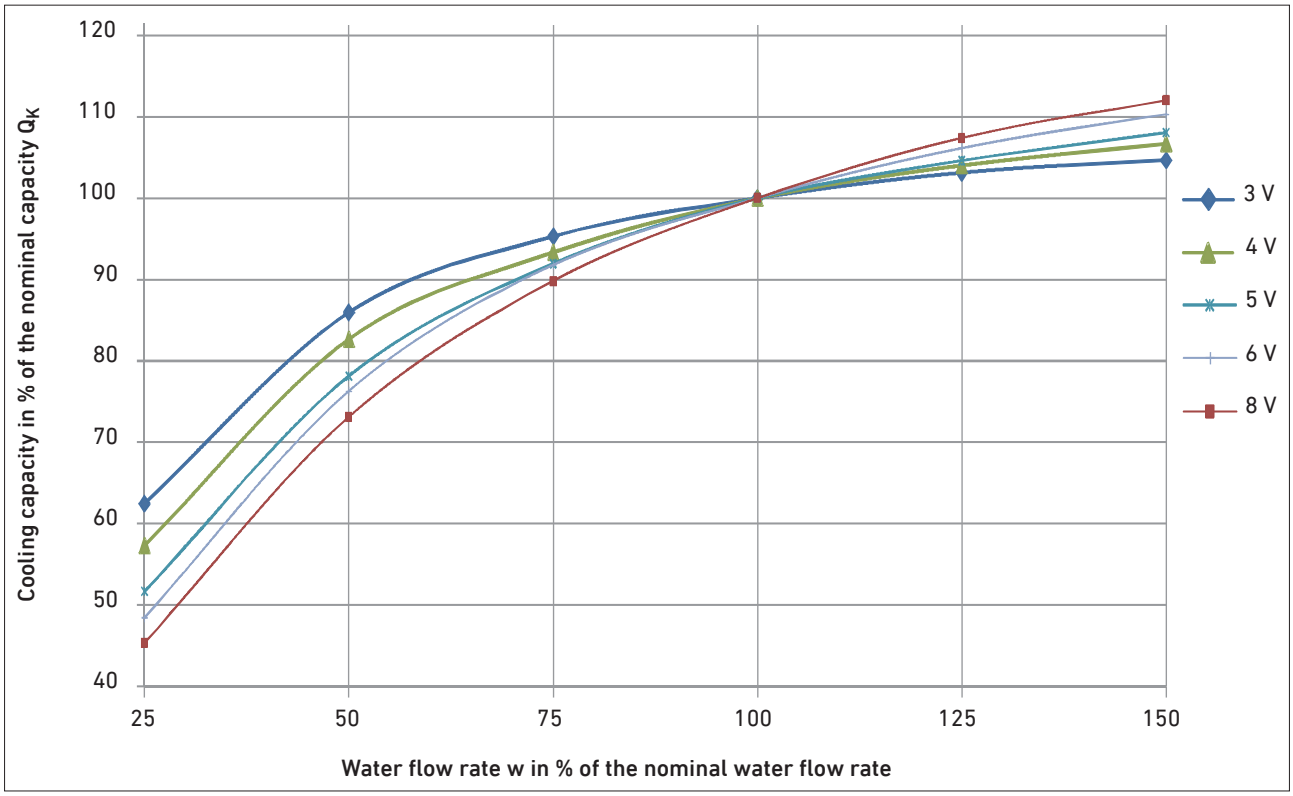
2) For 6 °C water supply temperature, 26 °C suction air temp. before entering the heat exchanger (may vary from the room air temp.), condensing operation, 50 % relative humidity.

3) For 55 °C water supply temperature, 20 °C room air temperature

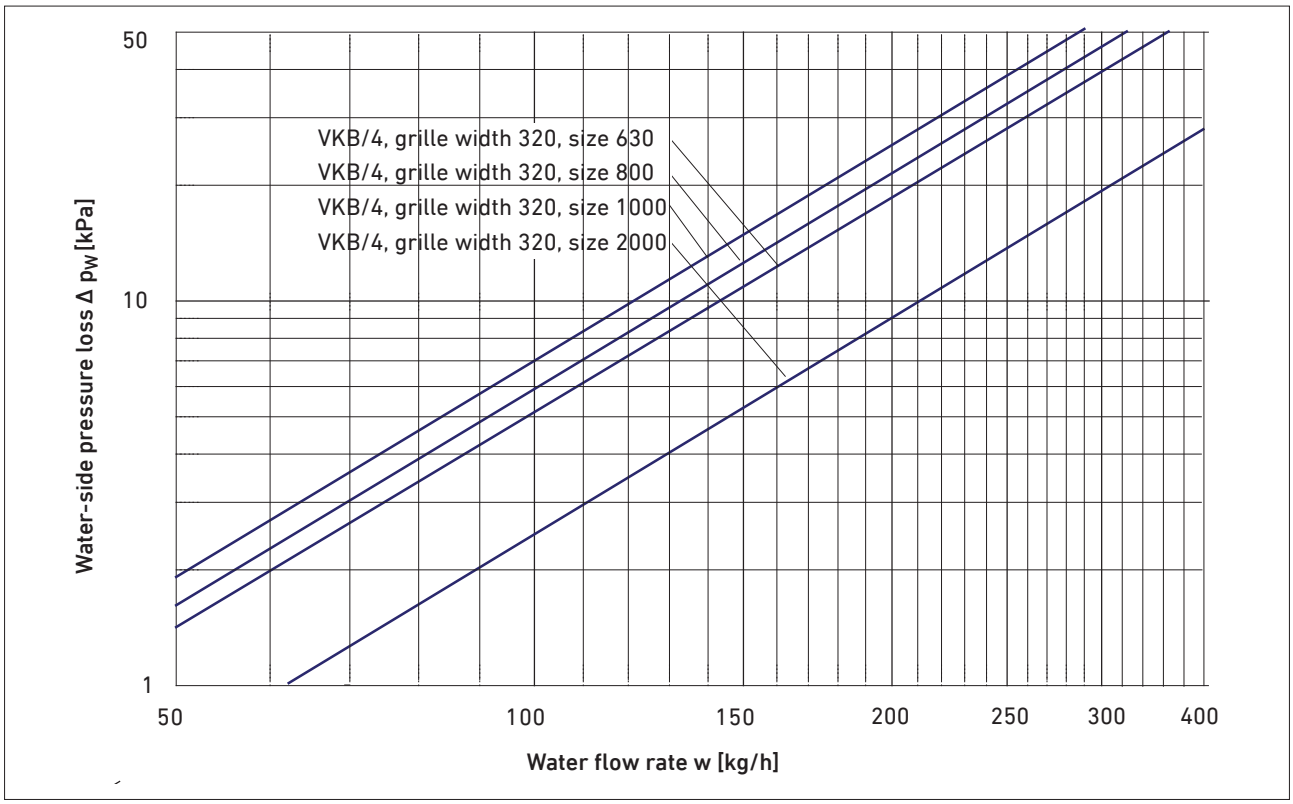
U - Control voltage fan
V - Flow rate (± 10 %)
L_{A18} - Sound pressure level
L_{wA} - Sound power level ± 3 dB(A)
Q_k - Total cooling capacity
Q_{ksens} - Sensible cooling capacity
Q_h - Total heating capacity
Δt - Temp. difference between suction air temp. before entering the heat exchanger and water supply
Q_{st} - Heating capacity for natural convection
w_{ok} - Standard water flow rate (cooling) *
w_{oh} - Standard water flow rate (heating) *
$Δp_w$ - Water-side pressure loss
P_{el} - Electric power consumption (± 10 %)

* Correction for other water flow rates see pages 13...15

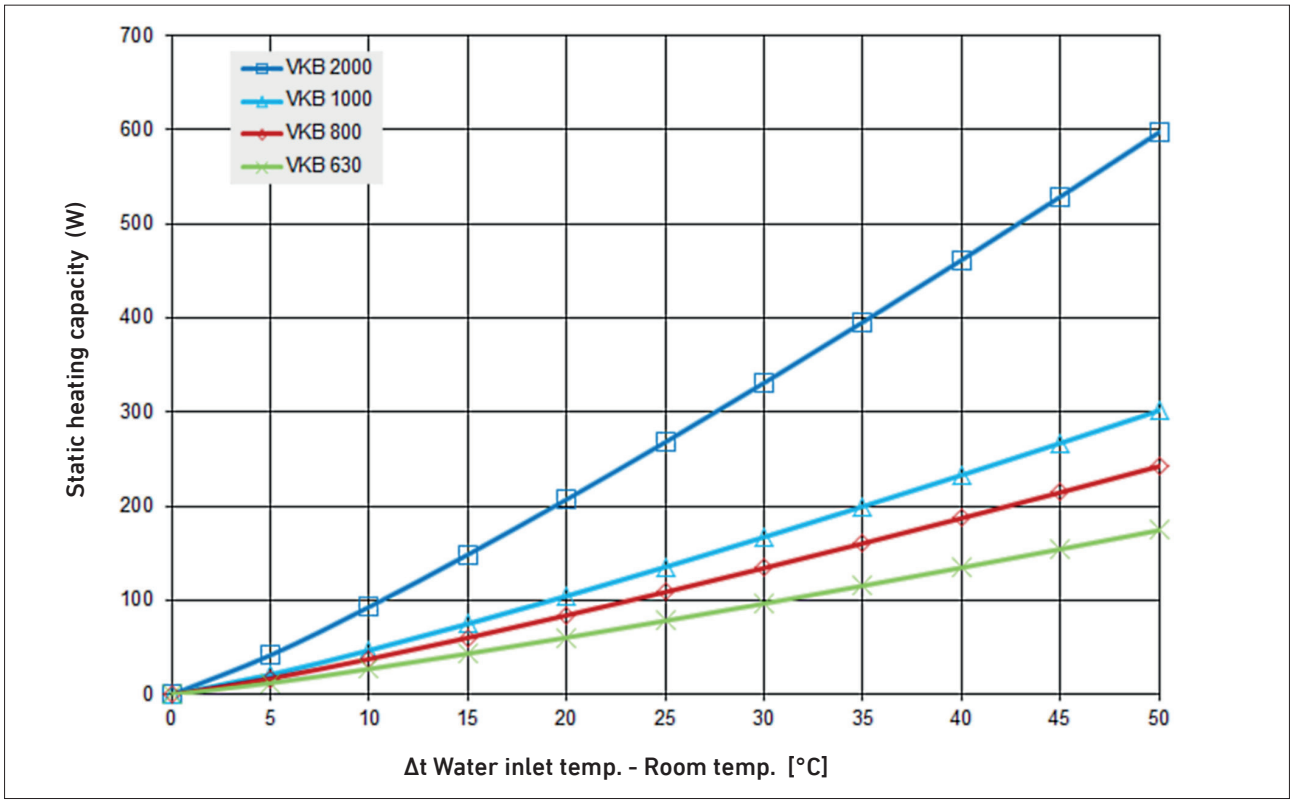
Cooling capacity for different water flow rates



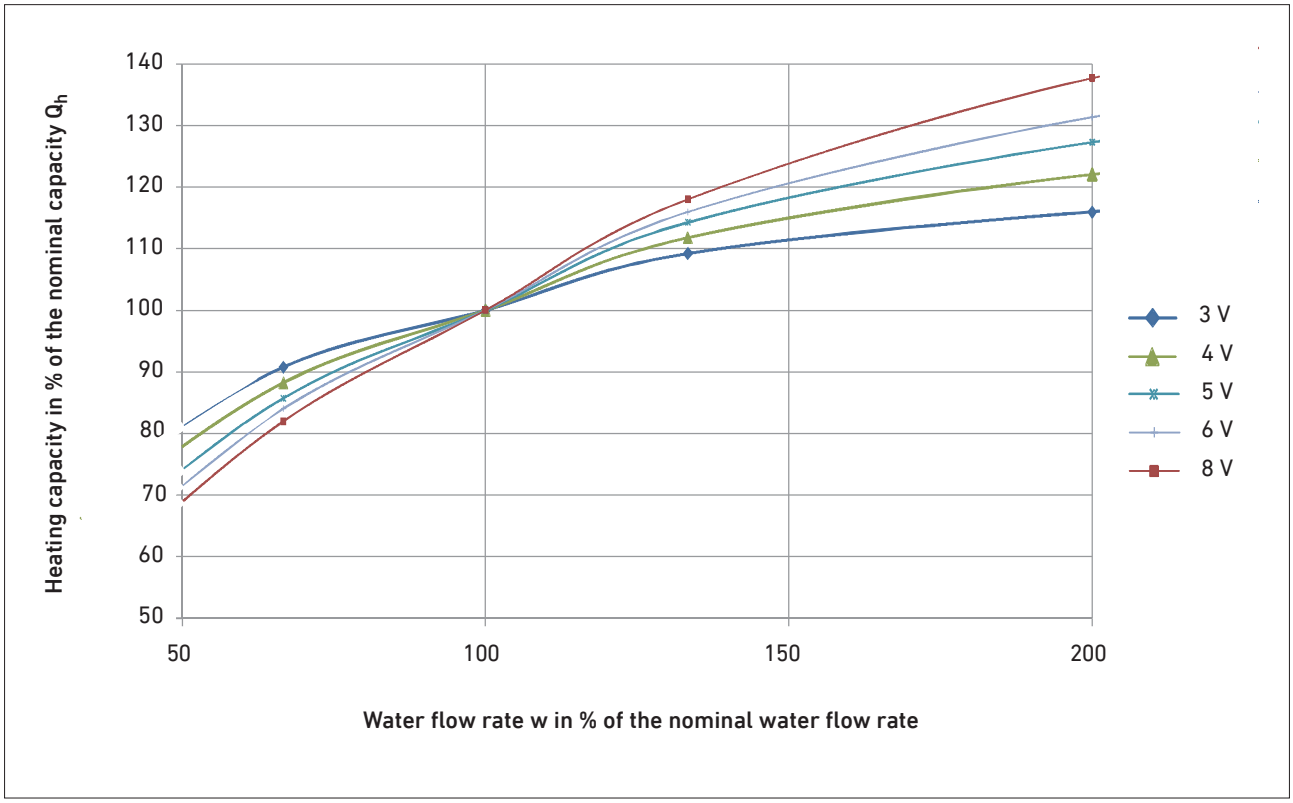
Water-side pressure loss of the cooler for different water flow rates



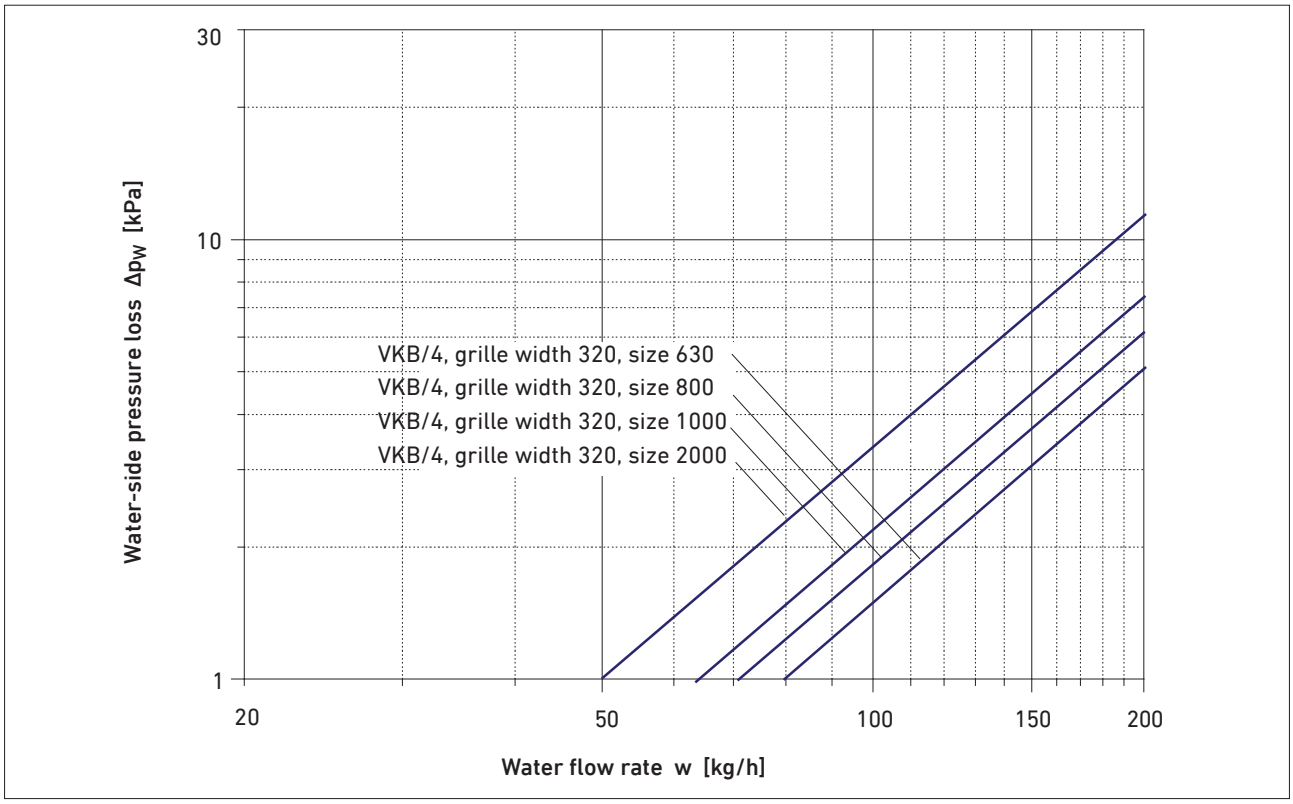
Static heating capacity for 100 kg/h



Heating capacity for different water flow rates



Water-side pressure loss of the heater for different water flow rates



Technical brochure • Fan coil units VKB, floor installation
Type VKB-0/2/.../T, 2-pipe system, non condensing

Technical data size 630

U [V DC]	V [m³/h]	L_{A18} [dB(A)]	L_{wA} [dB(A)]	Q_k 1)/Δt [W/K]	Q_k 1) [W]	Q_h/Δt [W/K]	Q_{st} 3) [W]	w_{ok}/Δpw [kg/h]/[kPa]	w_{oh}/Δpw	P_{el} (EC) [W]
3	180	25	31	42	420	37				3
4	240	30	36	54	540	45				4
5	290	33	39	64	640	51	120	300 / 7	150 / 2	5
6	360	38	44	74	740	57				7
8	460	46	52	86	860	64				11

Technical data size 800

U [V DC]	V [m³/h]	L_{A18} [dB(A)]	L_{wA} [dB(A)]	Q_k 1)/Δt [W/K]	Q_k 1) [W]	Q_h/Δt [W/K]	Q_{st} 3) [W]	w_{ok}/Δpw [kg/h]/[kPa]	w_{oh}/Δpw	P_{el} (EC) [W]
3	230	25	31	54	540	47				3
4	330	30	36	71	710	59				4
5	410	33	39	86	860	69	160	300 / 8	150 / 2.6	6
6	510	38	44	99	990	77				8
8	640	46	52	112	1120	83				14

Technical data size 1000

U [V DC]	V [m³/h]	L_{A18} [dB(A)]	L_{wA} [dB(A)]	Q_k 1)/Δt [W/K]	Q_k 1) [W]	Q_h/Δt [W/K]	Q_{st} 3) [W]	w_{ok}/Δpw [kg/h]/[kPa]	w_{oh}/Δpw	P_{el} (EC) [W]
3	310	27	33	59	590	51				3
4	410	29	35	76	760	63				5
5	510	34	40	92	920	74	200	300 / 10	150 / 2.9	7
6	630	39	45	106	1060	82				10
8	790	47	53	122	1220	90				19

Technical data size 2000

U [V DC]	V [m³/h]	L_{A18} [dB(A)]	L_{wA} [dB(A)]	Q_k 1)/Δt [W/K]	Q_k 1) [W]	Q_h/Δt [W/K]	Q_{st} 3) [W]	w_{ok}/Δpw [kg/h]/[kPa]	w_{oh}/Δpw	P_{el} (EC) [W]
3	510	27	33	106	1060	80				8
4	680	32	38	137	1370	92				10
5	830	37	43	163	1630	102	400	400 / 9	150 / 1.5	13
6	870	42	48	179	1790	112				18
8	1210	51	57	214	2140	118				32

Values are given for the unit including the air outlet grille, without spreading vanes. The spreading vanes have the effect of reducing capacity by max. 10 %.

1) For 16 °C water supply temperature
   26 °C suction air temperature before entering the heat exchanger (may vary from the room air temp.)
   non-condensing operation
2) For 55 °C water supply temperature
   20 °C room air temperature

U - Control voltage fan
V - Flow rate (± 10 %)
L_{A18} - Sound pressure level
L_{wA} - Sound power level ± 3 dB(A)
Q_k - Total cooling capacity
Q_h - Total heating capacity
Δt - Temp. difference between suction air temp. before entering the heat exchanger and water supply
Q_{st} - Heating capacity for natural convection
w_{ok} - Standard water flow rate (cooling) *
w_{oh} - Standard water flow rate (heating) *
$Δp_w$ - Water-side pressure loss
P_{el} - Electric power consumption (± 10 %)

* Correction for other water flow rates see pages 18/19

Technical brochure • Fan coil units VKB, floor installation
Type VKB-0/2/.../E, 2-pipe system, condensing

Technical data size 630

U [V DC]	V [m³/h]	L_{A18} [dB(A)]	L_{wA} [dB(A)]	Q_k 1)/Δt [W/K]	Q_k 1) [W]	Q_k 2) [W]	Q_{ksens} 2) [W]	Q_h/Δt [W/K]	Q_{st} 3) [W]	w_{ok}/Δpw [kg/h]/[kPa]	w_{oh}/Δpw	P_{el} [W]
3	180	25	31	40	400	1040	690	35				3
4	240	30	36	51	510	1290	900	42				4
5	290	33	39	61	610	1460	1050	49	120	300 / 7	150 / 2	5
6	360	38	44	70	700	1610	1210	55				7
8	460	46	52	82	820	1810	1450	61				11

Technical data size 800

U [V DC]	V [m³/h]	L_{A18} [dB(A)]	L_{wA} [dB(A)]	Q_k 1)/Δt [W/K]	Q_k 1) [W]	Q_k 2) [W]	Q_{ksens} 2) [W]	Q_h/Δt [W/K]	Q_{st} 3) [W]	w_{ok}/Δpw [kg/h]/[kPa]	w_{oh}/Δpw	P_{el} [W]
3	250	25	31	51	510	1330	880	45				3
4	330	30	36	68	680	1690	1180	57				4
5	410	33	39	82	820	1960	1410	66	160	300 / 8	150 / 2.6	6
6	510	38	44	94	940	2160	1620	73				8
8	640	46	52	106	1060	2330	1860	79				14

Technical data size 1000

U [V DC]	V [m³/h]	L_{A18} [dB(A)]	L_{wA} [dB(A)]	Q_k 1)/Δt [W/K]	Q_k 1) [W]	Q_k 2) [W]	Q_{ksens} 2) [W]	Q_h/Δt [W/K]	Q_{st} 3) [W]	w_{ok}/Δpw [kg/h]/[kPa]	w_{oh}/Δpw	P_{el} [W]
3	310	27	33	56	565	1470	970	49				3
4	410	29	35	73	726	1816	1270	61				5
5	510	34	40	88	876	2102	1510	70	200	300 / 10	150 / 2.9	7
6	630	39	45	100	1005	2311	1730	78				10
8	790	47	53	116	1155	2542	2030	86				19

Technical data size 2000

U [V DC]	V [m³/h]	L_{A18} [dB(A)]	L_{wA} [dB(A)]	Q_k 1)/Δt [W/K]	Q_k 1) [W]	Q_k 2) [W]	Q_{ksens} 2) [W]	Q_h/Δt [W/K]	Q_{st} 3) [W]	w_{ok}/Δpw [kg/h]/[kPa]	w_{oh}/Δpw	P_{el} [W]
3	510	27	33	101	1010	2660	1780	74				8
4	680	32	38	130	1300	3155	2300	83				10
5	830	37	43	155	1550	3630	2760	89	400	400 / 9	100 / 2.1	13
6	870	42	48	170	1700	3840	3000	99				18
8	1210	51	57	203	2030	4310	3590	101				32

Values are given for the unit including the air outlet grille, without spreading vanes. The spreading vanes have the effect of reducing capacity by max. 10 %.

1) For 16 °C water supply temperature, 26 °C suction air temp. before entering the heat exchanger (may vary from the room air temp.), non-condensing operation.

2) For 6 °C water supply temperature, 26 °C suction air temp. before entering the heat exchanger (may vary from the room air temp.) condensing operation, 50 % relative humidity

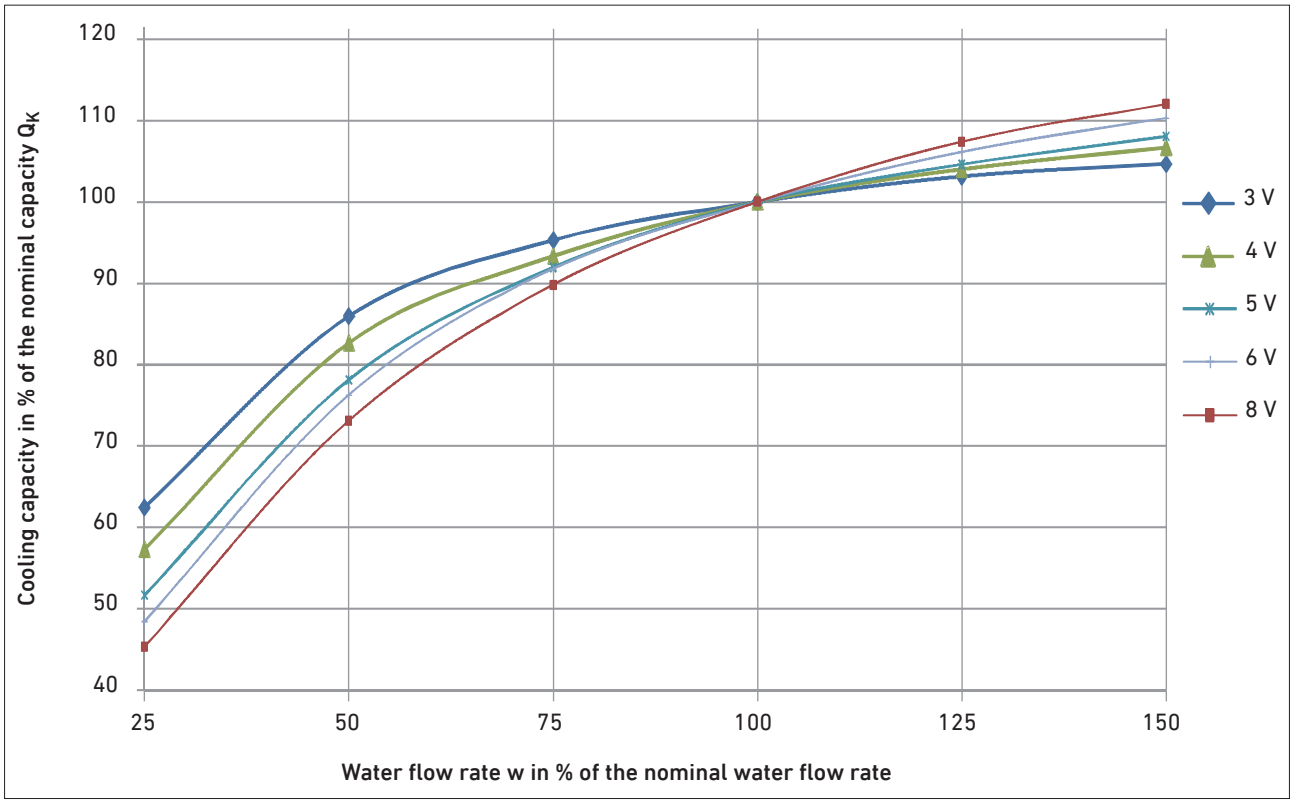
3) For 55 °C water supply temperature 20 °C suction air temp. before entering the heat exchanger (may vary from the room air temp.)

*

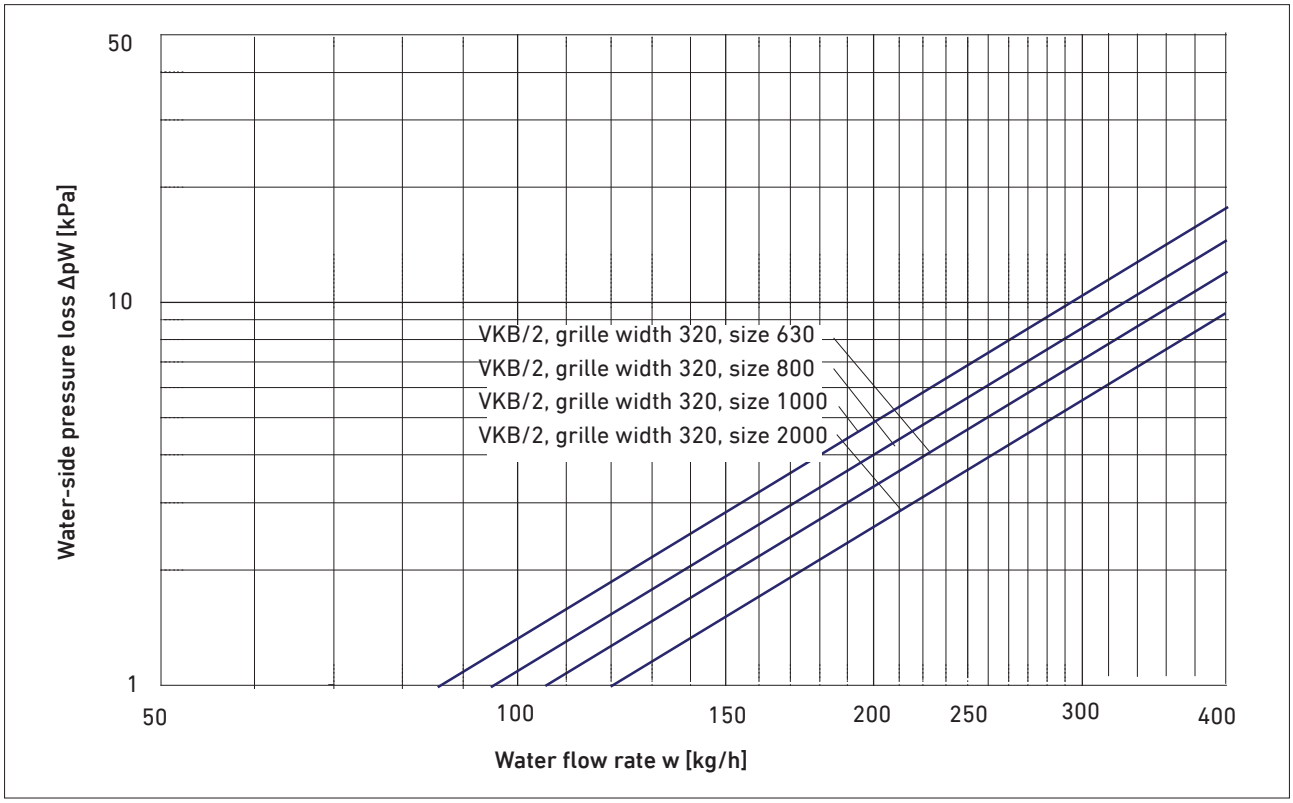
U - Control voltage fan
V - Flow rate (± 10 %)
L_{A18} - Sound pressure level
L_{wA} - Sound power level ± 3 dB(A)
Q_k - Total cooling capacity
$Q_{k\ sens}$ - Sensible cooling capacity
Q_h - Total heating capacity
Δt - Temp. difference between suction air temp. before entering the heat exchanger and water supply
Q_{st} - Heating capacity for natural convection
w_{ok} - Standard water flow rate (cooling) *
w_{oh} - Standard water flow rate (heating) *
$Δp_w$ - Water-side pressure loss
P_{el} - Electric power consumption (± 10 %)

* Correction for other water flow rates see pages 18/19

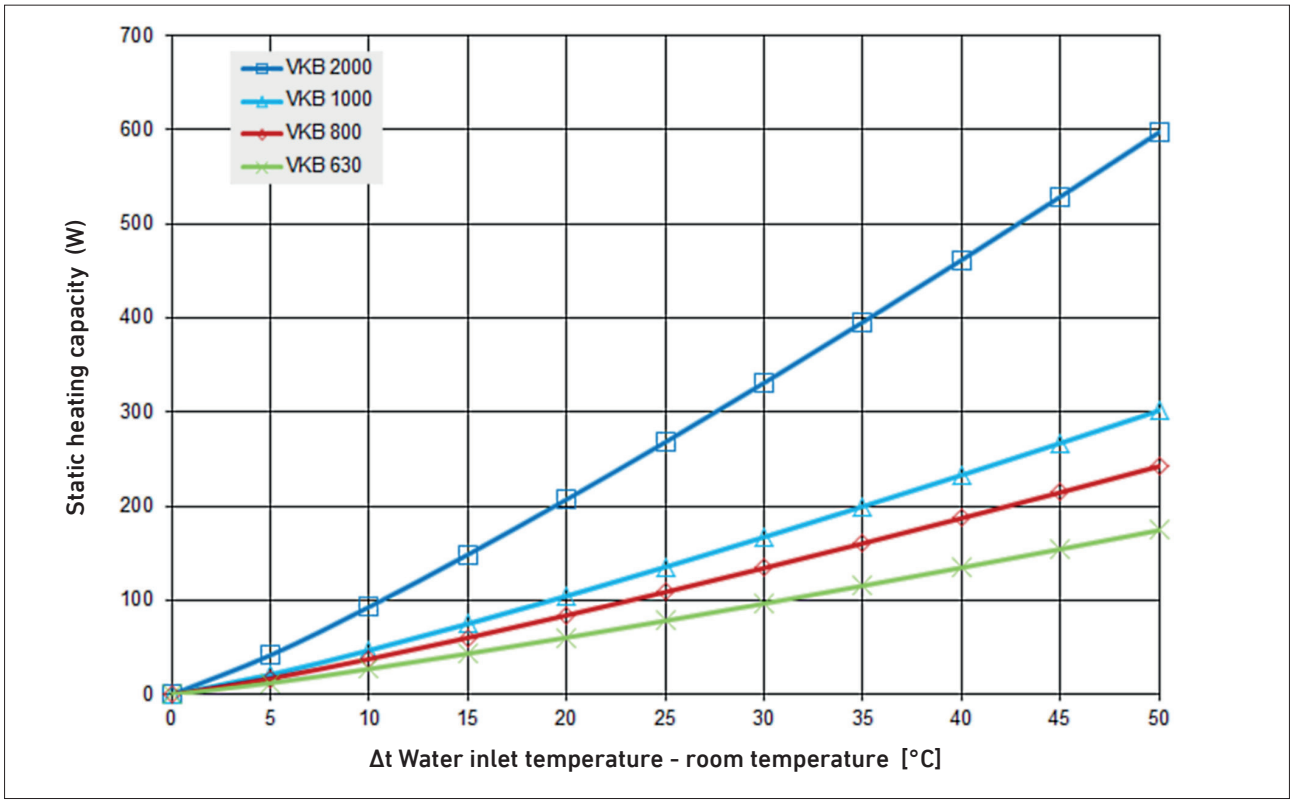
Cooling capacity for different water flow rates



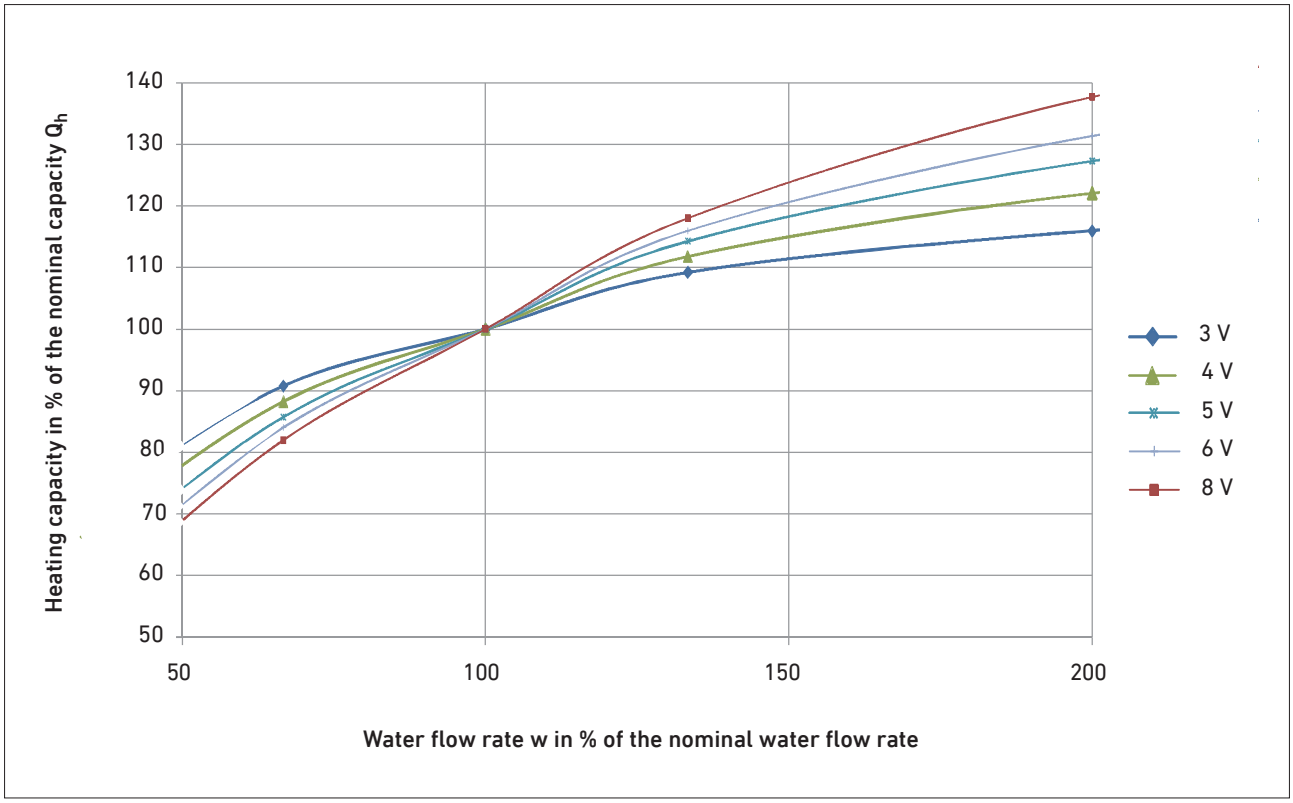
Water-side presssure loss for different water flow rates



Static heating capacity



Heating capacity for different water flow rates



Technical brochure • Fan coil units VKB, floor installation Type VKB-0 and VKB-N

Wiring

The installation of electrical equipment must be performed in accordance with the specifications of VDE0100-100:2009-06.

Electrical installations must be installed professionally by suitable qualified personnel and using suitable materials in accordance with the current state of the art.

The specifications of the respective manufacturer must be observed and implemented for accessory components (e.g. room control units, valve actuators, etc.) that are connected and operated with LTG units.

Speed control wiring diagram for EC motor

Two connections are necessary for electrically connecting the fan coil unit. These are provided by plug connections, protection IP 21. The plugs are pre-assembled on the motor side at the factory. Only the supplied mating plugs have to be assembled by others accordingly.

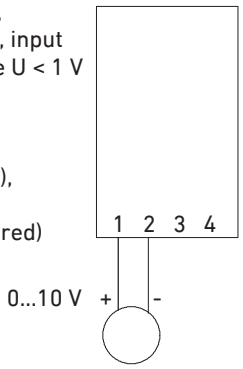
Note: As a rule, we are not familiar with the full scope of the ventilation, air-conditioning and control engineering systems. For this reason, the designs, drawings and circuit diagrams only show the systems that are relevant to the basic functions. Other units or components, such as those required for overall control engineering and/or design in compliance with VDE regulations, are not shown and are not explicitly mentioned.

Please also note the assembly and installation instructions in the original documentation.

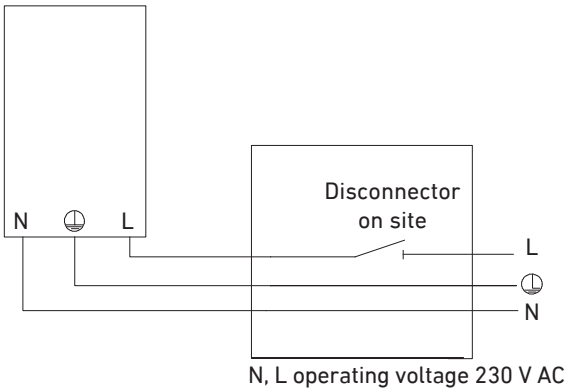
The controllers for this application are parametrised by others.

Speed control 0...10 V DC, 4-pin plug

1 = 0...10 V DC (yellow), speed specification, input with control voltage U < 1 V is speed n = 0
2 = GND, 0 V DC (blue), input
3 = Tacho signal (white), output (optional)
4 = 10 V steady signal (red) output (optional)



230 V AC mains voltage supply, 3-pin plug



N, L operating voltage 230 V AC

Technical brochure • Fan coil units VKB, floor installation
Type VKB-N/./..., grille width 320 mm, low height

Specification

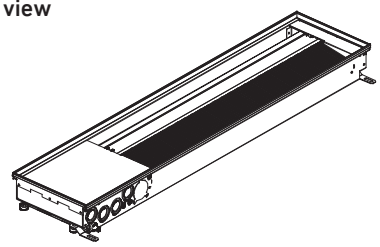
Fan coil unit with one heat exchanger and two separate circuits for heating and cooling the room air.

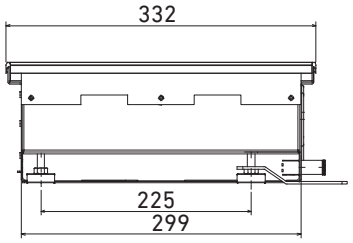
Installation in access floors with a recommended clearance of 125...165 mm (take care to consider construction tolerances and grille types). Precise adjustment of the units via vibration-isolated, height-adjustable feet - retractable up to 130 mm.

Dimensions, weights

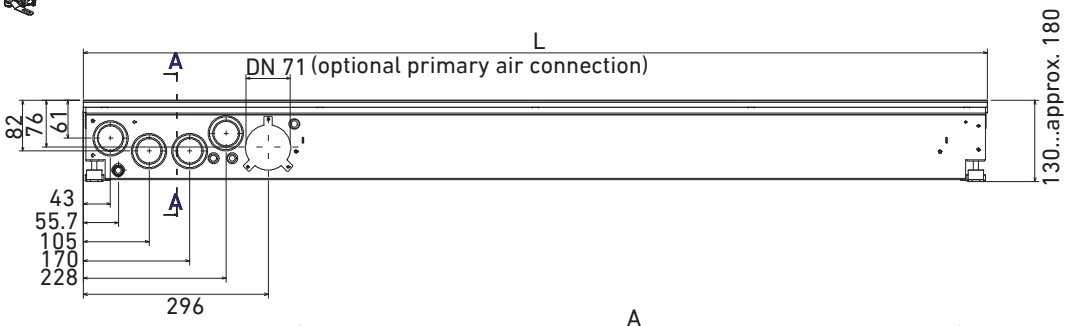
Size	Total length L [mm]	Air outlet width A [mm]	Weight [kg]	Water content Heating circuit [l]	Water content Cooling circuit [l]
630	1020	625	20	0.35	0.35
800	1250	855	23	0.40	0.40
1000	1450	1055	26	0.50	0.50

Isometrc view

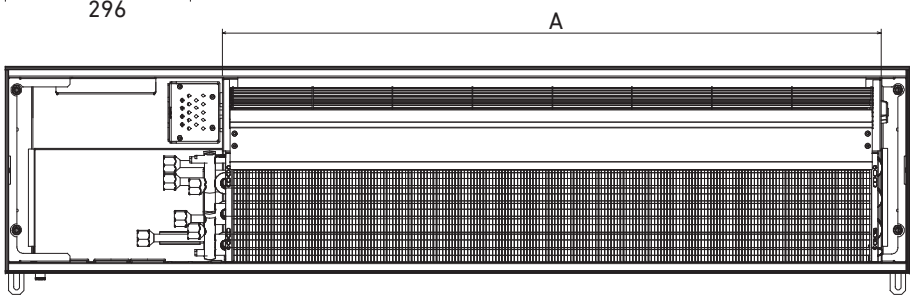




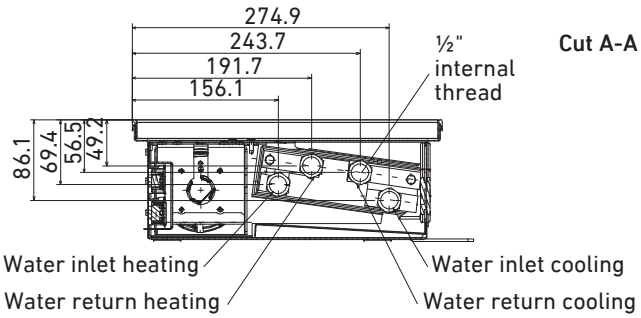
Front view



Top view

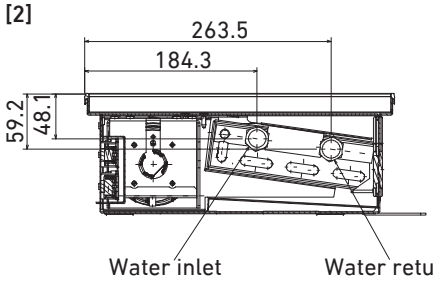


Cut A-A



4-pipe heat exchanger, condenssate tray

Cut A-A [2]



2-pipe heat exchanger, condensate tray

1 socket (DN 71) with grille	**Primary air flow rate** V_P	[m³/(h)]	40	60	80	100	The total acoustic power level may be calculated as: $L_{wA} = 10 * \log (10^{0,1*L_{wA\,P}} + 10^{0,1 * L_{wA,VKB}})$
	Sound power level $L_{wA\,P}$	[dB(A)]	<27	32	40	47	
	Pressure loss	[Pa]	<1	5	8	12	

Technical brochure • Fan coil units VKB, floor installation
Type VKB-N/4/.../T, 4-pipe, grille width 320 mm, low height, non condensing

Technical data size 630

U [V DC]	V [m³/h]	L_{A18} [dB(A)]	L_{wA} [dB(A)]	Q_k 1)/Δt [W/K]	Q_k 1) [W]	Q_h/Δt [W/K]	Q_{st} 3) [W]	w_{ok}/Δpw [kg/h]/[kPa]	w_{oh}/Δpw [kg/h]/[kPa]	P_{el} (EC) [W]
3	140	25	31	20	270	18	90	200 / 13	100 / 1.8	3
4	170	27	33	27	310	23				4
5	220	33	39	34	370	30				5
6	250	37	43	38	410	34				7
8	330	46	52	48	480	40				11

Technical data size 800

U [V DC]	V [m³/h]	L_{A18} [dB(A)]	L_{wA} [dB(A)]	Q_k 1)/Δt [W/K]	Q_k 1) [W]	Q_h/Δt [W/K]	Q_{st} 3) [W]	w_{ok}/Δpw [kg/h]/[kPa]	w_{oh}/Δpw [kg/h]/[kPa]	P_{el} (EC) [W]
3	190	25	31	27	270	24	120	200 / 15	100 / 2.2	3
4	240	27	33	37	370	31				4
5	300	33	39	45	450	39				5
6	350	37	43	52	520	45				7
8	460	46	52	64	640	52				12

Technical data size 1000

U [V DC]	V [m³/h]	L_{A18} [dB(A)]	L_{wA} [dB(A)]	Q_k 1)/Δt [W/K]	Q_k 1) [W]	Q_h/Δt [W/K]	Q_{st} 3) [W]	w_{ok}/Δpw [kg/h]/[kPa]	w_{oh}/Δpw [kg/h]/[kPa]	P_{el} (EC) [W]
3	240	25	31	33	330	29	160	200 / 17	100 / 2.5	3
4	300	27	33	45	450	37				5
5	370	33	39	55	550	46				7
6	440	37	43	65	650	53				10
8	570	46	52	78	780	62				19

Values are given for the unit without air outlet grille, without filter.

1) For 16 °C water supply temperature, 26 °C suction air temperature before entering the heat exchanger (may vary from room temperature), non condensing operation

2) For 55 °C water supply temperature, 20 °C room air temperature

U - Control voltage fan
V - Flow rate (± 10 %)
L_{A18} - Sound pressure level
L_{wA} - Sound power level ± 3 dB(A)
Q_k - Total cooling capacity
Q_h - Total heating capacity
Δt - Temp. difference between suction air temp. before entering the heat exchanger and water supply
Q_{st} - Heating capacity for natural convection
w_{ok} - Standard water flow rate (cooling) *
w_{oh} - Standard water flow rate (heating) *
$Δp_w$ - Water-side pressure loss
P_{el} - Electric power consumption (± 10 %)

* Correction for other water flow rates see pages 24/25

Technical brochure • Fan coil units VKB, floor installation
Type VKB-N/4/.../E, 4-pipe, grille width 320 mm, low height, condensing

Technical data size 630

U [V DC]	V [m³/h]	L_{A18} [dB(A)]	L_{wA} [dB(A)]	Q_k 1)/Δt [W/K]	Q_k 1) [W]	Q_k 2) [W]	$Q_{k\ sens}$ 2) [W]	Q_h/Δt [W/K]	Q_{st} 3) [W]	w_{ok}/Δpw [kg/h]/[kPa]	w_{oh}/Δpw [kg/h]/[kPa]	P_{el} (EC) [W]
3	140	25	31	17	170	470	310	16				3
4	170	30	36	23	230	590	400	22				4
5	220	33	39	29	290	720	510	27	90	200 / 13	100 / 1.8	5
6	250	38	44	33	330	800	570	31				7
8	330	46	52	41	410	940	710	38				11

Technical data size 800

U [V DC]	V [m³/h]	L_{A18} [dB(A)]	L_{wA} [dB(A)]	Q_k 1)/Δt [W/K]	Q_k 1) [W]	Q_k 2) [W]	$Q_{k\ sens}$ 2) [W]	Q_h/Δt [W/K]	Q_{st} 3) [W]	w_{ok}/Δpw [kg/h]/[kPa]	w_{oh}/Δpw [kg/h]/[kPa]	P_{el} (EC) [W]
3	190	25	31	24	240	650	440	21				3
4	240	30	36	34	340	900	600	30				4
5	300	33	39	42	420	1100	740	35	120	200 / 15	100 / 2.2	5
6	350	38	44	49	490	1210	850	40				7
8	460	46	52	63	630	1440	1260	49				12

Technical data size 1000

U [V DC]	V [m³/h]	L_{A18} [dB(A)]	L_{wA} [dB(A)]	Q_k 1)/Δt [W/K]	Q_k 1) [W]	Q_k 2) [W]	$Q_{k\ sens}$ 2) [W]	Q_h/Δt [W/K]	Q_{st} 3) [W]	w_{ok}/Δpw [kg/h]/[kPa]	w_{oh}/Δpw [kg/h]/[kPa]	P_{el} (EC) [W]
3	240	25	31	28	280	760	510	26				3
4	300	27	33	38	380	970	670	35				5
5	370	33	39	47	470	1180	830	42	160	200 / 17	100 / 2.5	7
6	440	37	43	55	550	1330	960	48				10
8	570	46	52	65	650	1510	1100	58				19

Values are given for the unit including the air outlet grille, without filter.

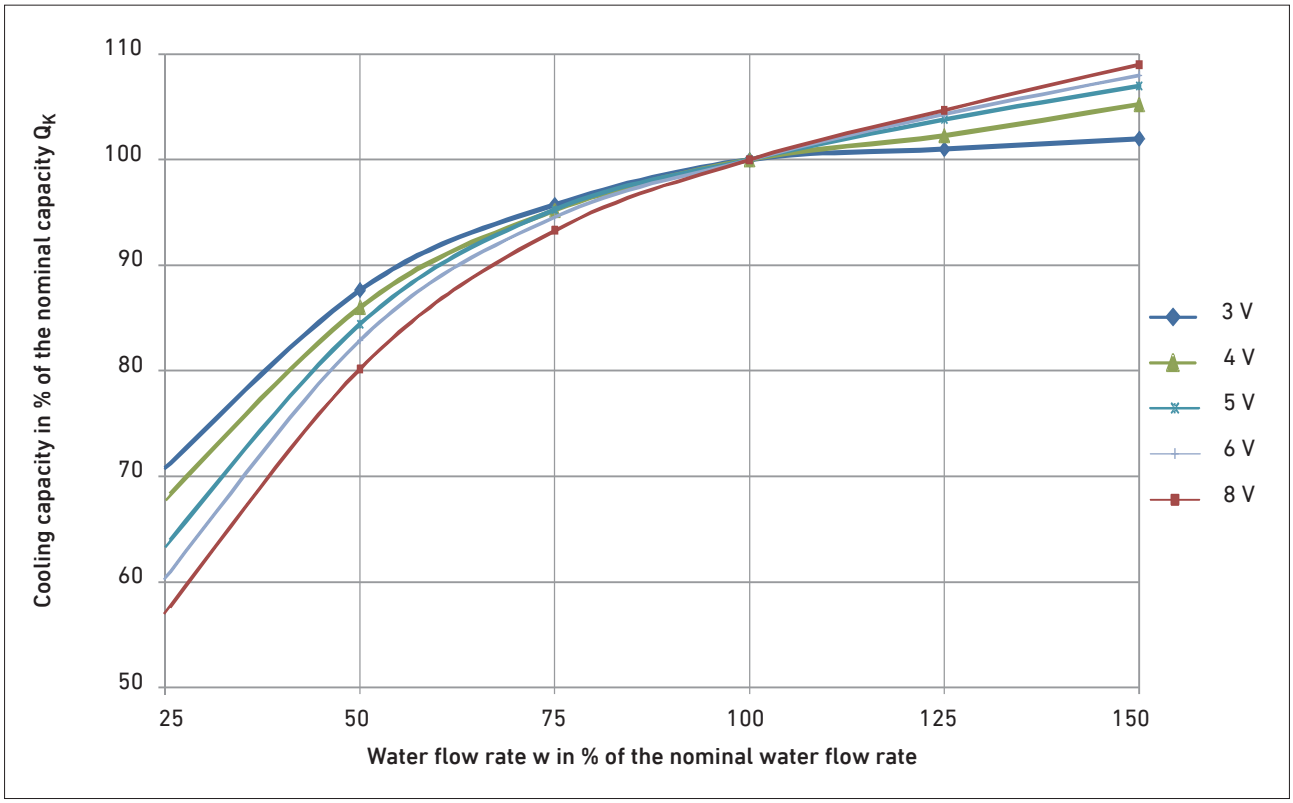
1) For 16 °C water supply temperature, 26 °C suction air temp. before entering the heat exchanger (may vary from the room air temp.), non-condensing operation
2) For 6 °C water supply temperature, 26 °C suction air temp. before entering the heat exchanger (may vary from the room air temp.), non condensing operation
3) For 55 °C water supply temperature, 20 °C suction air temp. before entering the heat exchanger (may vary from the room air temp.)

U - Control voltage fan
V - Flow rate (± 10 %)
L_{A18} - Sound pressure level
L_{wA} - Sound power level ± 3 dB(A)
Q_k - Total cooling capacity
$Q_{k\ sens}$ - Sensible cooling capacity
Q_h - Total heating capacity
Δt - Temp. difference between suction air temp. before entering the heat exchanger and water supply
Q_{st} - Heating capacity for natural convection
w_{ok} - Standard water flow rate (cooling) *
w_{oh} - Standard water flow rate (heating) *
$Δp_w$ - Water-side pressure loss
P_{el} - Electric power consumption (± 10 %)

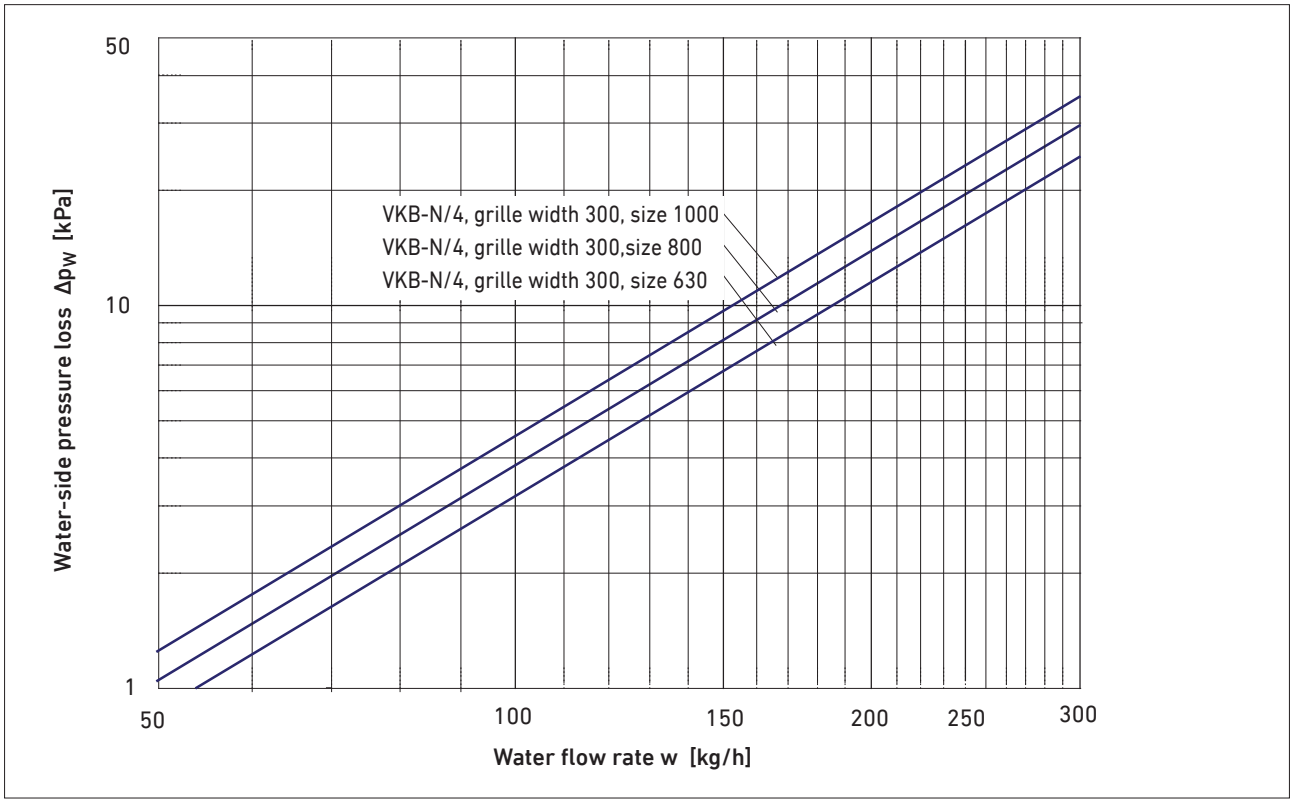
* Correction for other water flow rates see pages 18/19

Technical brochure • Fan coil units VKB, floor installation
Type VKB-N/4 (low height)

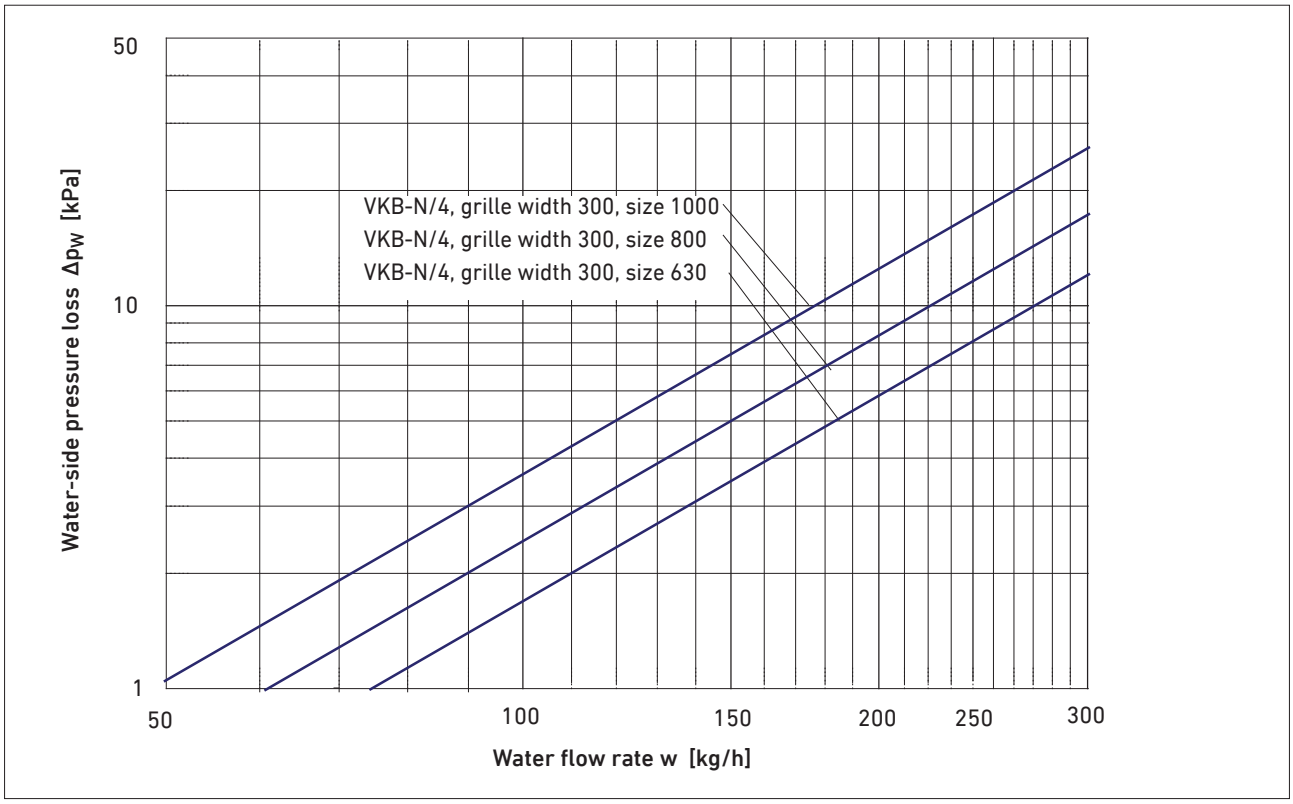
Cooling capacity for different water flow rates



Water-side pressure loss of the cooler for different water flow rates

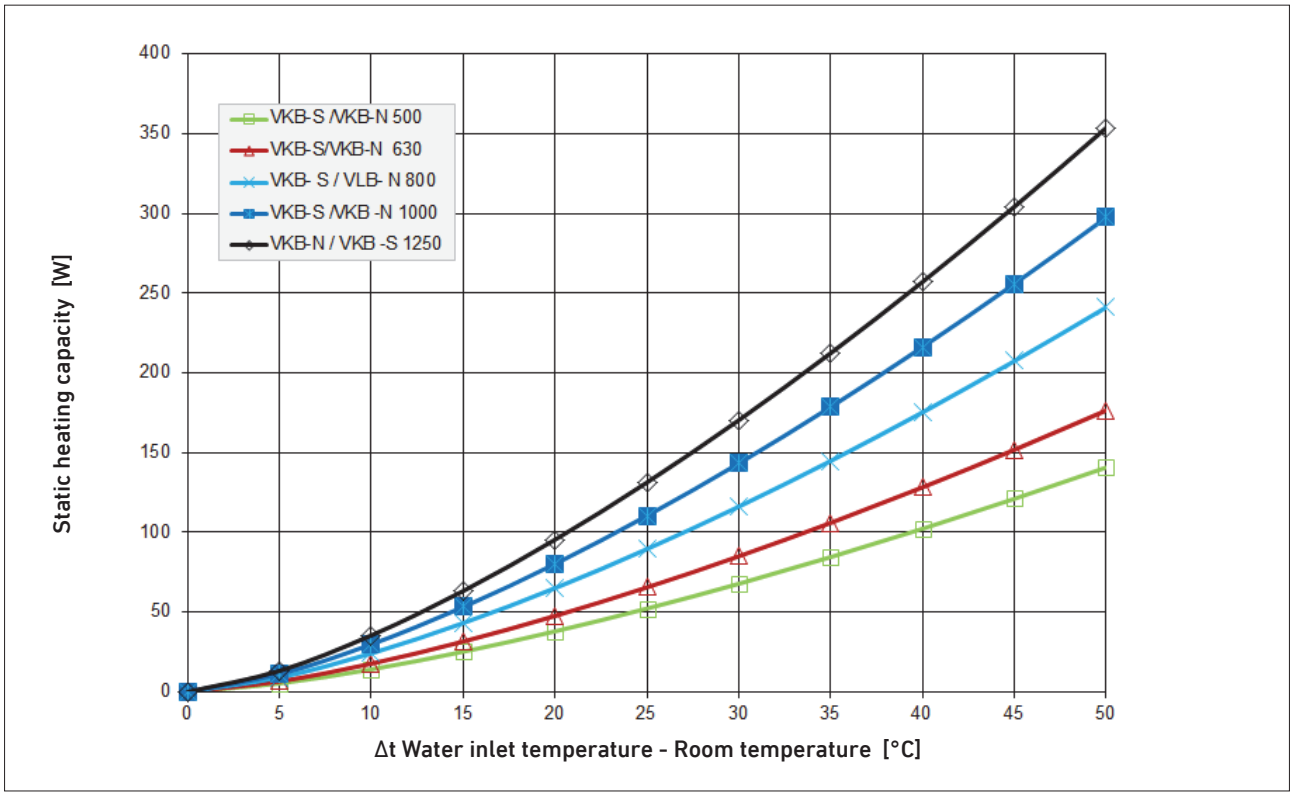


Water-side pressure loss of the heater for different water flow rates

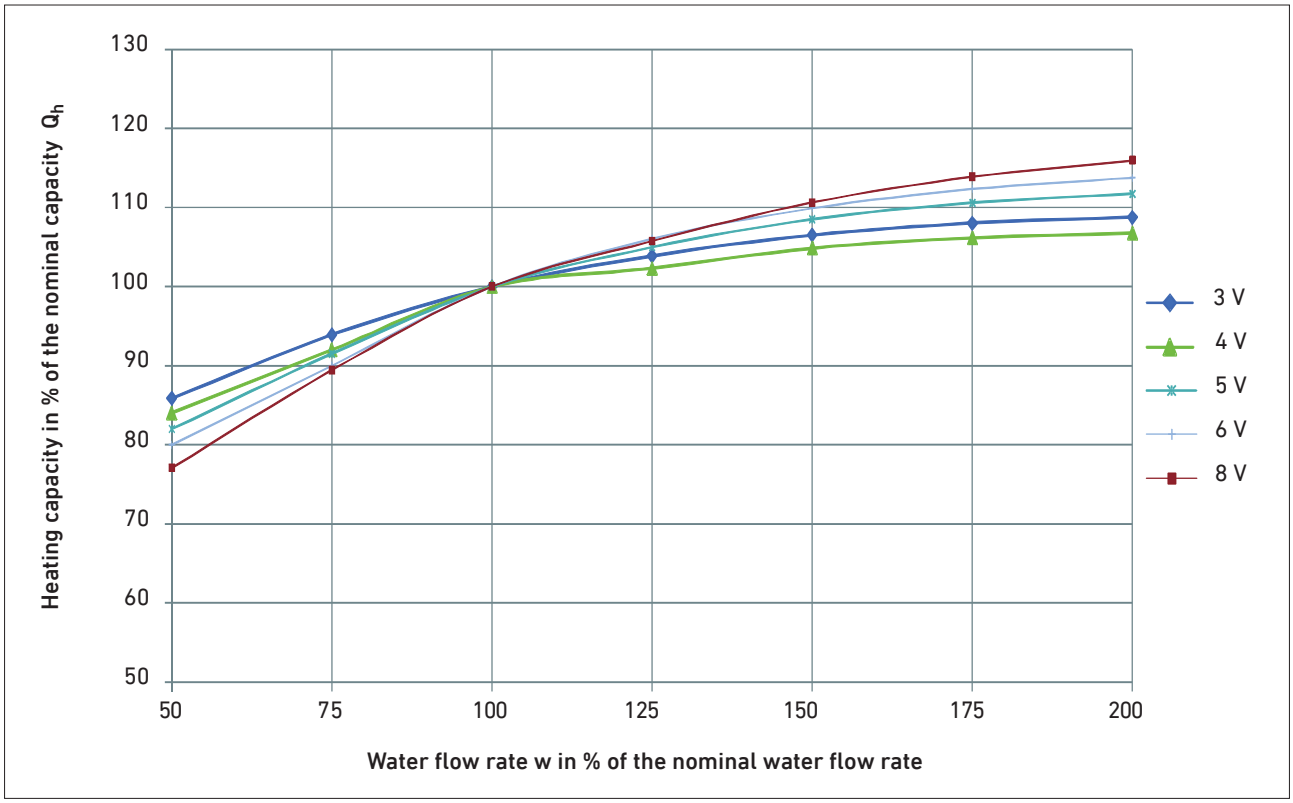


Technical brochure • Fan coil units VKB, floor installation
Type VKB-N/4 (low height)

Static heating capacity for 100 kg/h



Heating capacity for different water flow rates



Technical brochure • Fan coil units VKB, floor installation
Type VKB-N/2/.../T, 2-pipe, grille width 320 mm, low height, non condensing

Technical data size 630

U [V DC]	V [m³/h]	L_{A18} [dB(A)]	L_{wA} [dB(A)]	Q_k 1)/Δt [W/K]	Q_k 1) [W]	Q_h/Δt [W/K]	Q_{st} 3) [W]	w_{ok}/Δpw [kg/h]/[kPa]	w_{oh}/Δpw [kg/h]/[kPa]	P_{el} (EC) [W]
3	140	25	31	22	270	19	90	200 / 16	100 / 5	3
4	170	27	33	30	310	25				4
5	220	33	39	40	370	32				5
6	250	37	43	47	410	37				7
8	330	46	52	57	570	43				11

Technical data size 800

U [V DC]	V [m³/h]	L_{A18} [dB(A)]	L_{wA} [dB(A)]	Q_k 1)/Δt [W/K]	Q_k 1) [W]	Q_h/Δt [W/K]	Q_{st} 3) [W]	w_{ok}/Δpw [kg/h]/[kPa]	w_{oh}/Δpw [kg/h]/[kPa]	P_{el} (EC) [W]
3	190	25	31	30	300	26	120	200 / 19	100 / 6	3
4	240	27	33	42	420	35				4
5	300	33	39	53	530	43				5
6	350	37	43	63	630	50				7
8	460	46	52	75	750	57				12

Technical data size 1000

U [V DC]	V [m³/h]	L_{A18} [dB(A)]	L_{wA} [dB(A)]	Q_k 1)/Δt [W/K]	Q_k 1) [W]	Q_h/Δt [W/K]	Q_{st} 3) [W]	w_{ok}/Δpw [kg/h]/[kPa]	w_{oh}/Δpw [kg/h]/[kPa]	P_{el} (EC) [W]
3	240	27	33	38	380	29	160	200 / 21	100 / 6	3
4	300	27	33	51	510	39				4
5	370	33	39	64	640	47				5
6	440	37	43	77	770	55				7
8	570	46	52	90	900	59				19

Values are given for the unit without air outlet grille, without filter.

1) For 16 °C water supply temperature, 26 °C suction air temperature before entering the heat exchanger (may vary from room temperature), non condensing operation.

2) For 55 °C water supply temperature, 20 °C suction air temperature before entering the heat exchanger (may vary from room temperature),

U - Control voltage fan
V - Flow rate (± 10 %)
L_{A18} - Sound pressure level
L_{wA} - Sound power level ± 3 dB(A)
Q_k - Total cooling capacity
Q_h - Total heating capacity
Δt - Temp. difference between suction air temp. before entering the heat exchanger and water supply
Q_{st} - Heating capacity for natural convection
w_{ok} - Standard water flow rate (cooling) *
w_{oh} - Standard water flow rate (heating) *
$Δp_w$ - Water-side pressure loss
P_{el} - Electric power consumption (± 10 %)

* Correction for other water flow rates see pages 29/30

Technical brochure • Fan coil units VKB, floor installation
Type VKB-N/2/.../E, 2-pipe, grille width 320 mm, low height, condensing

Technical data size 630

U [V DC]	V [m³/h]	L_{A18} [dB(A)]	L_{wA} [dB(A)]	Q_k 1)/Δt [W/K]	Q_k 1) [W]	Q_k 2) [W]	$Q_{k\ sens}$ 2) [W]	Q_h/Δt [W/K]	Q_{st} 3) [W]	w_{ok}/Δpw [kg/h]/[kPa]	w_{oh}/Δpw [kg/h]/[kPa]	P_{el} (EC) [W]
3	140	25	31	20	200	530	360	15				3
4	170	27	33	28	280	720	490	20				4
5	220	33	39	37	370	920	660	25	90	200 / 16	100 / 5	5
6	250	37	43	43	430	1040	750	27				7
8	330	46	52	56	560	1280	970	32				11

Technical data size 800

U [V DC]	V [m³/h]	L_{A18} [dB(A)]	L_{wA} [dB(A)]	Q_k 1)/Δt [W/K]	Q_k 1) [W]	Q_k 2) [W]	$Q_{k\ sens}$ 2) [W]	Q_h/Δt [W/K]	Q_{st} 3) [W]	w_{ok}/Δpw [kg/h]/[kPa]	w_{oh}/Δpw [kg/h]/[kPa]	P_{el} (EC) [W]
3	190	25	31	27	270	730	490	19				3
4	240	27	33	38	380	980	670	25				4
5	300	33	39	49	490	1210	860	28	120	200 / 15	100 / 6	5
6	350	37	43	59	590	1420	1020	31				7
8	460	46	52	73	730	1680	1240	35				12

Technical data size 1000

U [V DC]	V [m³/h]	L_{A18} [dB(A)]	L_{wA} [dB(A)]	Q_k 1)/Δt [W/K]	Q_k 1) [W]	Q_k 2) [W]	$Q_{k\ sens}$ 2) [W]	Q_h/Δt [W/K]	Q_{st} 3) [W]	w_{ok}/Δpw [kg/h]/[kPa]	w_{oh}/Δpw [kg/h]/[kPa]	P_{el} (EC) [W]
4	240	25	31	34	340	780	600	23				3
4	300	27	33	47	470	1200	830	30				5
5	370	33	39	60	600	1460	1050	35	160	200 / 17	100 / 7	7
6	440	37	43	71	710	1700	1240	38				10
8	570	46	52	65	650	1510	1100	58				19

Values are given for the unit including the air outlet grille.

1) For 16 °C water supply temperature
26 °C suction air temp. before entering the heat exchanger (may vary from the room air temp.)
non-condensing operation

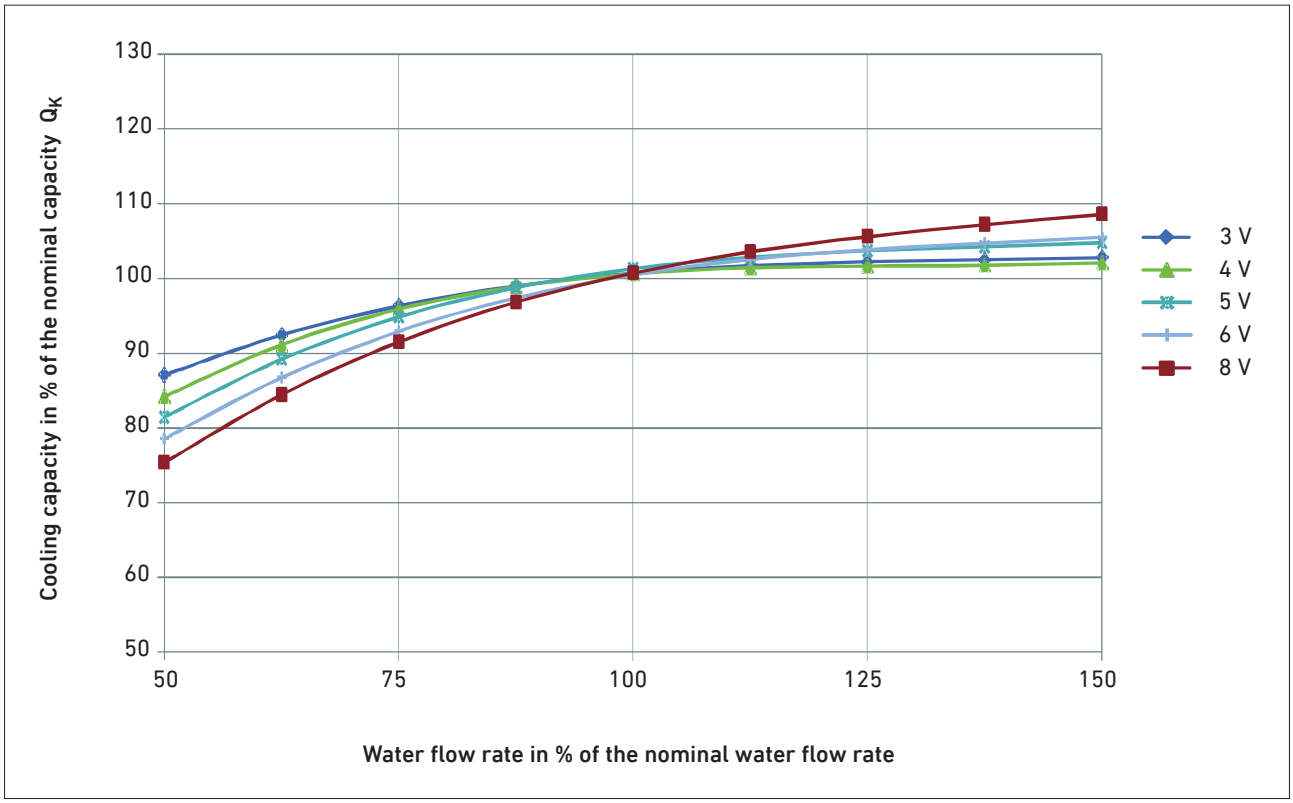
2) For 6 °C water supply temperature
26 °C suction air temp. before entering the heat exchanger (may vary from the room air temp.)
condensing operation

3) For 55 °C water supply temperature
20 °C room air temperature

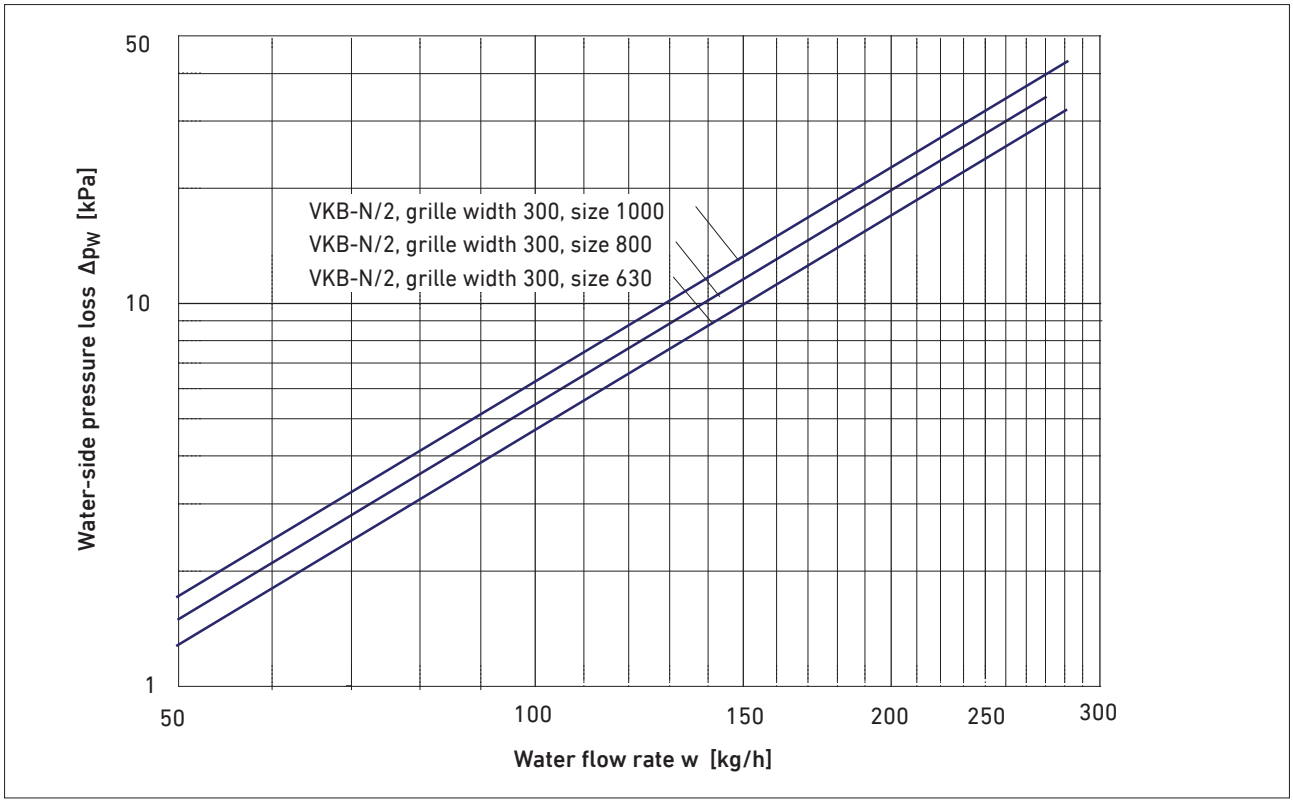
U - Control voltage fan
V - Flow rate (± 10 %)
L_{A18} - Sound pressure level
L_{wA} - Sound power level ± 3 dB(A)
Q_k - Total cooling capacity
$Q_{k\ sens}$ - Sensible cooling capacity
Q_h - Total heating capacity
Δt - Temp. difference between suction air temp. before entering the heat exchanger and water supply
Q_{st} - Heating capacity for natural convection
w_{ok} - Standard water flow rate (cooling) *
w_{oh} - Standard water flow rate (heating) *
$Δp_w$ - Water-side pressure loss
P_{el} - Electric power consumption (± 10 %)

* Correction for other water flow rates see pages 29/30

Cooling capacity for different water flow rates

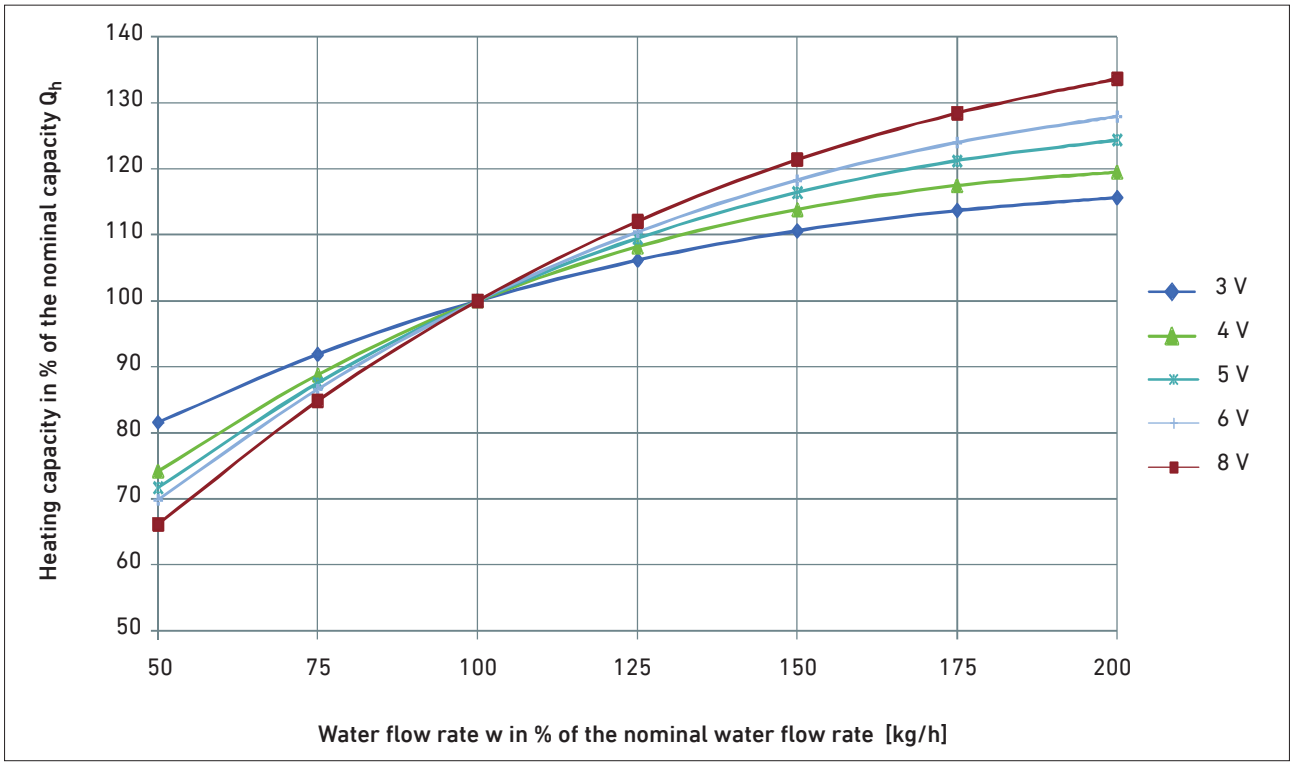


Water-side pressure loss of the cooler for different water flow rates



Technical brochure • Fan coil units VKB, floor installation
Type VKB-N/2 (low height)

Heating capacity for different water flow rates



Technical brochure • Fan coil units VKB, floor installation Type VKB-0 and VKB-N

Wiring

The installation of electrical equipment must be performed in accordance with the specifications of VDE0100-100:2009-06.

Electrical installations must be installed professionally by suitable qualified personnel and using suitable materials in accordance with the current state of the art.

The specifications of the respective manufacturer must be observed and implemented for accessory components (e.g. room control units, valve actuators, etc.) that are connected and operated with LTG units.

Speed control wiring diagram for EC motor

Two connections are necessary for electrically connecting the fan coil unit. These are provided by plug connections, protection IP 21. The plugs are pre-assembled on the motor side at the factory. Only the supplied mating plugs have to be assembled by others accordingly.

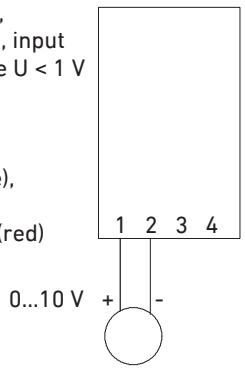
Note: As a rule, we are not familiar with the full scope of the ventilation, air-conditioning and control engineering systems. For this reason, the designs, drawings and circuit diagrams only show the systems that are relevant to the basic functions. Other units or components, such as those required for overall control engineering and/or design in compliance with VDE regulations, are not shown and are not explicitly mentioned.

Please also note the assembly and installation instructions in the original documentation.

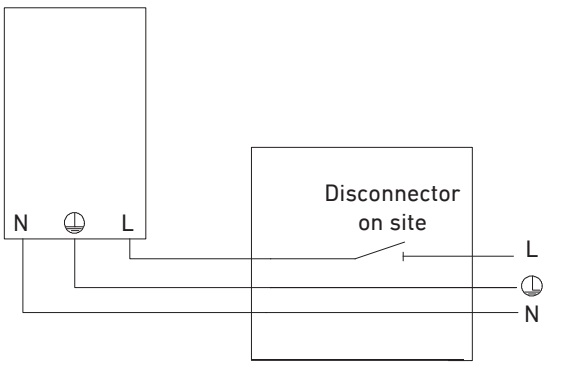
The controllers for this application are parametrised on site.

Speed control 0...10 V DC, 4-pin plug

1 = 0...10 V DC (yellow), speed specification, input with control voltage U < 1 V is speed n = 0
2 = GND, 0 V DC (blue), input
3 = Tacho signal (white), output (optional)
4 = 10 V steady signal (red) output (optional)



230 V AC mains voltage supply, 3-pin plug



N, L operating voltage 230 V AC

Technical brochure • Fan coil units VKB, floor installation
Type VKB-S/4, 4-pipe system, grille width 200 mm

Specification

Fan coil unit with one heat exchanger and two separate circuits for heating and cooling the room air.

Installation in access floors with a recommended clearance of 200...250 mm.

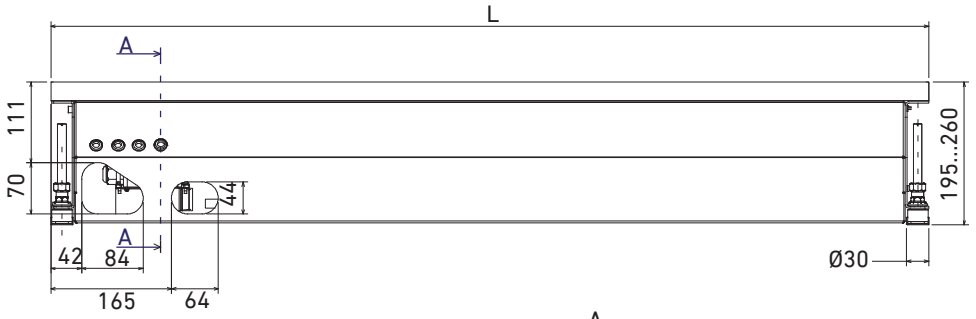
Precise adjustment of the units is realised via vibration-isolated, height-adjustable feet, retractable.

Water-side control by valves (accessories separate).

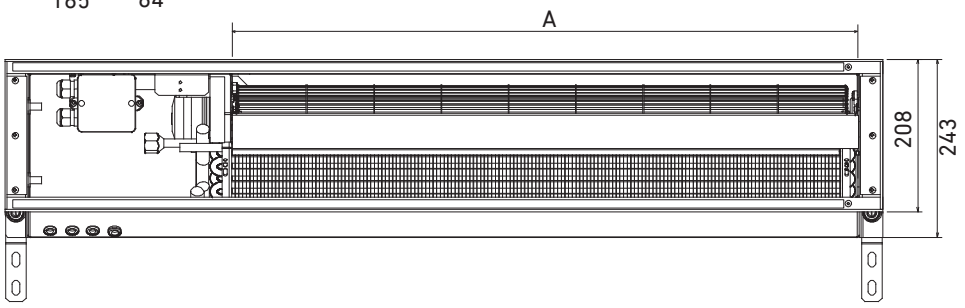
Dimensions, weights

Size	Total length L	Air outlet width A	Minimal height H_{min}	Total width B	Weight	Water content	
	[mm]				[kg]	Heating circuit [l]	Cooling circuit [l]
500	898	526	with stainless steel linear grille: 195 | 205 with aluminium roller grille (on request): 201 | 208 with aluminium linear grille: 201 | 208		19	0.25	0.25
630	988	626			21	0.35	0.35
800	1198	856			25	0.40	0.40
1000	1398	1056			31	0.50	0.50
1250	1598	1256			36	0.60	0.60

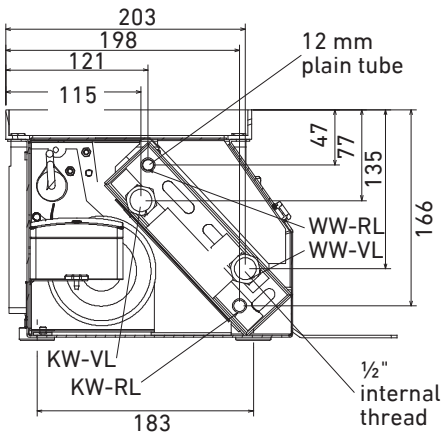
Front view



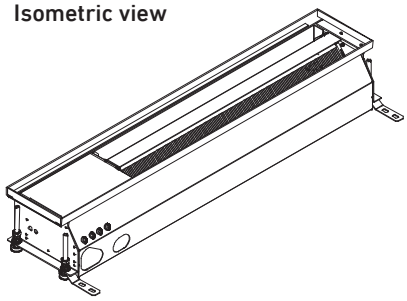
Top view



Cut A-A



Isometric view



KW-VL = water inlet cooling
KW-RL = water return cooling
WW-RL = water return heating
WW-VL = water inlet heating

Technical brochure • Fan coil units VKB, floor installation
Type VKB-S/4, 4-pipe, grille width 200 mm, primary air connection on the left DN 80

Specification

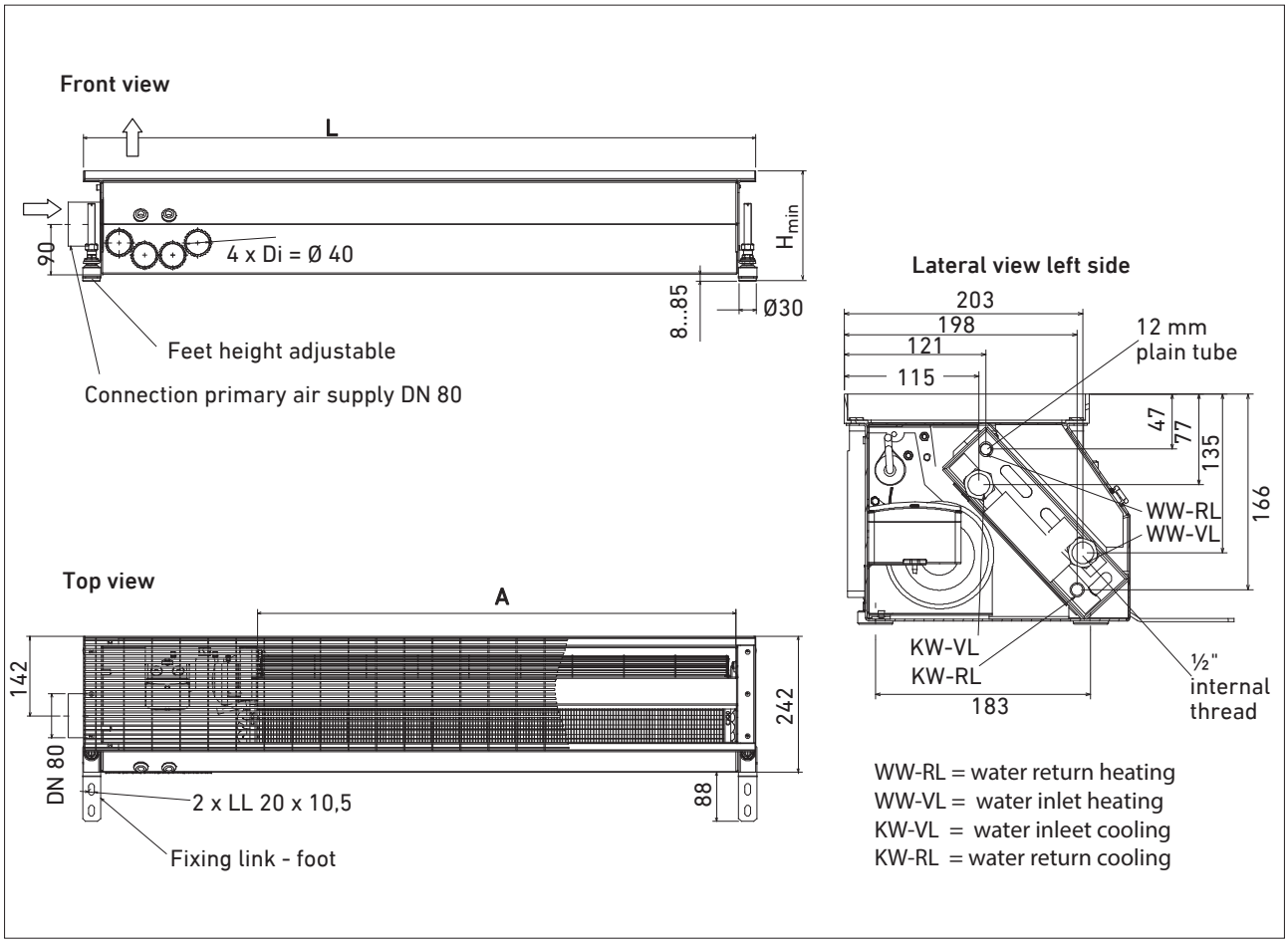
Fan coil unit with one heat exchanger and two separate circuits for heating and cooling the room air.

Additional socket for primary air supply DN 80, air discharge via perforated plate.

Installation in access floors with a recommended clearance of 200...250 mm. Precise adjustment of the units is realised via vibration-isolated, height-adjustable feet - retractable up to H_{min}.
Water-side control by valves (accessories separate).

Dimensions, weights

Size	L [mm]	A [mm]	H_{min} [mm]	B [mm]	Weight [kg]	Water content Heating circuit [l]	Water content Cooling circuit [l]
500	898	526	with stainless steel linear grille: 195 | 205 with aluminium roller grille (on request): 201 | 208 with aluminium linear grille: 201 | 208		19	0.25	0.25
630	988	626			21	0.35	0.35
800	1198	856			25	0.40	0.40
1000	1398	1056			31	0.50	0.50
1250	1598	1256			36	0.60	0.60



Acoustic power level for separate primary air connection socket (to be added to the unit's power level).

The **total acoustic power level** may be calculated as follows:

$L_{wA} = 10 * \log (10^{0,1*L_{wA\,P}} + 10^{0,1 * L_{wA,VKB}})$

Primary air flow rate	V_P	[m³/(hm)]	50	60	80	100
Acoustic power level	$L_{wA\,P}$	[dB(A)]	27	28	29	31
Pressure loss		[Pa]	2	4	5	8

Technical brochure • Fan coil units VKB, floor installation
Type VKB-S/4, 4-pipe system, grille width 200 mm

Technical data size 500

n (not EC)	U	V	L_{A18}	L_{wA}	Q_k 1)/Δt	Q_k 1)	Q_h/Δt	Q_{st} 3)	w_{ok}/Δpw	w_{oh}/Δpw	P_{el}	P_{el} (EC)
[-]	[V]	[m³/h]	[dB(A)]	[dB(A)]	[W/K]	[W]	[W/K]	[W]	[kg/h]/[kPa]		[W]	[W]
I	3	180	25	32	38	380	31				15	3
II	4	250	32	38	46	460	36				17	4
III	5	300	36	42	52	520	42	90	200 / 8	100 / 2.5	20	5
IV	6	340	41	47	57	570	46				22	7
V	8	400	47	53	62	620	50				27	12

Technical data size 630

n (not EC)	U	V	L_{A18}	L_{wA}	Q_k 1)/Δt	Q_k 1)	Q_h/Δt	Q_{st} 3)	w_{ok}/Δpw	w_{oh}/Δpw	P_{el}	P_{el} (EC)
[-]	[V]	[m³/h]	[dB(A)]	[dB(A)]	[W/K]	[W]	[W/K]	[W]	[kg/h]/[kPa]		[W]	[W]
I	3	230	26	32	46	460	38				15	3
II	4	300	32	38	57	570	45				17	4
III	5	370	36	42	64	640	51	100	200 / 10	100 / 3.5	20	5
IV	6	420	41	47	69	690	55				22	7
V	8	490	47	53	75	750	60				27	13

Technical data size 800

n (not EC)	U	V	L_{A18}	L_{wA}	Q_k 1)/Δt	Q_k 1)	Q_h/Δt	Q_{st} 3)	w_{ok}/Δpw	w_{oh}/Δpw	P_{el}	P_{el} (EC)
[-]	[V]	[m³/h]	[dB(A)]	[dB(A)]	[W/K]	[W]	[W/K]	[W]	[kg/h]/[kPa]		[W]	[W]
I	3	280	25	31	54	540	45				15	3
II	4	390	31	37	64	640	51				17	4
III	5	470	34	42	72	720	56	140	200 / 12	100 / 4	20	5
IV	6	520	40	46	77	770	61				22	7
V	8	600	46	52	84	840	64				27	14

Technical data size 1000

n (not EC)	U	V	L_{A18}	L_{wA}	Q_k 1)/Δt	Q_k 1)	Q_h/Δt	Q_{st} 3)	w_{ok}/Δpw	w_{oh}/Δpw	P_{el}	P_{el} (EC)
[-]	[V]	[m³/h]	[dB(A)]	[dB(A)]	[W/K]	[W]	[W/K]	[W]	[kg/h]/[kPa]		[W]	[W]
I	3	300	25	31	60	600	44				15	3
II	4	410	32	38	70	700	56				17	4
III	5	510	36	42	79	790	63	171	200 / 15	100 / 5	19	5
IV	6	570	41	47	84	840	67				22	7
V	8	660	47	53	92	920	74				27	14

Technical data size 1250

n (not EC)	U	V	L_{A18}	L_{wA}	Q_k 1)/Δt	Q_k 1)	Q_h/Δt	Q_{st} 3)	w_{ok}/Δpw	w_{oh}/Δpw	P_{el}	P_{el} (EC)
[-]	[V]	[m³/h]	[dB(A)]	[dB(A)]	[W/K]	[W]	[W/K]	[W]	[kg/h]/[kPa]		[W]	[W]
I	3	330	25	31	66	660	54				15	3
II	4	450	32	38	77	770	61				17	4
III	5	560	36	42	86	860	69	204	200 / 17	100 / 6.5	19	5
IV	6	620	41	47	92	920	73				22	8
V	8	720	47	53	101	1010	81				27	14

Values are given for the unit with air outlet grille, without filter.

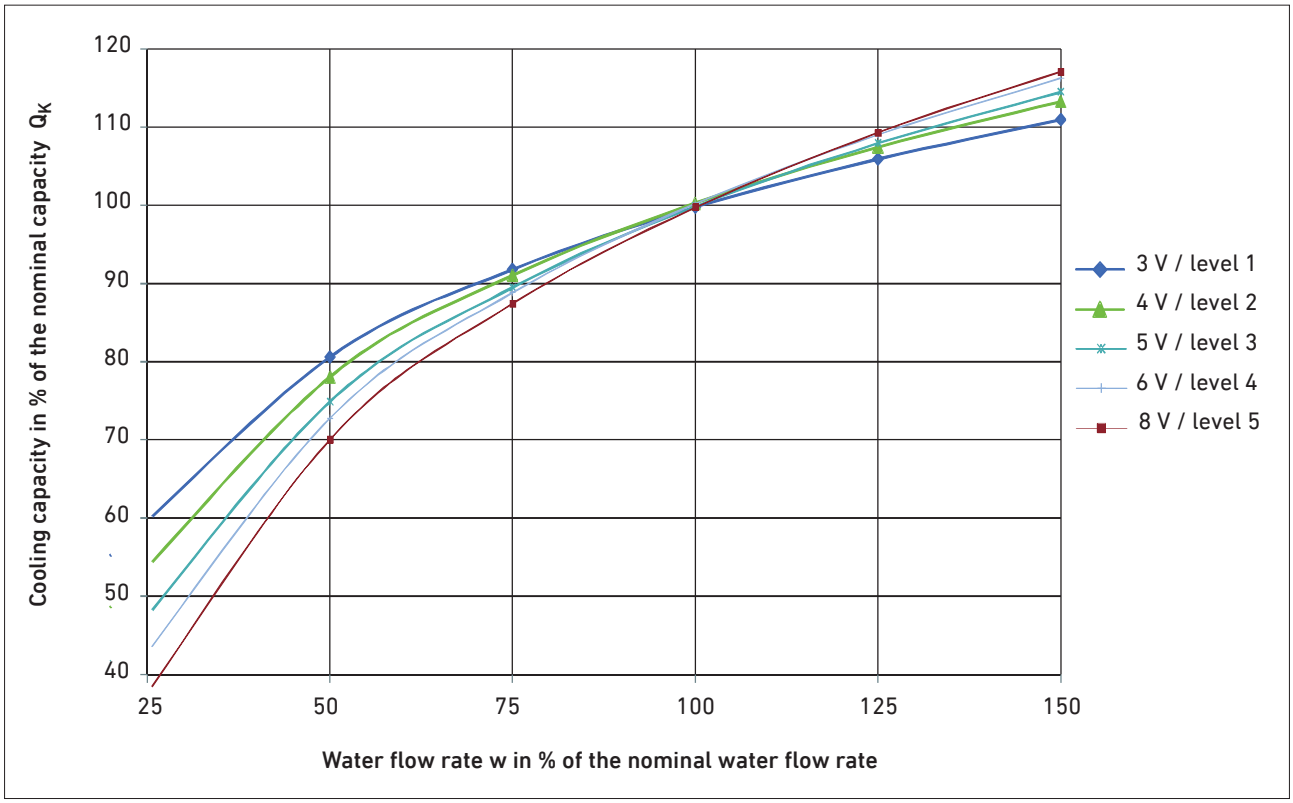
1) For 16 °C water supply temp., 26 °C suction air temperature before entering the heat exchanger (may vary from room temperature), non condensing operation.

2) For 55 °C water supply temperature, 20 °C suction air temperature

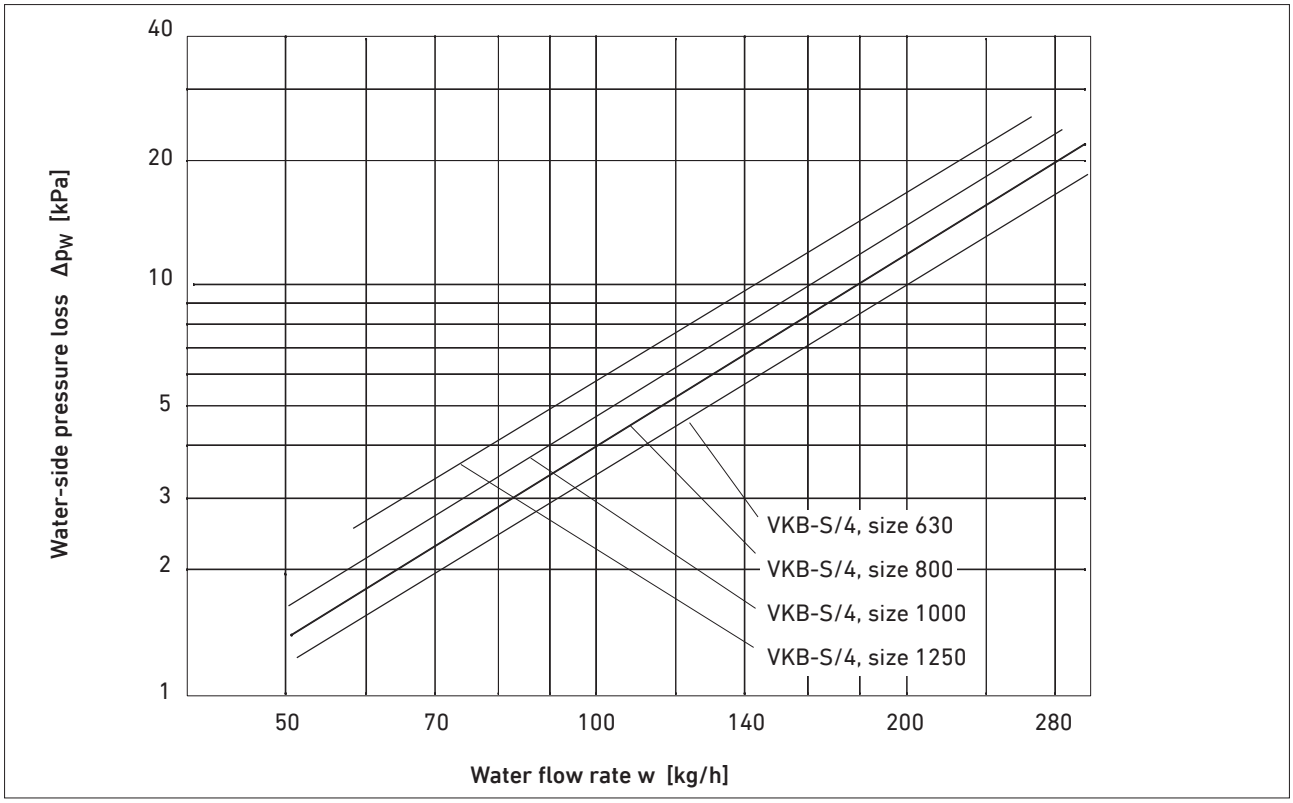
Correction for other water flow rates see pages 35/36. Legend see page 27.

Technical brochure • Fan coil units VKB, floor installation
Type VKB-S/4, 4-pipe system, grille width 200 mm

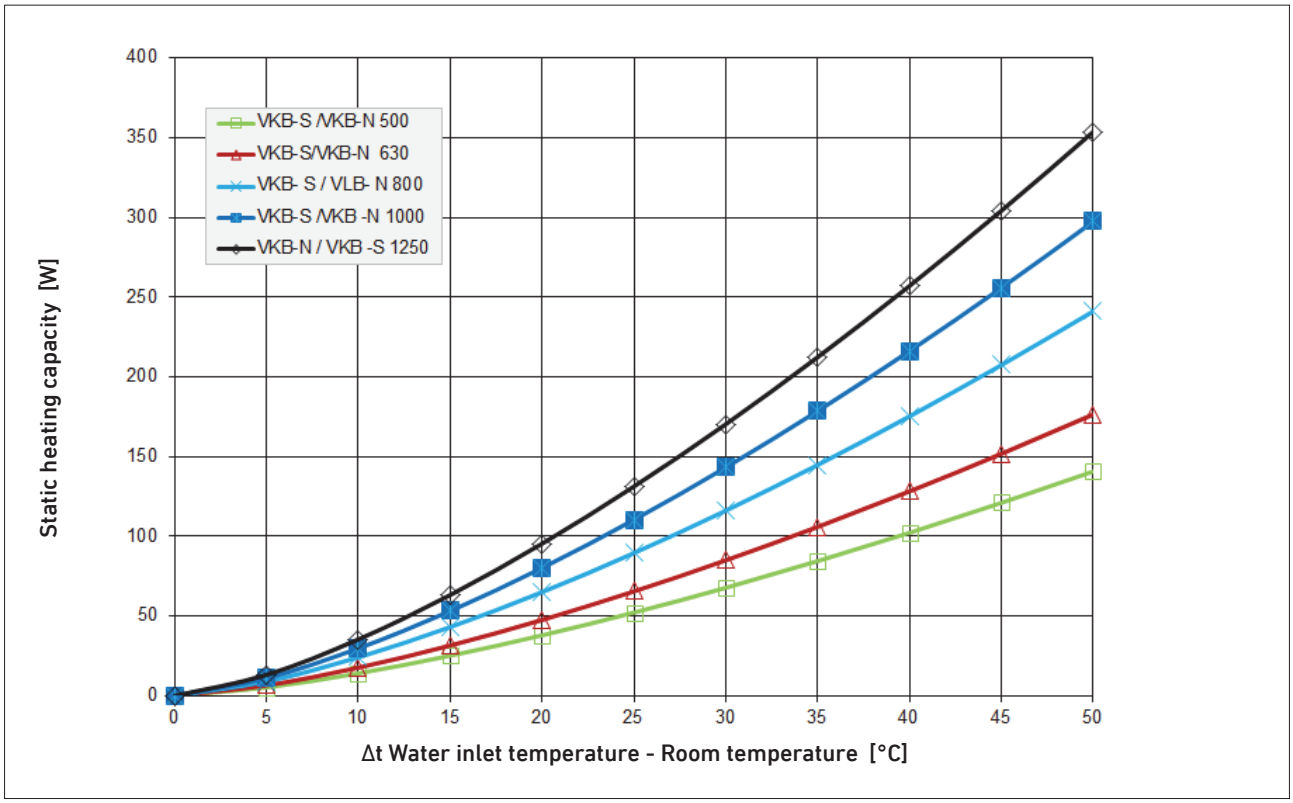
Cooling capacity for different water flow rates



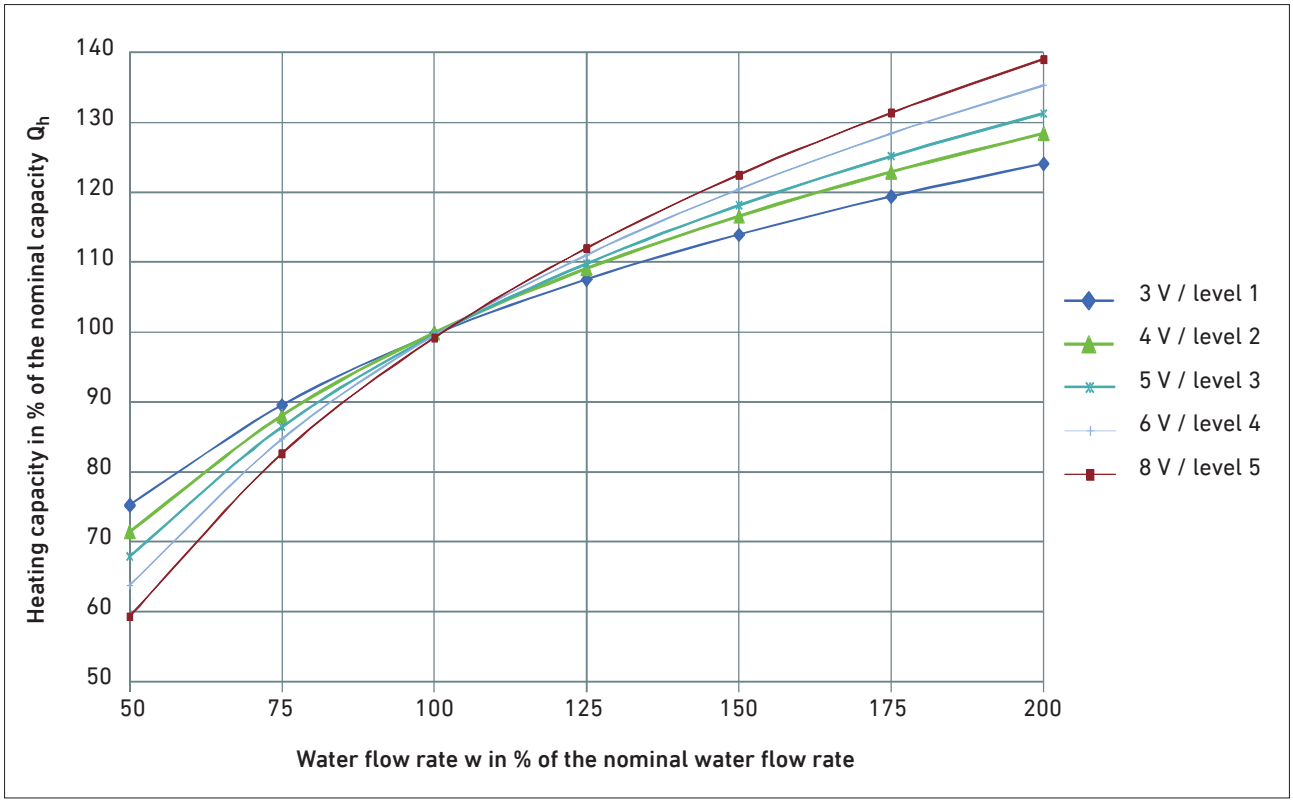
Water-side pressure loss of the cooler for different water flow rates



Static heating capacity for 100 kg/h



Heating capacity for different water flow rates



Wiring

The installation of electrical equipment must be performed in accordance with the specifications of VDE0100-100:2009-06.

Electrical installations must be installed professionally by suitable qualified personnel and using suitable materials in accordance with the current state of the art.

The specifications of the respective manufacturer must be observed and implemented for accessory components (e.g. room control units, valve actuators, etc.) that are connected and operated with LTG units.

Speed control wiring diagram for EC motor

Two connections are necessary for electrically connecting the fan coil unit. These are provided by plug connections, protection IP 21. The plugs are pre-assembled on the motor side at the factory. Only the supplied mating plugs have to be assembled by others accordingly.

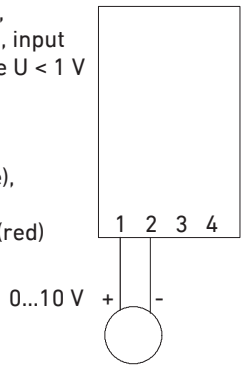
Note: As a rule, we are not familiar with the full scope of the ventilation, air-conditioning and control engineering systems. For this reason, the designs, drawings and circuit diagrams only show the systems that are relevant to the basic functions. Other units or components, such as those required for overall control engineering and/or design in compliance with VDE regulations, are not shown and are not explicitly mentioned.

Please also note the assembly and installation instructions in the original documentation.

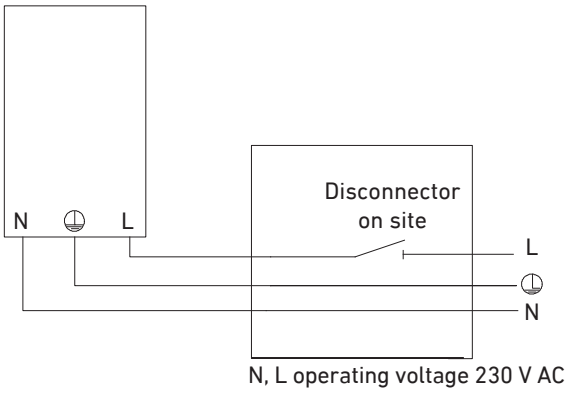
The controllers for this application are parametrised by others.

Speed control 0...10 V DC, 4-pin plug

1 = 0...10 V DC (yellow), speed specification, input with control voltage U < 1 V is speed n = 0
2 = GND, 0 V DC (blue), input
3 = Tacho signal (white), output (optional)
4 = 10 V steady signal (red) output (optional)



230 V AC mains voltage supply, 3-pin plug

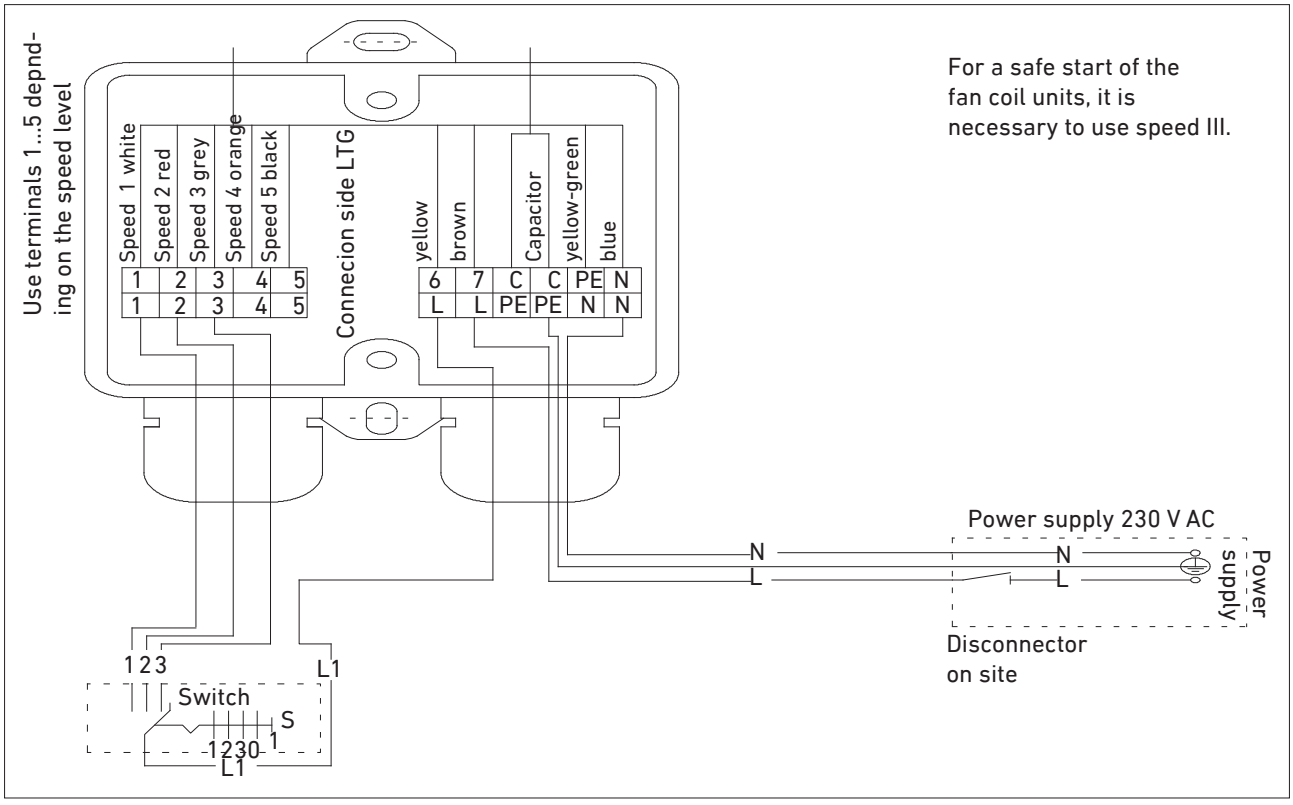


N, L operating voltage 230 V AC

Speed control wiring diagram for 5-speed AC motor

Note:

- Capacitor motor with 5 tappings
- Multiple unit triggering via on-site relays possible
- The technical data contain details about the current consumption and the corresponding electrical power



Nomenclature, ordering code

VKB-0 / 2 / 630, 1020 / T / EC / OL / MQ / OF / AL / 4R / NE

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12)

(1)	**Series**	**VKB**	=	VKB
(2)	**Type**	**0**	=	Standard
		N	=	Low height
		S	=	Slim
(3)	**Heat exchanger**	**2**	=	2-pipe system
		4	=	4-pipe system
(4)	**Size, length**	**500, 898**	=	500, 898 (Type VKB-S)
		630, 1020	=	630, 1020 (Type VKB-0 und VKB-N)
		630, 988	=	630, 988 (Type VKB-S)
		800, 1200	=	800, 1200 (Type VKB-0)
		800, 1250	=	800, 1250 (Type VKB-0 und VKB-N)
		800, 1198	=	800, 1198 (Type VKB-S)
		1000, 1450	=	1000, 1450 (Type VKB-0 und VKB-N)
		1000, 1398	=	1000, 1398 (Type VKB-S)
		1250, 1598	=	1250, 1598 (Type VKB-S)
		2000, 2450	=	2000, 2450 (Type VKB-0 und VKB-N)
(5)	**Condensate tray**	**T**	=	Without additional condensate tray (non condensing)
		E	=	With additional condensate tray (condensing, type VKB-0 and VKB-N only)
(6)	**Fan motor**	**EC**	=	EC motor continuous (0...10 V DC)
		AC5	=	AC motor 5-speed (type VKB-S only)
(7)	**Primary air connection**	**OL**	=	Without primary air supply
		FQ	=	Integrated displacement air diffuser, separated from recirculating air
		FL	=	Inductive linear diffuser, grille width 345 mm (type VKB-0 only)
(8)	**Mixed/displacement air insert**	**MQ**	=	With mixed/displacement air insert (type VKB-0 and VKB-S)
		–	=	Without mixed/displacement air insert
(9)	**Filter**	**OF**	=	Without Filter
		MF	=	With Filter
(10)	**Grille**	**AL**	=	Aluminium linear grille
		AR	=	Aluminium roller grille (on request)
		E	=	Stainless steel linear grille
		H	=	Wood roller grille
(11)	**Frame**	**2R**	=	Frame lengthwise (prepared for installation in line)
		4R	=	Frame all around
(12)	**Surface grille/frame**	**NE**	=	Natural anodised (E6-EV1)
		PB	=	Powder coated
		SE	=	Special anodised

Operation with Connected Intelligence (CI)

Function

The CI board, which is optionally installed in each fan coil unit or decentralised ventilation unit FVP*pulse*, takes care of room temperature and air quality control. It only requires information about the desired operating mode (see "Ventilation concepts") and the setpoint and actual values in the control zone as an input variable. The CI board independently controls the fan, cycle time, heating and cooling valves at the decentralised unit level.

It communicates via Modbus RTU with other bus nodes or superordinate instances, depending on the concept implemented for the building management system (BMS).

The unit, CI board, and valves form a single unit and are completely wired together at the factory.

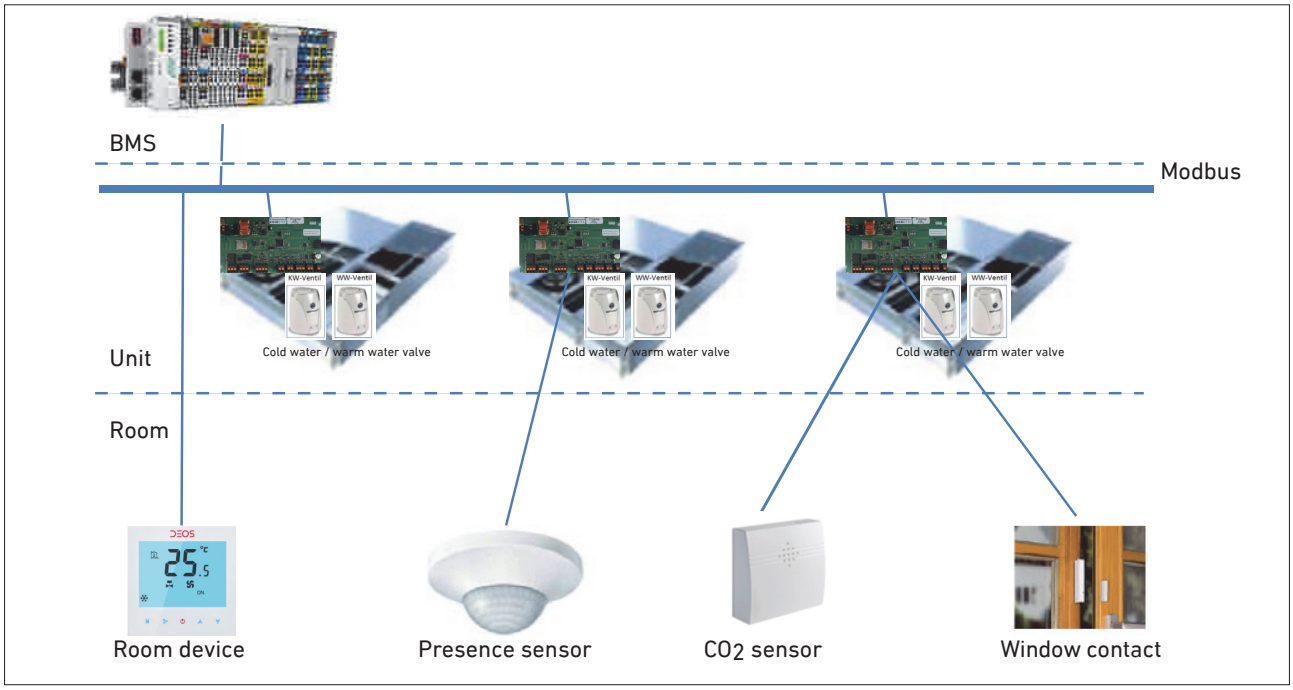
The following shows the different options for integration into a BMS concept for CI.
See the Connected Intelligence technical leaflet for more detailed information

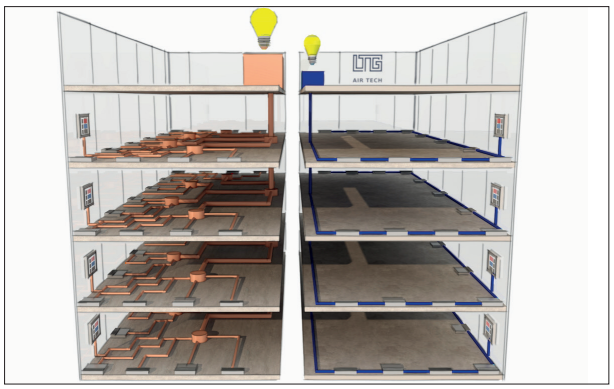
With superordinate BMS, with Modbus RTU

The VKB units generally communicate with a superordinate BMS. This assigns zones to units, reads room control units, and distributes the information to the slaves. They automatically regulate room temperature and, if necessary, air quality. Up to 120 LTG units (FVP*pulse* decentralised ventilation units, fan coil units, or induction units) can be networked in a Modbus network.

Beyond this, a wide variety of sensors can be connected to the inputs of each CI board and made available for the control zone:

- Temperature sensor (Ni1000) for recording room, outdoor, changeover, or supply air temperature,
- Normally closed or normally open contact for changeover, presence, condensate, window
- CO_2 or VOC sensor (0...10 V DC signal; 24 V DC sensor supply available on board; 230/24 V transformer optionally available for a surcharge)





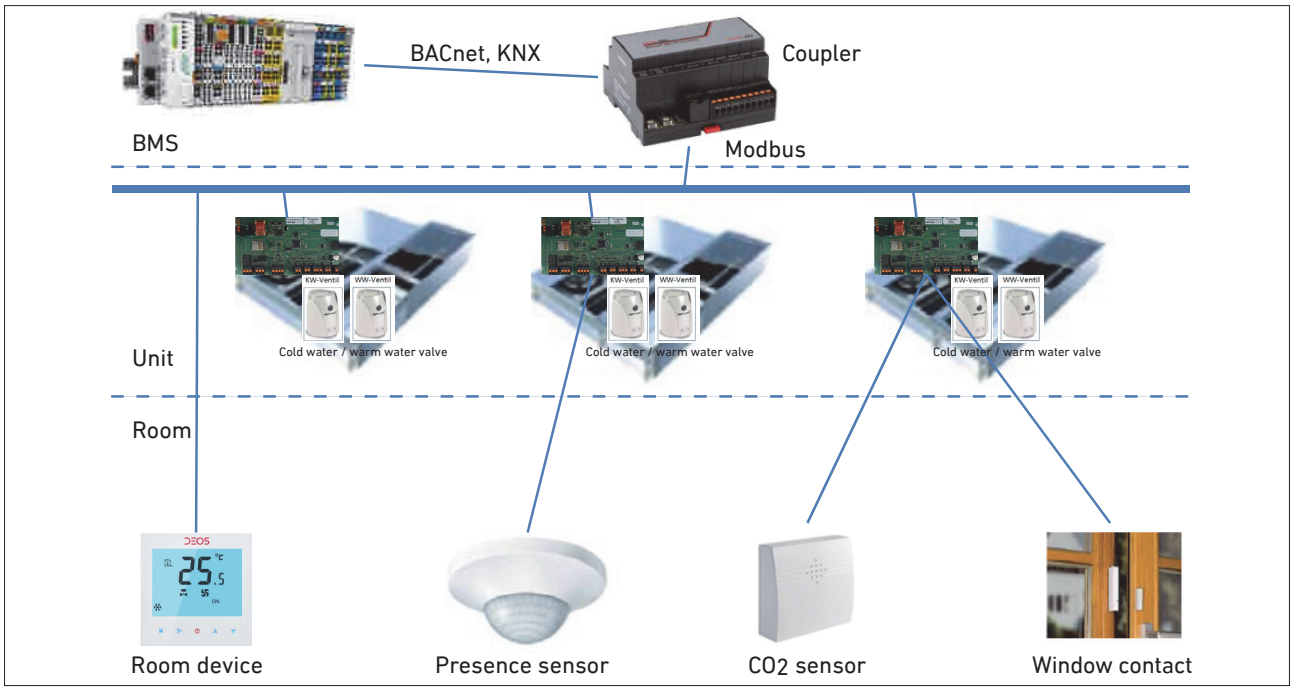
Operation with Connected Intelligence - With superordinate BMS, with other bus system

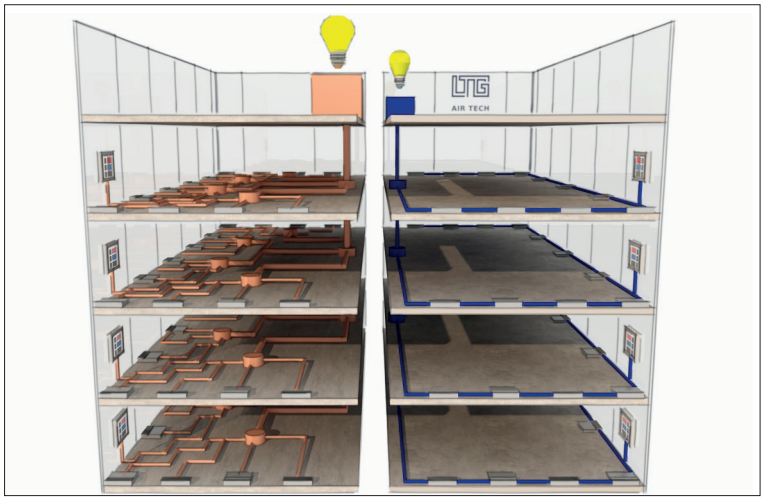
In the case of a superordinate BMS that does not communicate on a Modbus basis, a coupler/gateway is used, which is optionally available from LTG. This converts the information from Bacnet or KNX into Modbus RTU. We recommend the use of one coupler per floor, whereby the maximum number of 120 bus nodes (CI boards, room operating panels and possibly others) per coupler must not be exceeded.

The superordinate BMS again takes care of the zone assignment of the units, the readout of the room operating devices and the distribution of the information to the slaves. The room temperature and, if necessary, the air quality are controlled automatically by the CI board in the respective VKB unit.

Beyond this, a wide variety of sensors can be connected to the inputs of each CI board and made available for the control zone:

- Temperature sensor (Ni1000) for recording room, outdoor, changeover, or supply air temperature,
- Normally closed or normally open contact for changeover, presence, condensate, window
- CO_2 or VOC sensor (0...10 V DC signal; 24 V DC sensor supply available on board; 230/24 V transformer optionally available for a surcharge)





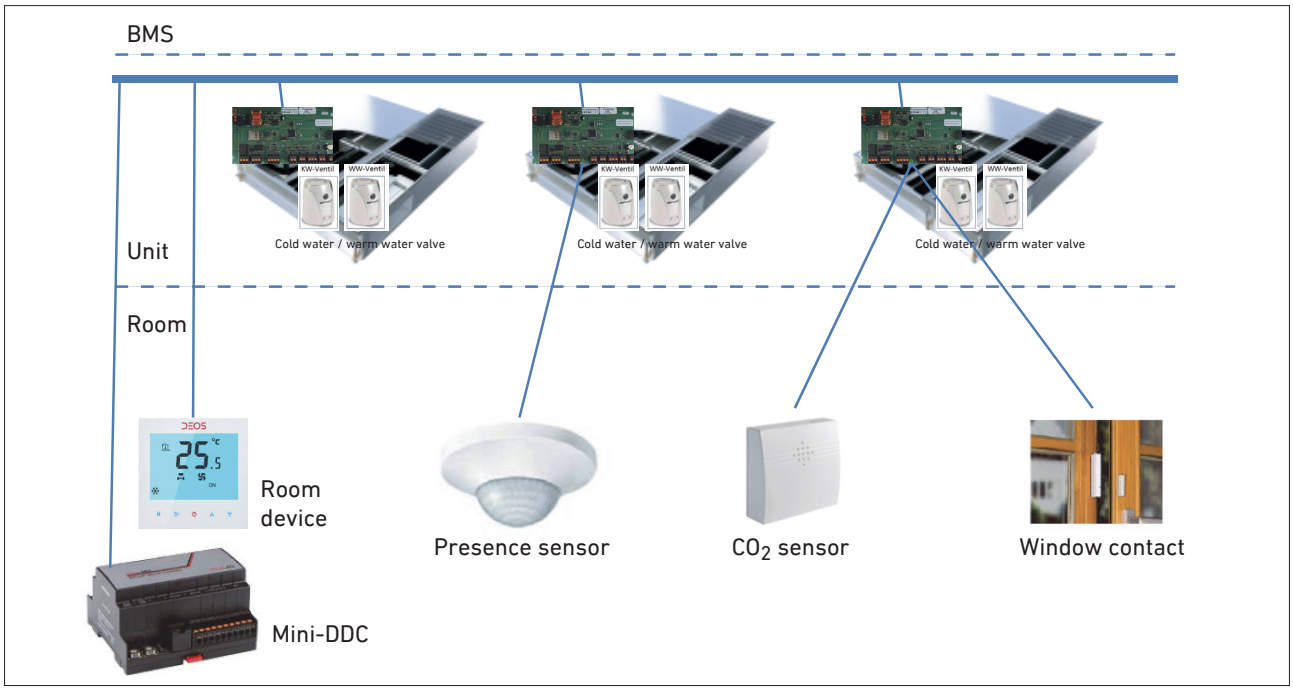
Operation with Connected Intelligence – Without superordinate BMS, as stand-alone solution with several rooms/control zones

If no superordinate BMS is available, but multiple control zones are desired, a mini DDC is used, which is optionally available from LTG. It performs zone assignment of the units and distribution of the information to the slaves, whereby the maximum number of 120 bus nodes (CI boards, room operating devices and possibly others) per coupler must not be exceeded.

The room temperature and, if necessary, the air quality are controlled automatically by the CI board in the respective VKB unit.

Beyond this, a wide variety of sensors can be connected to the inputs of each CI board and made available for the control zone:

- Temperature sensor (Ni1000) for recording room, outdoor, changeover, or supply air temperature,
- Normally closed or normally open contact for changeover, presence, condensate, window,
- CO_2 or VOC sensor (0...10 V DC signal; 24 V DC sensor supply available on board; 230/24 V transformer optionally available for a surcharge).

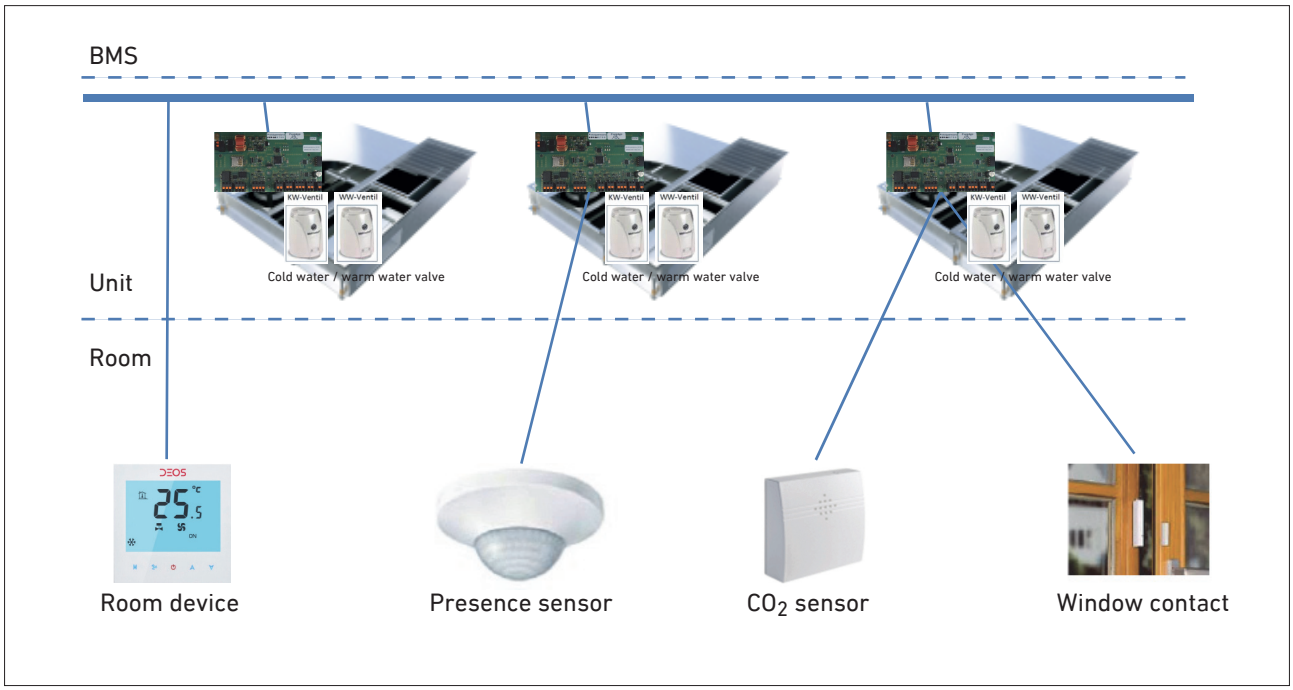


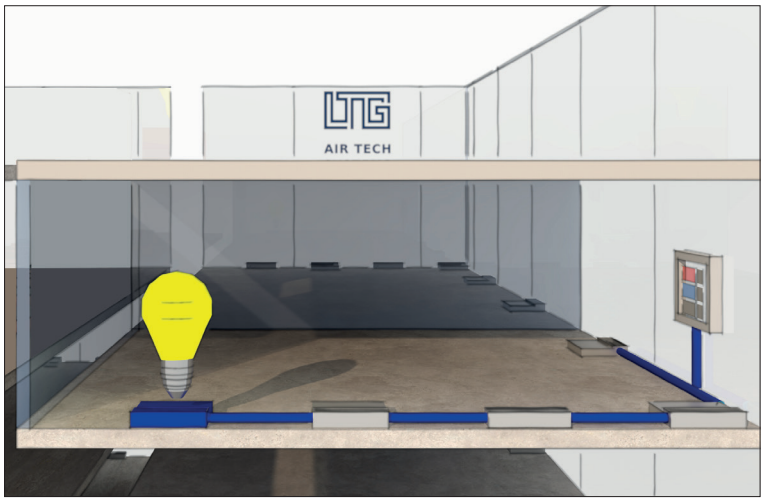
Operation with Connected Intelligence – Without superordinate BMS, as stand-alone solution with one room/one control zone

If there is no higher-level BMS and only one control zone (e.g. large meeting room with several VKB units), additional superordinate components can be omitted. In this case, the parameters of a CI board can be set from the Modbus network to assume the master function for the other CI boards in addition to the control functions for the unit in which it is installed. It then reads out the room operating devices and distributes the information to the slaves, whereby the maximum number of 6 bus nodes (CI boards, room operating devices and possibly others) per network must not be exceeded.

The room temperature and, if necessary, the air quality are controlled automatically by the CI board in the respective VKB unit.
Beyond this, a wide variety of sensors can be connected to the inputs of each CI board and made available for the control zone:

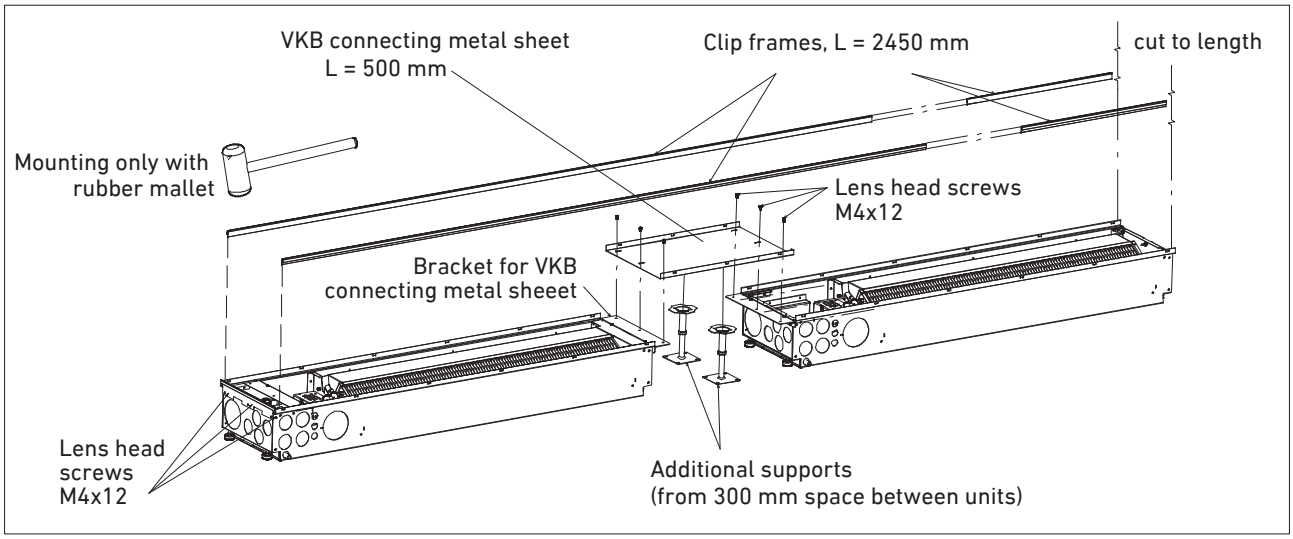
- Temperature sensor (Ni1000) for recording room, outdoor, changeover, or supply air temperature,
- Normally closed or normally open contact for changeover, presence, condensate, window
- CO_2 or VOC sensor (0...10 V DC signal; 24 V DC sensor supply available on board; 230/24 V transformer optionally available for a surcharge).



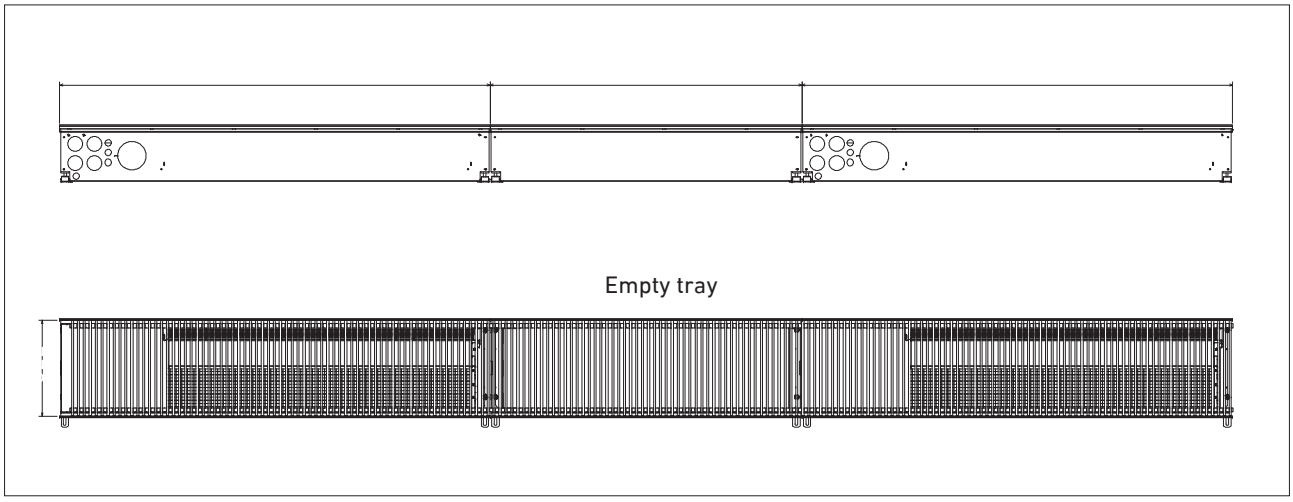


Technical brochure • Fan coil units VKB, floor installation
Type VKB-./...

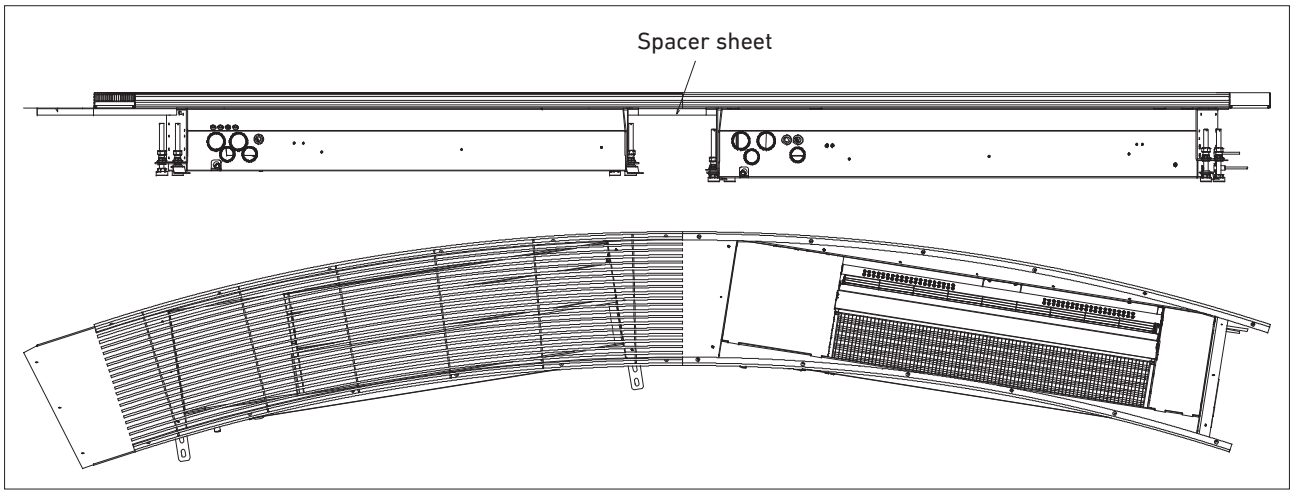
Example for installation in line, version with spacer sheet



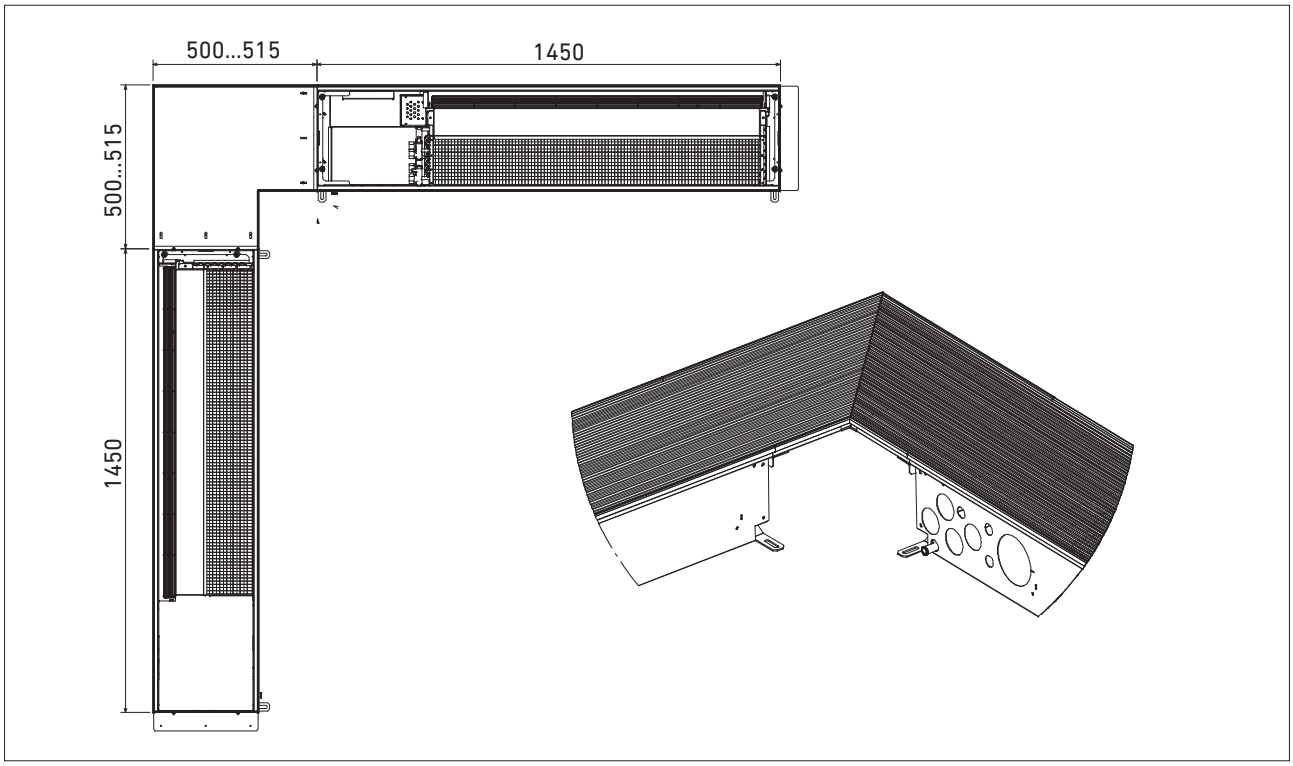
Example for installation in line, version with empty tray



Example for installation in line, curved version



Example for installation in line, angled version



Technical brochure • Fan coil units VKB, floor installation
Type VKB-./...

Notes for installation in line

In order to produce a "continuous effect" grille, black coated spacer sheets are fixed between the units:
- Intermediate piece as bridge or end section, 500 mm or 800 mm long, for cutting to length by others, frame loose in 2 m for fitting, incl. required floor supports.

If the space between units is greater than 300 mm or if end pieces are used, additional floor supports will be required to provide more stability.

If the space is 600 mm or greater, the use of an empty tray type SKB-L is recommended for stabilisation:
- Empty tray with aluminium frame and grille, for installation in line, sizes (width/length)
  320/850 · 320/1050 · 320/1250 · 320/1450

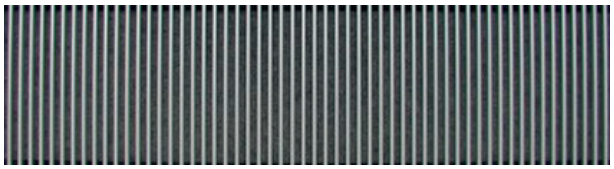
The LTG grilles may also be used to create cutouts for columns or mitre edges.

Grille load capacity

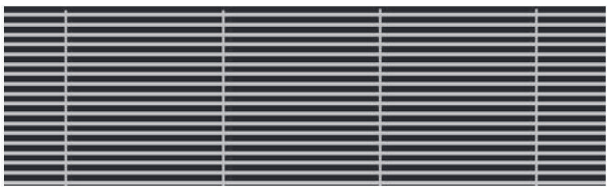
The 3 variants of foot traffic resistant LTG grilles offer the following static load capacities:
- Stainless steel linear grille 750 kg/m²
- Aluminium roller grille (on request) 1600 kg/m²
- Aluminium linear grille 2000 kg/m²

Other capacities on request.

LTG stainless steel linear grille



LTG aluminium roller grille (on request)



LTG aluminium linear grille

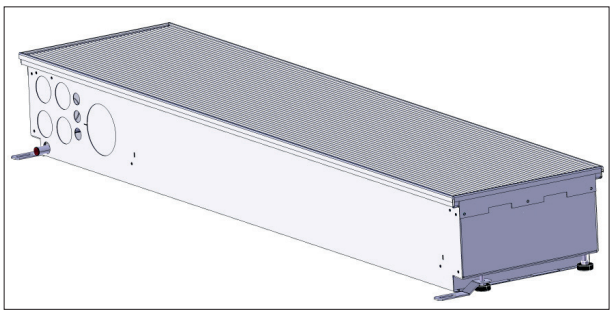
Installation

The compact design with a unit depth of 332 mm allows the installation of the unit between floor supports. Height-adjustable feet ensure a precise alignment of the unit.

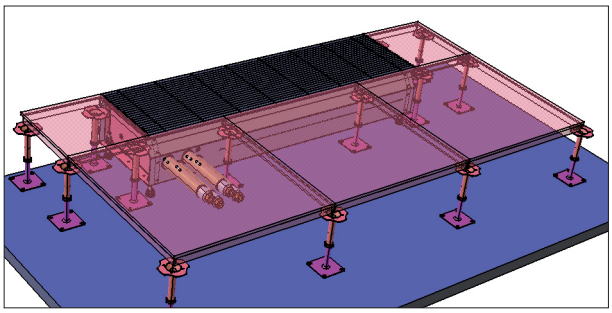
The control valve compartment and the water connection are located on the unit's left side. Lead-throughs for water connection hoses are provided on the unit's rear panel, on the left hand side.

Power connection is to be realised on the left hand side, for EC motor at the pre-assembled plugs, for AC motor using the splash-protected terminal box.

The ventilation grille is designed to be flush-mounted to the floor. It is foot traffic resistant without the need for any additional cross members.



Fan coil unit VKB with ventilation grille



Fan coil unit VKB, installation between floor supports

Installation sequence

- Set the unit with insulating strips directly on the facade.
- Height adjustment and exact positioning of the unit through adjustable feet.
- If required, use e.g. a PU adhesive to fix the unit feet in order to avoid accidental movement.
- Fixation of the unit on fixing links using bolts.
- Set the feet for floor panels and install the floor panels so that a direct contact with the unit is ensured.
- In case of continuous grille: Align units precisely and attach connecting pieces to the unit's bottom using countersunk head screws

Maintenance

All components are located within a sheet steel pan and are easily accessible from above for maintenance, inspection and cleaning.

Control

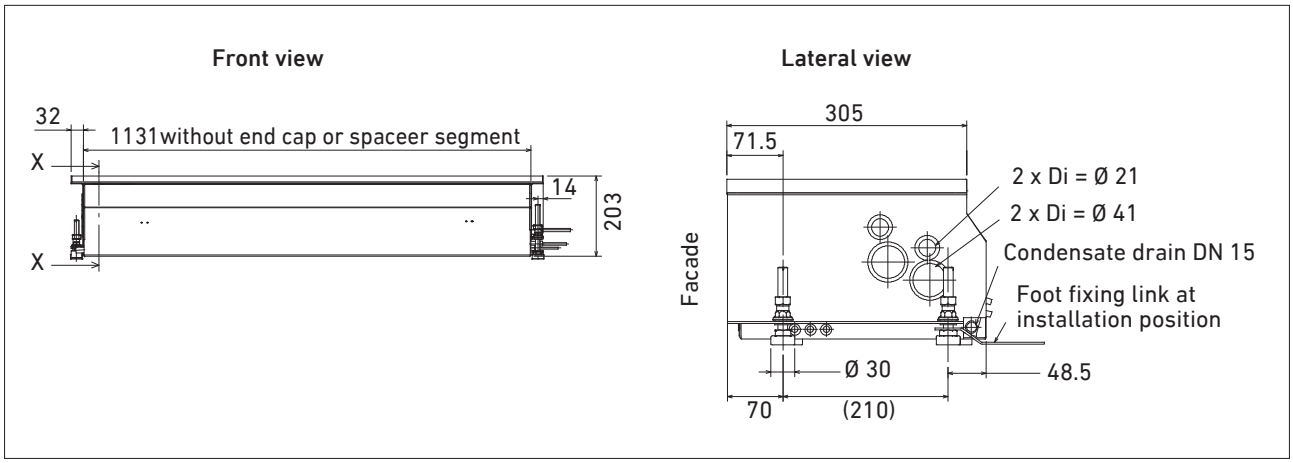
See separate brochure "Control for LTG induction units and fan coil units".

Special constructions

We perform optimisation for special requirements within the scope of our engineering services.

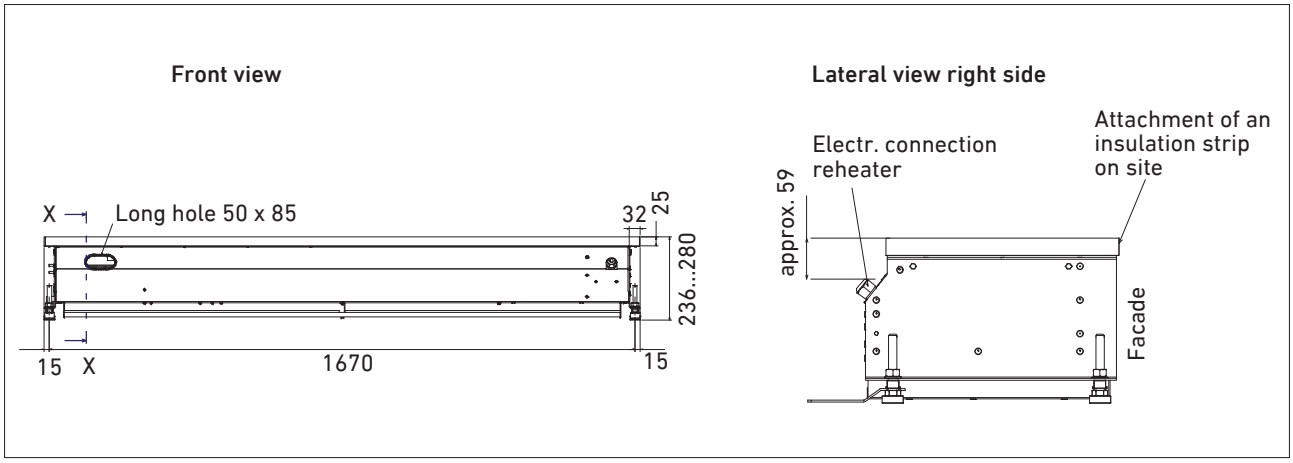
Example: with humidification

An ultrasonic humidifier is integrated into the equipment housing, which humidifies the circulated air using a special steel humidifying lance and introduces it evenly into the discharge cross-section when the fan is switched on (regulation by others).



Example: with electric heating element

An electric finned-tube radiator is integrated into the unit housing, which heats the circulated air with a 1500 W heating capacity and introduces it evenly into the discharge cross-section when the fan is switched on (regulation by others).



Technical brochure • Fan coil units VKB, floor installation
Static heating convector SKB, grille width 320 mm

Specification

2-pipe heating convector, suitable by free convection for covering the entire heat requirement or the residual heat.

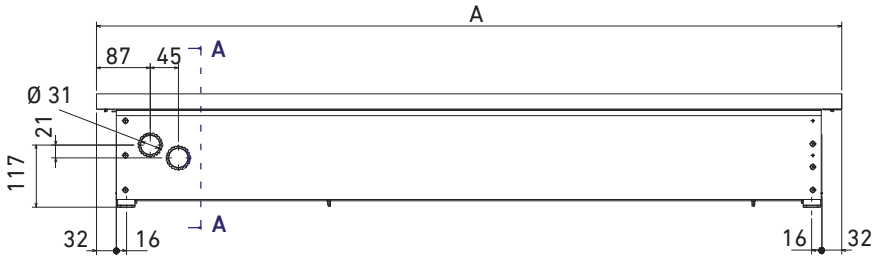
Installation in double floors with min. 200 mm height.

The heat exchangers have been specially optimised for low water quantities and high calorific output. Connection with a ½ " valve connection.

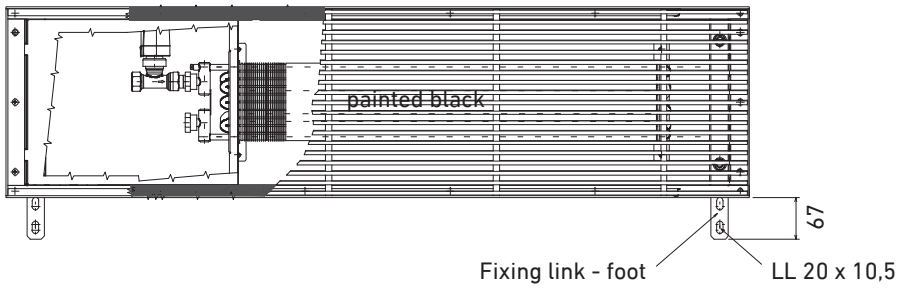
Empty tray SKB-L: empty tray with aluminium frame and grille, for installation in line

Size	A [mm]	Weight [kg]	Water content Heating circuit [l]
630	1020	17	0.5
800	1250	20	0,6
1000	1450	23	0.7

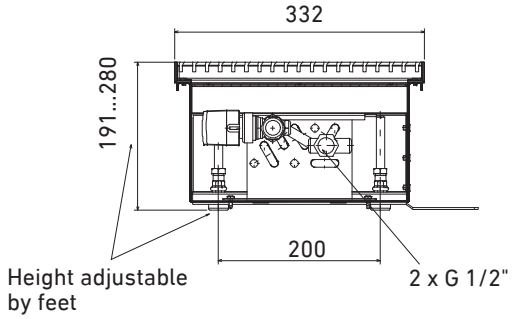
Front view



Top view

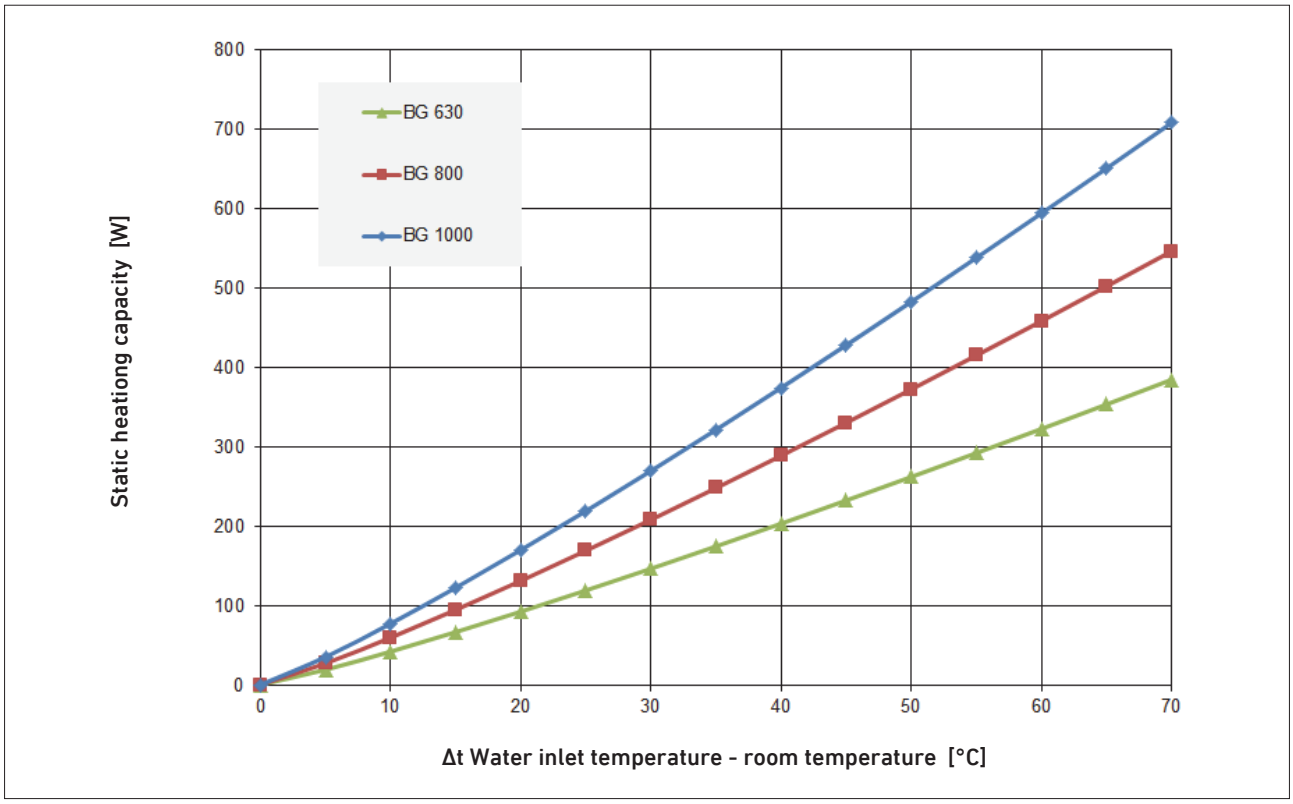


Cut A-A

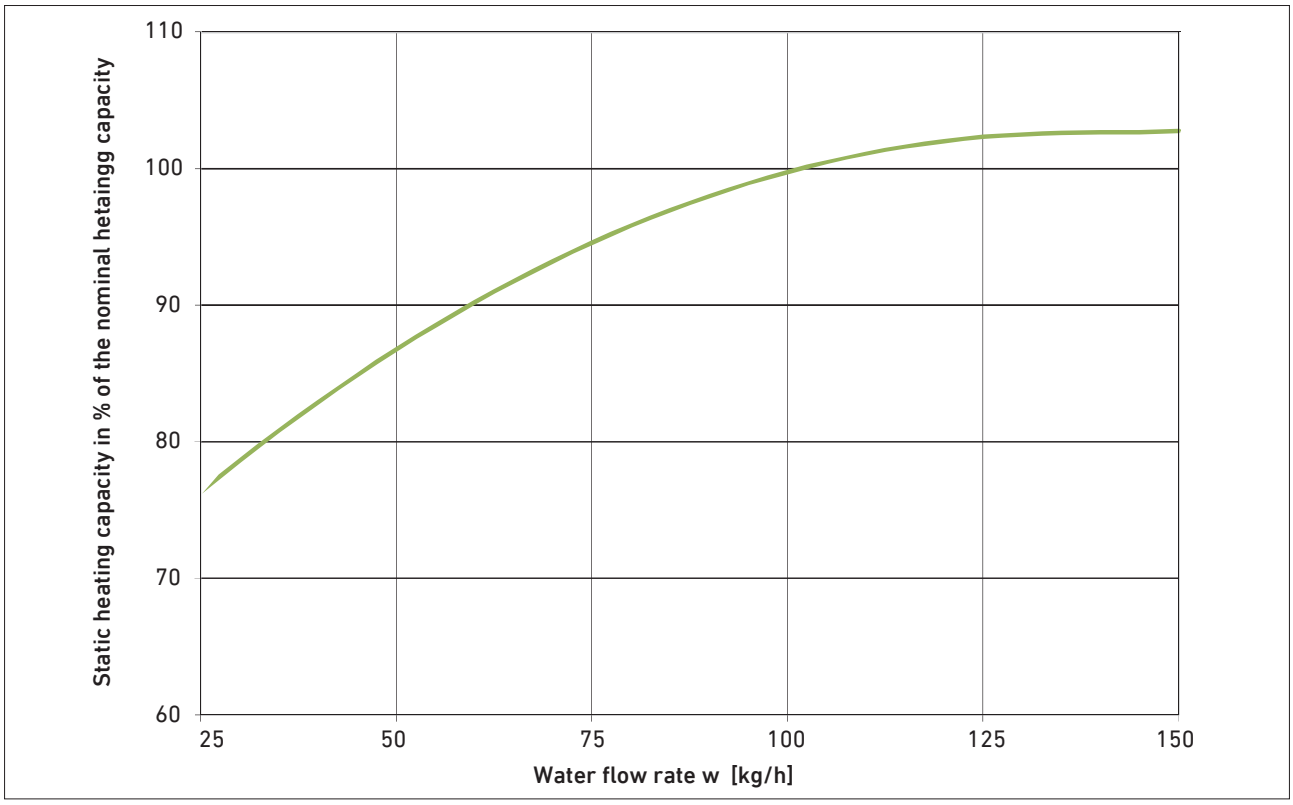


Static heating convector SKB, grille width 320 mm

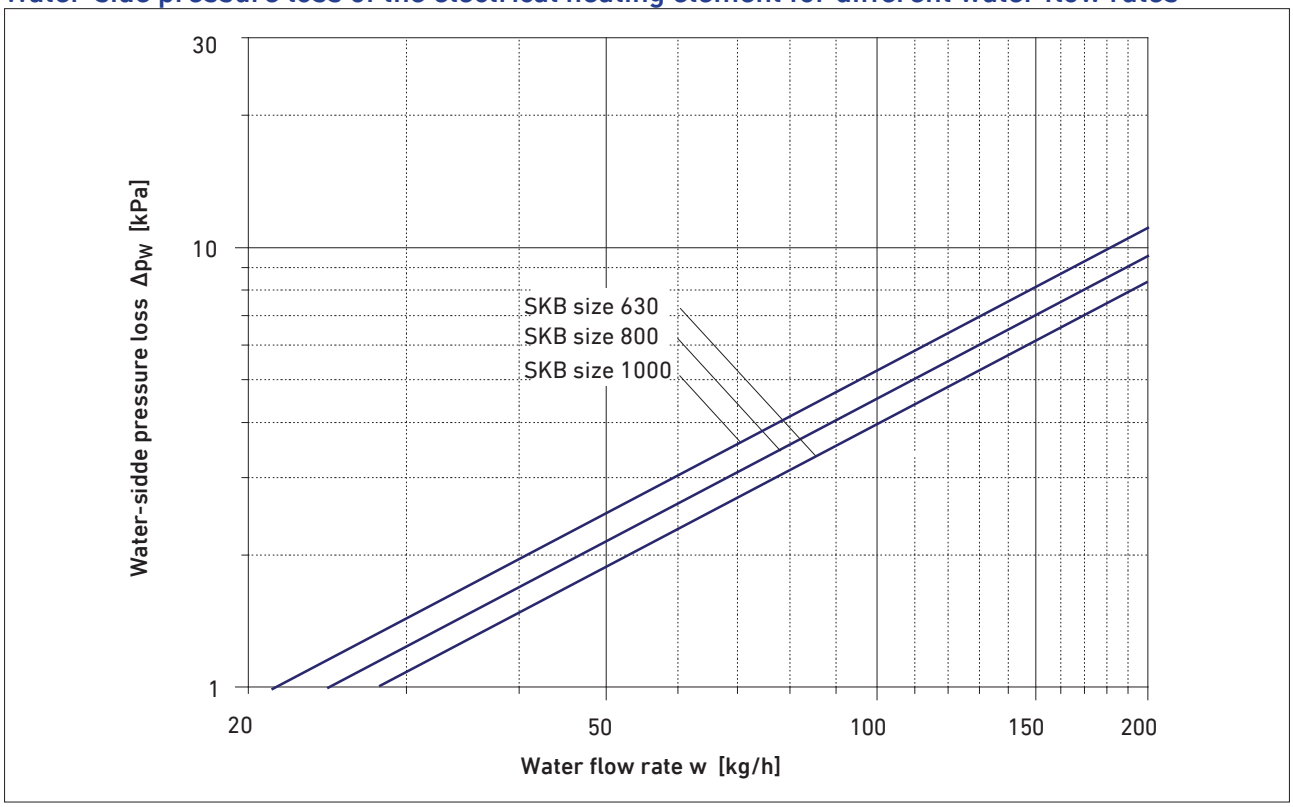
Static heating capacity for 100 kg/h



Static heating capacity for different water flow rates



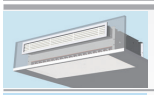
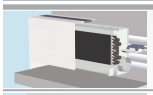
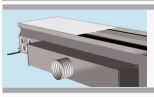
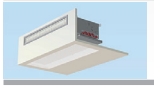
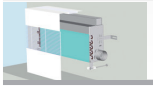
Water-side pressure loss of the electrical heating element for different water flow rates



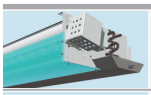
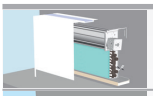
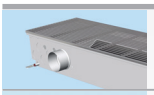
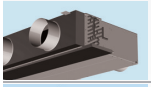
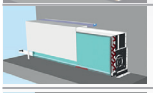
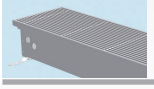
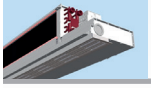
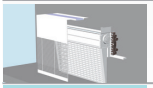
AIR TECH SYSTEMS

Product overview • **LTG Air-Water Systems**

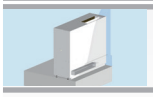
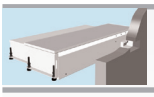
LTG **Decentral** – Induction Units

Ceiling Installation	Sill Installation	Floor Installation
 HFF*suite* SilentSuite	 HFV / HFV*sf* System SmartFlow	 HFB / HFB*sf* System SmartFlow
 HFG-0/D	 HFG	

LTG **FanPower** – Fan Coil Units

Ceiling Installation	Sill Installation	Floor Installation
 VKH	 VFC	 VKB
 VKE	 VFC-N	 SKB
 VKL	 QVC	
	 VKL-W	

LTG **Induction** – Decentralised Ventilation Units

Ceiling/Wall Installation	Sill Installation	Floor Installation
 FVS*Eco$_2$School*	 FVP*pulse*-V System PulseVentilation	 FVP*pulse*-B System PulseVentilation
 FVP*pulse*-D System PulseVentilation		

Engineering Services

LTG Engineering Services Comfort Air Technology

AIR TECH SYSTEMS

Comfort Air Technology

Air-Water Systems
Air Diffusers
Air Distribution

Process Air Technology

Fans
Filtration Technology
HumidificationTechnology

Engineering Services

Laboratory Test & Experiment
Field Measurement & Optimisation
Simulation & Expertise
R&D & Start-up

LTG Aktiengesellschaft
Grenzstrasse 7
70435 Stuttgart
Germany
Tel.: +49 711 8201-0
Fax: +49 711 8201-720
E-Mail: info@LTG.net
www.LTG.net

LTG Incorporated
105 Corporate Drive, Suite E
Spartanburg, SC 29303
USA
Tel.: +1 864 599-6340
Fax: +1 864 599-6344
E-Mail: info@LTG-INC.net
www.LTG-INC.net

VKB eng TP (11/22) 416-103