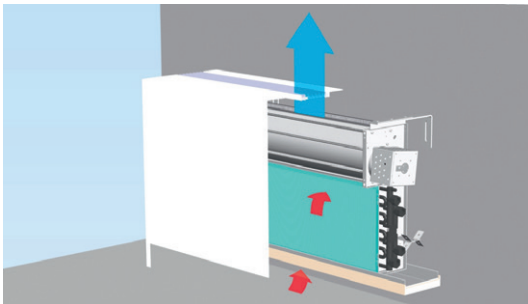


Technical Brochure

# LTG Air-Water Systems

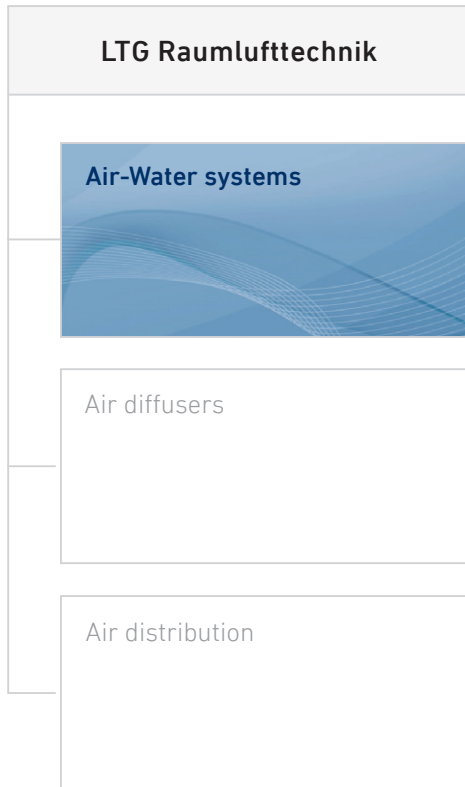
**LTG FanPower**

Fan coil units VFC



Sill installation

## Technical brochure • Fan coil units VFC, sill installation



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### 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](http://www.LTG.net).



Type VFC-0/4



Type VFC-0/2



Type VFC-N/4

### LTG planning tools – we support you!

Visit the download area on our website [www.LTG.net](http://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.

#### DOWNLOADS

ProductNavigator & DocumentFinder



ProductNavigator  
Please choose your desired product.



DocumentFinder  
Please choose your desired type of documents.

# 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.

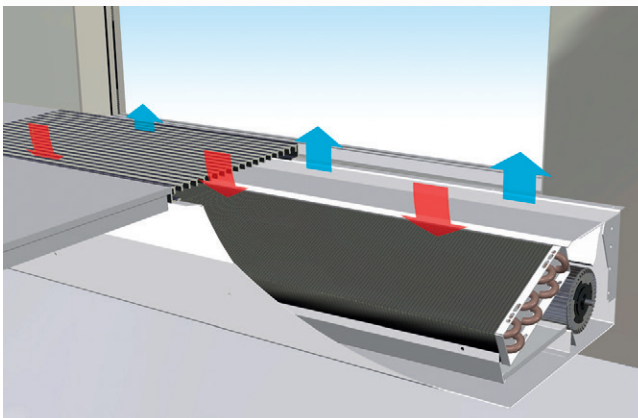
LTG fan coil units use both radial and tangential fans to implement the best flow and acoustics for different installation situations. Flexible and high-performance.

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.

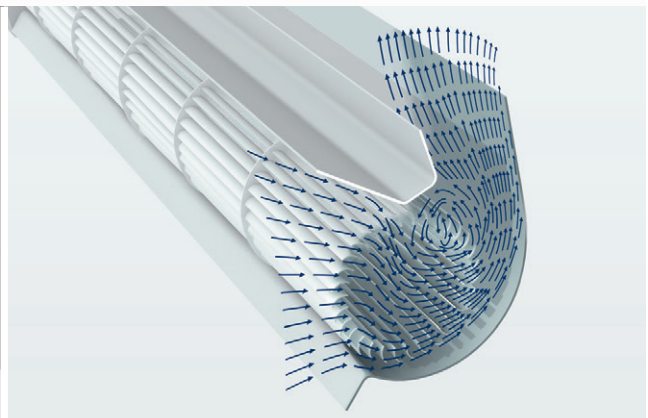
The latest drive technology generation (EC-technology) also permits capacity modulation at the lowest electrical energy consumption.

### 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.

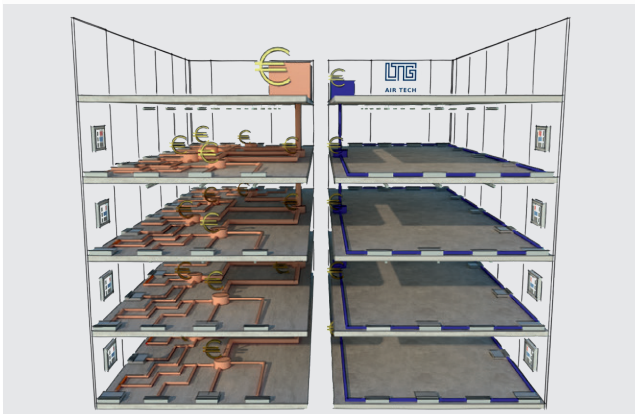
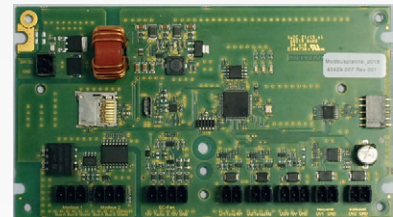
Demand-controlled ventilation even without building management systems.  
Efficient, scalable, bus-compatible.

## Advantages

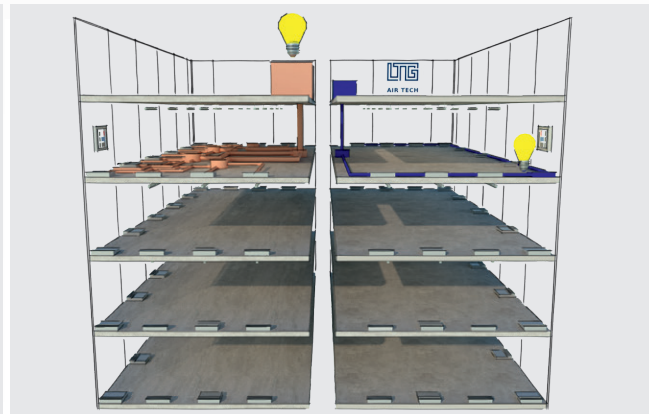
- Cost-effective, simple, and flexible solution for your room automation tasks with LTG systems
- Innovative automation solution for at least 50% savings for investment/installation costs for the ICE
- Cost-effective or reduced installation/operating costs
- Open bus system, manufacturer-independent
- 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<sub>2</sub>-concentration, condensate, window contact, presence, ...)
- Quick parametrization via SD card



Cost reduction



Decentralised control intelligence

## Technical brochure • Fan coil units VFC, sill installation

### Product overview

Type	Features	Functions	Sizes
VFC-0/2/T	Standard unit	2-pipe unit Cooling only or heating only Water-side control by valves	500 (type VFC-0 only) 630 800 1000 1250
VFC-0/2/.../E	For extremely low inlet temperatures		
VFC-0/2/.../FL	With primary air supply by LTG linear air diffuser LDB		
VFC-0/2/.../FS	With primary air supply by primary air box		
VFC-N/2/.../T	Particularly small built-in depth and height. For high demands on acoustics		
VFC-./2/.../EC/...	With energy-saving EC motor		
VFC-0/4/.../T	Standard unit	4-pipe unit Cooling and heating Water-side control by valves	500 (type VFC-0 only) 630 800 1000 1250
VFC-0/4/.../E	For extremely low inlet temperatures		
VFC-0/4/.../FL	With primary air supply by LTG linear air diffuser LDB		
VFC-0/4/.../FS	With primary air supply by primary air box		
VFC-N/4/.../T	Particularly small built-in depth and height. For high demands on acoustics		
VFC-./4/.../EC/...	With energy-saving EC motor		

## Technical brochure • Fan coil units VFC, sill installation Type VFC-0

### Unit view



Fan coil unit for sill installation VFC

### Application

The fan coil unit VFC has been specifically designed for hotels and office buildings with strict acoustic requirements. It offers versatile possibilities for design of air distribution systems. Installation in sills.

### Features

- Low-noise operation.
- Insulation of the unit suitable for operation with 6° C cooling water.
- Energy-saving fan operation
- Maintenance-friendly design. Motor, impeller and heat exchanger are accessible from below.
- Low installation depth of only 165 mm
- Highly efficient EC and AC motors with low energy consumption (SFP 200 W/(m<sup>3</sup>/s))
- Excellent aerodynamic integration of fan and large area heat exchanger for high caloric output 30...75 W<sub>th</sub>/W<sub>el</sub> with low sound level
- Very smooth running and low sound level thanks to vibration isolated tangential fan and low noise slide bearing
- Heat exchanger for efficient room heating via natural convection
- Fan with maintenance free, low noise slide bearings for long service life
- Air guiding elements for patented, optimised LTG mixed/displacement air ventilation, adjustable to a variety of room geometries (optional)

### Design

- 2-pipe system for cooling only or heating only (VFC-./2)
- 4-pipe system for cooling and heating (VFC-./4)

### Installation, placement



Installation example as cabinet unit

### Operation principle

The tangential fan of the VFC draws in air from the room on the underside of the unit. This air passes through a heat exchanger (cooling or heating) and is then returned into the room. Output control is water-side using valves.



Example with special fan insert for mixed/displacement flow

## Technical brochure • Fan coil units VFC, sill installation Type VFC-0/2/.../T or VFC-0/4/.../T, 2-/4-pipe system

### Specification

Fan coil unit with one heat exchanger for cooling or heating the room air (VFC-0/2) or with a heat exchanger with two separate water cycles for cooling and heating the room air (VFC-0/4).

Water-side control by valves.

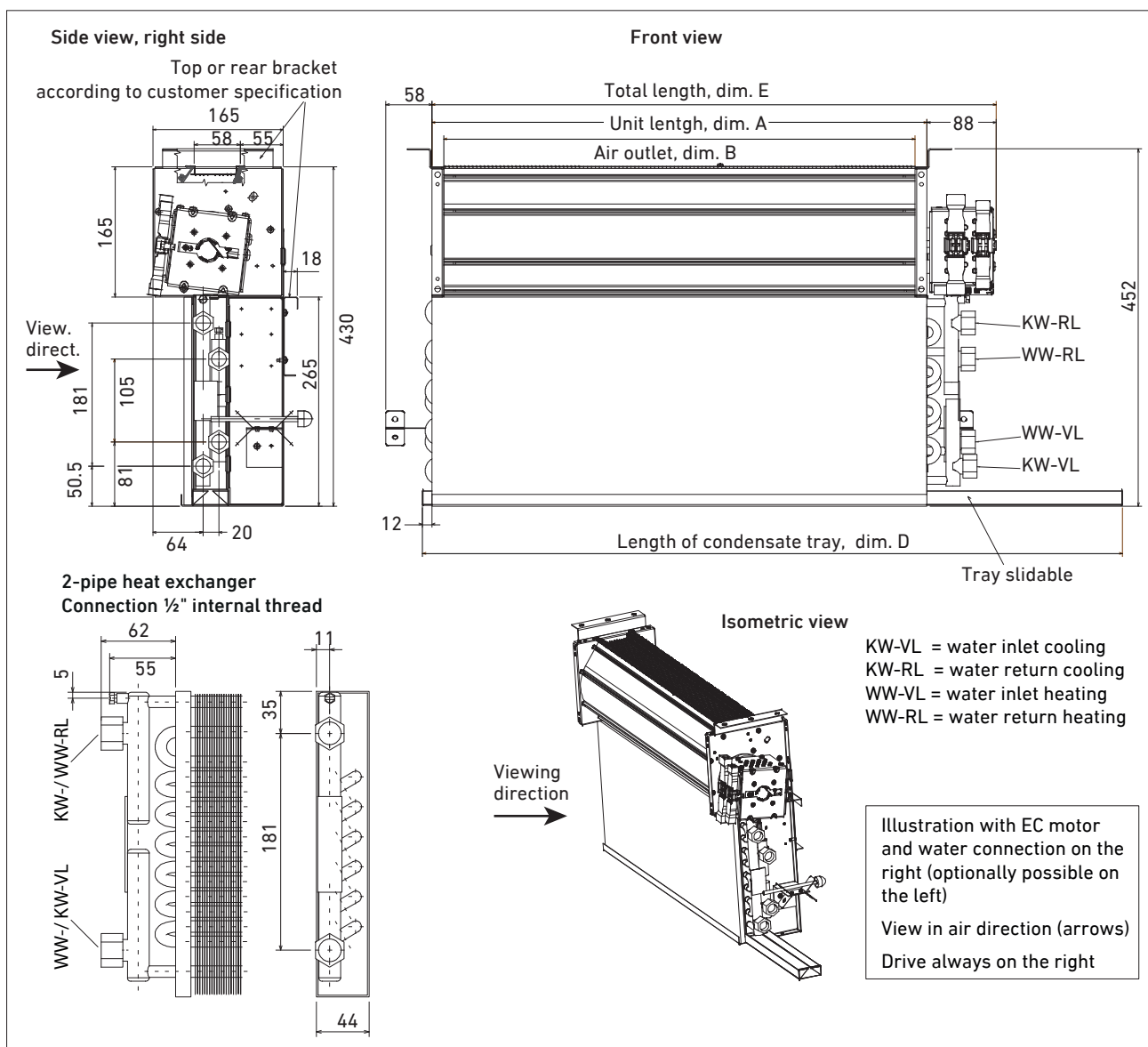
Particularly small built-in depth and height, therefore especially appropriate for a room-saving sill installation. For extremely low inlet temperatures the unit is available with an insulated condensate tray (see page 10)..

Vertical installation. Water connection on the right or left.

### Dimensions, weight

Size	A	B	C [mm]	D	E	Weight* [kg]
500	527	497	563	730	615	13
680	627	597	663	885	715	15
800	857	827	893	1085	945	19
1000	1057	1027	1093	1335	1145	23
1250	1257	1227	1293	1535	1345	28

\* approx. values, depending on design



The unit may be mounted using one of the following possibilities (please state with your order):

- suspension from above (attachment to the sill) or
- wall mounting, rear or lateral suspension (see brochure Accessories for LTG air conditioning units)

Details see pages 30/31.

## Technical brochure • Fan coil units VFC, sill installation Type VFC-0/4/.../T, 4-pipe system

### Technical data

Size	N [-]	U (EC) [V]	V [m <sup>3</sup> /h]	L <sub>A18</sub> (EC) [dB(A)]	L <sub>wA</sub> (EC) [dB(A)]	Q <sub>k oF</sub> /Δt <sup>1)</sup> [W/K]	Q <sub>k mF</sub> /Δt <sup>1)</sup> [W/K]	Q <sub>k mF</sub> <sup>2)</sup> [W]	Q <sub>k sens</sub> <sup>2)</sup> mF [W]	Q <sub>h oF</sub> /Δt [W/K]	Q <sub>h mF</sub> /Δt [W/K]	w <sub>ok</sub> /Δp <sub>w</sub> [kg/h]/[kPa]	w <sub>oh</sub> /Δp <sub>w</sub> [kg/h]/[kPa]	P <sub>el</sub> (AC) [W]	P <sub>el</sub> (EC) [W]
500	I	2.3	160	23	29	34	28	672	560	21	19	200 / 13	100 / 2.5	16	5
	II	3.0	240	29	35	46	45	1080	900	28	28			20	6
	III	3.7	290	35	41	54	54	1220	1080	32	32			23	9
	IV	4.3	340	41	46	60	60	1320	1200	35	35			25	11
	V	5.3	430	45	51	68	68	1468	1360	40	40			31	17
630	I	2.3	170	23	29	41	36	864	720	26	23	200 / 14	100 / 2.7	16	5
	II	3.0	260	29	35	52	51	1224	1020	32	31			20	6
	III	3.7	310	35	41	60	60	1356	1200	35	35			23	9
	IV	4.3	370	41	46	67	67	1474	1340	39	39			25	11
	V	5.3	480	45	51	76	76	1641	1520	43	43			31	17
800	I	2.3	220	23	29	47	42	1008	840	29	26	200 / 16	100 / 3.1	16	5
	II	3.0	320	29	35	64	60	1440	1200	38	36			20	6
	III	3.7	380	35	41	74	71	1604	1420	42	41			23	9
	IV	4.3	460	41	46	82	81	1782	1620	47	47			25	11
	V	5.3	580	45	51	92	91	1965	1820	51	51			31	17
1000	I	2.3	300	24	30	58	53	1272	1060	36	33	200 / 18	100 / 3.4	25	6
	II	3.0	420	29	35	76	71	1704	1420	47	44			29	8
	III	3.7	470	35	41	85	82	1853	1640	54	51			33	11
	IV	4.3	570	41	47	95	92	2024	1840	59	57			36	16
	V	5.3	720	47	53	107	105	2268	2100	65	65			42	26
1250	I	2.3	360	24	30	74	68	1632	1360	46	43	200 / 20	100 / 3.6	25	6
	II	3.0	470	29	35	90	85	2040	1700	54	51			29	8
	III	3.7	570	35	41	98	96	2196	1920	61	58			33	11
	IV	4.3	690	41	47	106	104	2288	2080	63	61			36	16
	V	5.3	830	47	53	118	116	2505	2320	69	67			42	26

1) Specific cooling capacity (non-condensing operation)

2) Cooling capacity with the following parameters: water inlet: 6 °C, air inlet: 26 °C, 50 % rel. humidity

**n** - speed  
**U** - Control voltage EC fan  
**V** - flow rate (approx. values, tolerance ± 10 %)  
**L<sub>A18</sub>** - sound pressure level, 18 m<sup>2</sup> Sabine  
**L<sub>wA</sub>** - sound power level ± 3 dB(A) (without casing)  
**Q<sub>k oF</sub>** - cooling capacity (without filter)  
**Q<sub>k mF</sub>** - cooling capacity (with filter)  
**Q<sub>h oF</sub>** - heating capacity (without filter)  
**Q<sub>h mF</sub>** - heating capacity (with filter)  
**Q<sub>k sens mF</sub>** - sensible cooling capacity (with filter)

**Δt** - temperature difference between suction air temp. before entering heat exchanger and water supply  
**w<sub>ok</sub>** - standard water flow rate at cooling capacity correction for other flow rates see from page 17  
**w<sub>oh</sub>** - standard water flow rate at heating capacity correction for other flow rates see from page 17  
**Δp<sub>w</sub>** - water-side pressure loss  
**P<sub>el</sub> (AC)** - electric power consumption AC fan (± 20%)  
**P<sub>el</sub> (EC)** - electric power consumption EC fan (± 20%)

#### Speed control wiring diagram

See pages 28/29.



## Technical brochure • Fan coil units VFC, sill installation Type VFC-0/2/.../T, 2-pipe system

### Technical data

Size	N [-]	U (EC) [V]	V [m <sup>3</sup> /h]	L <sub>A18</sub> [dB(A)]	L <sub>wA</sub> [dB(A)]	Q <sub>oF</sub> /Δt <sup>1)</sup> [W/K]	Q <sub>mF</sub> /Δt <sup>1)</sup> [W/K]	Q <sub>mF</sub> <sup>2)</sup> [W]	Q <sub>sens</sub> <sup>2)</sup> mF [W]	w <sub>o</sub> /Δp <sub>w</sub> [kg/h]/[kPa]	P <sub>el</sub> (AC) [W]	P <sub>el</sub> (EC) [W]
500	I	2.3	160	26	32	37	36	864	720	200 / 18	16	5
	II	3.0	240	30	36	49	48	1152	960		20	6
	III	3.7	290	36	42	57	56	1265	1120		23	9
	IV	4.3	340	40	46	64	64	1408	1280		25	11
	V	5.3	430	46	52	73	73	1576	1460		31	17
630	I	2.3	170	25	31	48	43	1032	860	200 / 20	16	5
	II	3.0	260	29	35	59	59	1416	1180		20	6
	III	3.7	310	35	41	68	68	1536	1360		23	9
	IV	4.3	370	39	45	76	76	1672	1520		25	11
	V	5.3	480	46	52	87	87	1879	1740		31	17
800	I	2.3	220	25	31	52	48	1152	960	200 / 22	16	5
	II	3.0	320	28	34	72	64	1536	1280		20	6
	III	3.7	380	34	40	83	78	1762	1560		23	9
	IV	4.3	460	38	44	95	92	2024	1840		25	11
	V	5.3	580	45	51	105	105	2268	2100		31	17
1000	I	2.3	300	27	33	62	59	1488	1180	200 / 23	25	6
	II	3.0	420	30	36	82	76	1968	1520		29	8
	III	3.7	470	34	40	92	89	2079	1780		33	11
	IV	4.3	570	38	44	104	102	2288	2040		36	16
	V	5.3	720	46	52	114	114	2462	2280		42	26
1250	I	2.3	360	27	33	80	73	1752	1460	200 / 25	25	6
	II	3.0	470	30	36	98	92	2208	1840		29	8
	III	3.7	570	35	41	107	104	2350	2080		33	11
	IV	4.3	690	38	44	116	113	2486	2260		36	16
	V	5.3	830	46	52	128	124	2678	2480		42	26

1) Specific cooling capacity (non-condensing operation)

2) Cooling capacity with the following parameters: water inlet: 6 °C, air inlet: 26 °C, 50 % rel. humidity

**n** - speed

**U** - control voltage EC fan

**V** - flow rate (approx. values, tolerance ± 10 %)

**L<sub>A18</sub>** - sound pressure level, 18 m<sup>2</sup> Sabine

**L<sub>wA</sub>** - sound power level ± 3 dB(A) (without casing)

**Q<sub>k oF</sub>** - cooling capacity (without filter)

**Q<sub>k mF</sub>** - cooling capacity (with filter)

**Q<sub>k sens mF</sub>** - sensible cooling capacity (with filter)

**Δt** - temperature difference between suction air temp. before entering heat exchanger and water supply

**w<sub>o</sub>** - standard water flow rate at cooling capacity correction for other flow rates see from page 17

**Δp<sub>w</sub>** - water-side pressure loss

**P<sub>el</sub> (AC)** - electric power consumption AC fan (± 20 %)

**P<sub>el</sub> (EC)** - electric power consumption EC fan (± 20 %)

#### Speed control wiring diagram

See pages 28/29.

## Technical brochure • Fan coil units VFC, sill installation Type VFC-0/2/.../E or 0/4/.../E, 2-/4-pipe system, for low inlet temperatures

### Specification

Fan coil unit with one heat exchanger for cooling or heating the room air (VFC-0/2) or with a heat exchanger with two separate water cycles for cooling and heating the room air (VFC-0/4).

Water-side control by valves.

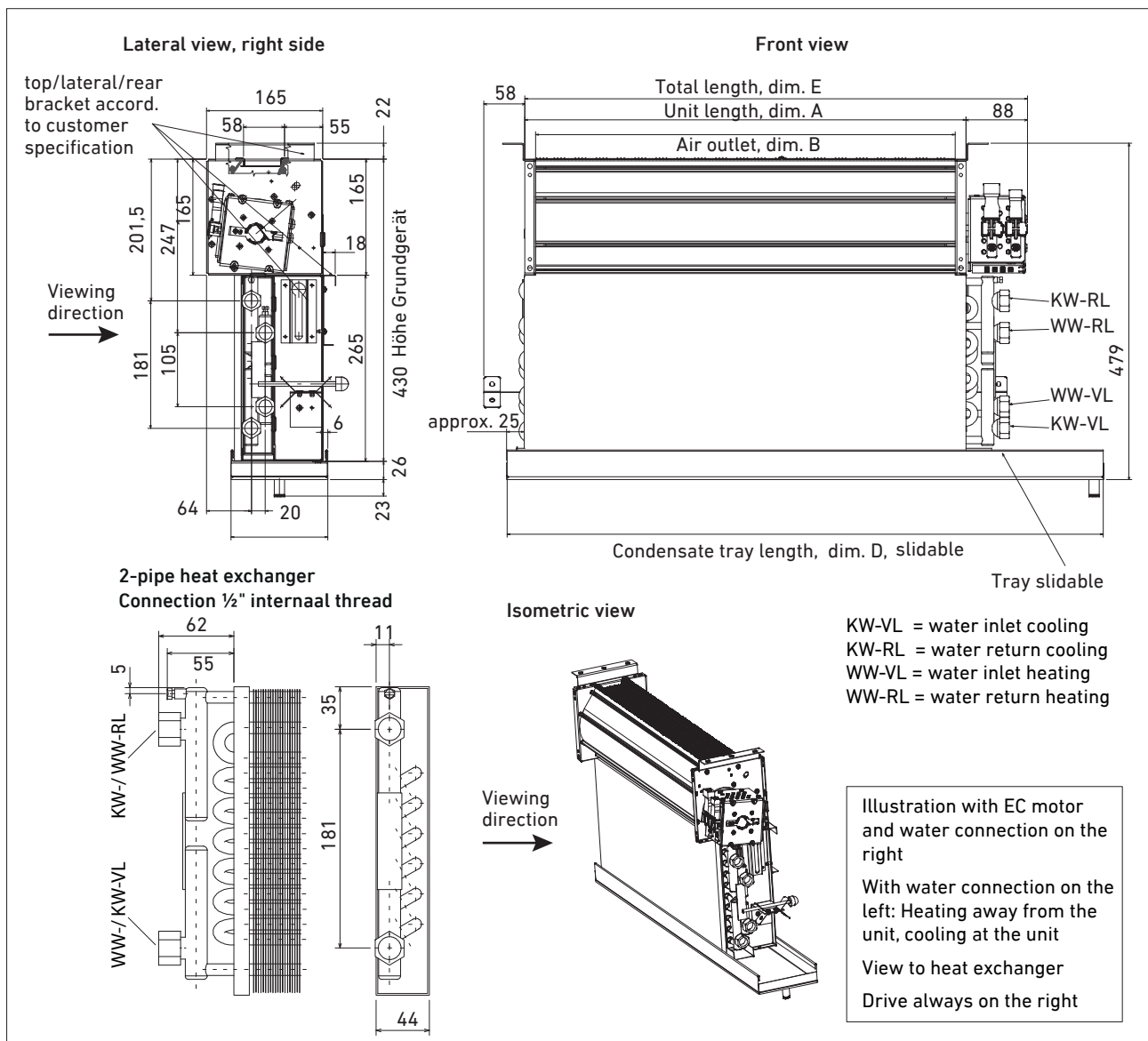
Particularly small built-in depth and height, therefore especially appropriate for a room-saving sill installation. For extremely low inlet temperatures the unit is available with an insulated condensate tray.

Vertical installation. Water connection on the right or left

### Dimensions, weight

Size	A	B	C [mm]	D	E	Weight * [kg]
500	527	497	563	749	615	16
630	627	597	663	849	715	19
800	857	827	893	1079	945	24
1000	1057	1027	1093	1279	1145	29
1250	1257	1227	1293	1479	1345	34

\* approx. values, depending on design



The unit may be mounted using one of the following possibilities (please state with your order):

- suspension from above (attachment to the sill casing) or
- wall mounting (rear suspension) (see brochure Accessories for LTG Air Conditioning Units).

Details see pages 30/31.

**Technical data** see standard unit VFC-0/4/.../T (see page 8)

## Technical brochure • Fan coil units VFC, sill installation Type VFC-0/ ... /FL, with primary air connection by linear diffuser LDB

### Specification

Fan coil unit special version with primary air supply. Through an adjustable LTG diffuser LDB, the air is blown out in parallel to the tangential fan outlet. Optimum primary air supply is ensured even with the fan at standstill.

Fan coil unit with one heat exchanger for heating and/or cooling the room air.

Water-side control by valves.

Particularly small built-in depth and height, therefore especially appropriate for a room-saving sill installation.

Vertical installation. Water connection on the right or left.

Socket at the front right or front left, always opposite the water connection!

### Technical data

See standard unit VFC-0/4/.../T (see page 8) and VFC-0/2/.../T (see page 9). Acoustic data may increase depending on primary air flow rate.

**Sound power level for separate primary air box**  
(to be added to unit level).

The **overall sound power level** is calculated as follows:

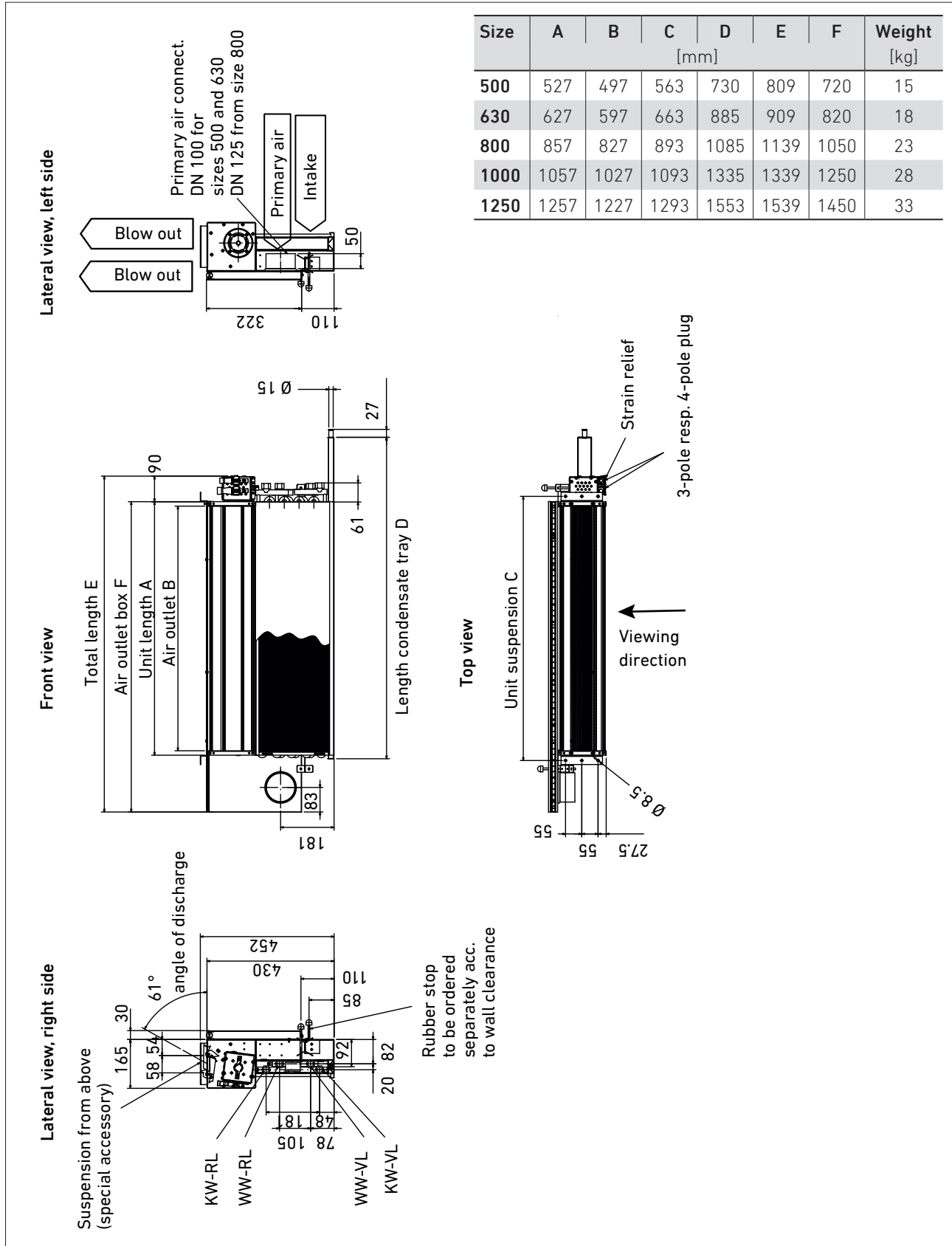
$$L_{WA} = 10 * \log (10^{0,1 * L_{WA,P}} + 10^{0,1 * L_{WA,VFC}})$$

### Sound power level $L_{WA}$ [dB(A)]

Size	V [m <sup>3</sup> /h]					
	40	60	80	100	120	140
500	15	26	34	40	46	>45
630	15	23	31	37	42	>45
800	<15	28	25	32	37	41
1000	<15	<15	19	26	31	35
1250	<15	<15	<15	22	26	31

# Technical brochure • Fan coil units VFC, sill installation Type VFC-0/ ... /EC/.. /FL, with primary air connection by linear diffuser LDB

## Dimensions, weight

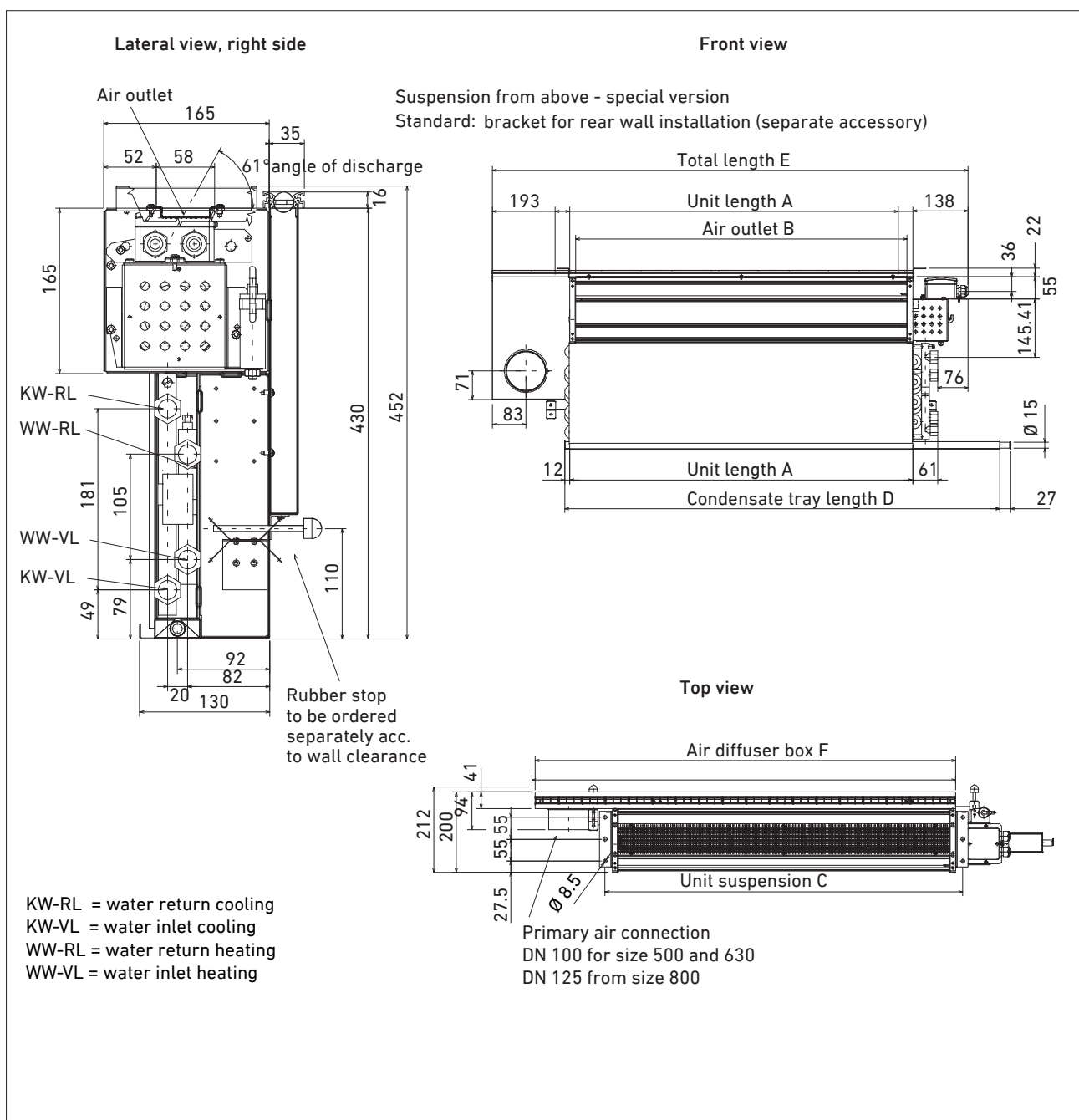


# Technical brochure • Fan coil units VFC, sill installation Type VFC-0/ ... /AC5/.. /FL, with primary air connection by linear diffuser LDB

## Dimensions, weight

Size	A	B	C [mm]	D	E	Weight * [kg]
500	527	497	563	730	860	16
630	627	597	663	885	960	19
800	857	827	893	1085	1190	24
1000	1057	1027	1093	1335	1390	29
1250	1257	1227	1293	1553	1590	35

\* approx. values, depending on design



## Technical brochure • Fan coil units VFC, sill installation Type VFC-0/ ... /FS, with standard primary air connection

### Specification

Fan coil unit special version with primary air supply, with lateral (left, opposite to motor) primary air box in extension to the recirculating air outlet. Optimum primary air supply is ensured even with the fan at standstill.

Connection is realised using a DN 100 socket, with integrated damper (option).

Fan coil unit with one heat exchanger for heating and/or cooling the room air..

Water-side control by valves.

Particularly small built-in depth and height, therefore esp. appropriate for a room-saving sill installation.

Vertical installation. Water connection on the right or left. Socket on the left side or bottom left, the latter only with water connection on the right.

### Technical data

See standard unit VFC-0/4/.../T (see page 8) and VFC-0/2/.../T (see page 9). Acoustic data may increase depending on primary air rate.

The **overall sound power level** is calculated as follows:

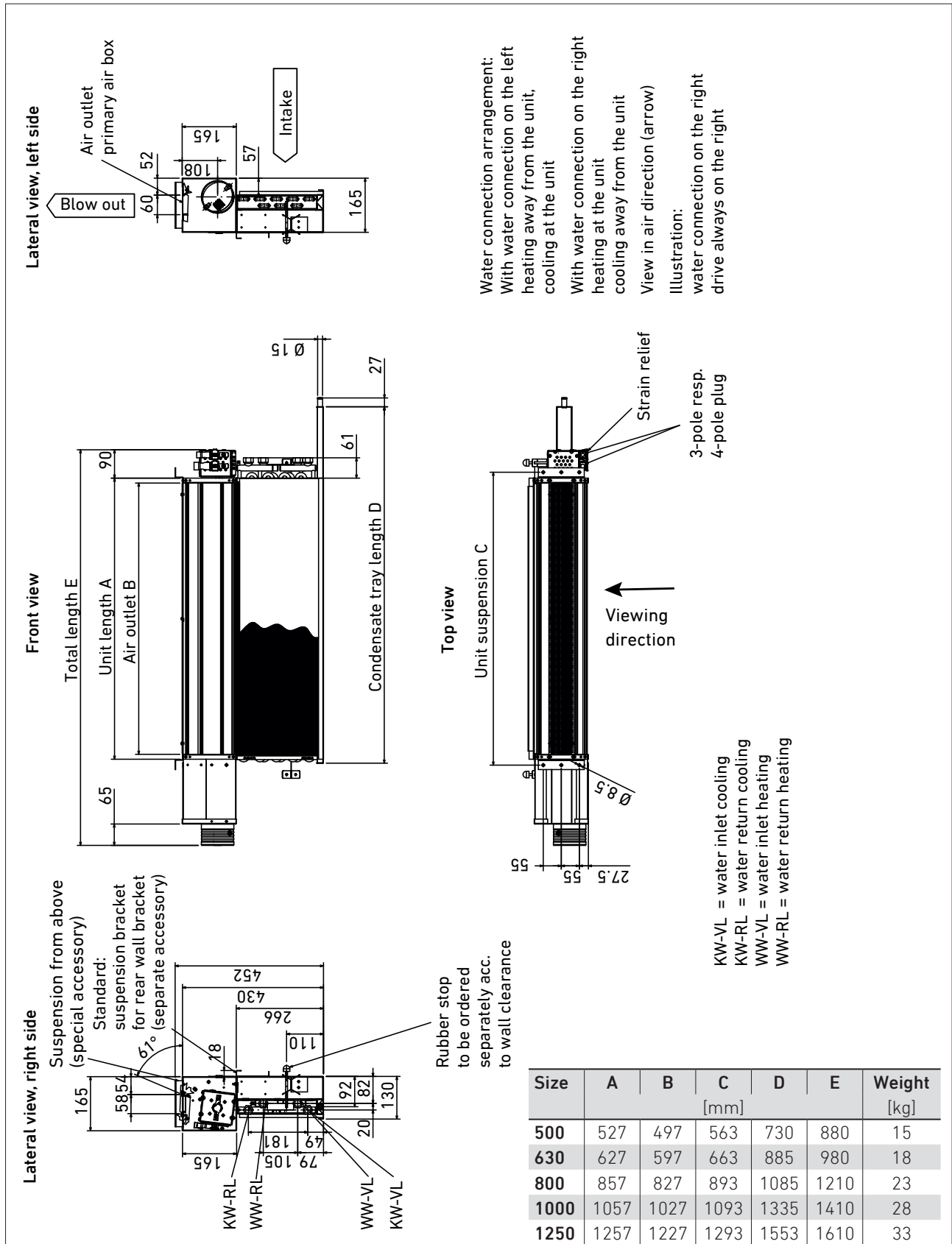
$$L_{wA} = 10 \cdot \log (100,1 \cdot L_{wA P} + 100,1 \cdot L_{wA, VFC})$$

**Sound power level for separate primary air box**  
(to be added to unit level)

1 socket (DN 100), with aluminium linear grille					
<b>V<sub>P</sub></b>	[m <sup>3</sup> /(hm)]	60	80	100	120
<b>L<sub>wA P</sub></b>	[dB(A)]	29	31	32	37
<b>Pressure loss</b>	[Pa]	3.5	6	10	14

# Technical brochure • Fan coil units VFC, sill installation Type VFC-0/ ... /EC/./FS, with standard primary air connection

## Dimensions, weight

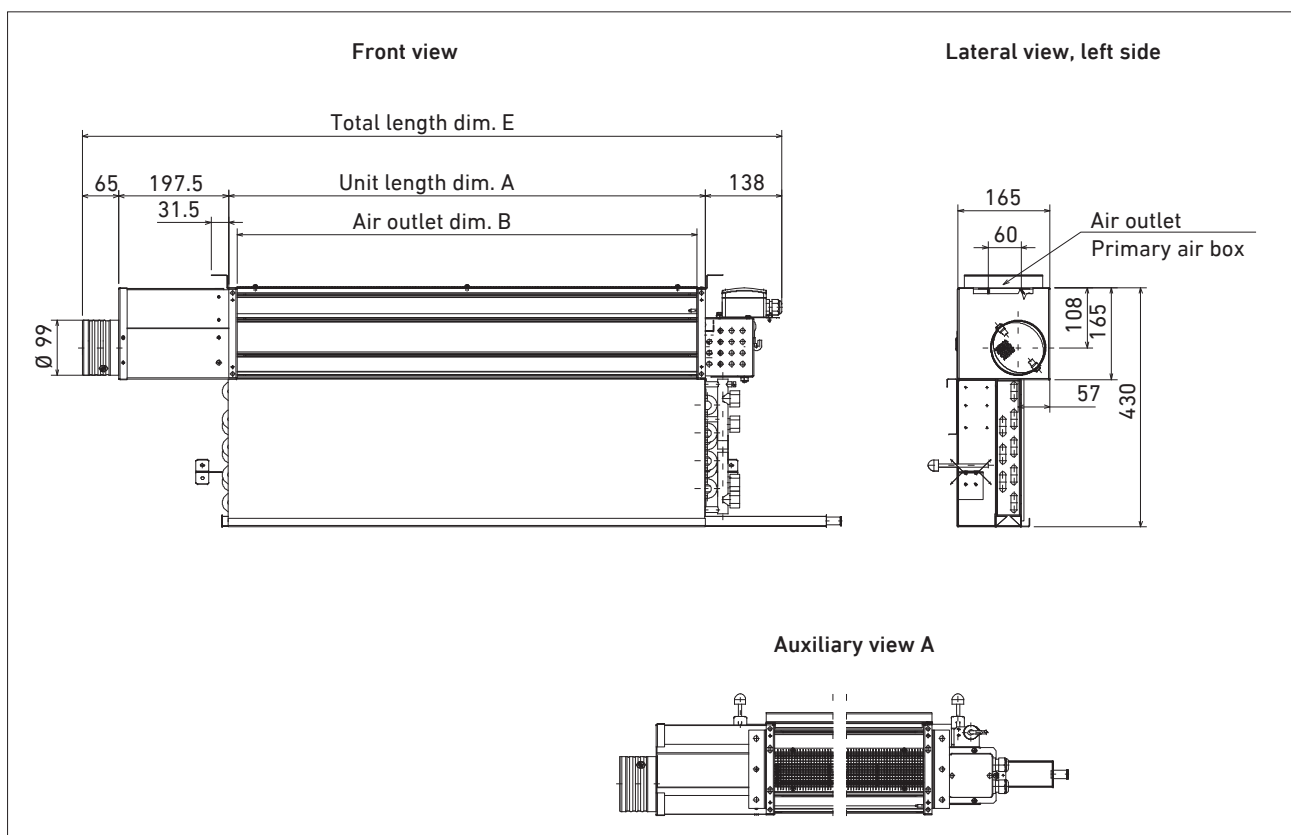


## Technical brochure • Fan coil units VFC, sill installation Type VFC-0/ ... /AC5/.. /FS, with primary air connection

### Dimensions, weight

Size	A	B [mm]	E	Weight * [kg]
500	527	497	928	14
630	627	597	1028	16
800	857	827	1258	20
1000	1057	1027	1458	24
1250	1257	1227	1658	29

\* approx. values, depending on design



Shown: Type VFC-0/4/800 (4-pipe system) with primary air connection by primary air box

### Technical data

See standard unit VFC-0/4/.../T (see page 8) and VFC-0/2/.../T (see page 9). Acoustic data may increase depending on primary air rate.

The **overall sound power level** is calculated as follows:

$$L_{wA} = 10^* \log (100,1^*L_{wA P} + 100,1^* L_{wA,VFC})$$

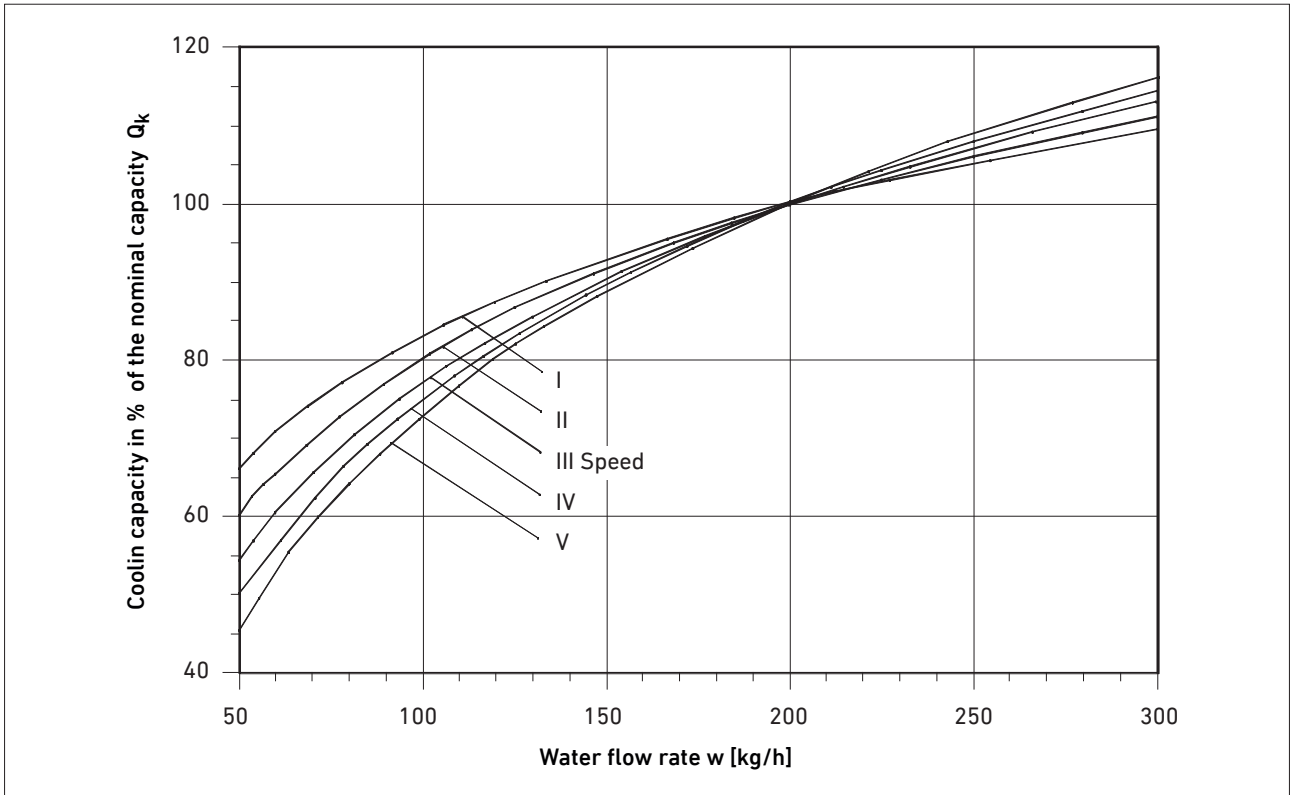
### Sound power level for separate primary air box (to be added to unit level)

1 socket (DN 100), with aluminium linear grille					
<b>V<sub>p</sub></b>	[m <sup>3</sup> /(hm)]	60	80	100	120
<b>L<sub>wA P</sub></b>	[dB(A)]	29	31	32	37
<b>Pressure loss</b>	[Pa]	3.5	6	10	14

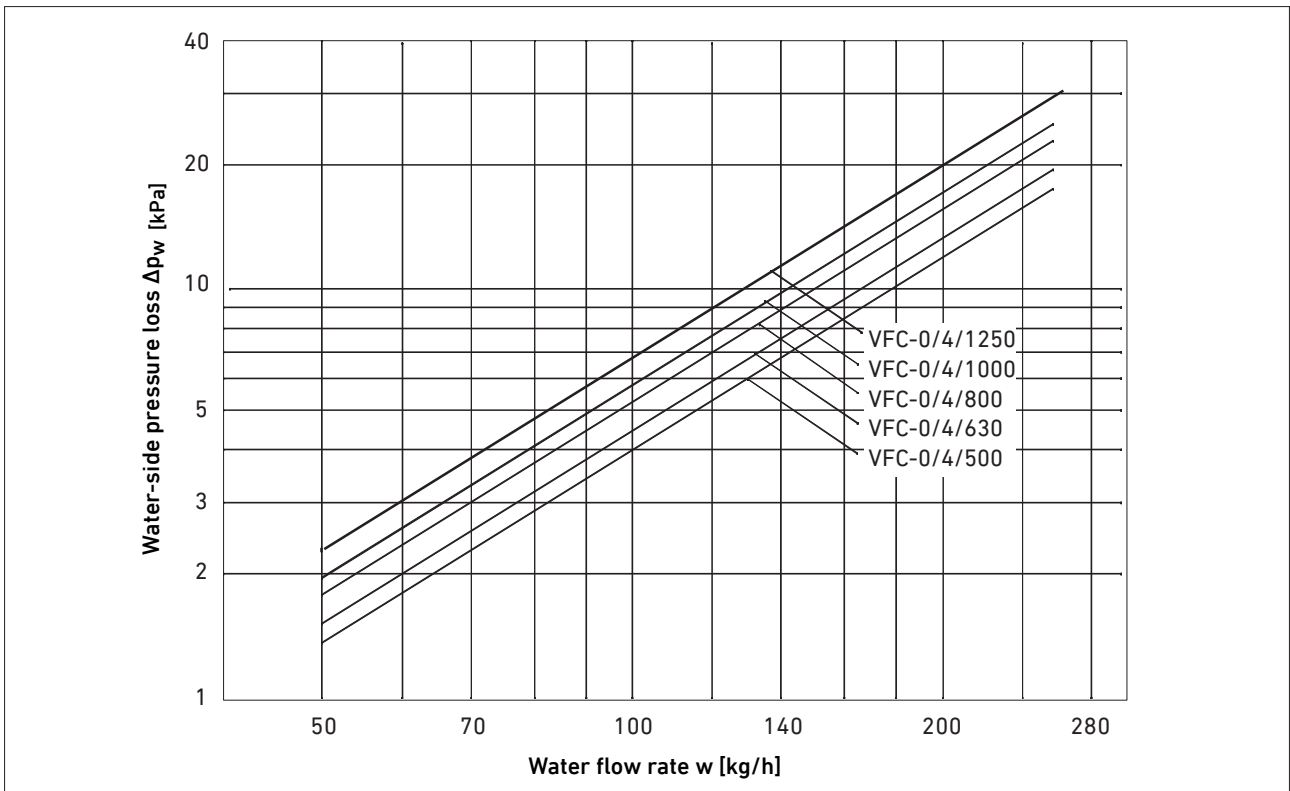


Technical brochure • Fan coil units VFC, sill installation  
 Type VFC-0/4, 4-pipe system

Cooling capacity for different water flow rates

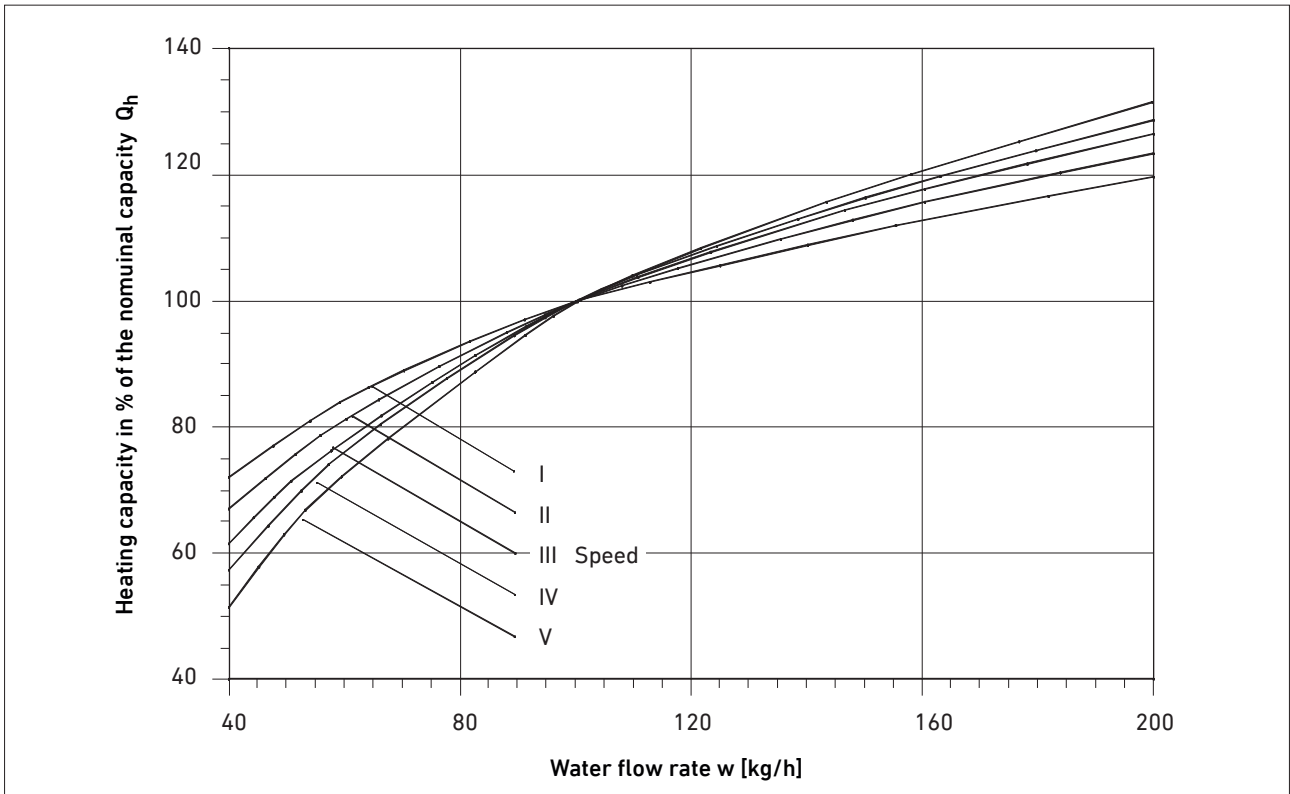


Water-side pressure loss of the cooler for different water flow rates

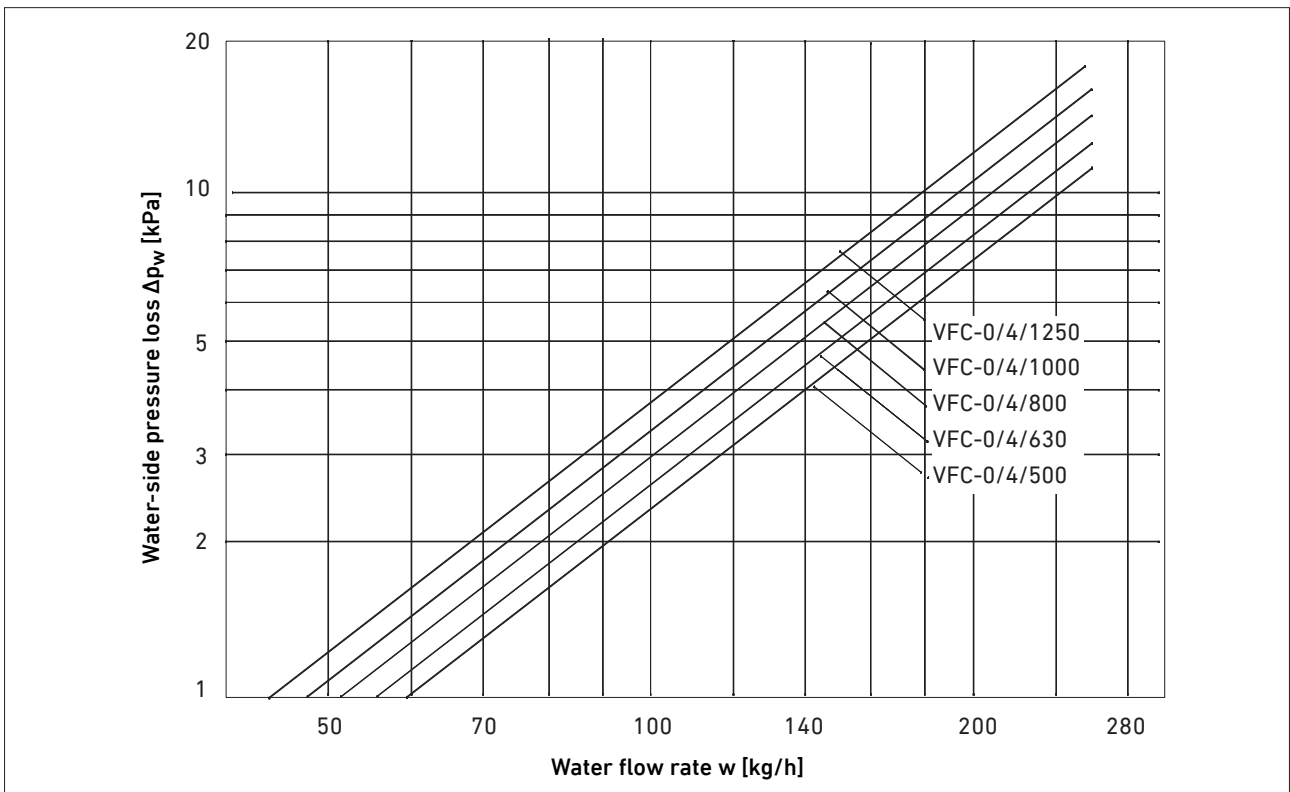


Technical brochure • Fan coil units VFC, sill installation  
 Type VFC-0/4, 4-pipe system

Heating capacity for different water flow rates

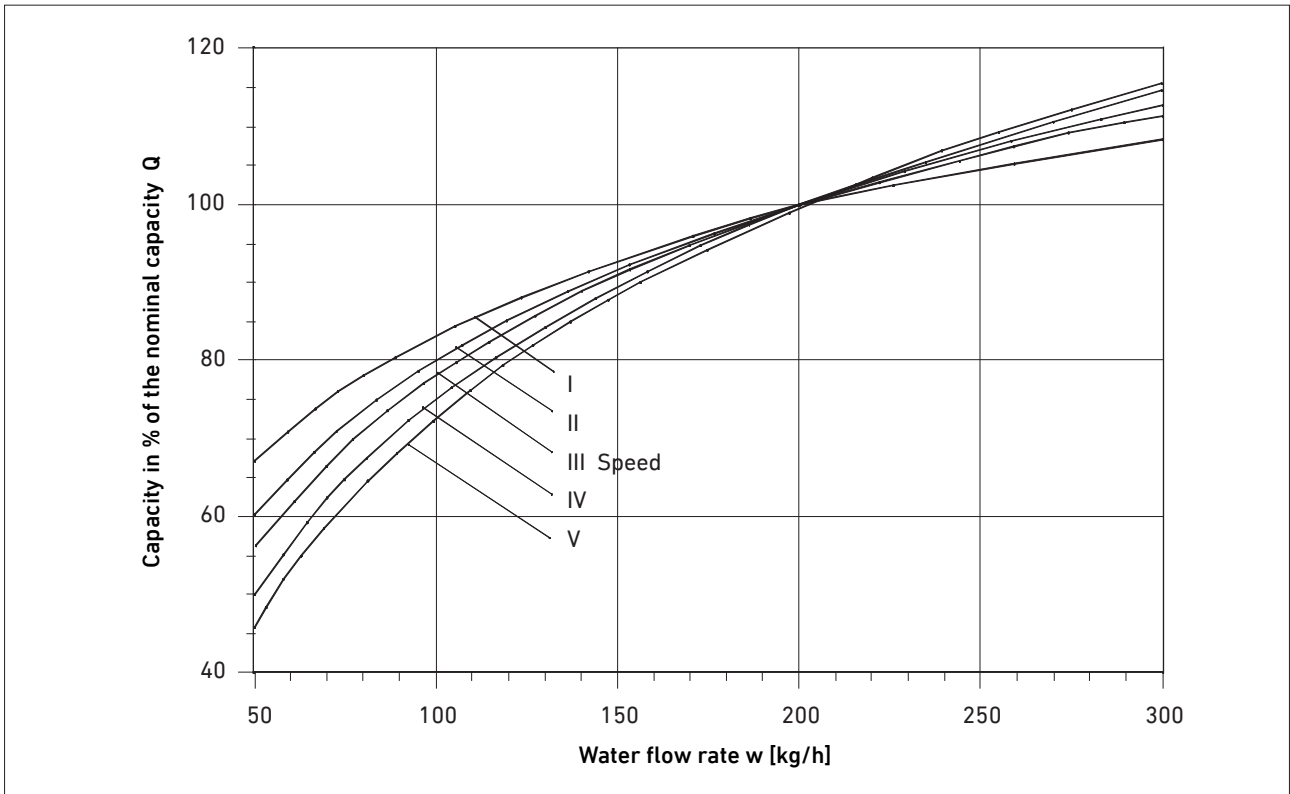


Water-side pressure loss of the heater for different water flow rates

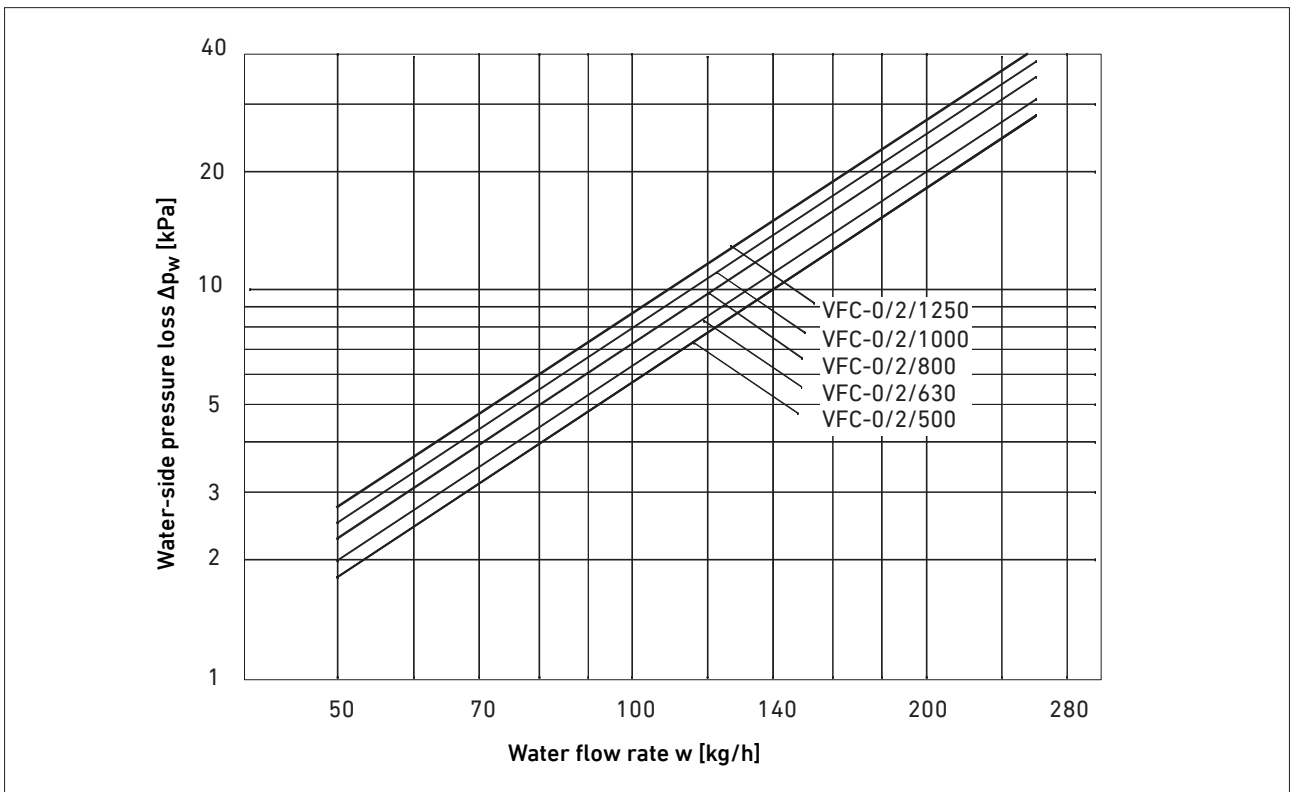


Technical brochure • Fan coil units VFC, sill installation  
 Type VFC-0/2, 2-pipe system

Capacity for different water flow rates

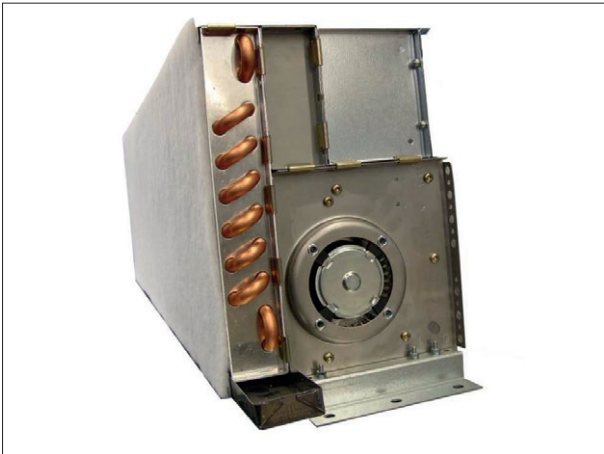


Water-side pressure loss for different water flow rates



## Technical brochure • Fan coil units VFC, sill installation Type VFC-N

### Unit views



### Application

The fan coil unit type VFC-N has been specifically designed for hotels and office buildings with strict acoustic requirements. It offers versatile possibilities for design of air distribution systems in the room.

### Advantages

- Very low installation depth of 280 mm
- Highly efficient EC and AC motors with low energy consumption
- Excellent aerodynamic integration of fan and large-area heat exchanger for high caloric output  $30...75 W_{th}/W_{el}$  with low sound level
- Very smooth running and low sound level thanks to vibration isolated tangential fan and low-noise slide bearings
- Heat exchanger for efficient room heating via natural convection
- Fan with maintenance free, low-noise slide bearings for long service life
- Air guiding elements for patented, optimised LTG mixed/displacement air ventilation, adjustable to a variety of room geometries (optional)

### Operation principle

The tangential fan of the VFC-N draws in room air at the unit's bottom side. This air passes through a heat exchanger (cooling or heating) and is then returned into the room.

Output control is water-side using valves.



*Example of room air flow VFC-N with special fan insert for mixed/displacement air*

### Design

- 2-pipe system for cooling only or heating only (type VFC-N/2)
- 4-pipe system for cooling and heating (type VFC-N/4)

# Technical brochure • Fan coil units VFC, sill installation

## Type VFC-N/.../T/.../EC

### Specification

Fan coil unit with one heat exchanger for cooling or heating the room air (type VFC-N/2) resp. with one heat exchanger with two separate circuits for cooling and heating the room air (type VFC-N/4).

Water-side control by valves.

Particularly small built-in depth and height, therefore especially appropriate for a room-saving installation in sills.

For non-condensing operation.

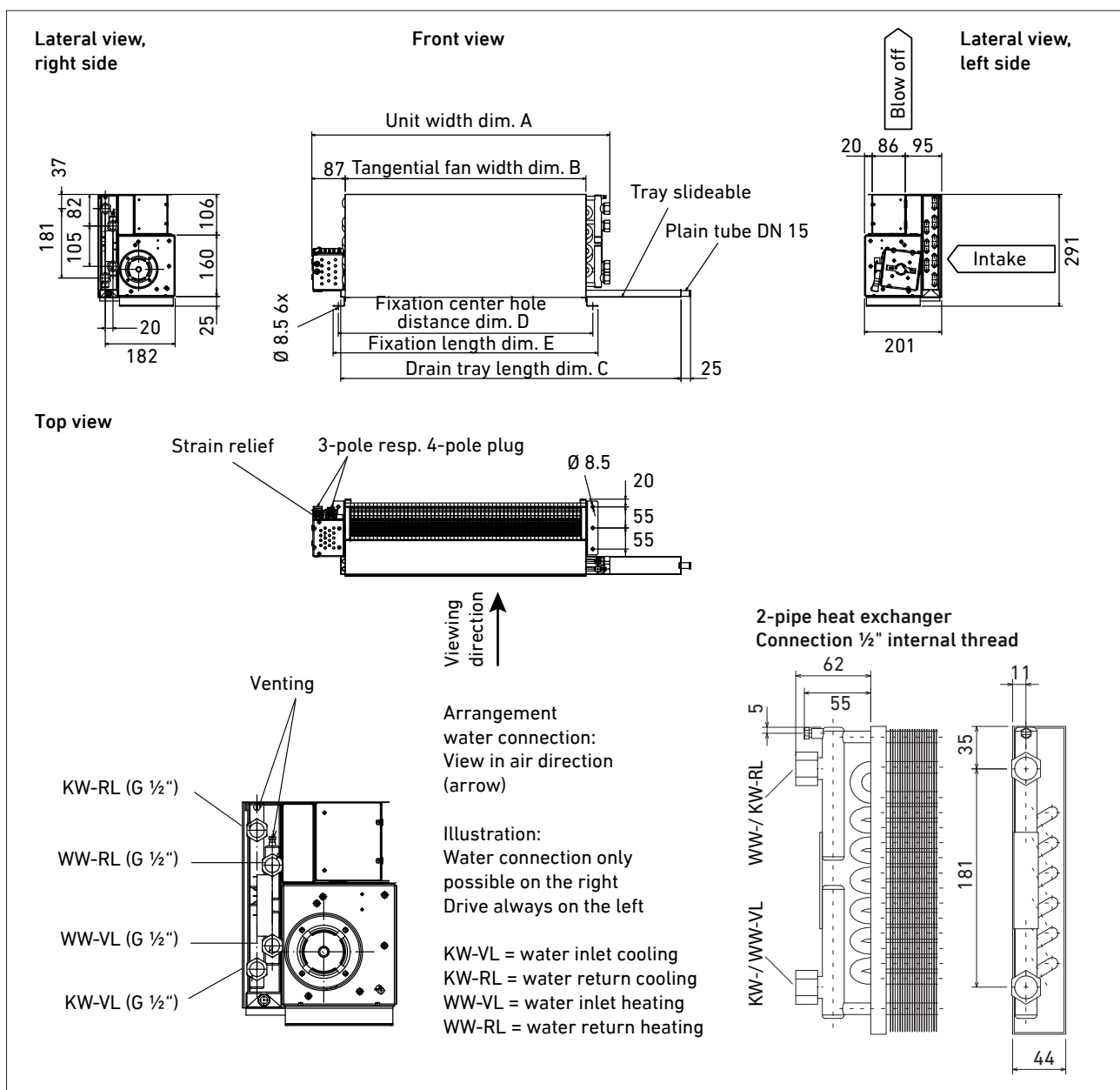
Vertical installation.

Water connection on the right.

### Dimensions, weight

Size	A (EC)	B	C	D	E	Weight *
500	647	497	586	533	560	15
630	777	627	731	663	690	18
800	947	797	886	833	860	23
1000	1147	997	1086	1033	1060	28
1250	1397	1247	1336	1283	1310	33

\* approx. values, depending on version



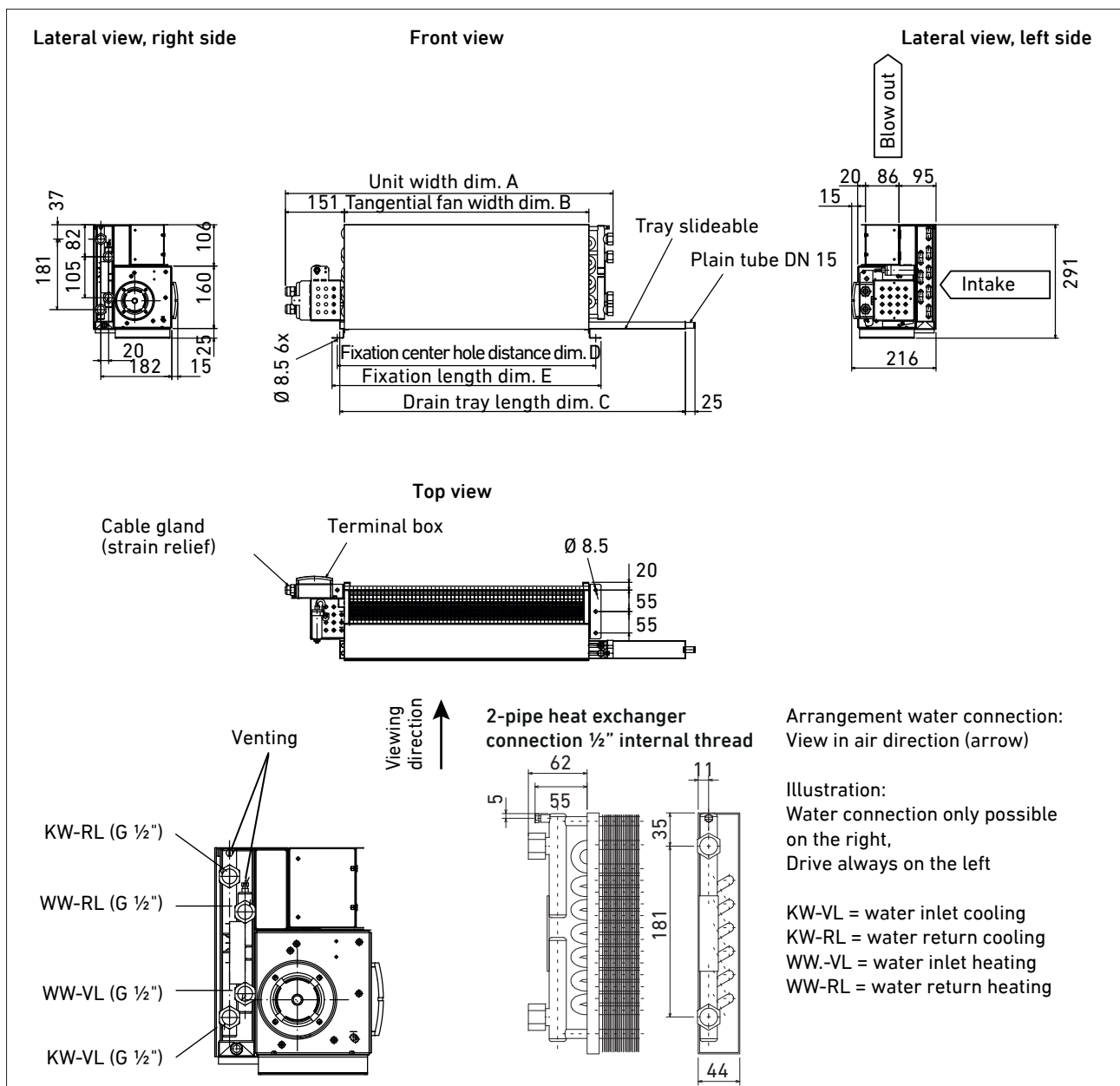
Type VFC-N/4/.../T/.../EC, 4 pipe system, with EC motor

# Technical brochure • Fan coil units VFC, sill installation Type VFC-N/.../T/.../AC5

## Dimensions, weight

Size	A (AC)	B	C	D	E	Weight *
500	711	497	586	533	560	15
630	841	627	731	663	690	18
800	1011	797	886	833	860	23
1000	1211	997	1086	1033	1060	28
1250	1461	1247	1336	1283	1310	33

\* approx. values, depending on version



Type VFC-N/4/.../T/.../AC5, 4-pipe system, with AC motor

## Technical brochure • Fan coil units VFC, sill installation Type VFC-N/4/800, 4-pipe system

### Technical data VFC-N/4/800, 4-pipe system, size 800

n [-]	V [m <sup>3</sup> /h]	L <sub>WA mF</sub> <sup>2)</sup> [dB(A)]	[W/K]				[kg/h]		[W]	
			Q <sub>k oF/Δt</sub> <sup>1)</sup>	Q <sub>k mF/Δt</sub> <sup>2)</sup>	Q <sub>h oF/Δt</sub> <sup>1)</sup>	Q <sub>h mF/Δt</sub> <sup>2)</sup>	w <sub>ok/Δpw</sub>	w <sub>oh/Δpw</sub>	P <sub>el</sub> (AC)	P <sub>el</sub> (EC)
I	220	30	49	43	36	33	200/16	100/3.1	16	5
II	260	32	55	50	40	37			20	6
III	290	34	62	57	43	41			23	9
IV	340	38	67	64	46	44			25	11
V	380	43	74	70	50	47			31	17

1) Values apply to the unit with air outlet grille, without filter

2) Values apply to the unit with air outlet grille, with filter

Values may vary when units are installed.

For a detailed dimensioning, please consult your responsible LTG branch.

**n** - Speed

**V** - Flow rate (tolerance ± 10 %)

**L<sub>WA mF</sub>** - Sound power level ± 3 dB(A) (without ceiling panelling, with filter)

**Q<sub>k oF</sub>** - Cooling capacity (without filter)

**Q<sub>k mF</sub>** - Cooling capacity (with filter)

**Q<sub>h oF</sub>** - Heating capacity (without filter)

**Δt** - Temperature difference between suction air temp. before entering heat exchanger and water inlet

**Q<sub>h mF</sub>** - Heating capacity (with filter)

**w<sub>ok</sub>** - Standard water flow rate at cooling capacity  
- (correction for other flow rates see from page 24)

**w<sub>oh</sub>** - Standard water flow rate at heating capacity  
- (correction for other flow rates see from page 24)

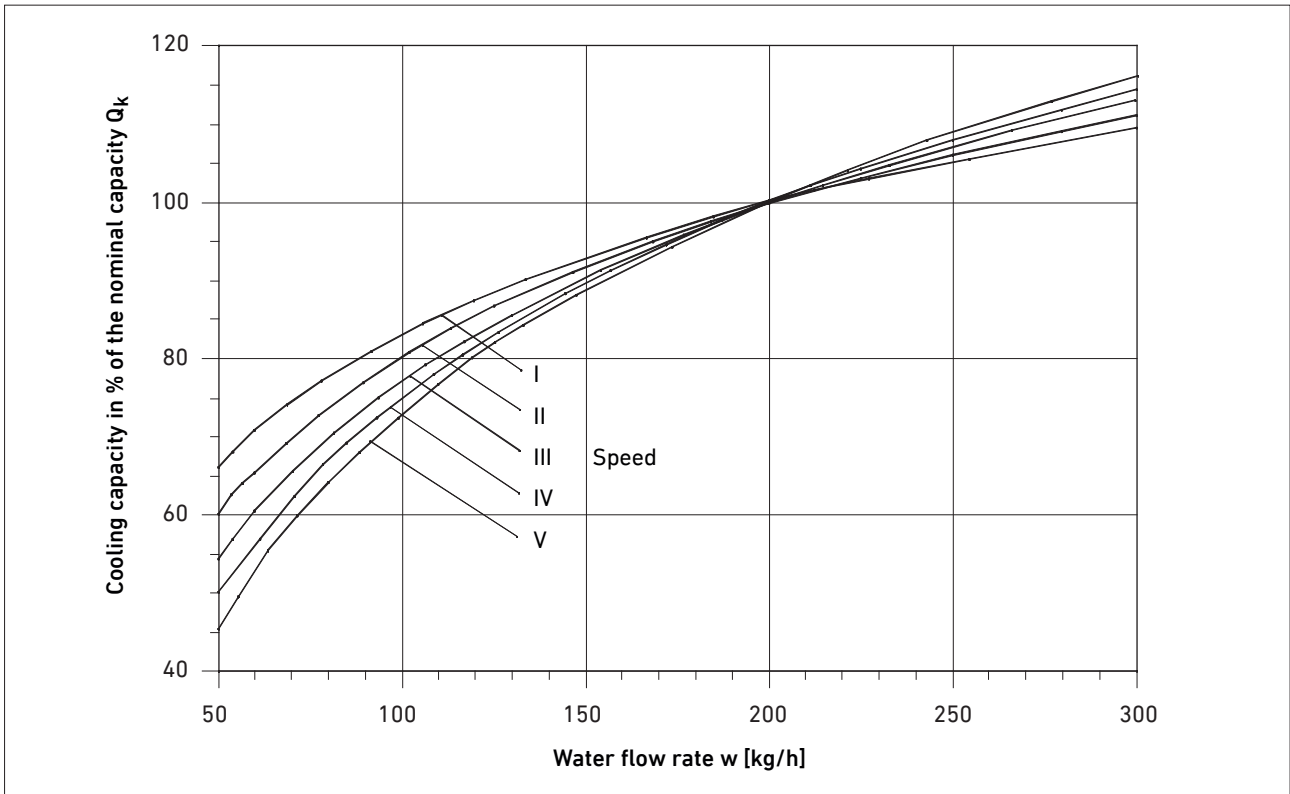
**P<sub>el</sub>** - Electric power consumption (± 20 %)

### Speed control wiring diagram

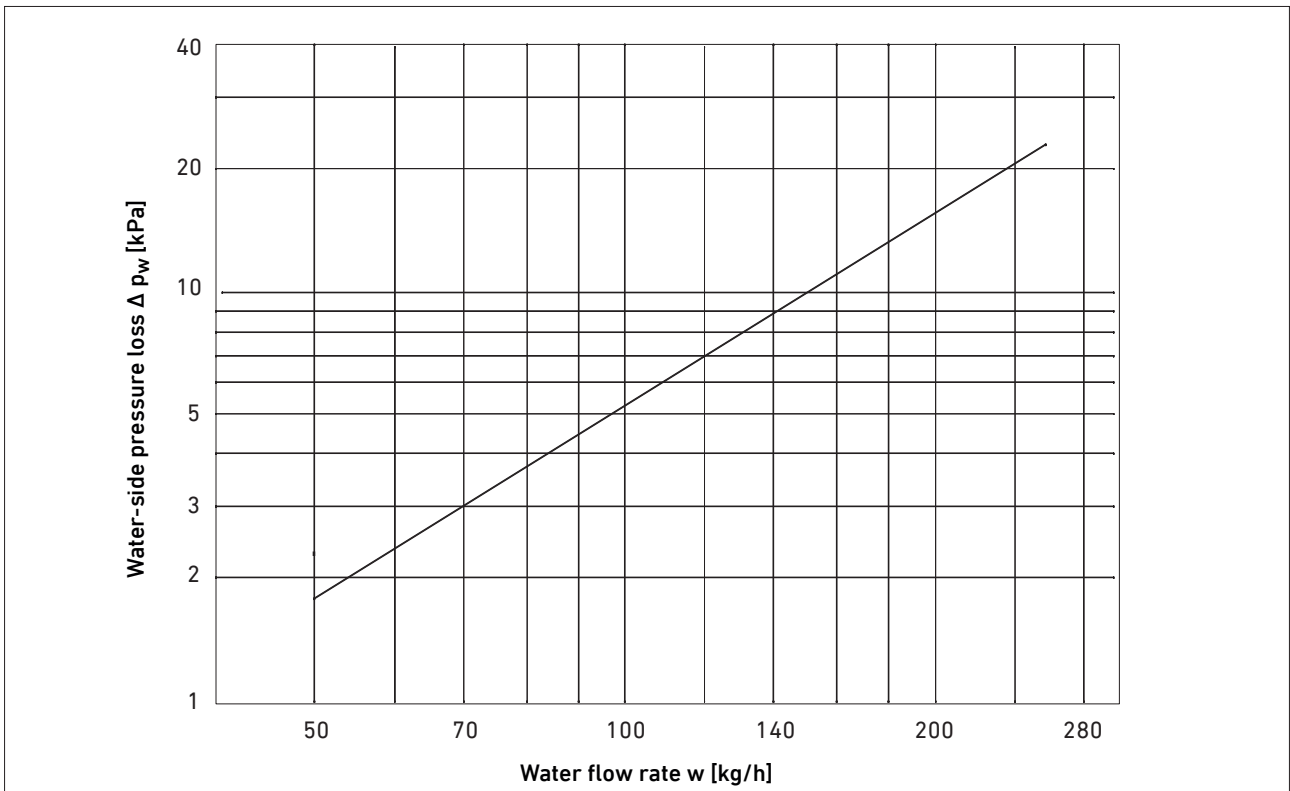
See pages 28/29.

Technical brochure • Fan coil units VFC, sill installation  
 Type VFC-N/4/800, 4-pipe system, size 800

Cooling capacity for different water flow rates



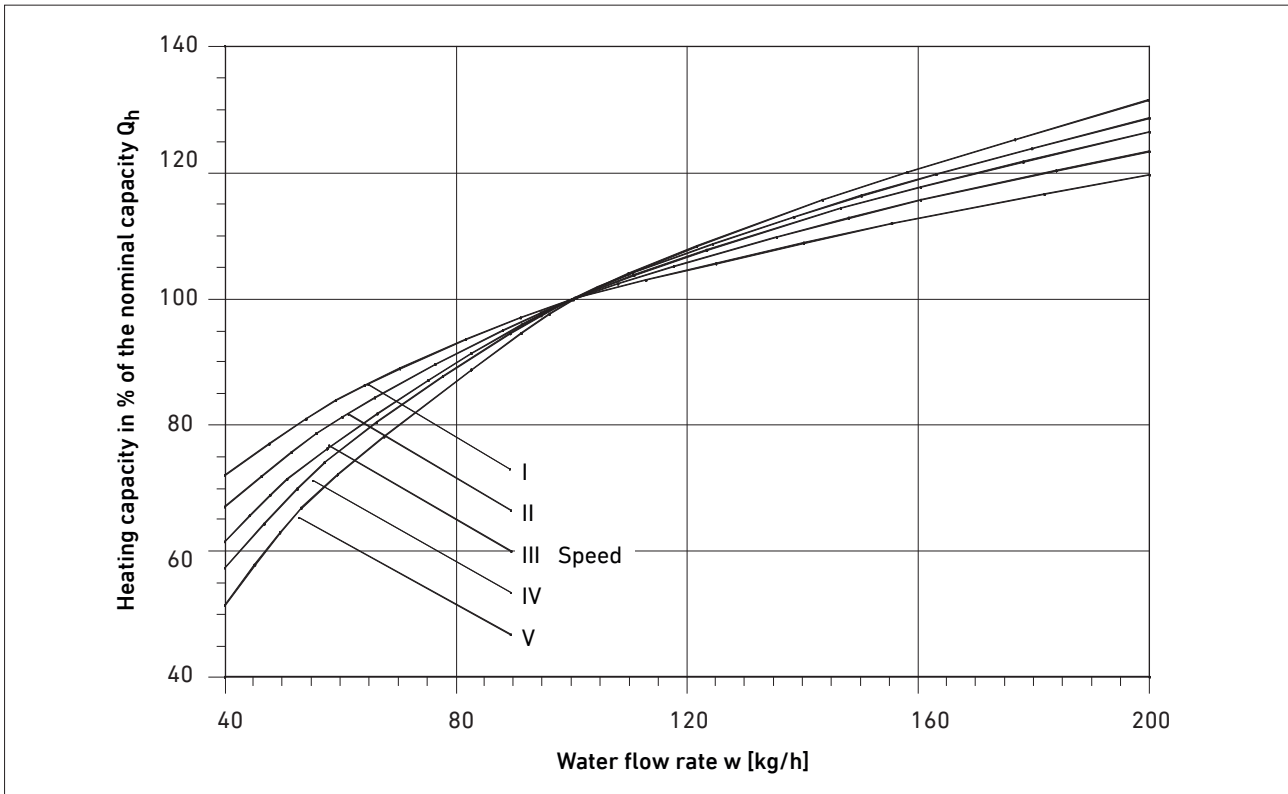
Water-side pressure loss of the cooler for different water flow rates



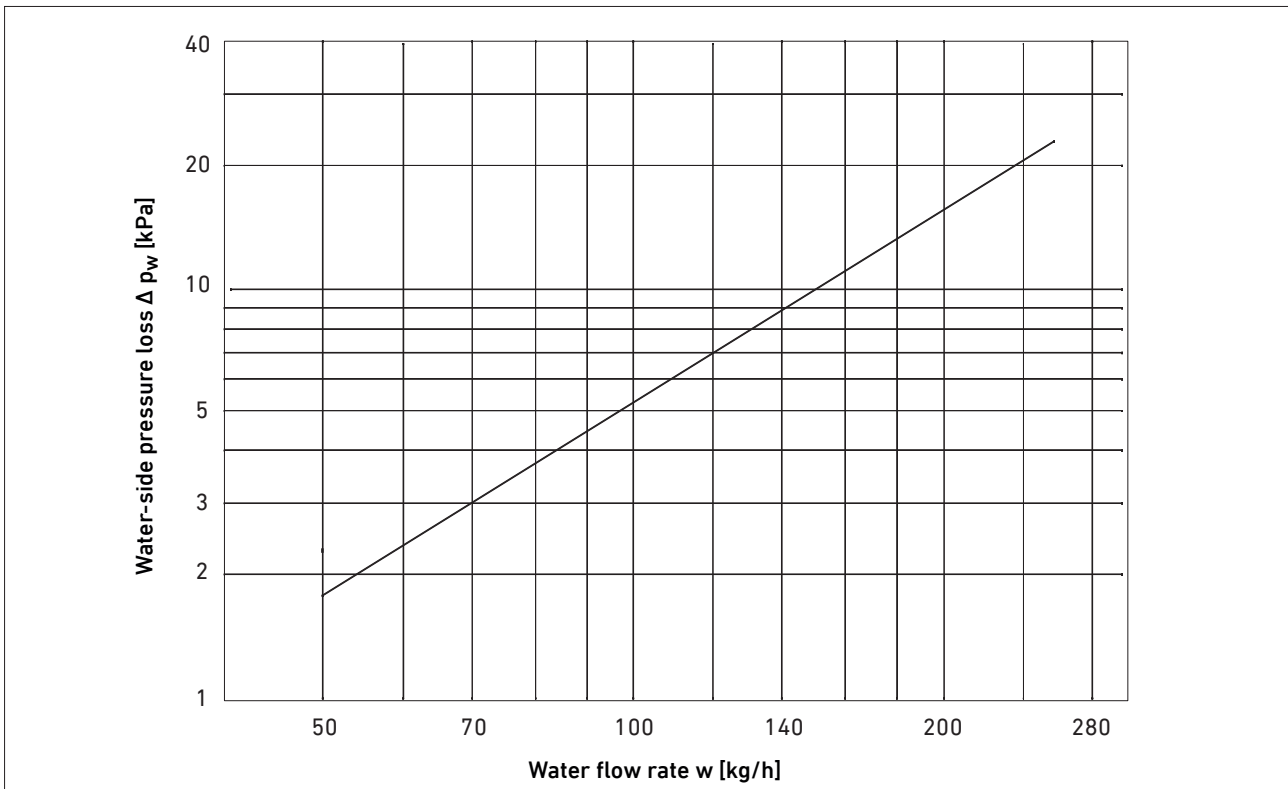


## Technical brochure • Fan coil units VFC, sill installation Type VFC-N/4/800, 4-pipe system, size 800

### Heating capacity for different water flow rates

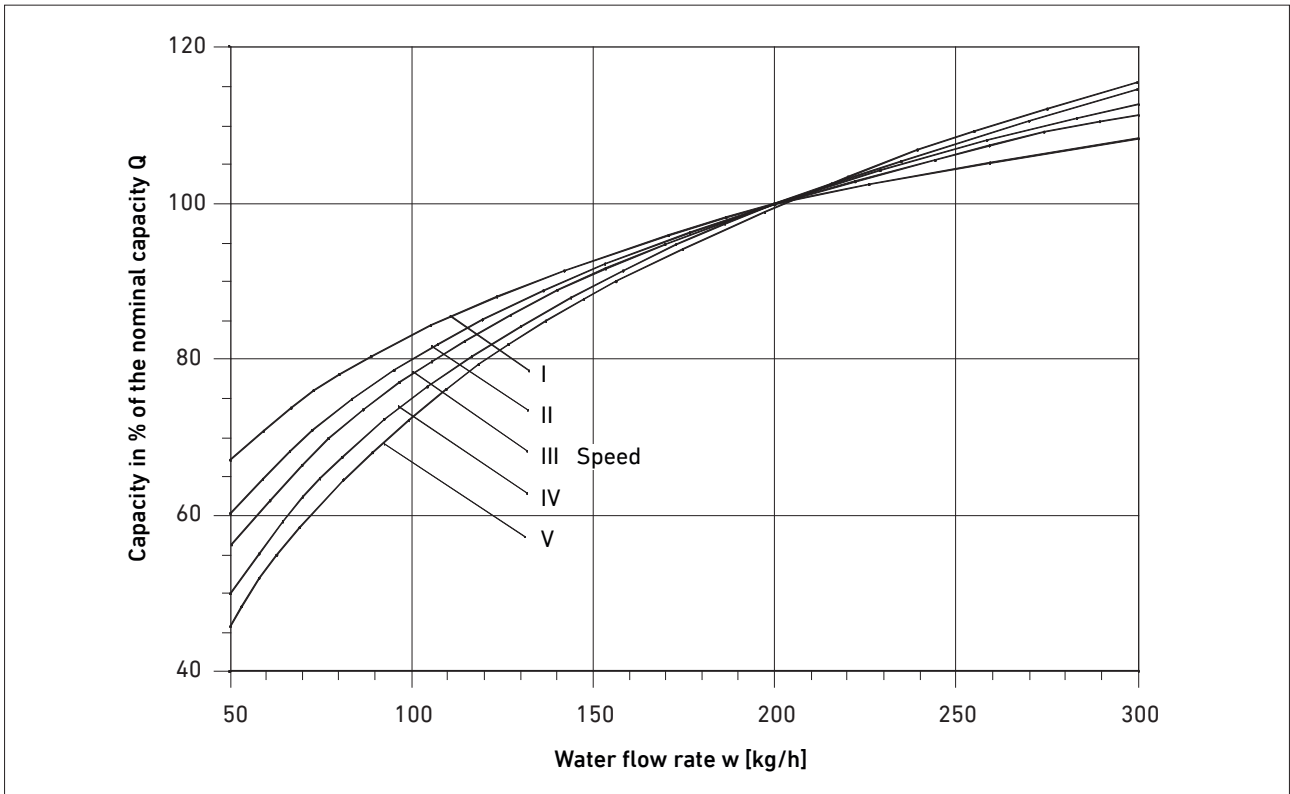


### Water-side pressure loss of the heater for different water flow rates

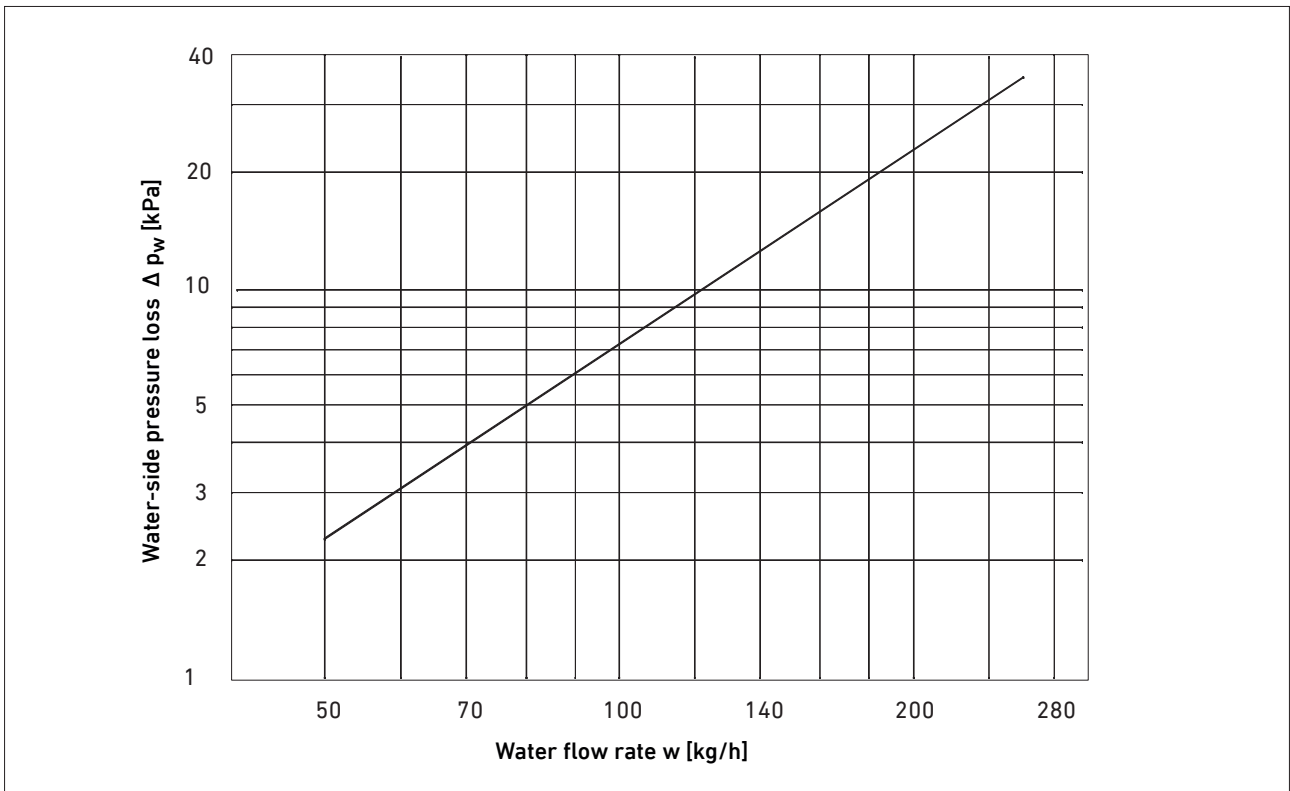


Technical brochure • Fan coil units VFC, sill installation  
 Type VFC-N/2/800, 2-pipe system, size 800

Capacity for different water flow rates



Water-side pressure loss for different water flow rates



## Technical brochure • Fan coil units VFC, sill installation

### Operation with Connected Intelligence (CI)

#### Function

The CI board, which is optionally installed in each fan coil unit or decentralised ventilation unit *FVPpulse*, 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.

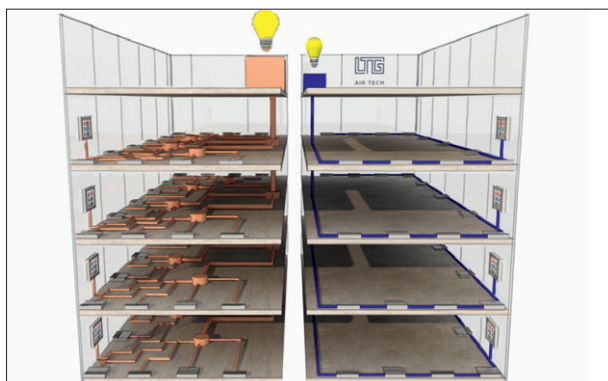
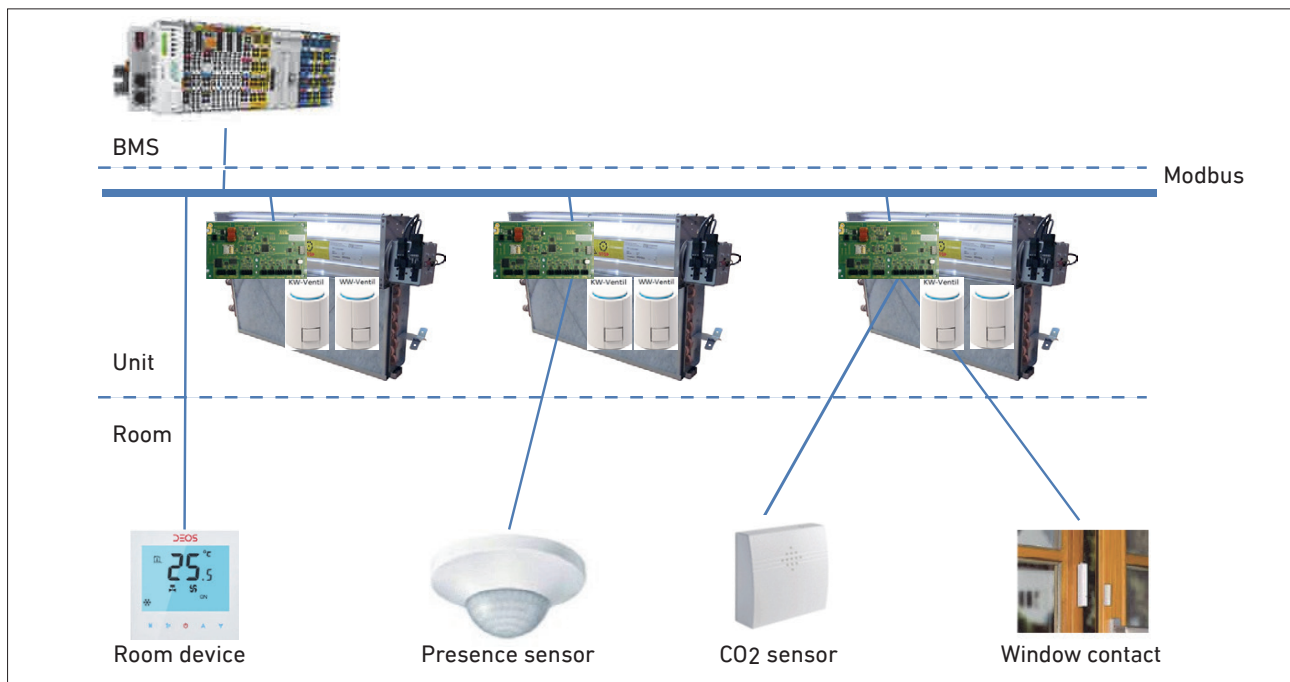
See the Connected Intelligence technical leaflet for more detailed information

#### With superordinate BMS, with Modbus RTU

The VFC 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 (*FVPpulse* 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<sub>2</sub> 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 VFC, sill installation

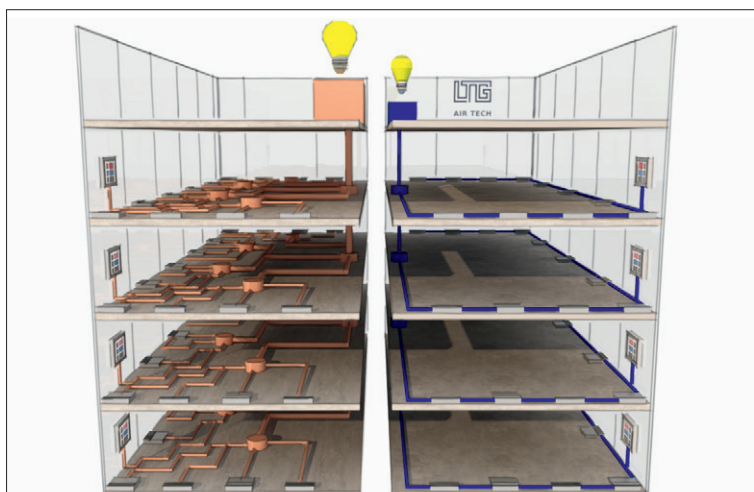
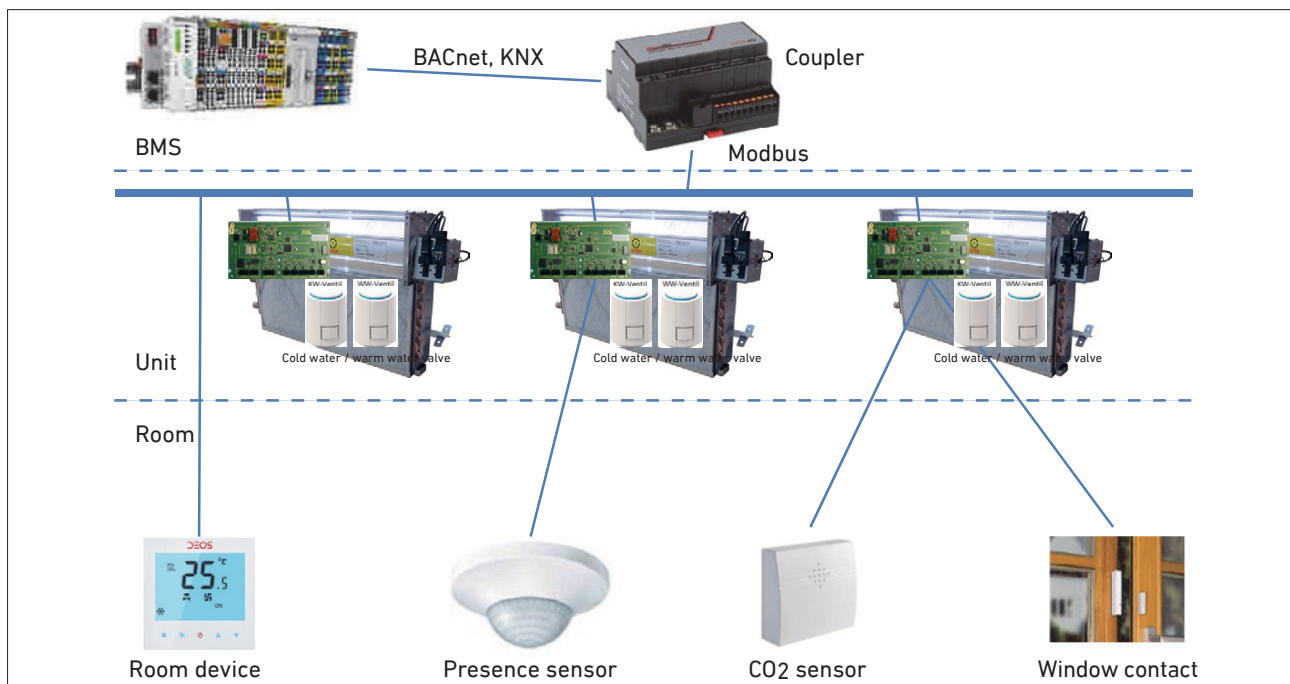
### Operation with Connected Intelligence - With superordinate BMS, with other bus system

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 VFC 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<sub>2</sub> 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 VFC, sill installation

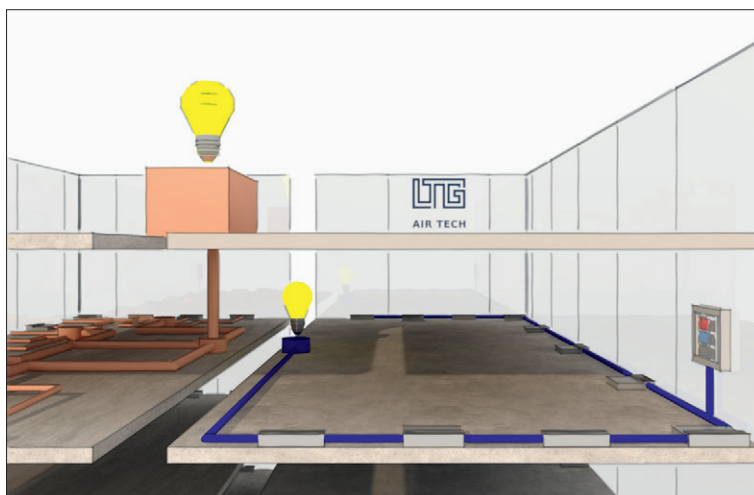
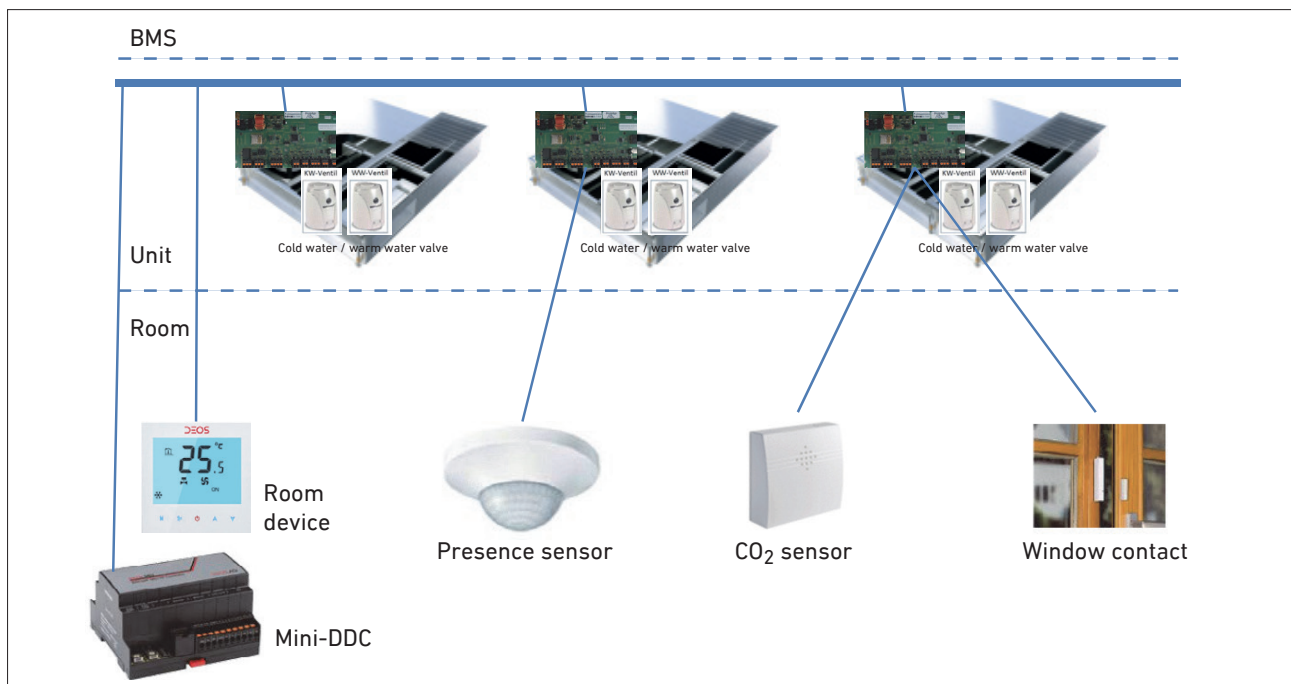
### Operation with Connected Intelligence – Without superordinate BMS, as stand-alone solution with several rooms/control zones

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 VFC 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<sub>2</sub> 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).



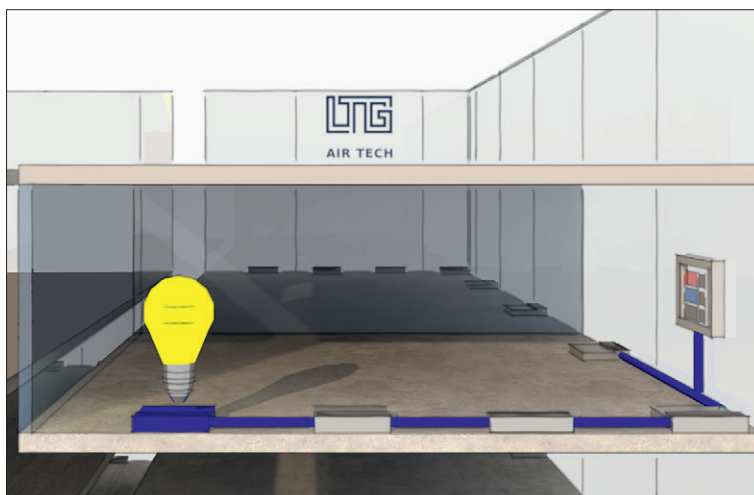
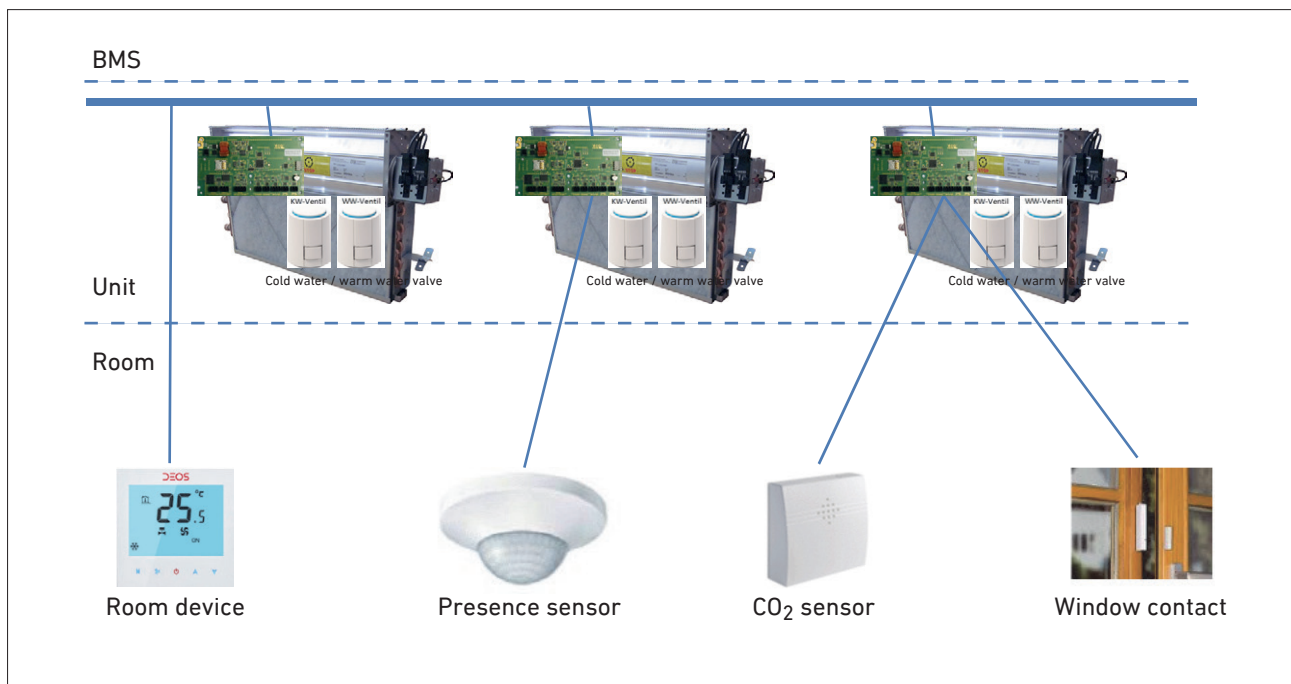
## Technical brochure • Fan coil units VFC, sill installation

### 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 fan coil units and/or decentralised ventilation units FVP*pulse*), 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 fan coil unit or decentralised ventilation unit FVP*pulse*. 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<sub>2</sub> 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 VFC, sill installation

### 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.

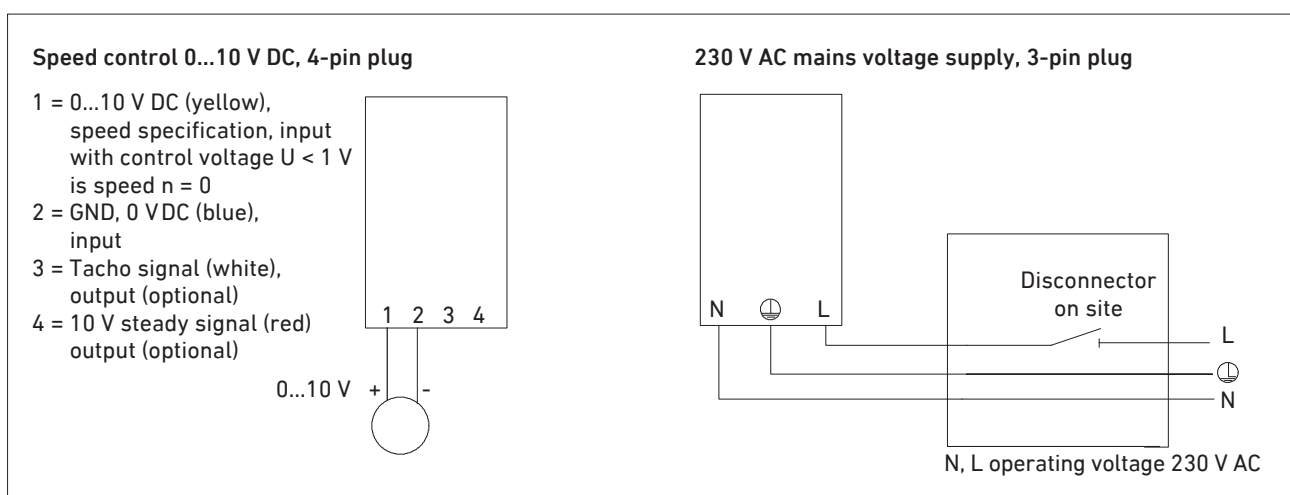
### Speed control wiring diagram for EC motor

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.

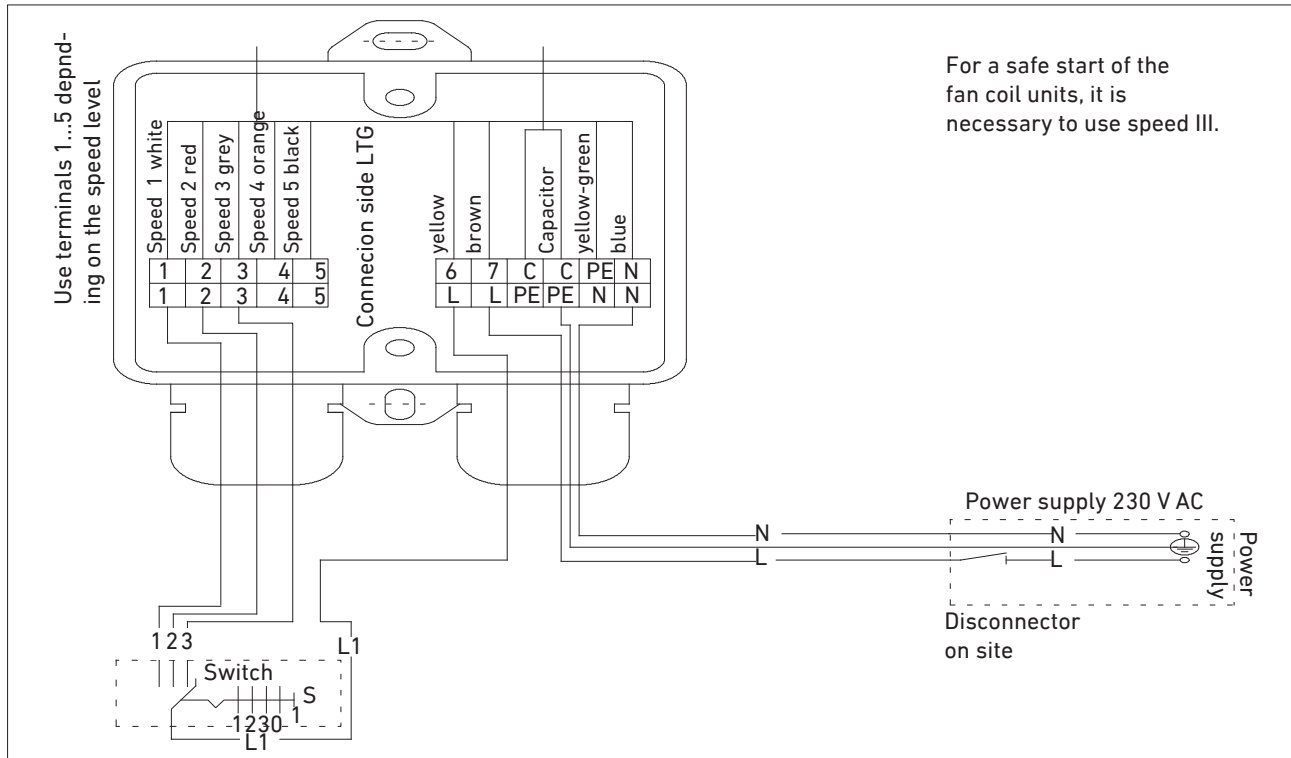
The controllers for this application are parametrised by others.



## Technical brochure • Fan coil units VFC, sill installation

### Speed control wiring diagram for AC motor 5 speeds

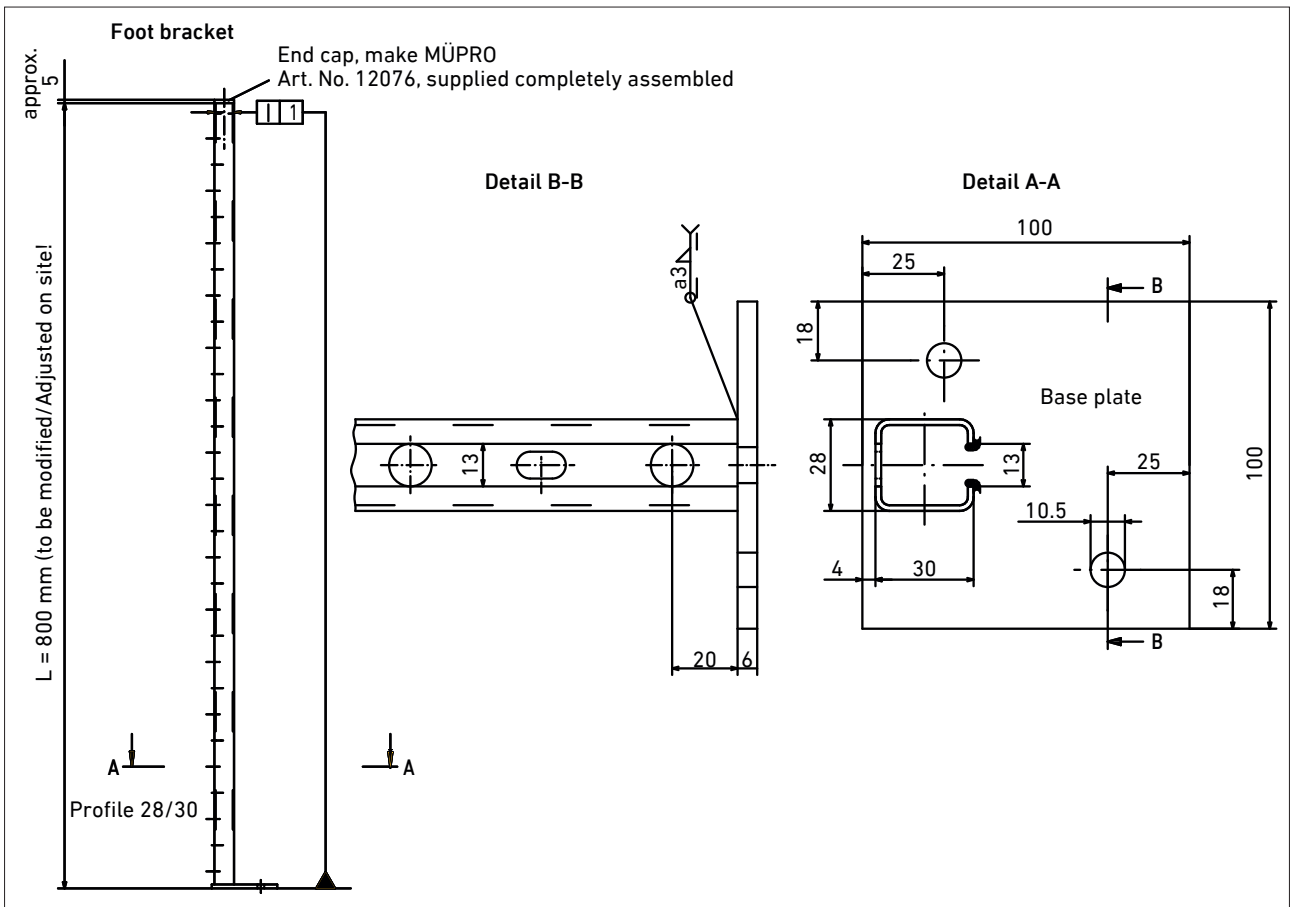
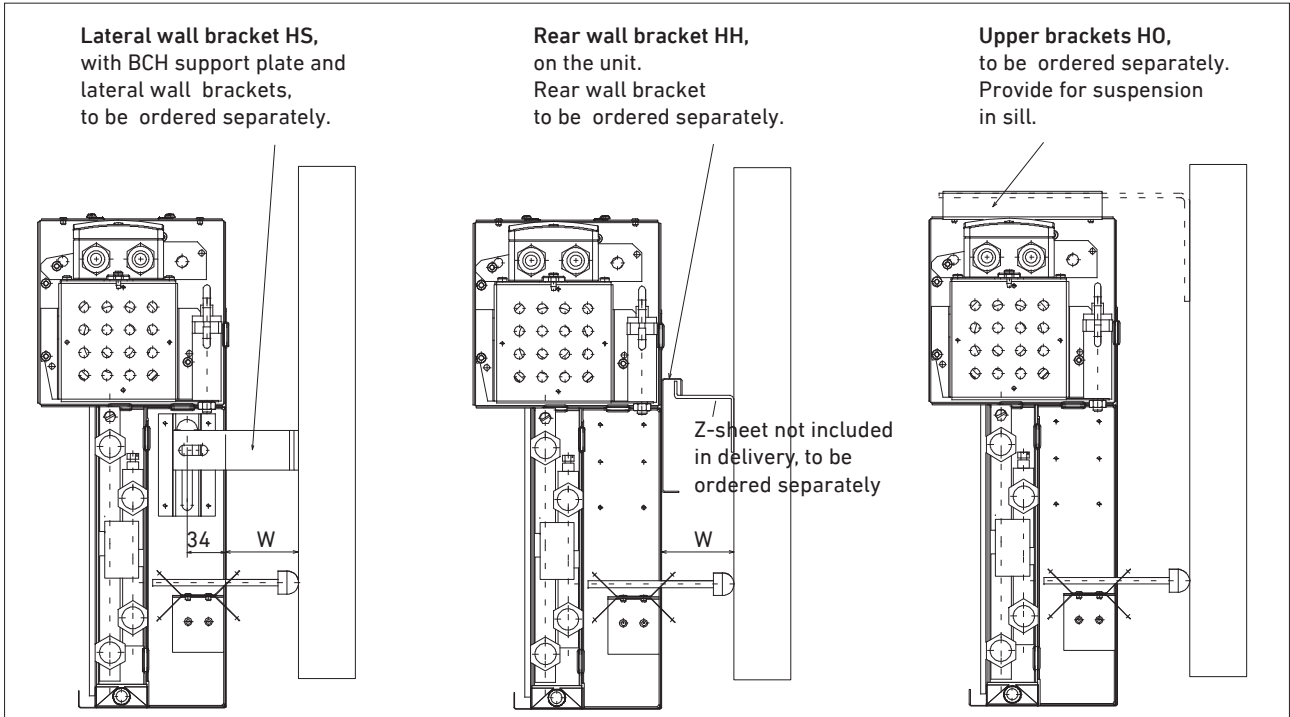
- Note:**
- Capacitor motor with 5 tapplings.
  - Multiple unit triggering possible through relays
  - The technical data contain details about the current consumption and the corresponding electrical power



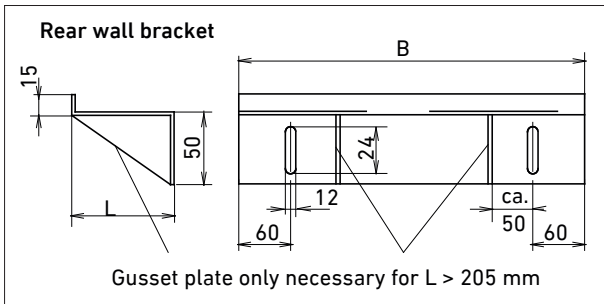


# Technical brochure • Fan coil units VFC, sill installation

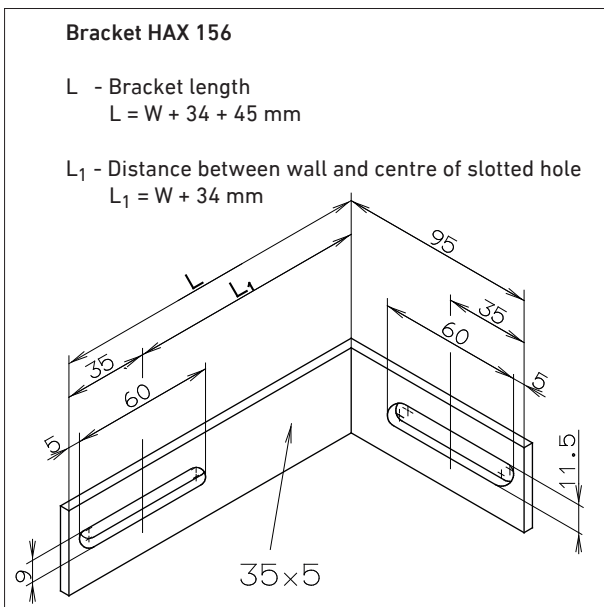
## Assembly, brackets (for type VFC-0)



## Technical brochure • Fan coil units VFC, sill installation



Size	B	L
	[mm]	
500	375	$L = W - 10 \geq 15$
630	495	
800	670	
1000	870	
1250	1110	



## Technical brochure • Fan coil units VFC, sill installation Type VFC-0/2/.../T/.../AC5, 2-pipe system

### Specification

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

Water-side control by valves.

Particularly small built-in depth and height, therefore especially appropriate for a room-saving sill installation.

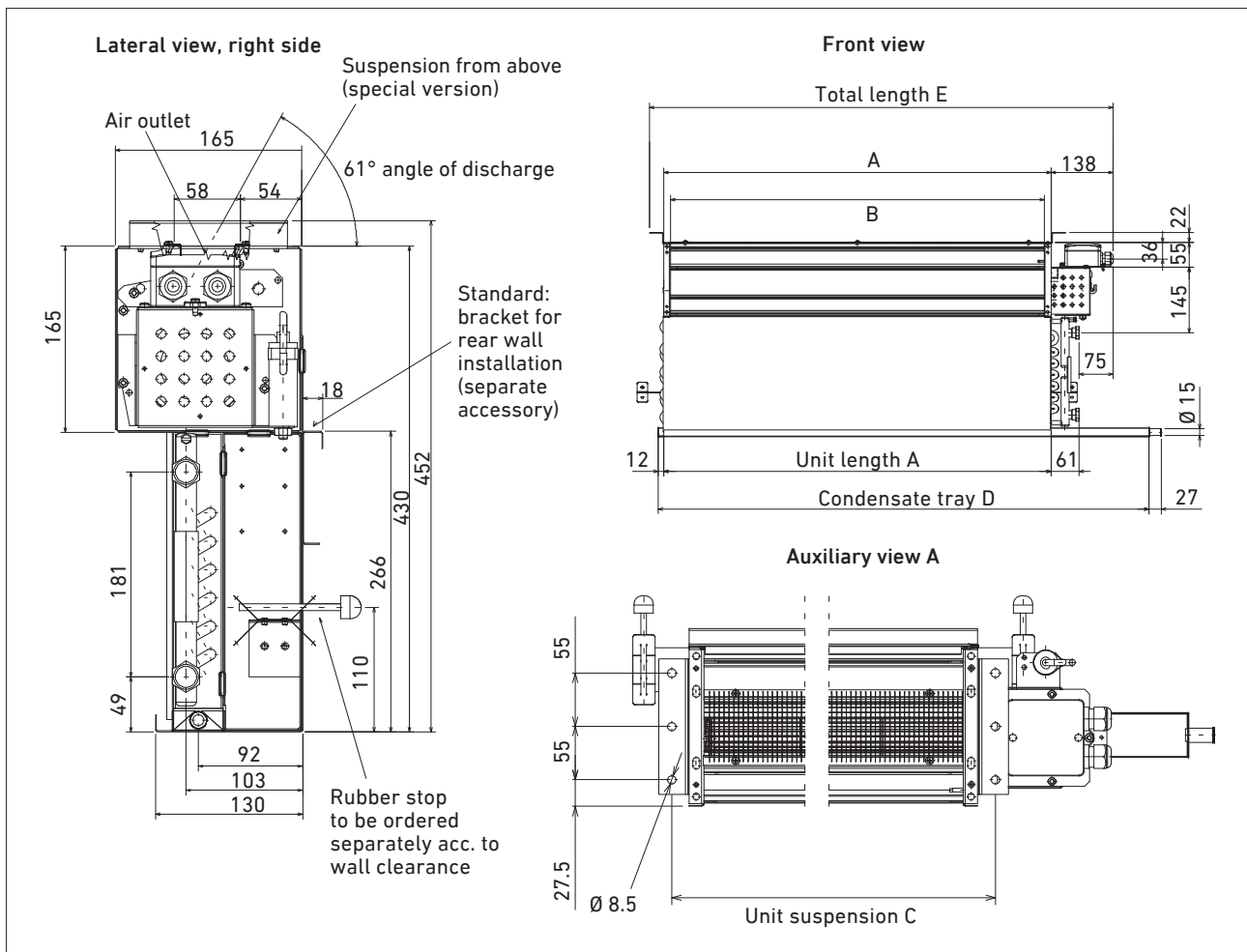
For extremely low inlet temperatures the unit is available with an insulated condensate tray (see page 10).

Vertical installation. Water connection on the right or left.

### Dimensions, weight

Size	A	B	C [mm]	D	E	Weight * [kg]
500	527	497	563	730	695	13
630	627	597	663	885	795	15
800	857	827	893	1085	1025	19
1000	1057	1027	1093	1335	1225	23
1250	1257	1227	1293	1535	1425	28

\* approx. values, depending on version



The unit may be mounted using one of the following possibilities (please state with your order):

- suspension from above (attachment to the sill) or
- wall mounting (rear suspension)  
(see brochure Accessories for LTG air conditioning units)

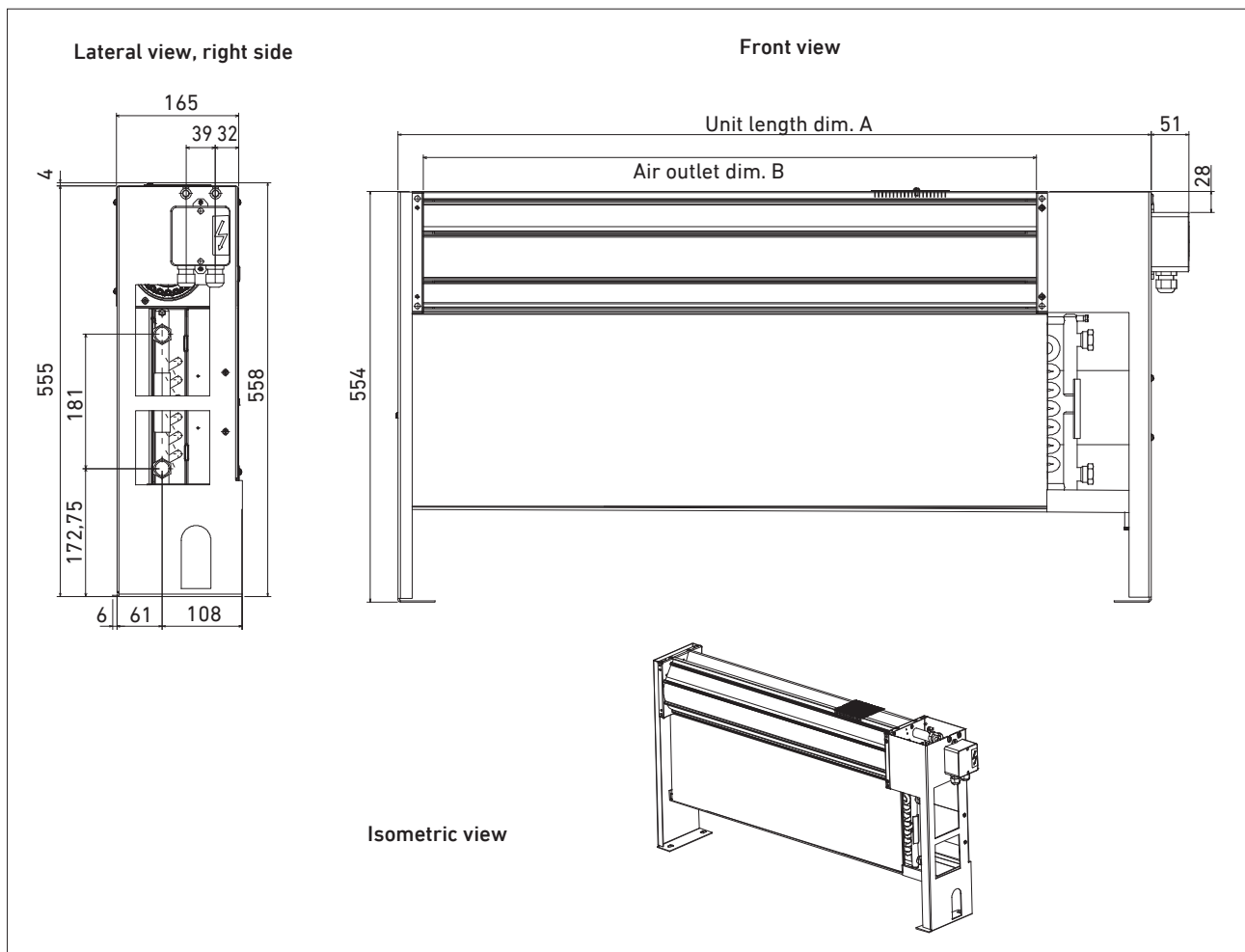
## Technical brochure • Fan coil units VFC, sill installation Type VFC-F, upright unit with solid floor fixation

### Specification

With console for fixation to the ground.

Dimensions, weight

Size	A	B	Weight [kg]
	[mm]		
630	786	597	19
800	1016	827	23
1000	1216	1027	27
1250	1416	1227	32



Size 630 (shown: 2-pipe unit), upright unit with solid floor fixation, without casing

### Technical data

See standard unit type VFC-0/4/.../T (see page 8) and VFC-0/2/.../T (see page 9).

## Technical brochure • Fan coil units VFC, sill installation Casing VK for upright units type VFC-F

### Specification

Casing (4 sides) of galvanised sheet metal. Consisting of a supporting structure of multi-bevelled U-sections, rear cover panel, angled panel, side parts, and air outlet grille LDC (aluminium). All visible surfaces high-quality powder coated similar to RAL, layer thickness 60 µm.

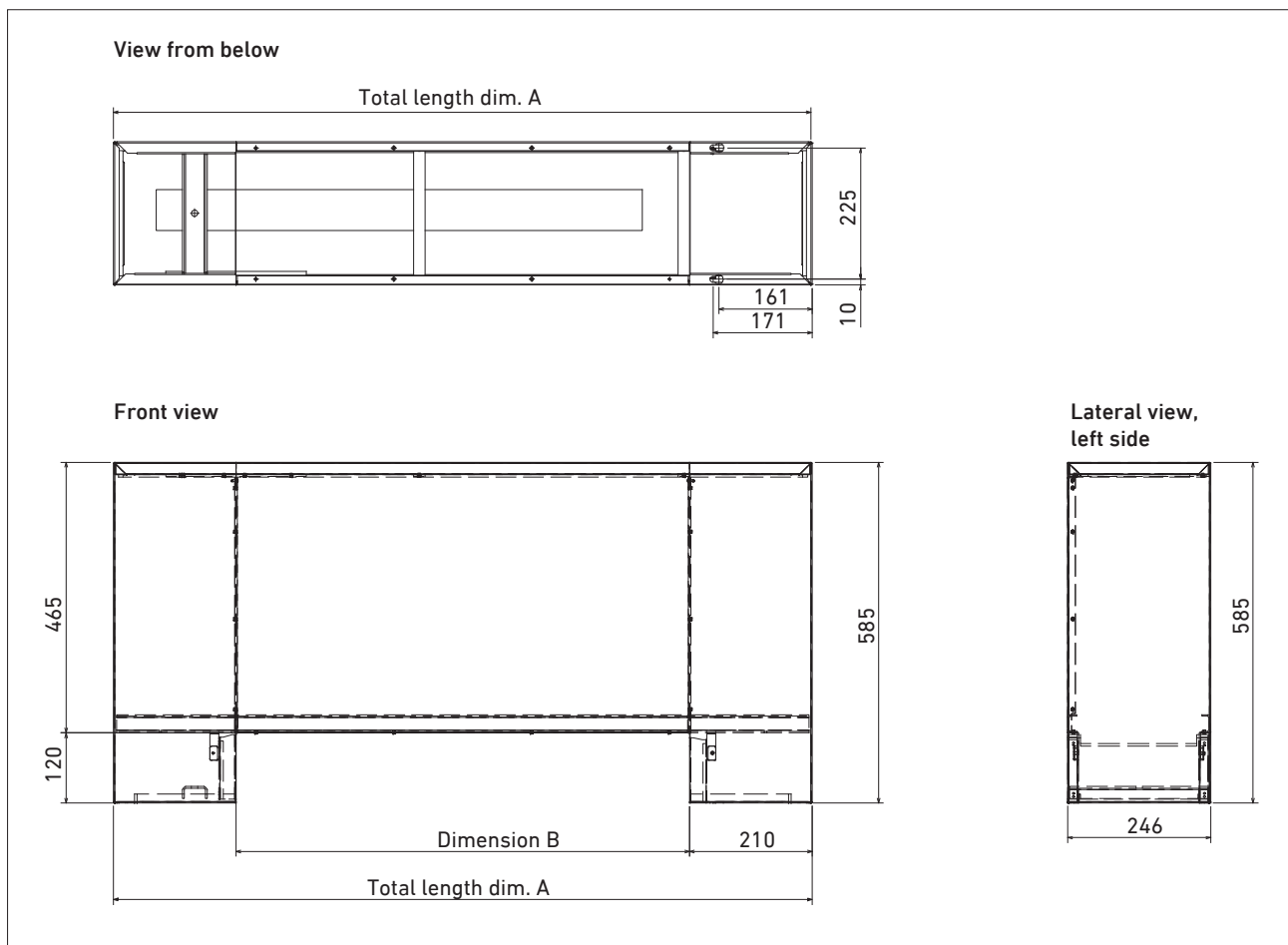
The VF unit is fixed to the casing using brackets.

Dimensions see chart.

### Dimensions, weight

Size	A	B	Weight
	[mm]		[kg]
<b>630</b>	970	605	16
<b>800</b>	1200	835	18
<b>1000</b>	1400	1035	21
<b>1250</b>	1600	1235	24

Special lengths on request



## Technical brochure • Fan coil units VFC, sill installation

### Nomenclature, ordering code

**VFC-0 / 2 / 800 / T / SR / EC / WR / OL / – / OA / OE / MF / HS / CI**

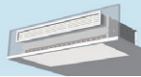

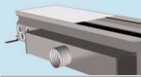

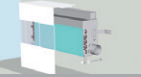
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15)

(1) <b>Series</b>	<b>VFC</b>	= Fan coil unit VFC
(2) <b>Type</b>	<b>O</b>	= Standard (wall or floor fixation)
	<b>N</b>	= Low height
	<b>F</b>	= Upright unit with solid floor fixation (matching console/panelling VK, on request)
(3) <b>Heat exchanger</b>	<b>2</b>	= 2-pipe
	<b>4</b>	= 4-pipe
(4) <b>Size</b>	<b>500</b>	= 500 (for type VFC-0 only)
	<b>630</b>	= 630
	<b>800</b>	= 800
	<b>1000</b>	= 1000
(5) <b>Condensate tray</b>	<b>T</b>	= Without additional condensate tray, with drain tray
	<b>E</b>	= With additional condensate tray (for type VFC-0 only, is supplied loose)
(6) <b>Condensate drain *</b>	<b>O</b>	= Without (for version T only)
	<b>SR</b>	= Lateral right (for version T only)
	<b>SL</b>	= Lateral left (for version T only)
	<b>UR</b>	= Bottom right
	<b>UL</b>	= Bottom left
(7) <b>Fan motor *</b>	<b>AC5</b>	= AC motor 5 speeds (always on the right)
	<b>EC</b>	= EC motor, 0...10 V (always on the right)
(8) <b>Water connection *</b>	<b>WR</b>	= On the right
	<b>WL</b>	= On the left (for type VFC-0 only)
(9) <b>Primary air connection *</b>	<b>OL</b>	= Without primary air connection (standard)
	<b>FS</b>	= With primary air connection (always on the left, with KLI DN 100, for type VFC-0 only)
	<b>FL</b>	= With inductive linear diffuser LDB 20 <i>classic</i> 1/00/E6-EV1/black cylinders, with SDA (for type VFC-0 only)
(10) <b>Primary air socket *</b>	<b>–</b>	= Without (for version OL only)
	<b>SL</b>	= Lateral left (for version FS only)
	<b>UL</b>	= Bottom left (for version FS and WR only)
	<b>VR</b>	= Front right (for version FL and WL only)
	<b>VL</b>	= Front left (for version FL and WR only)
(11) <b>Discharge socket</b>	<b>OA</b>	= Without discharge socket
	<b>MA</b>	= With standard discharge socket (straight, height 70 mm, for version OL only)
	<b>SXG-...</b>	= With special discharge socket, according to drawing (is supplied loose if necessary)
(12) <b>Fan insert</b>	<b>OE</b>	= Without fan insert
	<b>MQ</b>	= With fan insert for mixed/displacement air flow
(13) <b>Filter</b>	<b>OF</b>	= Without filter (for version T only)
	<b>MF</b>	= With filter
(14) <b>Suspension</b>	<b>OH</b>	= Without bracket
	<b>HS</b>	= Lateral wall bracket, specify wall clearance dimension W (is supplied loose)
	<b>HH</b>	= Rear wall bracket, specify wall clearance dimension W (is supplied loose)
	<b>HO</b>	= Top wall bracket (mounted)
	<b>FK</b>	= Foot bracket, specify height H (is supplied loose)
	<b>VK</b>	= console/panelling VK (for upright unit type VFC-F only)
(15) <b>Connected Intelligence</b>	<b>O</b>	= Without CI
	<b>CI</b>	= With CI

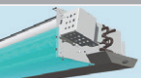
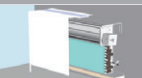
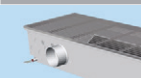
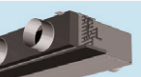
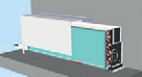
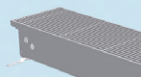
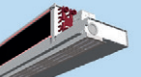


\* Definition right/left: see scale drawing page 7

## Product overvieww • LTG Air-Water Systems

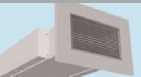



### LTG Decentral – Induction Units

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

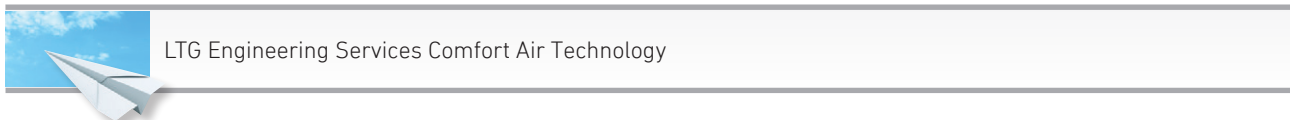
### LTG FanPower – Fan Coil Units

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	
	FVSEco <sub>2</sub> <i>School</i>		FVP <i>pulse-V</i> System PulseVentilation		FVP <i>pulse-B</i> System PulseVentilation
	FVP <i>pulse-D</i> System PulseVentilation				

## Engineering Services





**AIR TECH  
SYSTEMS**

### **Comfort Air Technology**

Air-Water Systems  
Air Diffusers  
Air Distribution

### **Process Air Technology**

Fans  
Filtration Technology  
Humidification Technology

### **Engineering Services**

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

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