



► KaDeck  
Fan Coils

# KaDeck

Versatile air conditioning for offices and  
administration buildings.

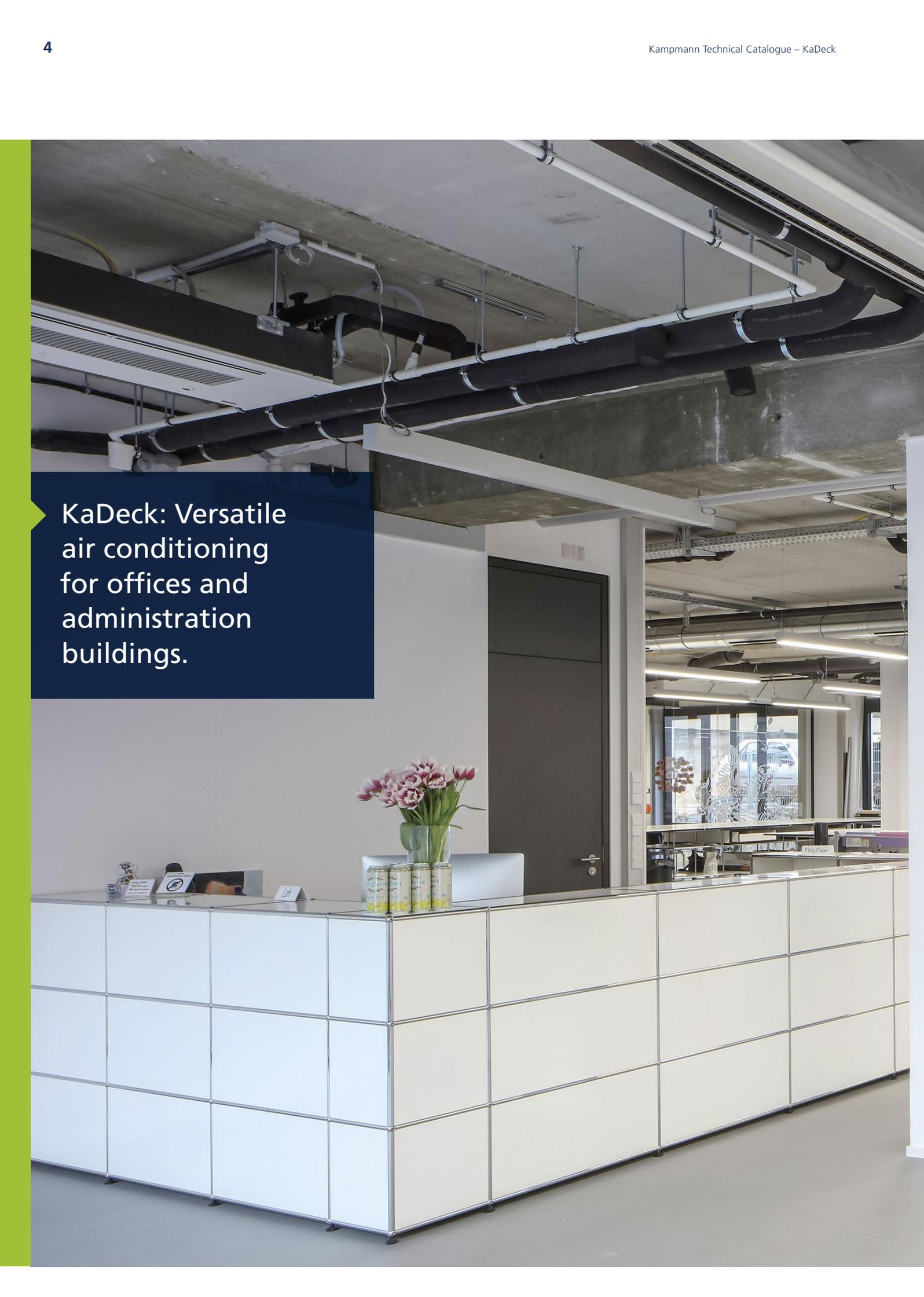
► **Technical catalogue**

**KAMP**MAN



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**KaDeck: Versatile  
air conditioning  
for offices and  
administration  
buildings.**



The KaDeck represents a visually minimalist room heating and cooling unit. The introduction of fresh air is optional.

# 01 ▶ Product information

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## KaDeck – versatile air conditioning for existing and new-build offices

Cooling loads are produced in offices with extensive glazing and large numbers of people, which cannot be dissipated without an air conditioning system. KaDeck offers versatile ceiling-mounted air conditioning for heating and cooling in these specific application areas.

The possible installation locations are playing an increasingly important role in existing as well as in new buildings. Kampmann KaDeck units stand out from the crowd on account of their versatility. They are available as wall-mounted units with one-sided air outlet, or with two-sided air outlet for installation in the centre of a room. The design panel is available in different colours at the customer's request. The dimensions are designed to enable the units to be installed within a false ceiling grid (either 625x625 or 600x600). The installation height of 165 mm is generally designed for minimal space requirement.

### Variable comfort solution

Apart from their versatility, aesthetic appearance and impressive performance, the units' low noise levels and draught prevention are other key features.

These aspects are a matter of course at Kampmann and have been incorporated for many years, among other things in the company's Katherm products. Kampmann's own in-house Research and Development Centre was able to incorporate and evolve the company's decade-long experience into this concept.

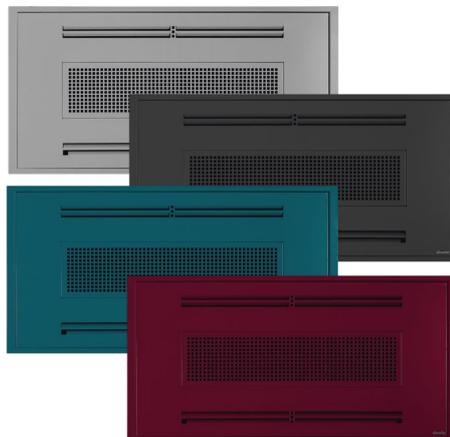
### Hygiene and maintenance

It is crucial with air conditioning that the system works just as well after years of operation as it did on its first day of commissioning. The internal design provides for ease of cleaning, thus guaranteeing hygienically perfect air conditioning even after years.

The design panel is simply unhinged and all the components are visible without the need for further disassembly. The valve and the flexible connection are located within the unit and remain accessible at all times. There is therefore no need for additional maintenance access openings on site. However the saving of investment costs is not the only benefit.

Over time, separate maintenance access panels can often become damaged and dirty by constant opening and closing. The KaDeck's access panel is designed for frequent opening and closing. The hinges and locks are designed and manufactured to the "industry standard", yet remain invisible and thus do not spoil the appearance of the panel.

### Examples: Colour options for the design panel



# Product data



## Product benefits

- ▶ Low suspended ceiling heights needed, installation height of only 165 mm
- ▶ All components (including valves) can be accessed without tools, no service hatches needed on site
- ▶ Thermally and acoustically insulated housing made of EPP (expanded polypropylene)
- ▶ Internal surfaces are organically shaped, without corners, for simplified cleaning in accordance with VDI 6022
- ▶ Very quiet condensate pump (less than 20 dB(A)), speed, flow rate is ideally adapted to the volume of condensate produced
- ▶ Design ceiling panel RAL 9016 (traffic white), other colours are optionally possible



## Features

- ▶ Optionally available for 625x625 mm or 600x600 mm ceiling grids
- ▶ Infeed of up to 120 m<sup>3</sup>/h of primary air is possible
- ▶ Valve kits, pre-adjustable or differential pressure-independent, optionally available
- ▶ Continuously variable, energy-saving EC tangential fans
- ▶ Optional dry cooling or wet cooling model
- ▶ Clean with disinfectant

### Installation

- ▶ Ceiling-mounted

### Primary air supply

- ▶ Optionally possible by way of accessories

### Heating

- ▶ LPHW

### Cooling

- ▶ CHW

### KaControl

- ▶ Optional

## Performance data

**Cooling output [W]<sup>1)</sup>** > 307 – 3010

**Heat output [W]<sup>2)</sup>** > 468 – 5852

**Air flow [m<sup>3</sup>/h]** > 39 – 415

**Sound pressure level [dB(A)]<sup>3)</sup>** > 13 – 42

<sup>1)</sup> at CHW 7/12 °C,  $t_{11}$  = 27 °C, 48% relative humidity

<sup>2)</sup> at LPHW 75/65 °C,  $t_{11}$  = 20 °C

<sup>3)</sup> The sound pressure levels were calculated with an assumed room insulation of 8 dB(A).

### Operating limits

- ▶ Max. operating pressure: 16 bar
- ▶ Max. entering water temperature: 75 °C
- ▶ Min. water inlet temperature, dry cooling: above the dew point
- ▶ Inlet air temperature: 35 °C
- ▶ Max. glycol volume: 50 %

## Applications

Buildings of all kinds, which require whisper-quiet cooling or heating from a visually discreet design.

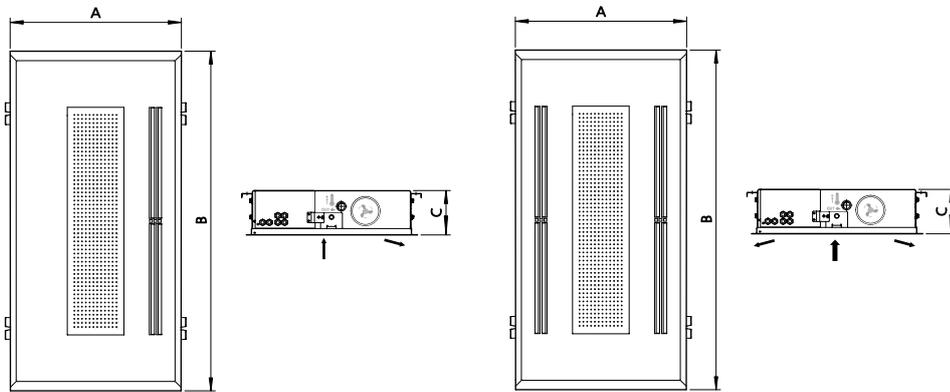


## Selection guide

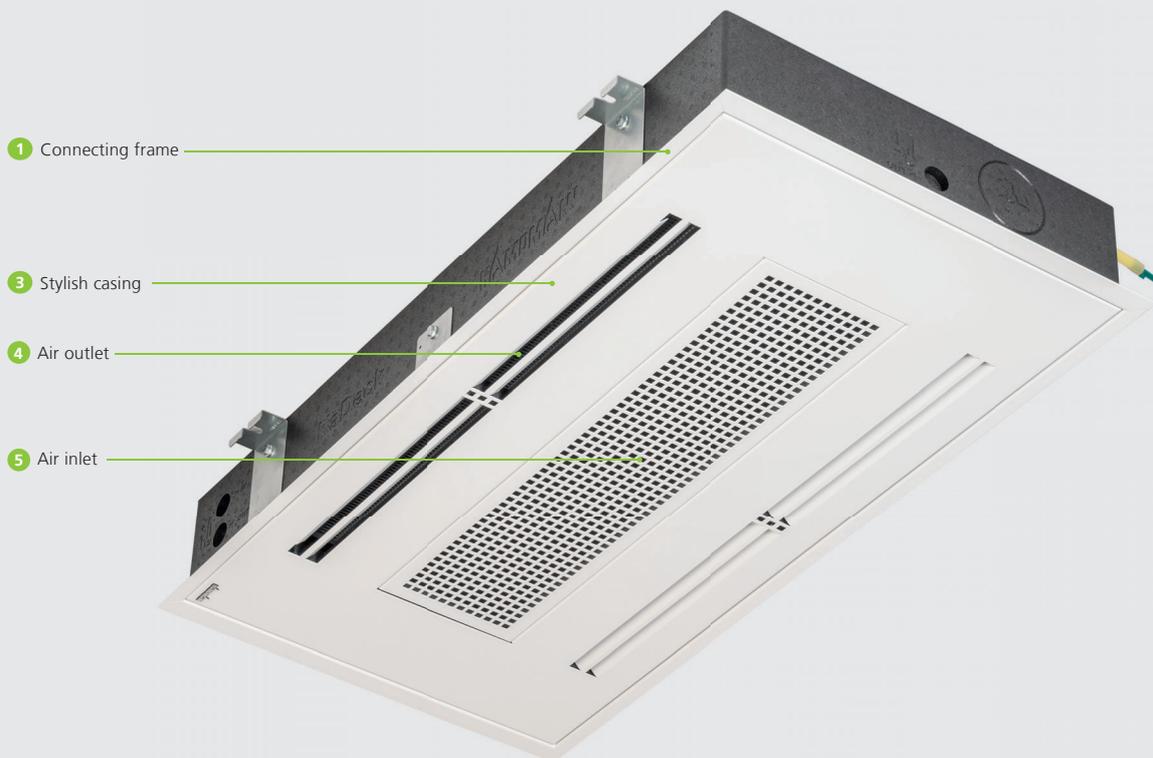
Air outlet	System	Cooling output (dry) [W]	Cooling output (wet) [W]	Heat output [W]	Dimensions		
					Width (A) [mm]	Length (B) [mm]	Height (C) [mm]
Bidirectional discharge	2-pipe	244 – 1364	641 – 3010	1113 – 5852	600 625	1200 1250	165
	4-pipe	243 – 1173	573 – 2442	868 – 3091			
One-sided discharge	2-pipe	134 – 752	346 – 1666	610 – 3247			
	4-pipe	132 – 646	307 – 1348	468 – 1664			

- <sup>1)</sup> at CHW 16/18,  $t_{11} = 27$  °C, 48% relative humidity  
<sup>2)</sup> at CHW 7/12 °C,  $t_{11} = 27$  °C, 48% relative humidity  
<sup>3)</sup> at LPHW 75/65 °C,  $t_{11} = 20$  °C

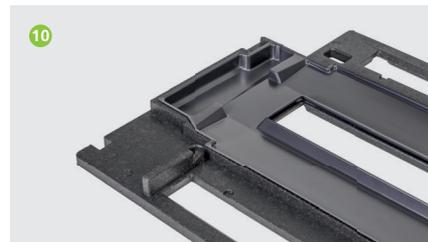
### Technical drawing (Dimensions in mm)

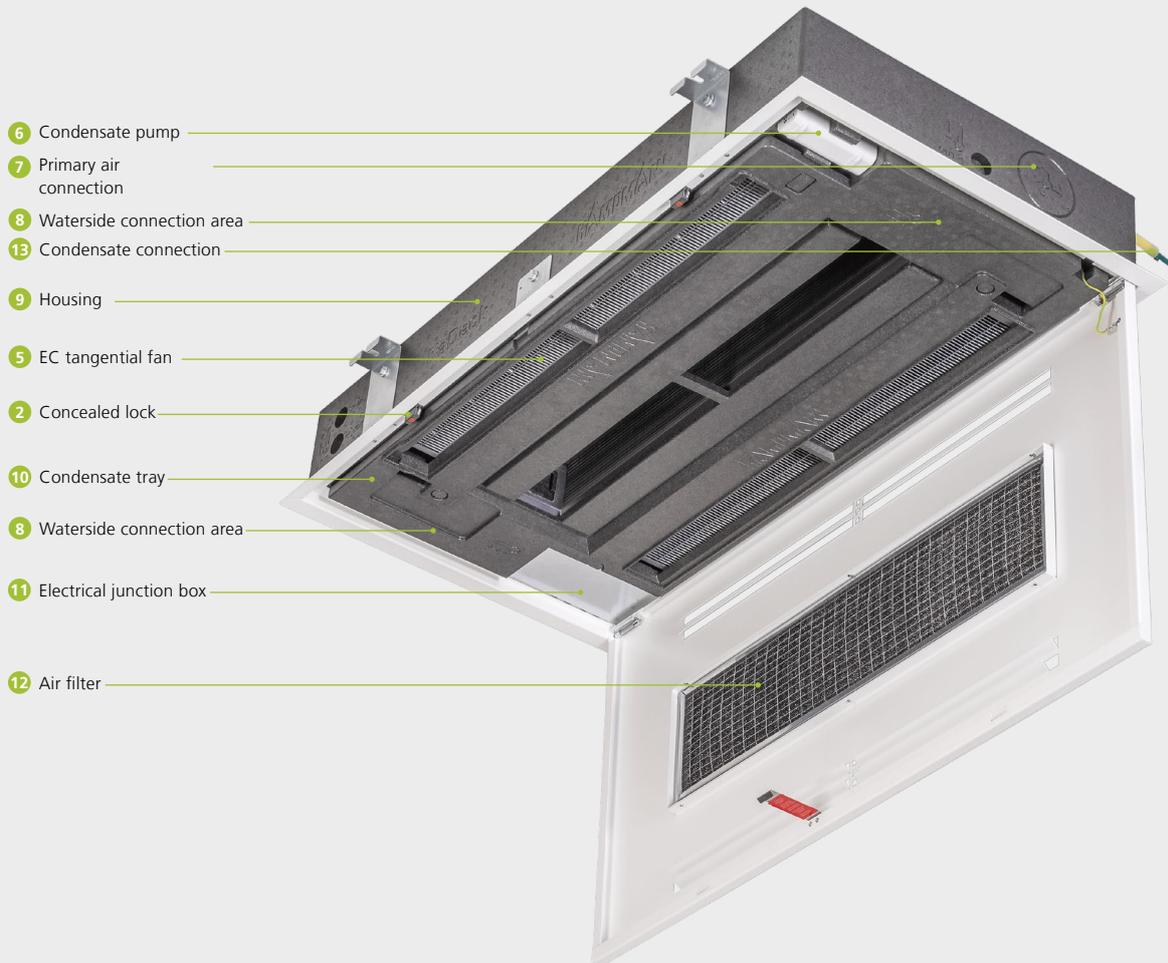


## KaDeck at a glance



## Features





### 1 Connection frame and ceiling panel:

- ▶ either fits 600x600 or 625x625 ceiling grid
- ▶ RAL 9016 (traffic white) ceiling panel and frame, customised colour on request
- ▶ ceiling panel can be opened without tools, industrial-quality hinges and closures for an extremely long service life
- ▶ internal cleanable ISO Coarse air filter to protect the internal components from dust

### 2 Easy to install and maintain

- ▶ complete with ceiling panel that can be opened without the need for tools and condensate tray
- ▶ no need for additional maintenance access openings
- ▶ all components can be accessed once the condensate tray has been removed.
- ▶ easy cleaning of all surfaces along which air flows
- ▶ valve installation (adjustable 2-way or differential pressure-independent) within the housing

### 3 Connection and operational safety

- ▶ unit design and component selection optimised for ease of assembly and operation
- ▶ total unit weight reduced to 60% compared to a steel sheet design, for ceiling installation gentle on the back
- ▶ EPP connection areas, with supply/return, primary air labelled

### 4 Primary air connection

- ▶ up to 120 m<sup>3</sup>/h primary air can be introduced via the KaDeck
- ▶ 2 spigots can be connected on each head side
- ▶ easy removal of the EPP closures, insertion of optional 80 mm connection spigots for primary air supply on site
- ▶ primary air is directed through the heat exchanger for temperature control

### 5 Durable EC tangential fan

- ▶ noise-optimised, smooth-running 3-wire, continuously variable and energy-saving EC motor
- ▶ tangential roller sitting in the CFD aerodynamically optimised EPP/aluminium contour
- ▶ utility model-protected bypass motor cooling to prevent the build-up of heat in heating mode to increase the motor's service life by 40%

### 6 Condensate pump

- ▶ included in the wet cooling configuration scope of delivery
- ▶ compact design, without separate float, prevents possible leaks at connections.
- ▶ extremely smooth-running pump (sound power below 20 dB(A)), fan speed and flow rate adapts to the condensate level in the pump sump
- ▶ the condensate level is determined by a capacitive sensor, preventing the float switch from sticking.
- ▶ maximum delivery height up to 6 m

- ▶ alarm contact in the event of a malfunction or too high a water level in the condensate tray

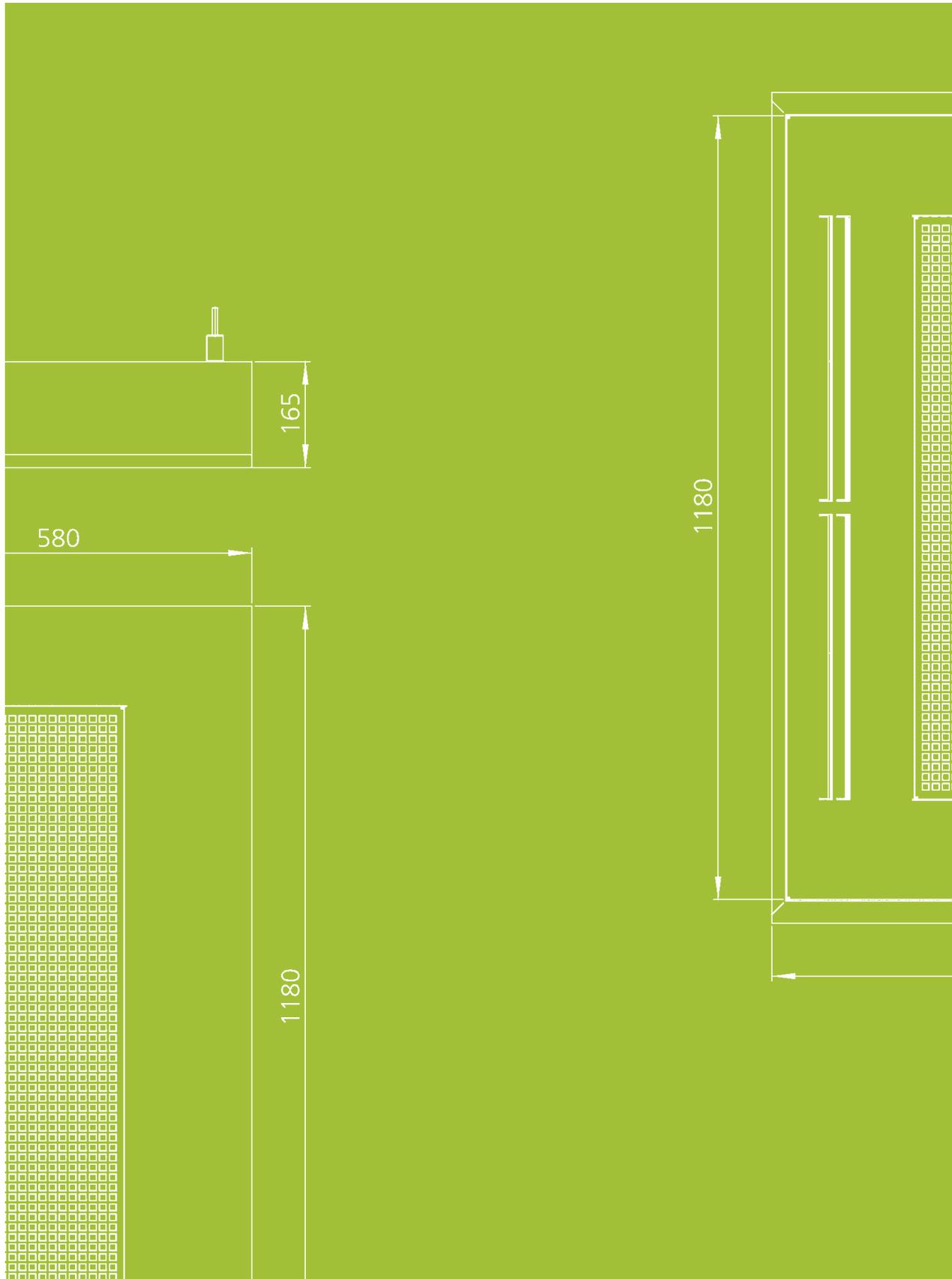
### 9 Sheet steel and EPP (expanded polypropylene) hybrid housing

- ▶ rigidity and strength, thanks to galvanised steel frame
- ▶ thermal and acoustic isolation by foamed EPP carcass free of heat bridges
- ▶ organic internal contours for ease of cleaning

### 10 Condensate tray

- ▶ condensate tray can be removed without tools for cleaning and maintenance
- ▶ made of EPP for thermal and acoustic isolation
- ▶ parts that come into contact with condensate are made of ABS plastic, disinfectant-resistant
- ▶ gradient on all sides for fast and residue-free condensate drainage from the section through which air flows

# 02 ▶ Technical data



## Advice on measuring conditions

The cooling and heat outputs have been calculated in line with DIN EN 1397: 2015 "Water-air fan coils, test methods for establishing the performance".

The specific requirements for cooling and heating mode are taken into account in DIN EN 1397. They are also based on Eurovent certification.

### Normative reference

The standard refers to:

- ▶ EN 16583; Determining the sound power levels of noise sources
- ▶ EN 45001; General criteria for the operation of test laboratories
- ▶ ISO 5801; Industrial fans; Performance testing using standardised airways
- ▶ ISO 5221; Air distribution and air diffusion; Rules to methods of measuring air flow rate in an air handling duct

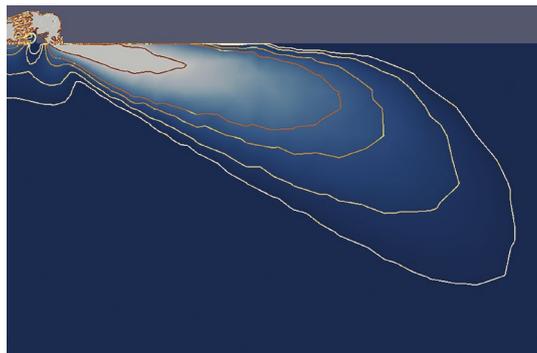
The air intake temperature of the fan coil is selected as the reference/air temperature, which should not be confused with the room temperature.

In practice, fan coils are positioned within a suspended ceiling or as sill units along the façade. Due to the temperature stratification that occurs, the air intake temperature differs from the room air temperature (measured at a height of 1.5m).

### Acoustics

Fan coils are very often used in acoustically sensitive areas. The units have therefore been optimised in terms of sound emissions.

The acoustic data was recorded in accordance with the provisions of DIN EN 16583 by DIN EN ISO 3744 and DIN EN ISO 3741 in the Kampmann GmbH laboratories.



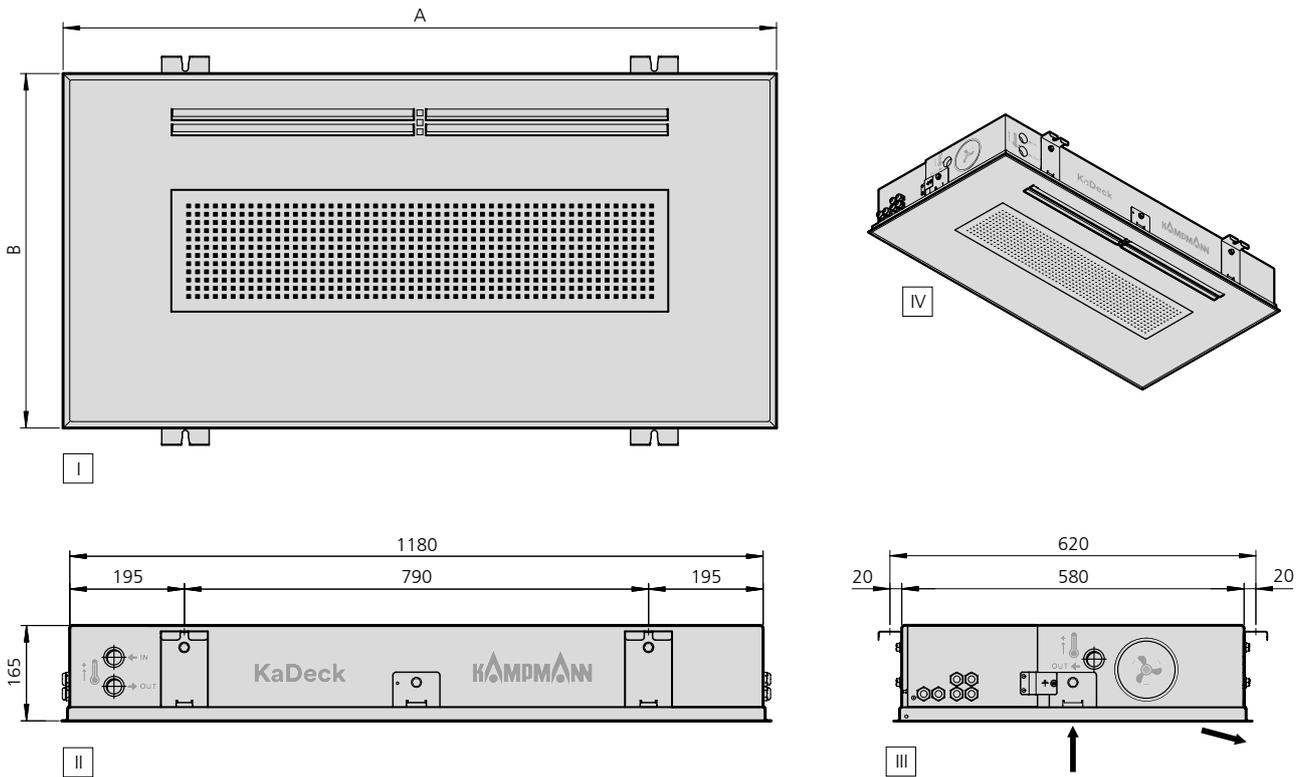
CFD simulation

# KaDeck

## Air outlet One-sided discharge

### Dry cooling

**Technical drawing** (Dimensions in mm)



- View**
- I View from below
  - II Front view
  - III side view
  - IV isometric view

**Specifications**

Article no.	System	Grid dimensions	Length (A) [mm]	Width (B) [mm]	water content heating [l]	water content cooling [l]	Weight [kg]
326116211111*	2-pipe	600 x 600 mm	1200	600	---	1	21
326116411111*	4-pipe	600 x 600 mm	1200	600	0.2	0.8	22
326126211111*	2-pipe	625 x 625 mm	1250	625	---	1	22
326126411111*	4-pipe	625 x 625 mm	1250	625	0.2	0.8	22

**Performance data**

System	Air outlet	Control voltage	Air flow	Cooling output, total	Cooling output, sensitive	Outlet air temperature	Mass Flow cooling	pressure loss, cooling	Heat output	Outlet air temperature	Mass Flow heating	pressure loss, heating	Power consumption	Amperage	Sound pressure level <sup>1)</sup>	Sound power level
		[V]	[m³/h]	[W]	[W]	[°C]	[l/h]	[kPa]	[W]	[°C]	[l/h]	[kPa]	[W]	[mA]	[dB(A)]	[dB(A)]
2-pipe	One-sided discharge	10	232	752	752	17.0	323	46	3247	62.1	286	35.6	12	140	39	47
		8	199	659	659	16.7	283	36.6	2820	62.6	249	27.9	10	120	34	42
		6	138	475	475	16.3	204	20.7	1998	63.8	176	15.3	6	80	25	33
		4	76	263	263	16.2	113	7.4	1144	65.6	101	5.8	5	70	16	24
		2	39	134	134	16.2	58	2.3	610	67.4	54	2	4	70	13	21
4-pipe	One-sided discharge	10	232	646	646	18.4	278	29.2	1664	41.6	147	1.7	12	140	39	47
		8	199	566	566	18.2	244	23.3	1505	42.7	133	1.4	10	120	34	42
		6	138	408	408	17.8	175	13.2	1172	45.7	103	0.9	6	80	25	33
		4	76	238	238	17.2	102	5.2	770	50.7	68	0.4	5	70	16	24
		2	39	132	132	16.4	57	1.9	468	56.4	41	0.2	4	70	13	21

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► <https://www.kampmann.co.uk/hvac/products/fan-coils/kadeck#Calculate-performance-data>

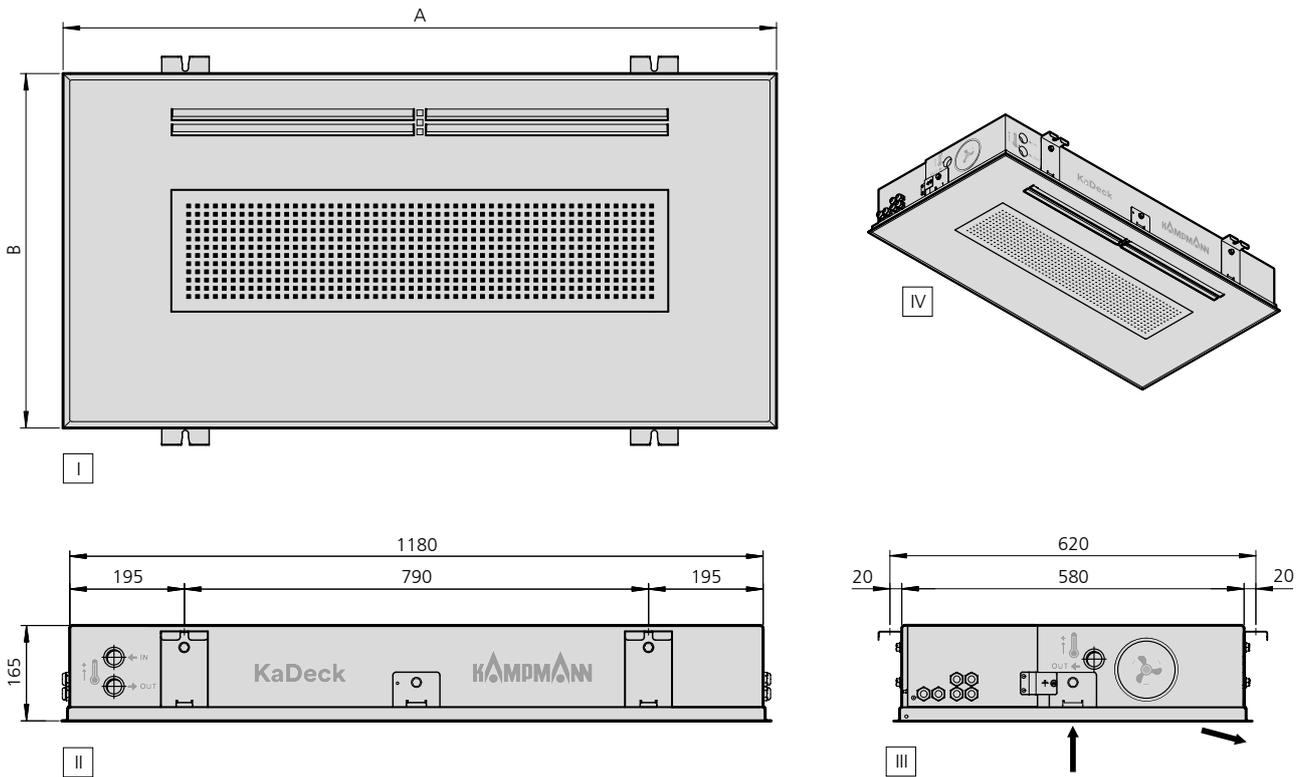
<sup>1)</sup> The sound pressure levels were calculated with an assumed room insulation of 8 dB(A). This corresponds to a distance of 2 m, a room volume of 100 m³ and a reverberation time of 0.5 s (in accordance with VDI 2081)

# KaDeck

## Air outlet One-sided discharge

### Wet cooling

**Technical drawing** (Dimensions in mm)



- View**
- I View from below
  - II Front view
  - III side view
  - IV isometric view

**Specifications**

Article no.	System	Grid dimensions	Length (A) [mm]	Width (B) [mm]	water content heating [l]	water content cooling [l]	Weight [kg]
326116261111*	2-pipe	600 x 600 mm	1200	600	---	1	22
326116461111*	4-pipe	600 x 600 mm	1200	600	0.2	0.8	22
326126261111*	2-pipe	625 x 625 mm	1250	625	---	1	23
326126461111*	4-pipe	625 x 625 mm	1250	625	0.2	0.8	23

**Performance data**

System	Air outlet	Control voltage	Air flow	Cooling output, total at CHW 7/12 °C, $t_{l,1} = 27$ °C, 48% relative humidity	Cooling output, sensitive	Outlet air temperature	Mass Flow cooling	pressure loss, cooling	Heat output at LPHW 75/65 °C, $t_{l,1} = 20$ °C	Outlet air temperature	Mass Flow heating	pressure loss, heating	Power consumption	Amperage	Sound pressure level <sup>1)</sup>	Sound power level
		[V]	[m³/h]	[W]	[W]	[°C]	[l/h]	[kPa]	[W]	[°C]	[l/h]	[kPa]	[W]	[mA]	[dB(A)]	[dB(A)]
2-pipe	One-sided discharge	10	232	1666	1154	11.6	286	37.3	3247	62.1	286	35.6	12	140	39	47
		8	199	1451	1006	11.3	249	29.3	2820	62.6	249	27.9	10	120	34	42
		6	138	1036	718	10.8	178	16.3	1998	63.8	176	15.3	6	80	25	33
		4	76	608	416	9.9	104	6.5	1144	65.6	101	5.8	5	70	16	24
		2	39	346	230	8.6	59	2.4	610	67.4	54	2	4	70	13	21
4-pipe	One-sided discharge	10	232	1348	965	14.1	232	21.3	1664	41.6	147	1.7	12	140	39	47
		8	199	1179	845	13.9	203	16.9	1505	42.7	133	1.4	10	120	34	42
		6	138	853	609	13.3	147	9.6	1172	45.7	103	0.9	6	80	25	33
		4	76	514	360	12.2	88	4	770	50.7	68	0.4	5	70	16	24
		2	39	307	206	10.5	53	1.6	468	56.4	41	0.2	4	70	13	21

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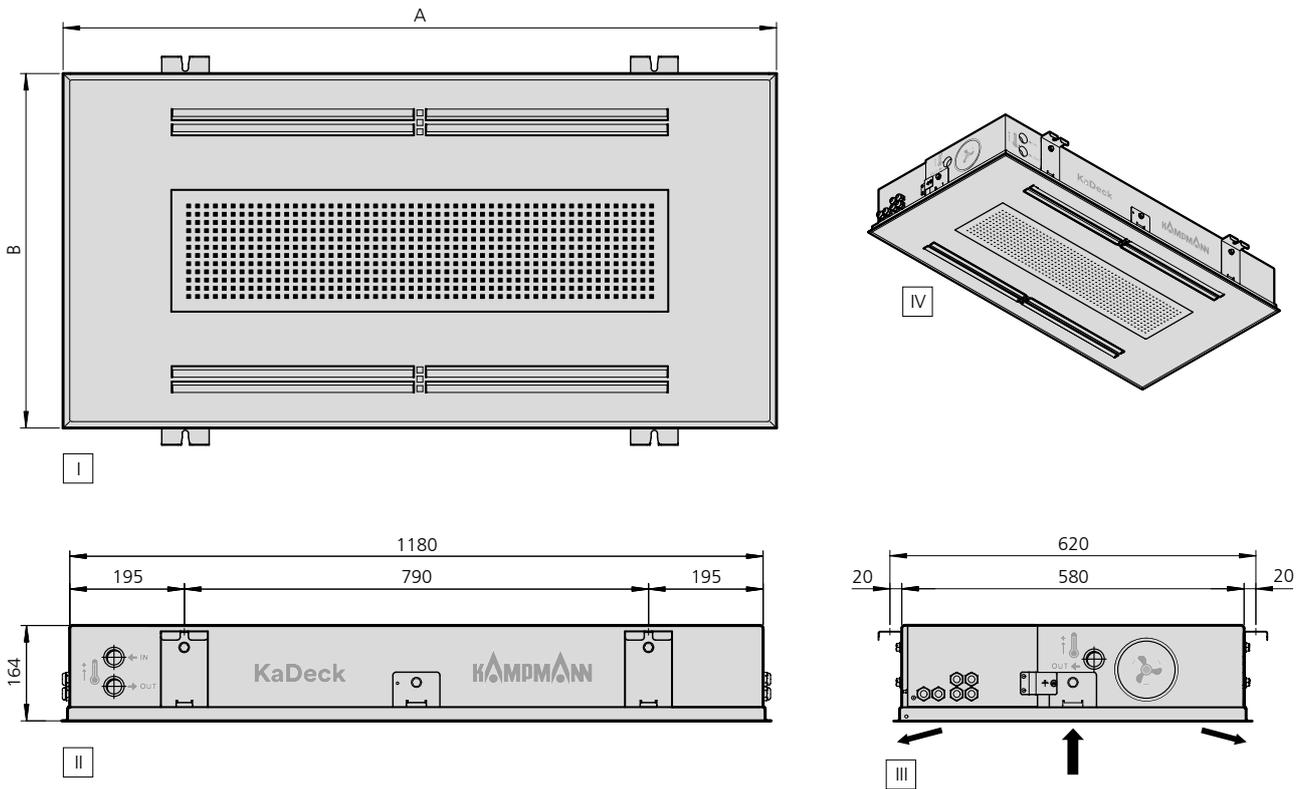
<sup>1)</sup> The sound pressure levels were calculated with an assumed room insulation of 8 dB(A). This corresponds to a distance of 2 m, a room volume of 100 m³ and a reverberation time of 0.5 s (in accordance with VDI 2081)

# KaDeck

## Air outlet Bidirectional discharge

### Dry cooling

Technical drawing (Dimensions in mm)



**View**

- I View from below
- II Front view
- III side view
- IV isometric view

**Specifications**

Article no.	System	Grid dimensions	Length (A) [mm]	Width (B) [mm]	water content heating [l]	water content cooling [l]	Weight [kg]
326116212111*	2-pipe	600 x 600 mm	1200	600	---	1.9	25
326116412111*	4-pipe	600 x 600 mm	1200	600	0.4	1.5	26
326126212111*	2-pipe	625 x 625 mm	1250	625	---	1.9	23
326126412111*	4-pipe	625 x 625 mm	1250	625	0.4	1.5	26

**Performance data**

System	Air outlet	Control voltage	Air flow	Cooling output, total	Cooling output, sensitive	Outlet air temperature	Mass Flow cooling	pressure loss, cooling	Heat output	Outlet air temperature	Mass Flow heating	pressure loss, heating	Power consumption	Amperage	Sound pressure level <sup>1)</sup>	Sound power level
		[V]	[m <sup>3</sup> /h]	[W]	[W]	[°C]	[l/h]	[kPa]	[W]	[°C]	[l/h]	[kPa]	[W]	[mA]	[dB(A)]	[dB(A)]
2-pipe	Bidirectional discharge	10	415	1364	1364	16.8	587	38.5	5852	62.5	516	29.5	20	210	42	50
		8	357	1195	1195	16.6	514	30.6	5085	63.0	448	23.1	16	170	37	45
		6	246	854	854	16.2	367	17.1	3607	64.1	318	12.7	10	120	28	36
		4	136	472	472	16.2	203	6.1	2071	65.9	182	4.9	7	90	19	27
		2	70	244	244	16.2	105	1.9	1113	67.7	98	1.7	6	80	15	23
4-pipe	Bidirectional discharge	10	415	1173	1173	18.2	504	24.6	3091	42.4	272	1.5	20	210	42	50
		8	357	1027	1027	18.1	442	19.5	2794	43.6	246	1.2	16	170	37	45
		6	246	739	739	17.7	318	11	2173	46.6	192	0.8	10	120	28	36
		4	136	433	433	17.1	186	4.4	1426	51.6	126	0.4	7	90	19	27
		2	70	243	243	16.3	104	1.6	868	57.2	77	0.2	6	80	16	23

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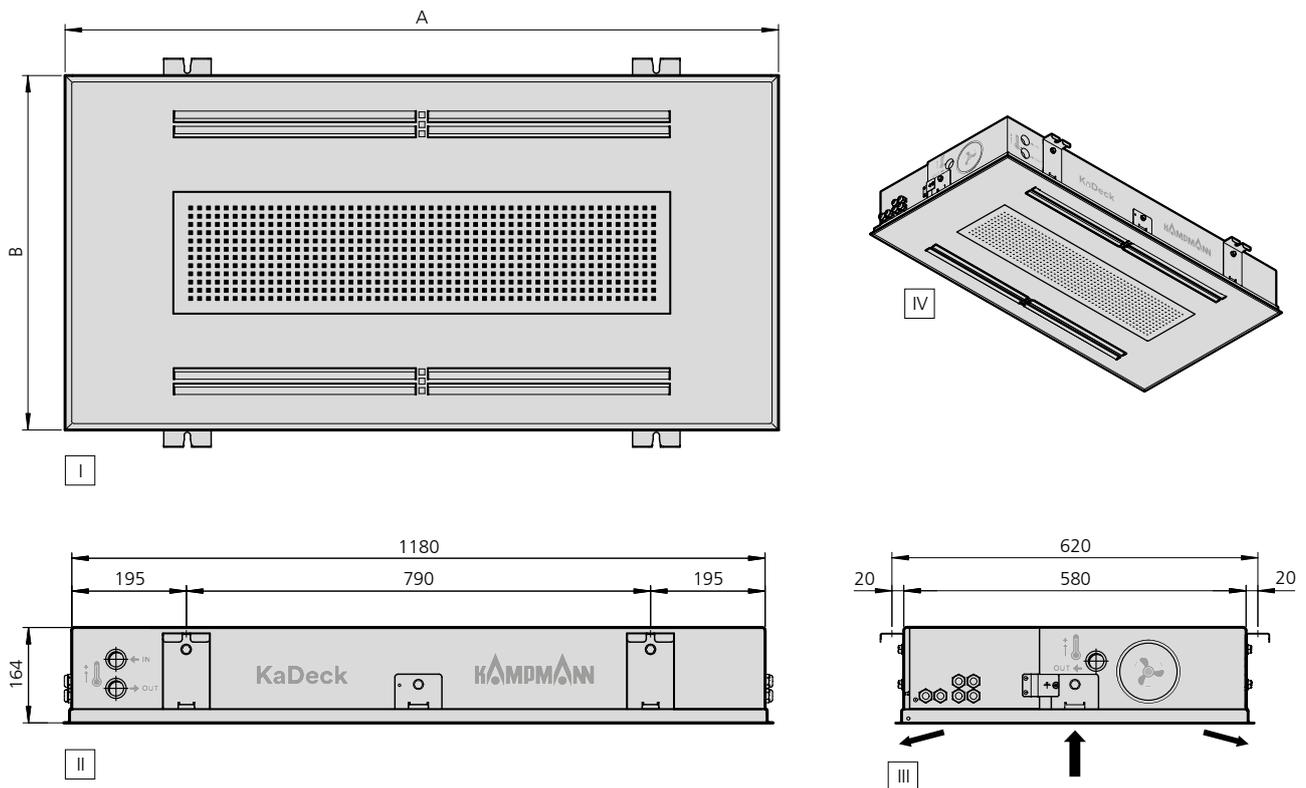
<sup>1)</sup> The sound pressure levels were calculated with an assumed room insulation of 8 dB(A). This corresponds to a distance of 2 m, a room volume of 100 m<sup>3</sup> and a reverberation time of 0.5 s (in accordance with VDI 2081)

# KaDeck

## Air outlet Bidirectional discharge

### Wet cooling

#### Technical drawing (Dimensions in mm)



#### View

- I View from below
- II Front view
- III side view
- IV isometric view

#### Specifications

Article no.	System	Grid dimensions	Length (A) [mm]	Width (B) [mm]	water content heating [l]	water content cooling [l]	Weight [kg]
326116262111*	2-pipe	600 x 600 mm	1200	600	---	1.9	26
326116462111*	4-pipe	600 x 600 mm	1200	600	0.4	1.5	26
326126262111*	2-pipe	625 x 625 mm	1250	625	---	1.9	27
326126462111*	4-pipe	625 x 625 mm	1250	625	0.4	1.5	27

**Performance data**

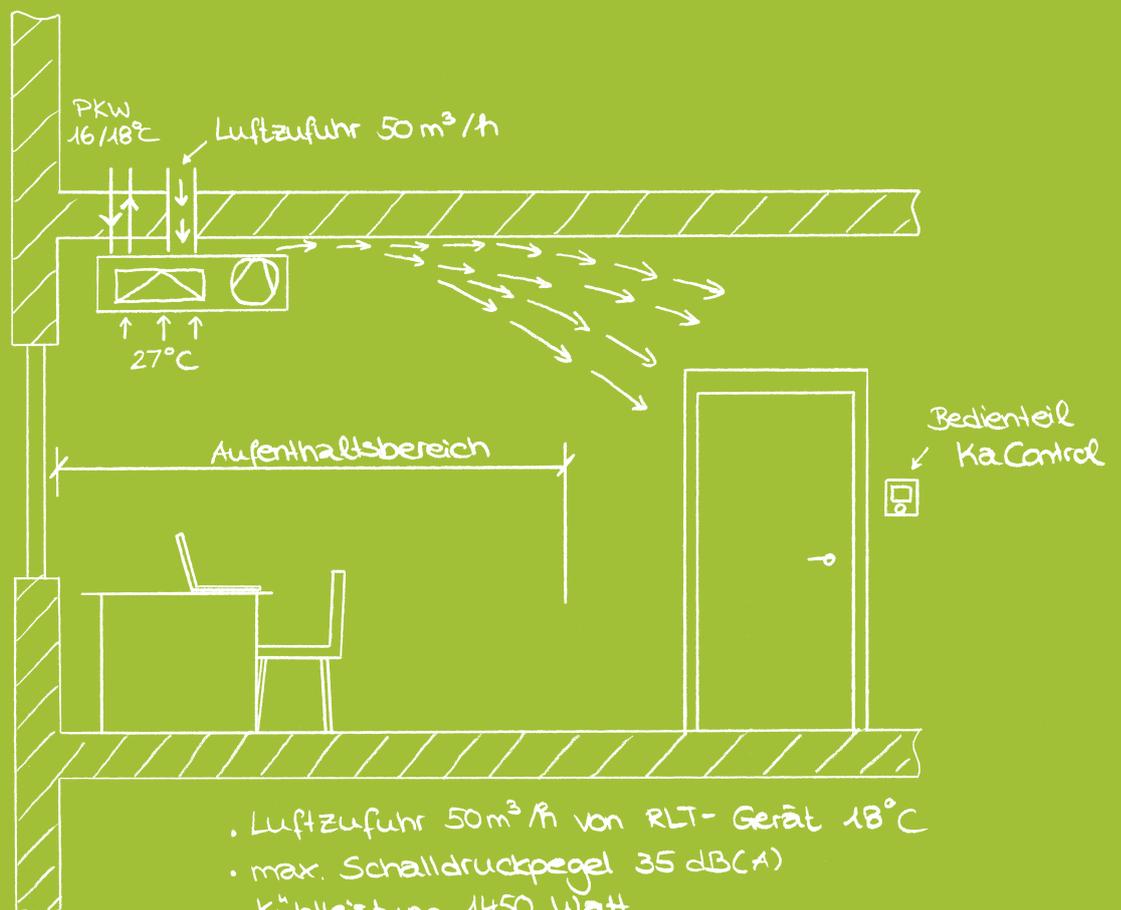
System	Air outlet	Control voltage	Air flow	Cooling output, total			Mass Flow cooling	pressure loss, cooling	Heat output		Mass Flow heating	pressure loss, heating	Power consumption	Amperage	Sound pressure level <sup>1)</sup>	Sound power level
				at CHW 7/12 °C, t <sub>L1</sub> = 27 °C, 48% relative humidity	Cooling output, sensitive	Outlet air temperature			at LPHW 75/65 °C, t <sub>L1</sub> = 20 °C	Outlet air temperature						
		[V]	[m³/h]	[W]	[W]	[°C]	[l/h]	[kPa]	[W]	[°C]	[l/h]	[kPa]	[W]	[mA]	[dB(A)]	[dB(A)]
2-pipe	Bidirectional discharge	10	415	3010	2086	11.4	517	31	5852	62.5	516	29.5	20	210	42	50
		8	357	2622	1818	11.2	451	24.4	5085	63.0	448	23.1	16	170	37	45
		6	246	1876	1298	10.7	322	13.6	3607	64.1	318	12.7	10	120	28	36
		4	136	1108	755	9.8	190	5.5	2071	65.9	182	4.9	7	90	19	27
		2	70	641	423	8.4	110	2.1	1113	67.7	98	1.7	6	80	17	23
4-pipe	Bidirectional discharge	10	415	2442	1750	13.9	420	17.9	3091	42.4	272	1.5	20	210	42	50
		8	357	2138	1531	13.7	367	14.2	2794	43.6	246	1.2	16	170	37	45
		6	246	1550	1105	13.1	266	8.1	2173	46.6	192	0.8	10	120	28	36
		4	136	943	658	12.0	162	3.4	1426	51.6	126	0.4	7	90	19	27
		2	70	573	382	10.1	99	1.5	868	57.2	77	0.2	6	80	18	23

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<sup>1)</sup> The sound pressure levels were calculated with an assumed room insulation of 8 dB(A). This corresponds to a distance of 2 m, a room volume of 100 m³ and a reverberation time of 0.5 s (in accordance with VDI 2081)

## 03 ▶ Design information



- Luftzufuhr 50 m<sup>3</sup>/h von RLT- Gerät 18°C
- max. Schalldruckpegel 35 dB(A)
- Kühlleistung 1450 Watt
- Taupunktüberwachung am Gerät
- Unterdeckenmontage | an der Fassade
- 2 Einheiten je Raum

## Information on planning and design

The installation position and the air discharge direction, as well as the choice of dry or wet cooling, depend on a range of different factors.

### Cooling output

The existing cooling load is calculated in line with VDI 2078 (VDI regulations governing cooling loads).

Select the dry or wet version of the KaDeck, depending on the existing cold water supply (CPW) and the desired or required cooling output. The dry version can be selected with high system temperatures above the dew point (e.g. CPW 16 /18 °C).

The components of the KaDeck for dry cooling are designed for as high a cooling output as possible at high system temperatures. A condensate pump is not included.

A dew point monitor is optionally available for the dry cooling version.

The wet cooling version should be used with high cooling requirements and has to be used at system temperatures below the dew point. A condensate tray and pump are integrated here.

### Ceiling type

The decision about whether to install the unit below the ceiling or within the false ceiling is determined by the architecture of the building. Select the under-ceiling version in rooms with no false ceiling. These units are suspended 4 cm below the unfinished ceiling. Please contact us for more information about the under-ceiling version. Use the false ceiling version if the building is fitted with a suspended ceiling. This obviates the need for additional maintenance inspection openings. The unit can be installed within two grids of a suspended ceiling grid.

### Air discharge direction

The choice is generally between 1-sided and 2-sided air outlet. Select the air outlet to avoid the creation of draughts. Select the unit taking into account where people will be standing and sitting. If the distance from the wall to the air outlet is less than 3.0 m, this can create draughts at higher fan stages. The air should always flow lengthways along the space.

If desks are positioned in the middle of a room, a unit with a 2-sided discharge should be positioned above the desk. If desks are positioned along the windows, then a unit with a 1-sided discharge should be selected and installed along the façade.

The supply to the units can or must also be taken into consideration. A 1-sided discharge unit is also beneficial if the unit is to be supplied from the corridor area. The unit is then positioned on the corridor side. Care nevertheless needs to be paid to the avoidance of draughts.

### Choice of the installation site:

- ▶ Positioning of the cooling unit to fit in with the architecture and environment (e.g. ceiling lights)

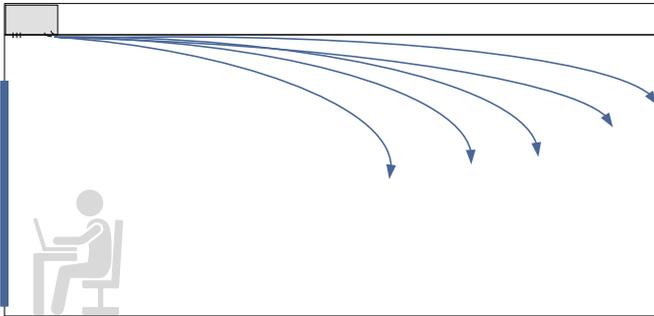
### Avoid:

- ▶ restricted air circulation due to lamps, furniture or shelves
- ▶ obstacles to air distribution and air intake
- ▶ electronic appliances below the KaDeck

## Unit arrangements in the room

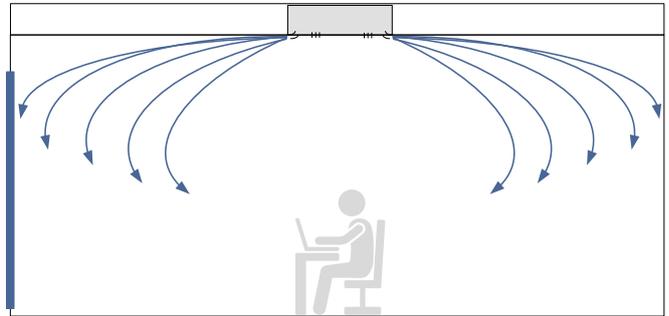
The KaDeck is available as a one-sided or two-sided version. The outer dimensions of both versions are identical. The following layouts work depending on the geometry of the room:

**The one-sided version is installed on the window or corridor side.**

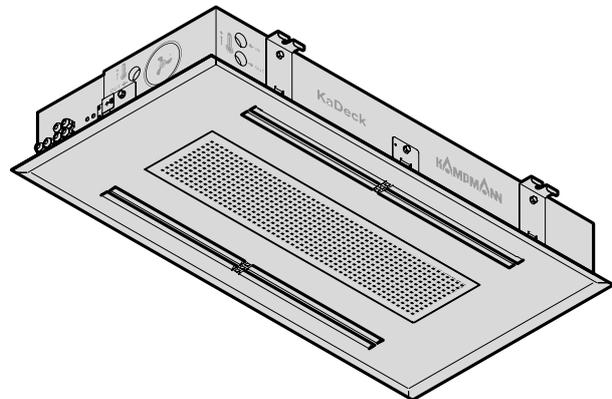
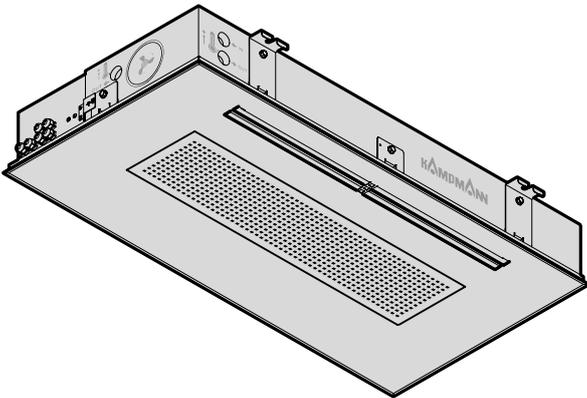


Window- or corridor-side arrangement

**The two-sided version is installed in the centre of the room.**



Room-centre arrangement



# Temperature stratification in heating mode

## Heating mode

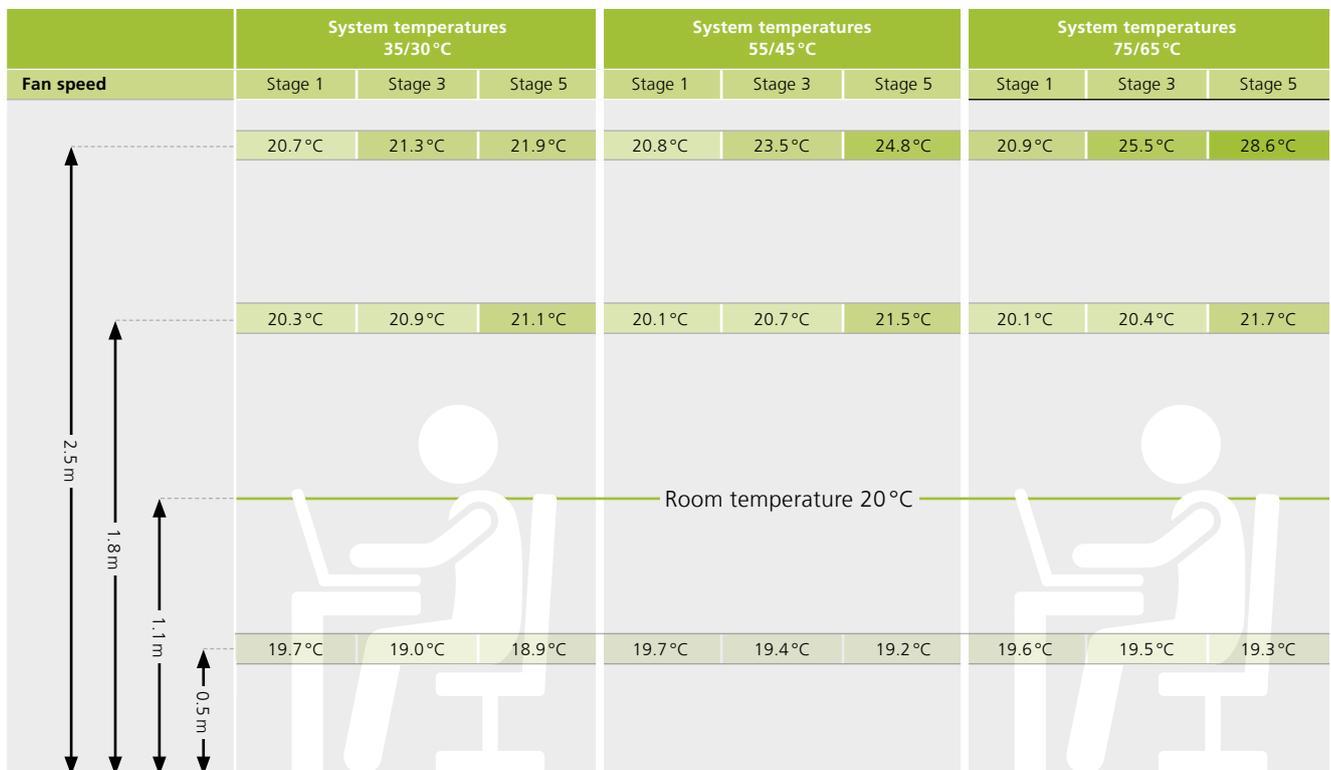
The KaDeck has been primarily developed for cooling mode. The special air discharge geometry, which prevents draughts in cooling mode, leads to temperature stratification in heating mode. Stratification increases the higher the system temperatures and thus also the leaving air temperatures. For this reason, the KaDeck should be used as a low temperature heating system. Do not exceed the 3 m maximum height of the air outlet.

The maximum room or installation height can be significantly lower, depending on the room shape, type of ceiling, use of the room and system temperatures, with under-ceiling units that are also used in heating mode.

## Temperature stratification

The figure below shows the temperature stratification

formed at a set temperature of 20 °C at a height of 1.1 m and a KaDeck air discharge height of 3.0 m. Different temperature layers are formed above ground level below the unit depending on the fan stage and system temperatures. This needs to be considered at the planning stage.



# External fresh air supply

## Primary air spigots for the fresh air supply

KaDeck units can be fitted with up to two primary air spigots. They enable pre-conditioned primary air to be fed into the KaDeck and the room.

The conditioned air needs to be cleaned and fed into the room at a minimum temperature of 14°C, and a maximum temperature of 25°C. The sound power level is max. 30 dB(A) when a maximum primary air volume is fed in.

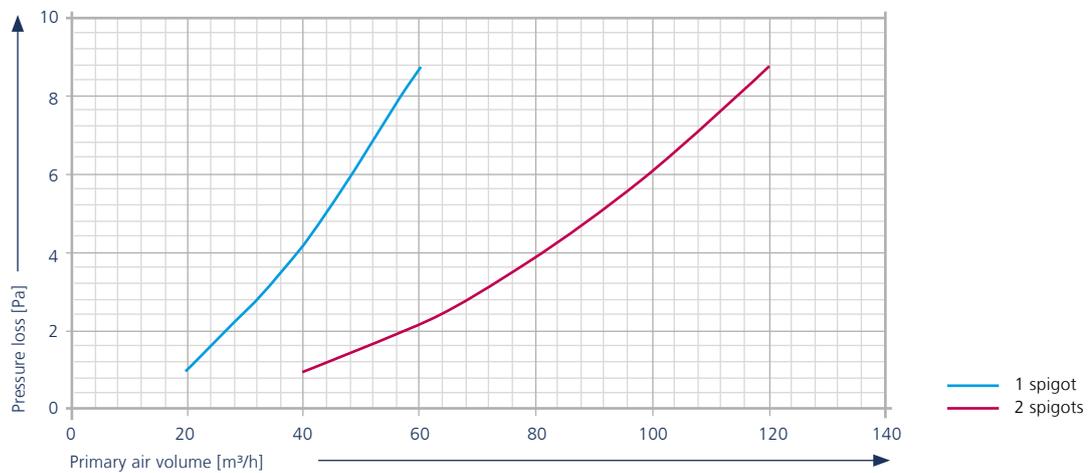
### Maximum air volume per unit

When using one spigot: 60 m<sup>3</sup>/h

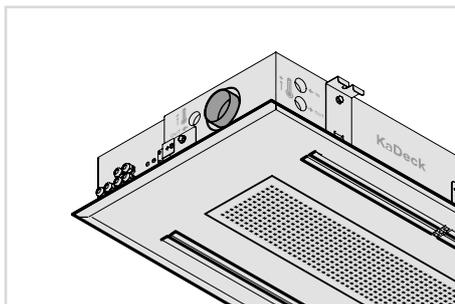
When using both spigots: 120 m<sup>3</sup>/h

The maximum primary volume is 60 m<sup>3</sup> with one-sided units, and 120 m<sup>3</sup> with two-sided units.

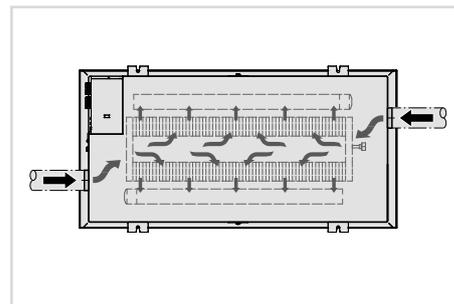
### Pressure losses of primary air spigots



### Fitting position of primary air spigots



Primary air spigot, side view



Primary air spigot, connected on both sides

# Wet and dry cooling versions

## Distinction

A distinction is made between two basic versions of the KaDeck: dry cooling and wet cooling.

**Never connect dry cooling units to an on-site cold water system in which the temperature could fall below the dew point!**

KaDeck dry cooling versions configured for KaControl can be fitted with a factory-fitted dew point monitor.

This monitors any condensate produced on the heat exchanger. If the temperature falls below the

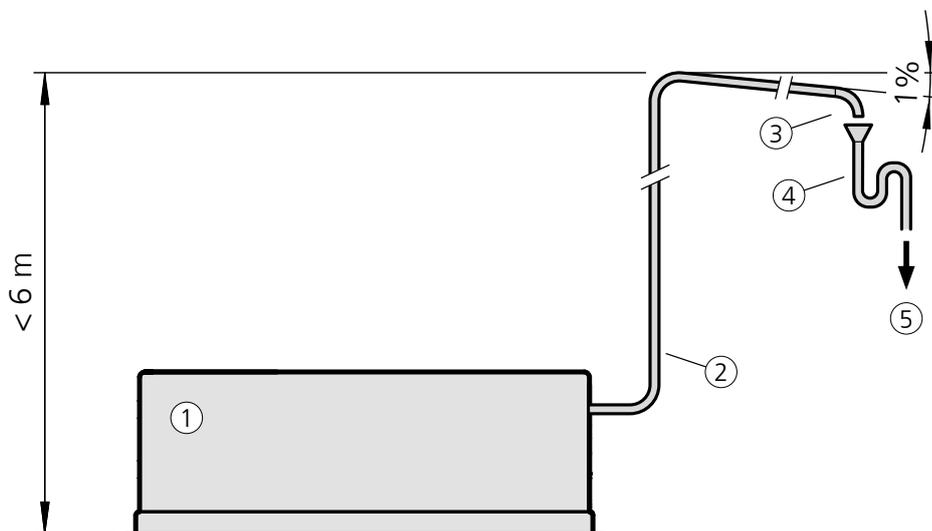
dew point on the heat exchanger, the dew point monitor closes the cooling valve.

The dew point monitor is not intended as a dew point controller, but rather a safety device. The chilled water network should generally be operated at above the dew point even when a dew point sensor is used!

## Condensate drain

Wet cooling versions of the KaDeck include a built-in condensate pump with float switch to drain away any condensate produced. The condensate produced from the condensate pump hose must be drained from the KaDeck along a 2% gradient.

The condensate has to be collected in a pool pump on site if it has to be drained higher than the integrated pump allows.



- ① KaDeck
- ② Condensate line
- ③ Free outlet (DIN EN 1717)
- ④ Odour trap
- ⑤ Waste water network

## Versions and adaptations

Not every building project has the same requirements. The KaDeck offers a wide range of adaptation options.

### Different ceiling grids

It is possible to select a frame that either fits the 625x625 mm grid dimensions. But a 600x600 version is also possible.

### Colour

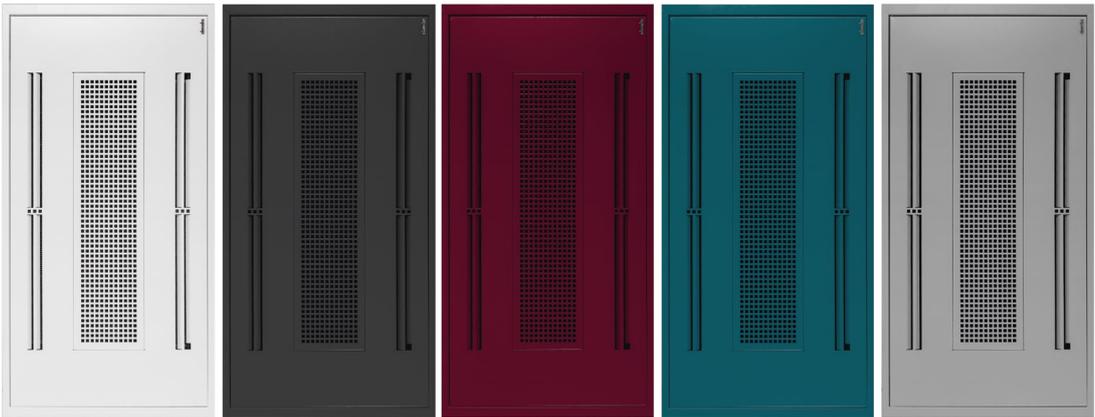
The colour can be individually adapted to the customer's requirements.

The design panel and the frame are made of sheet steel and can be adapted to the customer's requirements in Kampmann's in-house power-coating plant.

### Project solutions

The design of the KaDeck itself is also variable. If no false ceiling is available, the "below-ceiling" version is a good choice for many projects. Special project solutions have also been realised, particularly for the refurbishment of existing buildings. Simply get in touch with us!

### Examples of colour options



### Example of the under-ceiling solution



# 04 ▶ Controls

## Control of KaDeck, electromechanical version

### Product features

All factory-fitted actuators are wired to the terminal on the PCB with electromechanical versions. Irrespective of the control, 24 V DC valve actuators are required, which also need to be connected to the terminals of the PCB. The valve actuators on the PCB can either be controlled with 230 V AC or 24 V DC. The cooling valve is forced closed in the event of a condensate alarm.

### Fans

The fan speed of the EC fans used can be continuously variably controlled by a 0-10 V DC signal. The

“intelligent” motor electronics detect any possible motor malfunction and automatically switch off the fan.

A motor malfunction and condensate alarm are displayed by the associated LED on the PCB. There is also a potential-free motor fault signal contact on the PCB for external evaluation.

### Control units

Three different control units are available for operation and control.

### Room thermostat, type 30155



Room thermostat for 3-stage speed control for surface wall-mounted installation in an attractive minimalist design

#### Product features:

- ▶ 2- and 4-pipe applications, thermal valve actuators 230 V AC Open/Closed, normally closed
- ▶ ABS plastic housing, functional and robust design, pure white, similar to RAL 9010, for surface-mounting on a flush back box or surface-mounted using a surface-mounted frame (accessory)
- ▶ simple operation using a large rotary dial for temperature setting with mechanical range limitation of the temperature setpoint, operating mode selector switch, Standby, Manual fan, Automatic fan, 3-stage switch for pre-selecting the fan speed when the operating mode selector switch is in the “Manual fan” position
- ▶ control input for heating/cooling switch-over with 2-pipe systems
- ▶ control input can either be set to Comfort/ECO or ON/OFF switch-over
- ▶ room frost protection function  $< 5\text{ °C}$  → heating valve open, fan stage 3
- ▶ optional use of the internal or external room temperature sensor (accessory)
- ▶ parallel operation of 2 units is possible

### Clock thermostat, type 30256



Clock thermostat for fan speed control for surface wall-mounted installation in an attractive minimalist design

#### Product features:

- ▶ 2- and 4-pipe applications, thermal valve actuators 230 V AC Open/Closed, normally closed
- ▶ ABS plastic housing, robust design, pure white, similar to RAL 9010, for surface-mounting on a flush back box, integration in switch product range with dimensions 50 x 50 mm
- ▶ display with adjustable backlight
- ▶ operation using 4 sensor keys
- ▶ timer with automatic summer/winter switch-over
- ▶ control input for heating/cooling switch-over with 2-pipe systems
- ▶ control input can either be set to Comfort/ECO or ON/OFF switch-over
- ▶ unit frost protection function  $< 5\text{ °C}$  → valve(s) open
- ▶ optional use of the internal or external room temperature sensor (accessory)
- ▶ parallel operation of 2 units is possible

## Climate Controller type 148941 / type 148942 / type 148943 / type 148944



The Climate Controller is a control unit with a high-quality glass finish

### Product features:

- ▶ 2- and 4-pipe - applications, thermal valve actuators 230 V AC Open/Closed, normally closed
- ▶ 2.5" LCD display
- ▶ high-quality glass surface with capacitive keys
- ▶ LED ring acts as key feedback
- ▶ selection of the value to be displayed (room temperature, setpoint, setpoint offset)
- ▶ automatic LED backlight
- ▶ optional use of the internal or external room temperature sensor (accessory)
- ▶ room temperature control
- ▶ parametrisable room frost protection function → RT < 8 °C = heating valve open, fan stage 1
- ▶ parametrisable unit frost protection function → RT < 4° C = valve(s) open, fan off
- ▶ standby mode
- ▶ Eco/day switch-over
- ▶ manual or automatic mode
- ▶ functional display
- ▶ alarm display
- ▶ timer program with 3 time channels, each with 4 switch-over points
- ▶ cleaning mode
- ▶ parametrisable language: German or English
- ▶ Modbus RTU slave interface to wire to higher-level building automation system (BAS) (only with type 148943 and type 148944)
- ▶ 3 control inputs with type 148941 and type 148942 or 2 control inputs with type 148943 and type 148944 (parametrisable functions e.g. window contact, motion detector, heating/cooling switch-over), external room sensor
- ▶ password-protected parameter level
- ▶ surface-mounted on a flush box
- ▶ pure white (type 148941 and type 148943) or black (type 148942 and type 148944)
- ▶ parallel operation of 2 units is possible

### Operating using on-site systems

Control via analogue and digital signals is also possible as an alternative to the Kampmann control units. The following analogue and digital inputs and / or outputs are needed:

- ▶ speed control via a 0-10 V DC signal, the fan starts up safely at 1.5 V DC
- ▶ control input for the detection of any possible motor malfunction →only with electromechanical version with alarm contact (\*01M)
- ▶ control input for the detection of a possible condensate alarm →only with electromechanical version with condensate pump or dew point sensor
- ▶ analogue or digital signals to control the fan actuator(s) according to the actuator version

## Information on cable laying

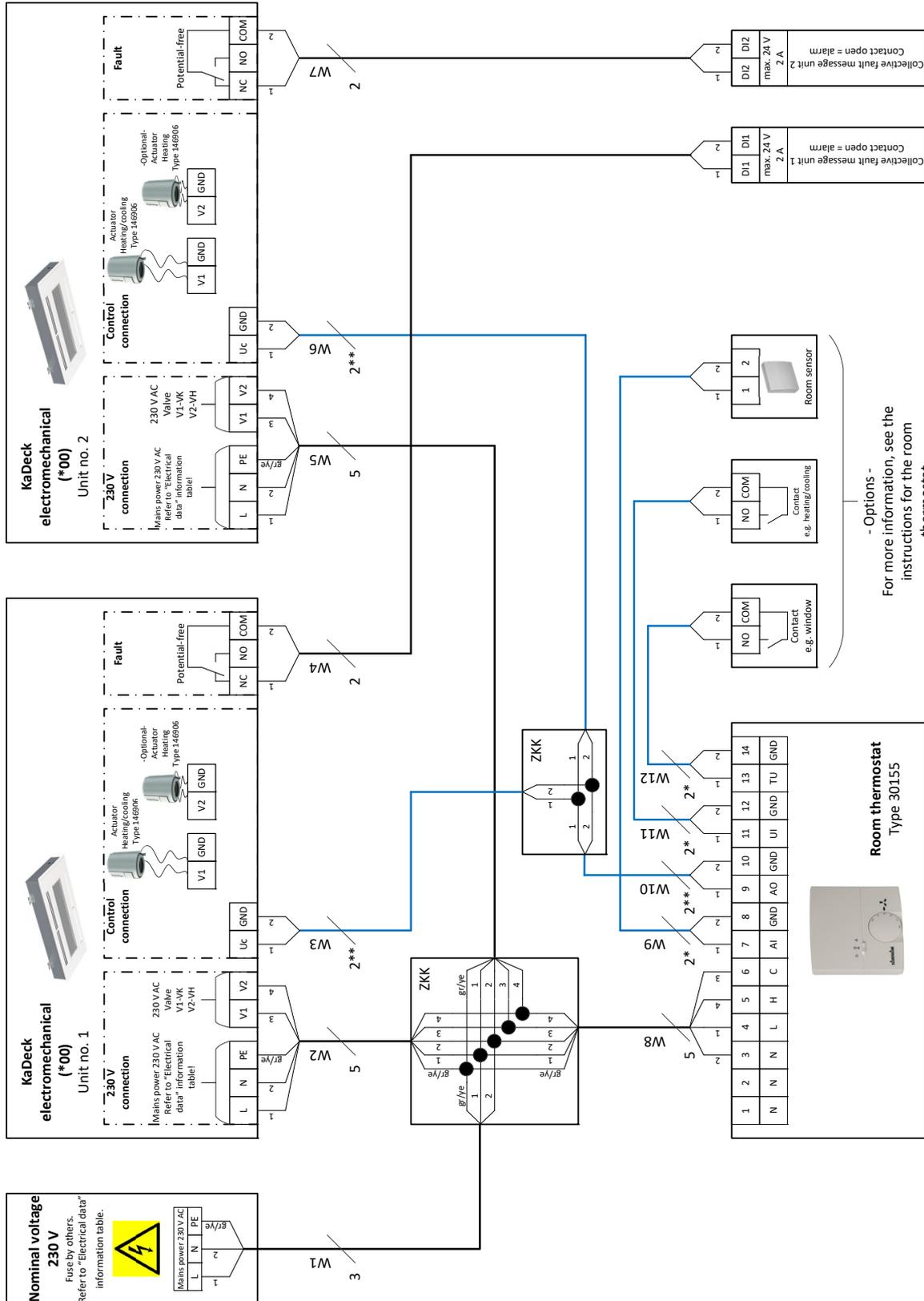
The points below need to be taken into account with the following cable laying and wiring diagrams:

- ▶ Comply with the details on the type of cable and cabling, taking into consideration VDE 0100.
- ▶ Without \*: NYM-J. The requisite number of wires, including PE conductor, is stated on the cable. Cross-sections are not stated, as the cable length is involved in the calculation of the cross-section.
- ▶ With \*: J-Y(ST)Y, 0.8 mm, max. 50 m. Lay separately from high voltage lines.
- ▶ With \*\*: J-Y(ST)Y, 0.8 mm, max. 30 m. Lay separately from high voltage lines.
- ▶ With \*\*\*: J-Y(ST)Y, 0.8 mm, max. 10 m. Lay separately from high voltage lines.
- ▶ With \*\*\*\*: UNITRONIC® BUS LD 2x2x0.22 mm<sup>2</sup>. Lay separately from high voltage lines.
- ▶ If other types of cables are used, they must be at least equivalent.
- ▶ The terminals on the unit are suitable for a maximum wire cross-section of 2.5 mm<sup>2</sup>.
- ▶ All RCCBs used must at least be mixed frequency-sensitive (type F). Refer to the provisions of DIN VDE 0100 Parts 400 and 500 when designing the rated fault current.
- ▶ The electrical data listed in the following table needs to be considered when configuring the mains supply and fuses on site (C 16A, max. 10 units).

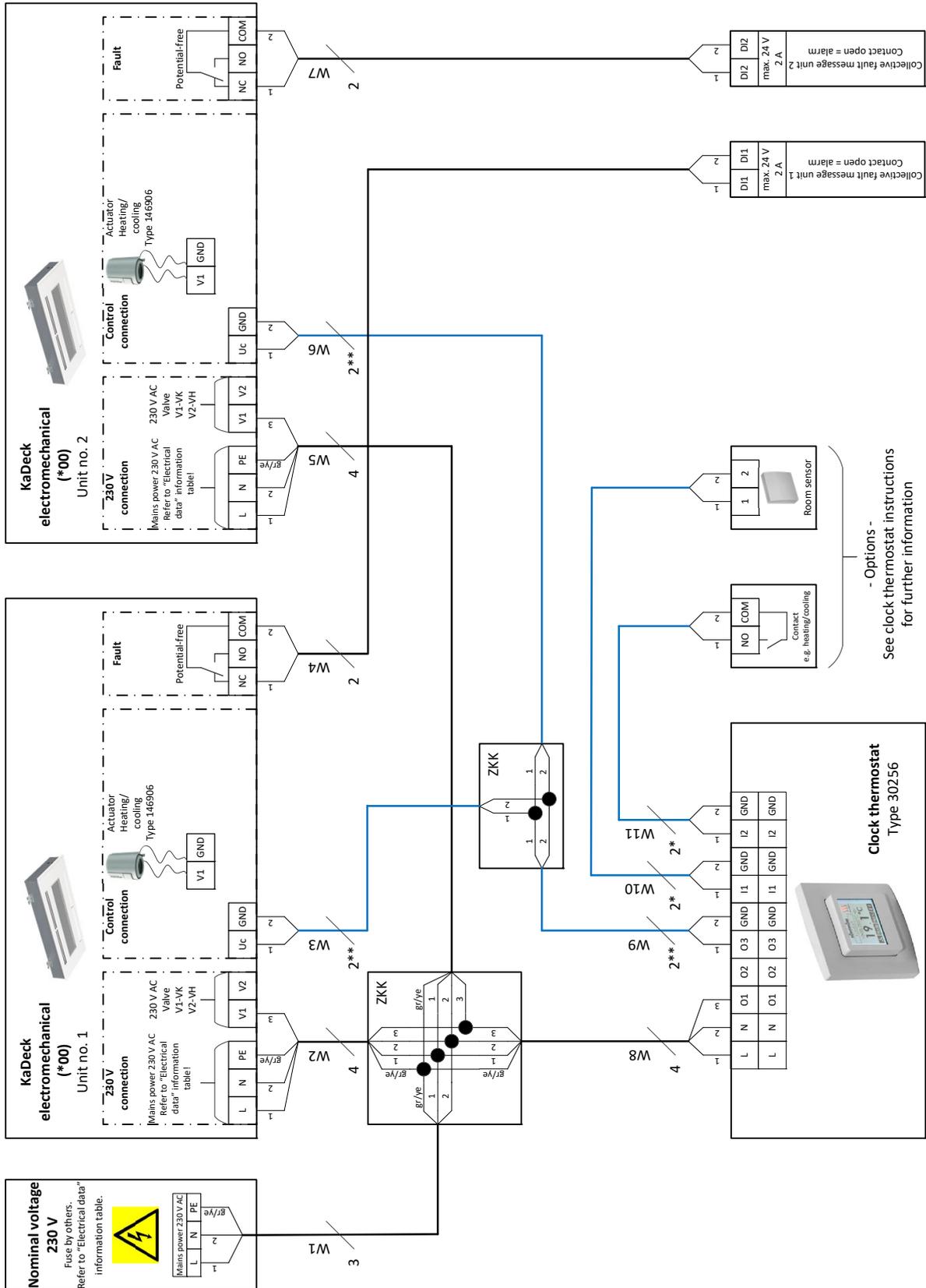
### Electrical data for KaDeck, electromechanical version (\*00)

Article number	Nominal voltage	Mains frequency	Active power	Nominal current	Analogue input Ri	IP class	Protection class
	[V]	[Hz]	[W]	[A]	[kΩ]		
3261xxx11xxx	230	50	16	0.13	100	20	I
3261xxx61xxx	230	50	24	0.20	100	20	I
3261xxx12xxx	230	50	27	0.22	50	20	I
3261xxx62xxx	230	50	35	0.29	50	20	I

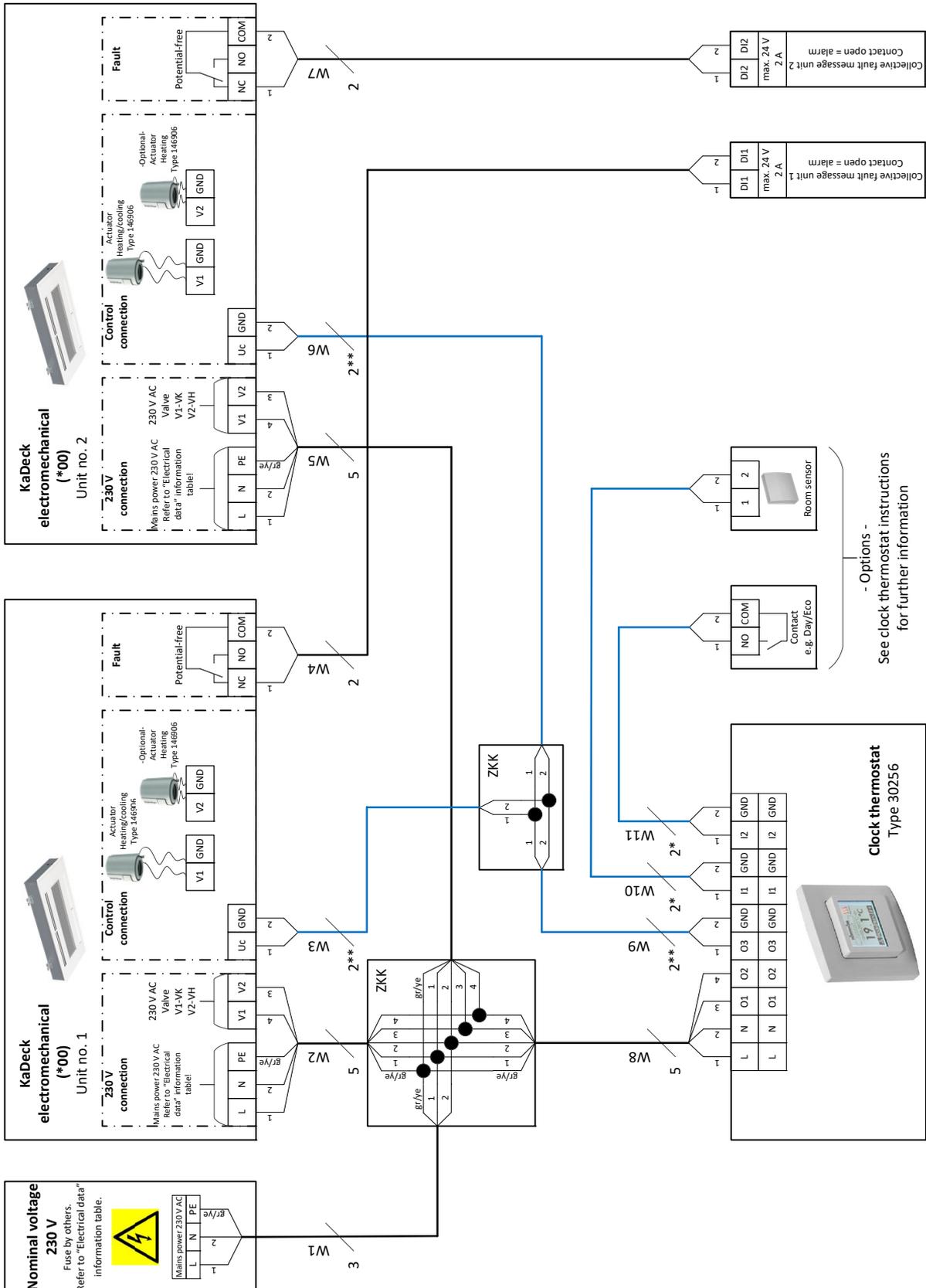
## Cable laying and wiring of KaDeck electromechanical (\*00), 2- or 4-pipe, valve actuator(s) 24 V DC Open/Closed, collective fault signal, room thermostat type 30155



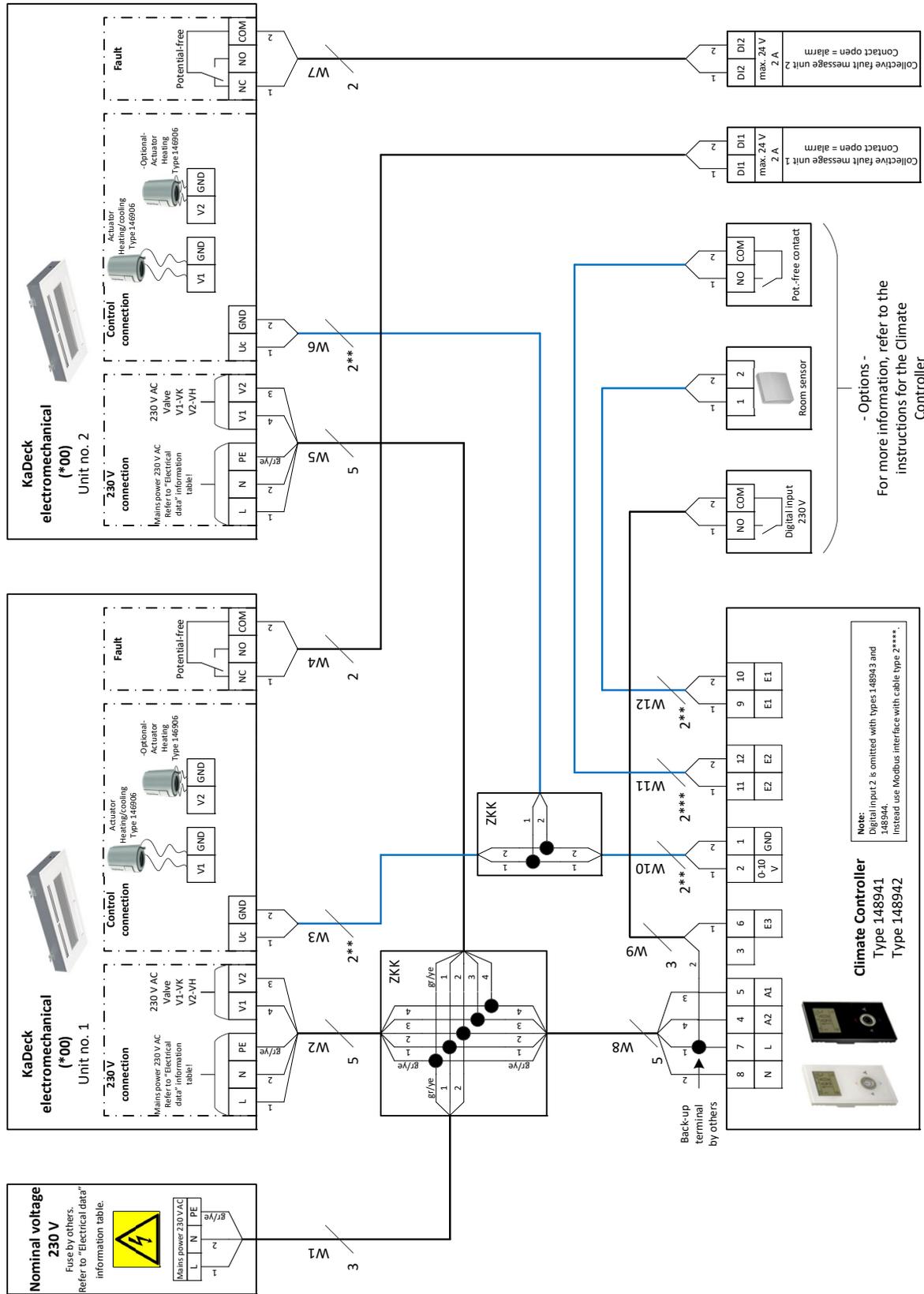
# Cable laying and wiring of KaDeck electromechanical (\*00), 2-pipe, valve actuator 24 V DC Open/Closed, collective fault signal, room thermostat type 30256



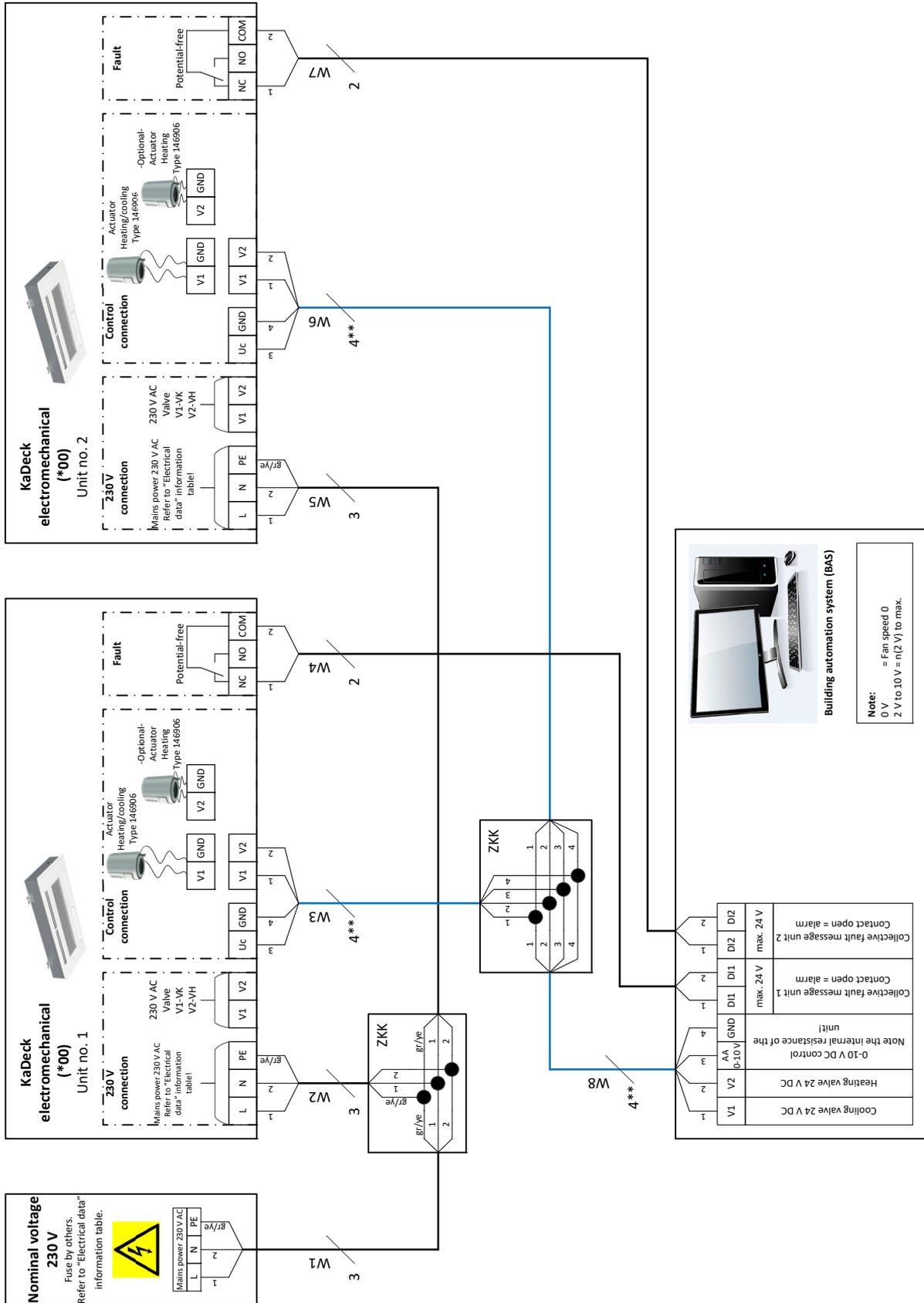
## Cable laying and wiring of KaDeck electromechanical (\*00), 4-pipe, valve actuators 24 V DC Open/Closed, collective fault signal, room thermostat type 30256



# Cable laying and wiring of KaDeck electromechanical (\*00), 2- or 4-pipe, valve actuator(s) 24 V DC Open/Closed, collective fault signal, optional Modbus, Climate Controller type 148941 / 148942 / 148943 / 148944



Cable laying and wiring of KaDeck electromechanical (\*00), 2- or 4-pipe, valve actuator(s) 24 V DC Open/Closed, collective fault signal, control by building automation system (BAS)



# Control of KaDeck, KaControl version

## The all-inclusive solution!

### Product features

Units configured for operation with KaControl are fully wired and fitted with all electrical parts ready for connection (with the exception of optional accessories).

The built-in, high-performance, parametrisable KaControl microprocessor control provides all the functions the KaDeck needs.

The “face” of the KaControl is the KaController control unit.

A group of up to six units can be formed using a KaController control unit without the need for additional addressing.

Optional plug-in interface cards offer the option of connecting to higher-level control systems.

### Fans

The fan speed of the EC fans used in the units is controlled by a 0-10 V DC signal from the KaControl. The “intelligent” motor electronics detect any possible motor malfunction and automatically switch off the fan. A motor malfunction on the unit to which the KaController is connected is displayed on the KaController. A motor malfunction and condensate alarm are also displayed by the associated LED on the PCB. There is also a potential-free motor malfunction signal contact and/or condensate alarm on the PCB for external evaluation.

### Control unit

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

### KaController Type 3210001



### Type 3210002



### Type 3210006



The KaController offers maximum operating convenience with a large display, one-touch operation and optionally also with side function keys for quick access. Based on the principle of “as little as possible, as much as required”, even untrained users can intuitively get to grips with the control options. The displays are language-independent using pictograms. The basic functions are inputted in a user-friendly way using the KaController.

#### Product features of the KaController

- ▶ plastic housing, colour similar to RAL 9010 (type 3210001 and 3210002) or black (type 3210006) for surface-mounting on a flush back box or surface-mounting with a surface-mounted frame (accessory)
- ▶ high-quality design of room control units, large PCD multifunctional display with energy-saving, automatically switching LED backlight
- ▶ push-turn navigator dial with endless turn/lock function
- ▶ side function keys for quick access (only with type 3210002)
- ▶ integral temperature sensor
- ▶ individually adjustable basic display
- ▶ display of fault alarms
- ▶ built-in weekly switching program
- ▶ password-protected parameter level

#### KaControl control function

The parametrisable KaControl microprocessor control offers a wealth of functions. The following factory settings are set for the functions of the KaDeck product:

- ▶ 2- and 4-pipe - applications, thermal valve actuators 24 V DC Open/Closed, normally closed
- ▶ room temperature control with 2-point valve control and demand-led fan control in automatic operation or optionally fixed stage selection
- ▶ room frost protection function → RT < 8 °C = heating valve open, fan stage 1
- ▶ unit frost protection function → RT < 4 °C = valve(s), fan off
- ▶ optional use of the internal or external room temperature sensor (accessory)
- ▶ in the event of a unit alarm being triggered on a device to which the KaController room control unit is connected, e.g. a motor malfunction or condensate alarm is detected by the KaControl and indicated on the KaController control unit
- ▶ control input for heating/cooling switch-over with 2-pipe systems
- ▶ control input can either be set to Comfort/ECO or ON/OFF switch-over
- ▶ 24 V DC/max 0.5 A switch output parametrisable to unit alarm, heat or cooling demand (only with 2-pipe applications)
- ▶ sequential control of valve (Open/Closed) and fan speed via one (2-pipe) or two data points 0-10 V DC (4-pipe) → only with control without KaController
- ▶ one slot for optional interface cards for connection to a higher-level building automation system → optionally Modbus, KNX, BACnet (accessories)
- ▶ password-protected parameter level
- ▶ parallel operation of a maximum of 6 units is possible, extendible to a maximum of 30 units using additional CANbus cards type 3260701 (accessory) per unit

Any additional functions required can be parametrised and correspondingly coordinated.

## Information on cable laying

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

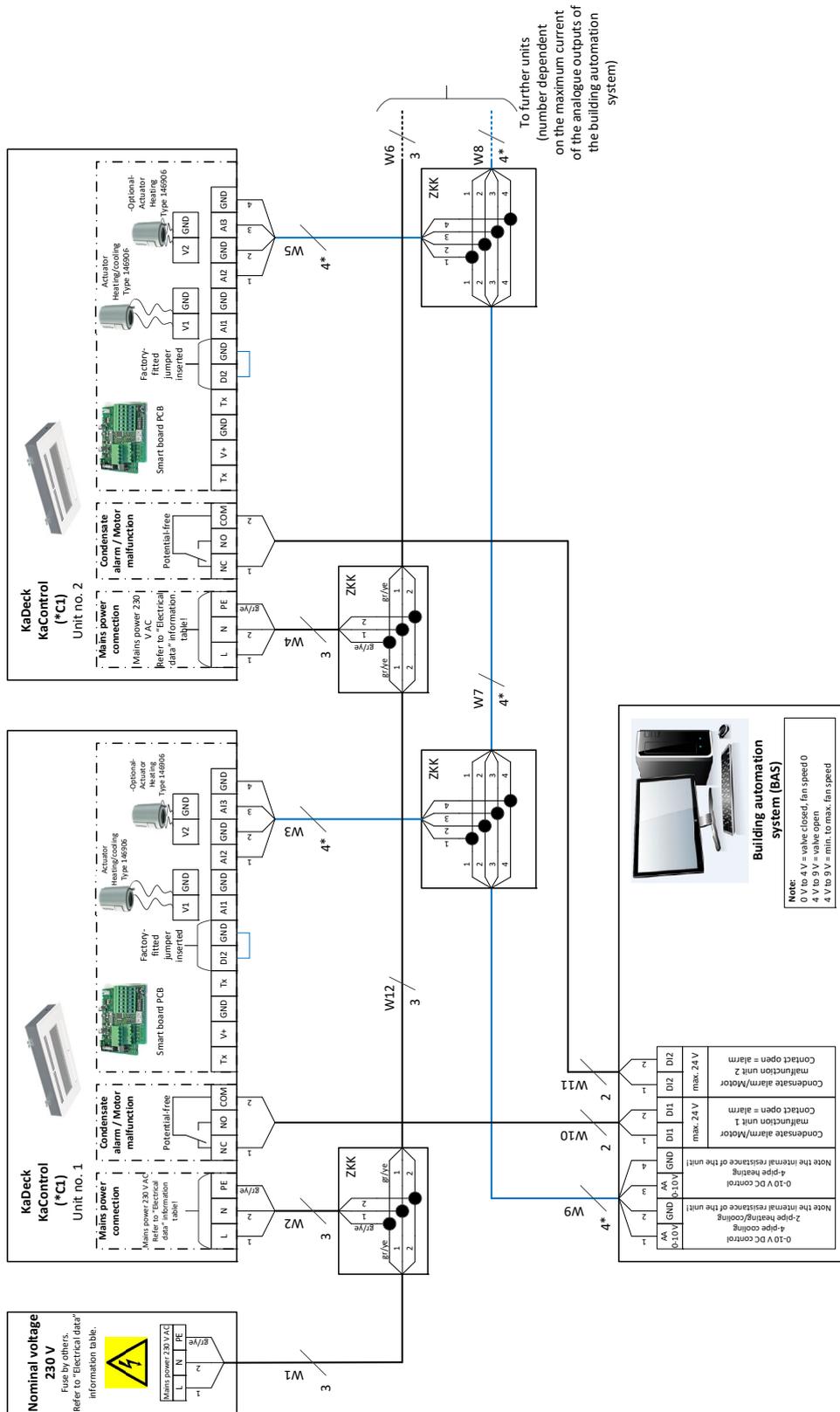
- ▶ Comply with the details on the type of cable and cabling, taking into consideration DE 0100.
- ▶ Without \*: NYM-J. The requisite number of wires, including PE conductor, is stated on the cable. Cross-sections are not stated, as the cable length is involved in the calculation of the cross-section.
- ▶ With \*: J-Y(ST)Y 0.8 mm. Lay separately from high voltage lines.
- ▶ With \*\*: UNITRONIC® BUS LD 0.22 mm<sup>2</sup>. Lay separately from high voltage lines.
- ▶ If other types of cables are used, they must be at least equivalent.
- ▶ Length of the BUS line from the KaController to unit 1: max. 30 m.
- ▶ Maximum number of parallel units: 6 units. CANbus cards type 3260701 needed for each unit (see accessories) maximum 30 no.
- ▶ Length of bus line from unit 1 to the last unit max. 30 m. The cable length can be increased to 500 m using CANbus cards type 3260701 (see accessories).
- ▶ The terminals on the unit for the mains power supply are suitable for a maximum wire cross-section of 2.5 mm<sup>2</sup>.
- ▶ All RCCBs used must at least be mixed frequency-sensitive (type F). Refer to the provisions of DIN VDE 0100 Parts 400 and 500 when designing the rated fault current.
- ▶ The electrical data listed in the following table needs to be considered when configuring the on-site mains power supply and fuses (C16A, max. 10 units).

### Electrical data for KaDeck, KaControl version (\*C1)

Article number	Nominal voltage	Mains frequency	Active power	Nominal current	Analogue input Ri	IP IP class	Protection class
	[V]	[Hz]	[W]	[A]	[kΩ]		
3261xxx11xxxC1	230	50	18	0.15	20	20	I
3261xxx61xxxC1	230	50	26	0.22	20	20	I
3261xxx12xxxC1	230	50	29	0.24	20	20	I
3261xxx62xxxC1	230	50	37	0.31	20	20	I



# Cable laying and wiring of KaDeck with KaControl (\*C1), 2- or 4-pipe, valve actuator(s) 24 V DC Open/Closed, condensate alarm, motor malfunction, control by building automation system (BAS)



## KaControl – Integration into intelligent building networks (IoT)

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

### Individual switching of units

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

### Switching of groups

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

### Communication interfaces

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

- ▶ Modbus RTU
- ▶ KNX
- ▶ BACnet IP

### Note:

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

## KaControl system controller

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

### KaControl SEL4.0 control panel



- ▶ for the monitoring and control of up to 60 Kampmann secondary air units, split into up to 25 groups (zones), maximum 6 units per groups
- ▶ central and zone-wide heating/cooling switch-over
- ▶ own timer program per zone/room
- ▶ integrated web server
- ▶ optional BACnet licence is available

### KaControl AUL control panel



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

### KaControl visualisation



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

#### Note:

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

## Wiring diagram for KaControl control panel SEL 4.0

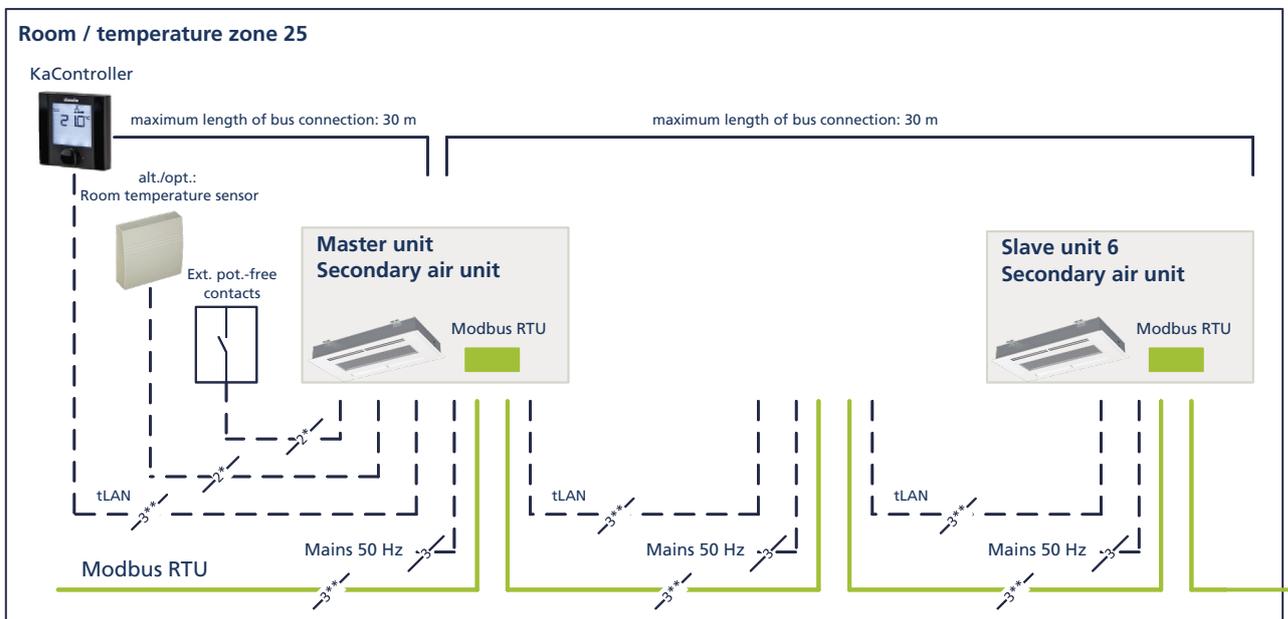
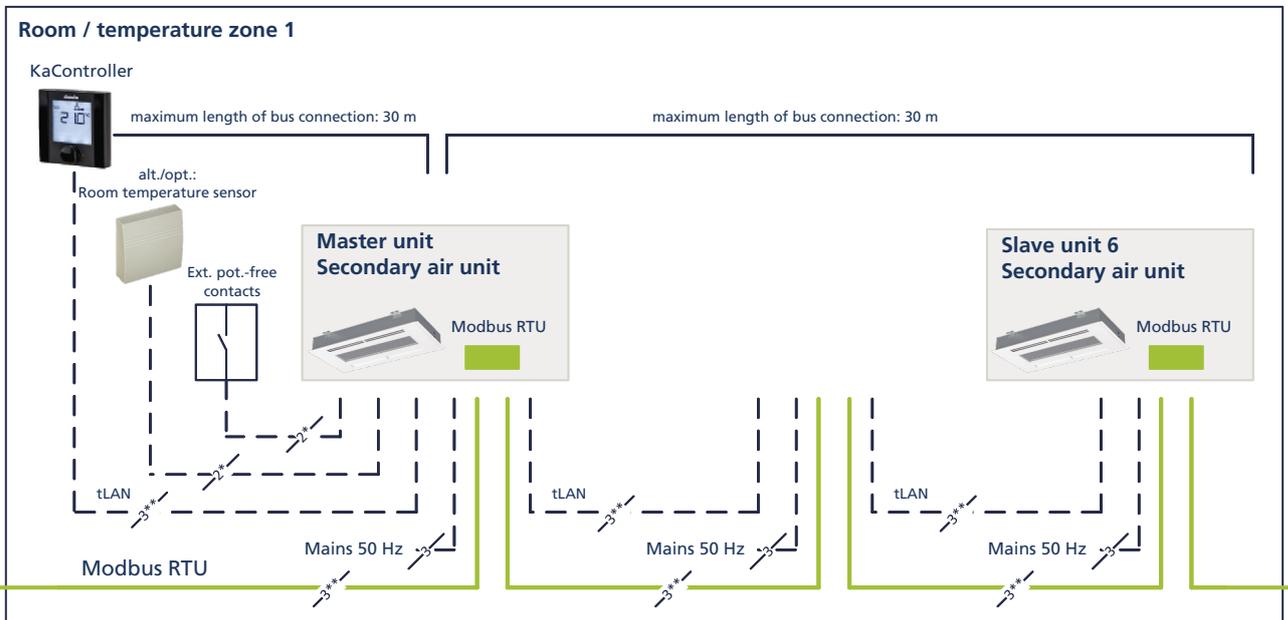


Mains 50 Hz

Ethernet

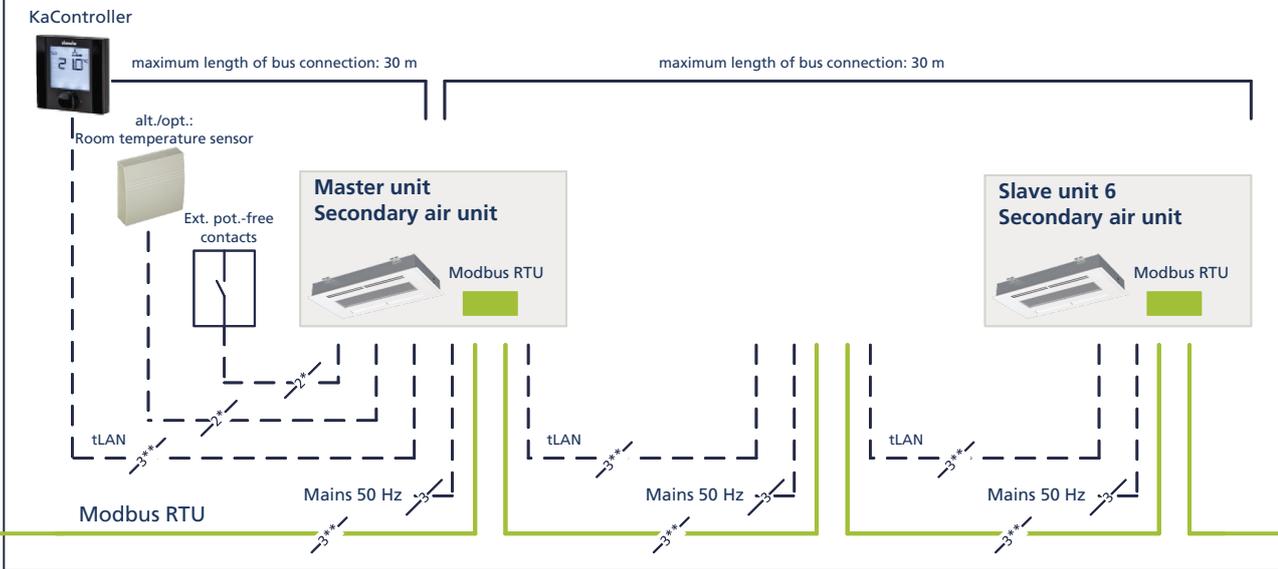
- Outdoor temperature sensor
- Return air temperature sensor
- Chiller
- Heat generator
- Heating pump Heating/cooling
- Heating/cooling switch-over valves
- Faults
- ....

**KaControl SEL4.0 control panel**

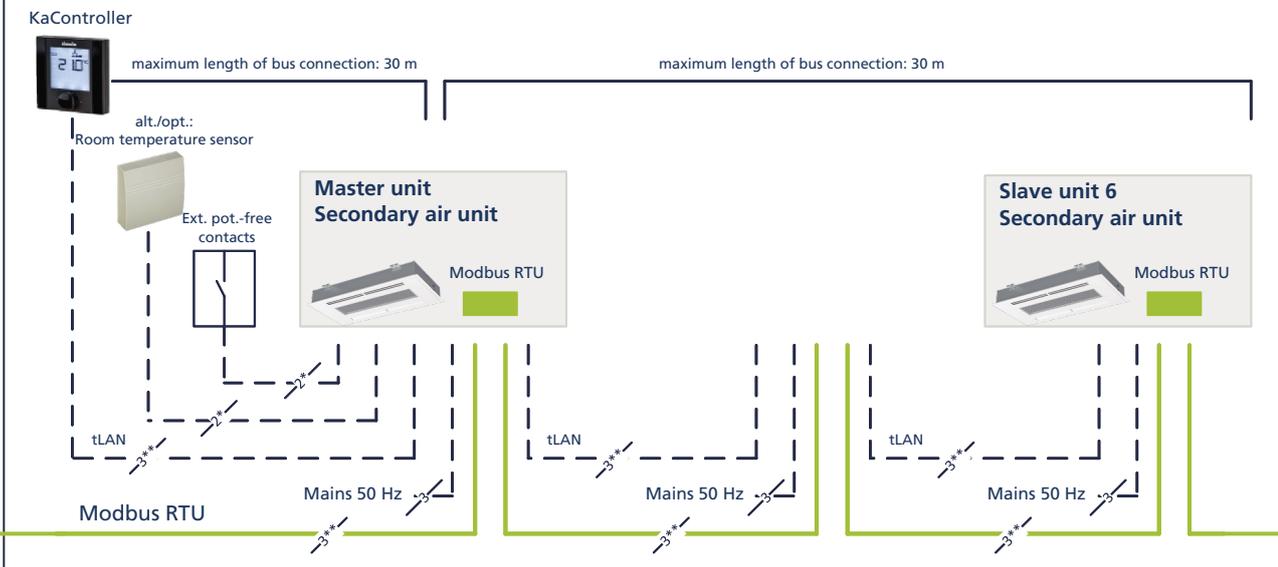




### Room / temperature zone 2



### Room / Temperature zone "n"



# 05 ▶ Ordering information

## Accessories

Article	Article	Properties	Dimensions [mm]	Suitable for	Article no.
<b>Control accessories KaControl</b>					
	KaController	with one-button operation, 24 V wall-mounted room control unit, with integral room temperature sensor, Protection class IP 30, Temperature setting range 8 - 35 °C, Colour similar to RAL 9010 pure white, plastic	86 x 52 x 86	all units with control option KaControl -C1	<b>196003210001</b>
	KaController	with one-button operation, 24 V wall-mounted room control unit, with integral room temperature sensor, Protection class IP 30, Colour similar to RAL 9017 traffic black, plastic	86 x 52 x 86	all units with control option KaControl -C1	<b>196003210006</b>
	KaController	with side operating keys, 24 V wall-mounted room control unit, with integral room temperature sensor, Protection class IP 30, Colour similar to RAL 9010 pure white, plastic	86 x 52 x 86	all units with control option KaControl -C1	<b>196003210002</b>
	Room temperature sensor	Wall-mounted, Surface-mounted, Protection class IP 30, Colour similar to RAL 9010 pure white, plastic Is the KaController installation site suitable for a temperature measurement? - If it is not suitable, e.g. behind a curtain, then a KaControl room temperature sensor should be chosen for each group!	101 x 110 x 23	all units with KaControl -C1 and climate controller art. no. 19600014894*	<b>196003250110</b>
	Clip-on pipe sensor	to detect the medium temperature, heating/cooling changeover function only in conjunction with 3-way valve!, Protection class IP 67, Temperature setting range -20 - 70 °C, Colour black Is there a risk of frost, e.g. due to the ingress of cold air – if so, then a KaControl clip-on pipe sensor should be chosen for each unit!	5 x 6 x 3000	all units with KaControl -C1 and climate controller art. no. 19600014894*	<b>196003250115</b>
	Serial KNX card	for integration into a KNX/EIB network, interface PCOS00KXNO, Type 3260702 The communication card slots into the free interface on the PCB.	35 x 20 x 80	all units with control option KaControl -C1	<b>196003260702</b>
	Serial CANbus card	to increase the number of units in a single-circuit system from 7 to a maximum of 30 units, one required per unit, Extension of the cable length from the first to the last unit from 30 m to 500 m Can only be used with the KaControl configuration.	35 x 30 x 60	all units with control option KaControl -C1	<b>196003260301</b>
	Serial Modbus card	Required for each device for connection to KaControl panels or on-site Modbus networks. The communication card slots into the free interface on the PCB.	31 x 12 x 61	all units with control option KaControl -C1	<b>196003260101</b>

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## Accessories

Article	Article	Properties	Dimensions [mm]	Suitable for	Article no.
<b>Control accessories electromechanical 230 V</b>					
	Room thermostat	Heating/Cooling, 2- and 4-pipe, 3-stage. Only in conjunction with valves/valve kits with actuator, 230 V AC, Open/Closed, with OFF/Manual/Automatic fan switch-over, Surface-mounted, Temperature setting range 5 - 30 °C, Colour similar to RAL 9010 pure white	110 x 111 x 26	EC units electromechanical, 5 Kathern HK Trench Technology, 2 TOP or Ultra Unit Heaters, 5 Venkon Fan Coils, 2 KaCool D AF, KaCool W or KaDeck Fan Coils	<b>196000030155</b>
	Clock thermostat	Heating/Cooling, 2- and 4-pipe, 230 V AC, continuously variable, with LCD operating menu and integrated timer program, flush-mounted, Protection class IP 30, Colour similar to RAL 9010 pure white	85 x 46 x 81	EC units electromechanical, 2 TOP or Ultra Unit Heaters, 5 Venkon Fan Coils, 2 KaCool D AF, KaCool W or KaDeck Fan Coils	<b>196000030256</b>
	Climate Controller	Heating/Cooling, 2- and 4-pipe, Without Modbus, only with valves/valve kits, 230 V AC, Open/Closed, continuously variable, with LCD operating menu and integrated timer program, Surface-mounted, Colour similar to RAL 9010 pure white	78 x 140 x 15	EC units electromechanical, 4 Kathern HK Trench Technology, 2 KaCool D AF, KaCool W, Venkon or KaDeck Fan Coils	<b>196000148941</b>
	Climate Controller	Heating/Cooling, 2- and 4-pipe, Without Modbus, only with valves/valve kits, 230 V AC, Open/Closed, continuously variable, with LCD operating menu and integrated timer program, Surface-mounted, Colour similar to RAL 9004 signal black	78 x 140 x 15	EC units electromechanical, 4 Kathern HK Trench Technology, 2 KaCool D AF, KaCool W, Venkon or KaDeck Fan Coils	<b>196000148942</b>

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## Accessories

Article	Article	Properties	Dimensions [mm]	Suitable for	Article no.
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### Valve kits

	Differential pressure-independent valve kit	2-pipe, 24 V 2-point actuator 24 V Open/Close, 50 Hz, supplied separately	180 x 30 x 523	KaDeck Fan Coils, Flow volume Cooling (min./max.) 200 - 1050 l/h	<b>326007110005</b>
	Differential pressure-independent valve kit	4-pipe, 24 V 2-point actuator 24 V Open/Close, 50 Hz, supplied separately	180 x 30 x 523	KaDeck Fan Coils, Flow volume Cooling (min./max.) 200 - 1050 l/h	<b>326007110015</b>
	Differential pressure-independent valve kit	2-pipe, 24 V 2-point actuator 24 V Open/Close, 50 Hz, supplied separately	180 x 30 x 523	KaDeck Fan Coils, Flow volume Cooling (min./max.) 35 - 420 l/h	<b>326007110003</b>
	Differential pressure-independent valve kit	4-pipe, 24 V 2-point actuator 24 V Open/Close, 50 Hz, supplied separately	180 x 30 x 523	KaDeck Fan Coils, Flow volume Cooling (min./max.) 35 - 420 l/h	<b>326007110013</b>
	Valve kit	2-pipe, Actuator, return shut-off valve and flexible connection, corrugated stainless steel pipe flow and return, 2-way valve, pre-settable, 24 V 50 Hz	180 x 30 x 523	KaDeck Fan Coils	<b>326007110001</b>
	Valve kit	4-pipe, Actuator, return shut-off valve and flexible connection, corrugated stainless steel pipe flow and return, 2-way valve, pre-settable, 24 V 50 Hz	180 x 30 x 523	KaDeck Fan Coils	<b>326007110011</b>

### Attachments

	Primary air connection spigot	for the connection of external primary air, Installation within a suspended ceiling	110 x 110 x 40	KaDeck Fan Coils	<b>326007010104</b>
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