



► **KaCool D AF**
Chilled water air conditioning systems


KaCool D AF

Comfortable feeling of well-being, thanks to
AtmosFeel

► **Technical catalogue**

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A photograph of a modern interior space, likely a hallway or entrance. The ceiling is white and features several circular recessed lights and a large, square, white air conditioning unit (KaCool D AF) mounted on it. Below the ceiling unit, there is a green emergency exit sign with a white arrow pointing down. The walls are white, and the floor is covered with a dark grey carpet. A large glass door with a silver frame is the central focus, reflecting the surrounding environment. The door has a silver handle and a lock. The overall atmosphere is clean and professional.

KaCool D AF:
Comfortable feeling
of well-being,
thanks to AtmosFeel



Side air outlets ensure draught-free airflows and maximum comfort (AtmosFeel).

01 ▶ Product information



Example: models 1 – 4

KaCool D AF - Comfortable feeling of well-being, thanks to AtmosFeel

KaCool D AF – AtmosFeel for the highest standards of comfortable air supply and design. The ceiling cassettes provide a wide spectrum of cooling and heating outputs in different output ranges.

The design panel has been developed specifically for maximum comfort and the ultimate in design standards. Cold air passes through four side air outlets along the ceiling and into the room and is perfectly dissipated. The so-called Coanda effect is used for this, which produces a comfortable room climate without draughts. The outlet slats can be manually adjusted. The minimal installation height of the ceiling cassettes and the flat design panel are both ideal for all rooms with a suspended ceiling. The units can be operated using a room thermostat, infra-red remote control or, ultra-conveniently, using the KaControler.

Fresh air

The supply of primary air enters through a pre-punched opening on the housing, to which a circular hose can be connected. An additional fan is then needed on site for this configuration.

Supply to adjacent rooms

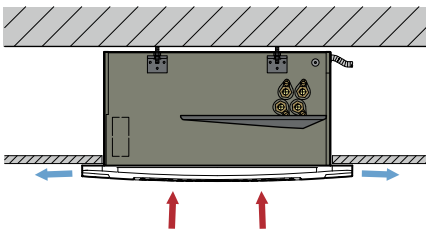
Depending on the size of the unit, one or two connecting spigots can be connected to the punched opening(s) to provide an air supply discharged into an adjacent room. The air volume can be regulated by closing one or both discharge openings.

Valves

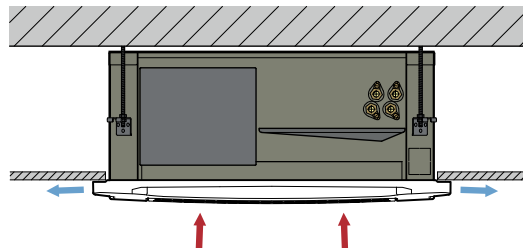
3-way or 2-way valves can optionally be provided separately for installation on site. They include an actuator and the required pipework to connect the valve to the cassette. There is an option of factory integrating the valves into the cassette with larger order quantities. They are completely pre-assembled and wired inside the cassette.

Cooling example

Models 1 – 4



Model 5 – 7



Product data



Product advantages

- ▶ draught-free air supply into rooms through side air outlets
- ▶ minimalist cassette design
- ▶ whisper-quiet EC technology
- ▶ easy to install
- ▶ fully automatic KaControl or connection to an existing, external building automation system



Example: models 1 – 4

Features

- ▶ 7 overall sizes
- ▶ ABS panel with AF (AtmosFeel) in traffic white, similar to RAL 9016
- ▶ optionally with "metal grid casing panel" colour coordinated to meet customer requirements and fitting precisely into 625 x 625 standard European ceiling grids (models 1 – 4)
- ▶ 0-100% infinitely adjustable EC fans
- ▶ optional primary air connection
- ▶ 2- or 3-way valves available as accessories, optionally factory-installed in the cassette with larger order volumes

Heating

Cooling

Installation

Heat exchanger

KaControl

Infra-red remote

control

- ▶ LPHW
- ▶ CHW
- ▶ ceiling-mounted
- ▶ 2-pipe
- ▶ 4-pipe
- ▶ optional
- ▶ optional

Condensation pump

- ▶ 600 mm head from stylish casing

Condensation connection:

- ▶ outside diameter 13.5 mm

Performance data

Cooling output¹⁾ [kW]

- ▶ 1.84–12.0

Heat output²⁾ [kW]

- ▶ 4.04–25.9

Operating limits

- ▶ max. operating pressure: 8 bar
- ▶ min. entering water temperature: 5 °C
- ▶ max. entering water temperature: 75 °C
- ▶ min. entering air temperature: 5 °C
- ▶ max. entering air temperature: 35 °C
- ▶ relative humidity: 15–75%

Applications

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



Hotels /
motels



Sales rooms
and
showrooms



Office and
meeting
rooms



Restaurants
and cafés

¹⁾ at CHW 7/12 °C and $t_{l1} = 27$ °C and 48% relative humidity

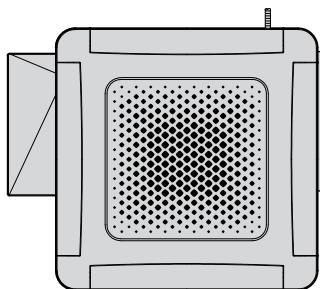
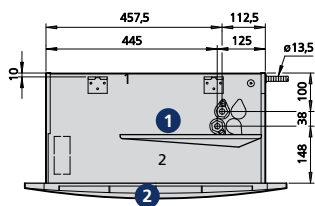
²⁾ at LPHW 70/60 °C, $t_{l1} = 20$ °C.

Selection guide: Overview of models

Model	2-pipe system		4-pipe system		Dimensions	Further information
	Cooling outputs ¹⁾	Heat outputs ²⁾	Cooling outputs ¹⁾	Heat outputs ²⁾		
	[W]	[W]	[W]	[W]	[mm]	
1	1841 – 2829	4004 – 5995	1843 – 2623	2950 – 4114	680 x 680	► Page 14 – 17
2	2324 – 4495	4763 – 8938	2014 – 3366	3272 – 5576		
3	2602 – 4972	5349 – 10249	1998 – 3964	2274 – 3904		
4	3947 – 5377	8656 – 11303	2523 – 4409	2725 – 4278		
5	3627 – 7039	7685 – 14958	3429 – 6186	5457 – 10160	930 x 930	► Page 18 – 19
6	4328 – 9393	8147 – 18271	3915 – 7487	6561 – 12264		
7	5514 – 12078	11266 – 25907	4963 – 8454	8183 – 13173		

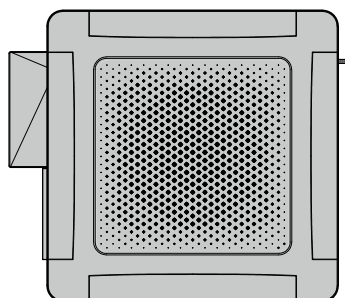
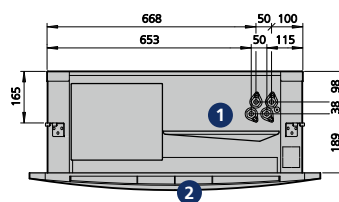
Dimensions

KaCool D AF: models 1 – 4, water connection side,
example 2-pipe



bottom view

KaCool D AF: models 5 – 7, water connection side,
example 4-pipe



bottom view

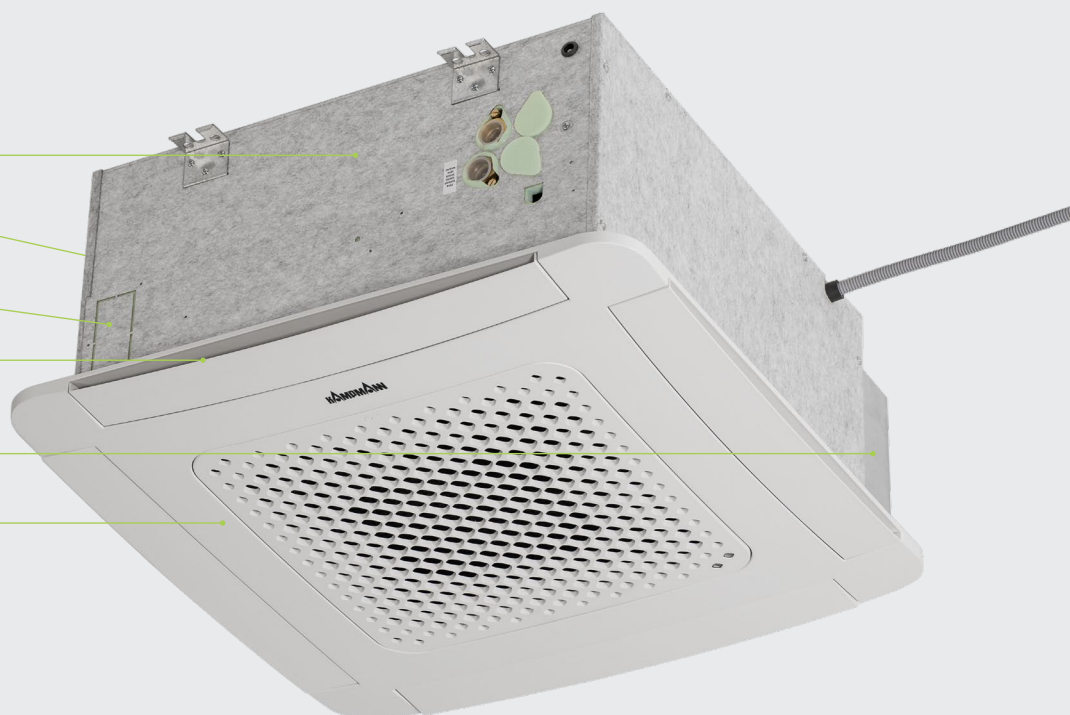
- 1 Condensation drip tray for valve assembly
- 2 Design panel in traffic white, similar to RAL 9016

1) at CHW 7/12 °C, $t_{l,1} = 27$ °C, 48 % relative humidity.

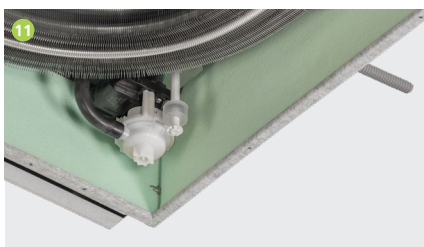
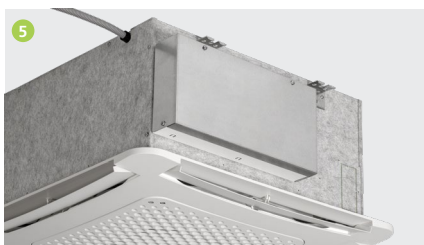
2) at LPHW 70/60°C, $t_{l1} = 20^\circ\text{C}$.

KaCool D AF at a glance

- 1 Compact basic housing
- 2 Punched opening for external air outlet
- 3 Punched opening for optional fresh air connection
- 4 AtmosFeel air outlet
- 5 Electrical junction box
- 6 Design panel



Features





Example: models 1 – 4

1 Compact basic housing:

- ▶ made of galvanised sheet steel
- ▶ the outside has a fleece coating for improved insulation from the environment
- ▶ the inside has high-grade 10 mm vapour diffusion-tight polyethylene foam matting

2 Punched opening for external air outlet:

- ▶ connection option for air outlets (see p 25)

3 Punched opening for optional fresh air connection:

- ▶ models 4 – 7 per spigot (max. 2) 80 m³/h
- ▶ models 5 - 7, max. 120 m³/h

4 AtmosFeel air outlet:

- ▶ four manually adjustable outlet air slats
- ▶ smooth plastic
- ▶ easy to clean

5 Electrical junction box for control PCBs:

- ▶ KaControl
- ▶ infra-red electronic receiver
- ▶ terminals only, for on-site control

6 Design panel in traffic white, similar to RAL 9016:

- ▶ outlet optimised for maximum comfort through side air outlets and utilisation of the Coanda effect
- ▶ IR receiver concealed within the design panel

7 Condensation connection:

- ▶ outside diameter 13.5 mm

8 Air filter Coarse:

- ▶ simple to remove
- ▶ easy to clean

9 Air inlet grille:

- ▶ large free cross-section to minimise pressure losses

10 Hydraulic connections:

- ▶ for CHW, LPHW and condensation drain
- ▶ valve drip tray drains any condensation produced into the condensation tray
- ▶ drip tray is supplied with the unit
- ▶ available with built-in valves with corresponding order volumes (fig. 14)

11 Condensation pump and float switch:

- ▶ easily accessible by removal of the polystyrene condensation tray
- ▶ integrated condensation pump drains the condensation up to a max. head of 600 mm
- ▶ pump activation by a two-stage float switch
- ▶ the pump is switched on when the first stage is reached, the second stage activates an evaluable alarm contact

12 Fans:

- ▶ continuously variable EC fans
- ▶ efficient and low-noise
- ▶ protection class IP 44, insulation class B
- ▶ integrated thermal contact to prevent the motor from overheating

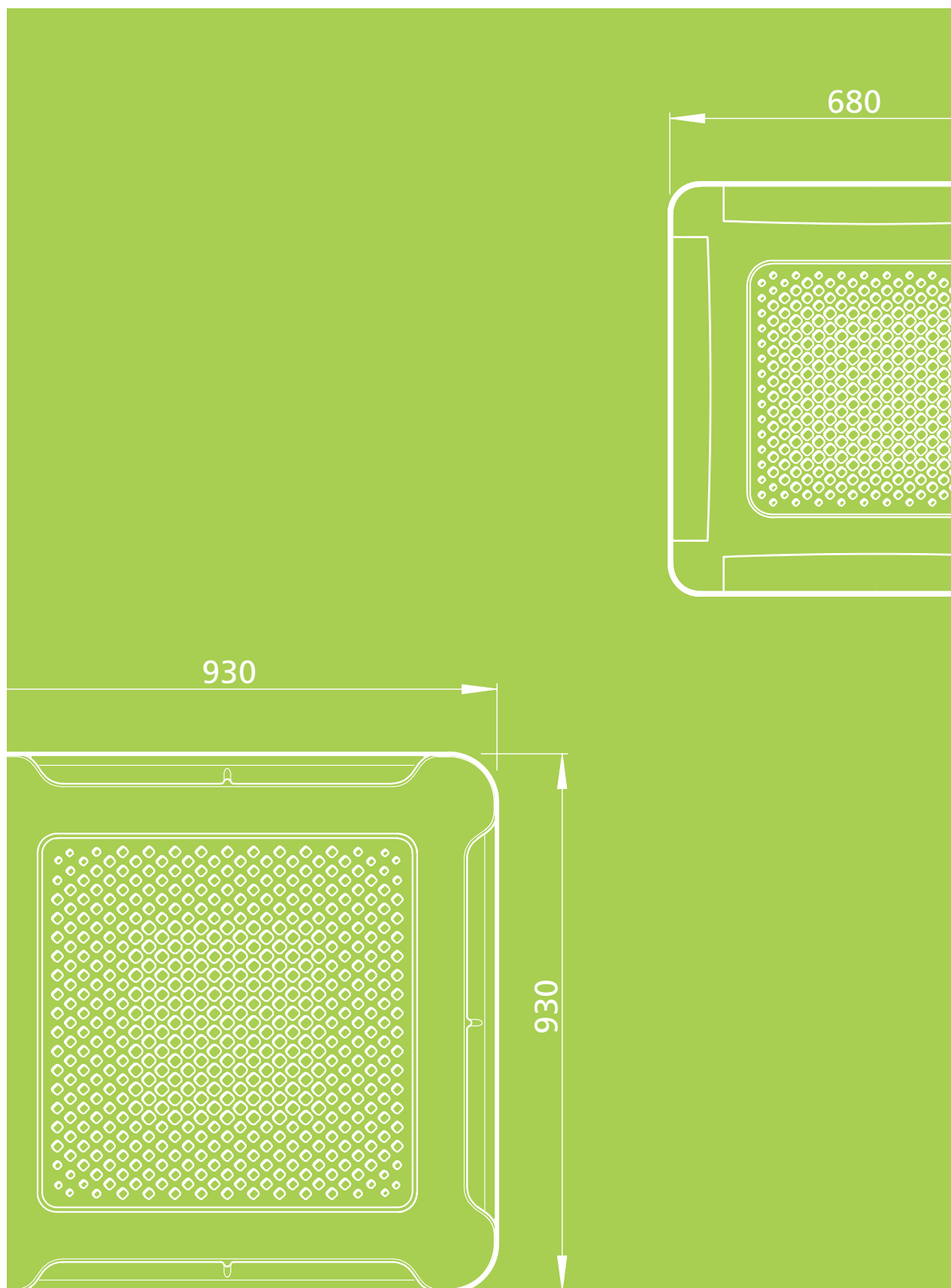
13 Heat exchanger:

- ▶ made of copper pipe with aluminium fins
- ▶ 2-/4-pipe version
- ▶ vent and drain valves on the outside of the unit

14 Valves (optional):

- ▶ optionally factory-integrated

02 ► Technical data



Advice on measuring conditions

The cooling and heat outputs have been calculated in line with DIN EN 1397: 2015-11 „Water-air fan convectors, test methods for establishing the performance“.

The specific requirements for cooling and heating mode are taken into account in DIN EN 1397. Eurovent measurements are also based on them, permitting certification following measurements in accredited test laboratories.

Normative reference

The standard refers to:

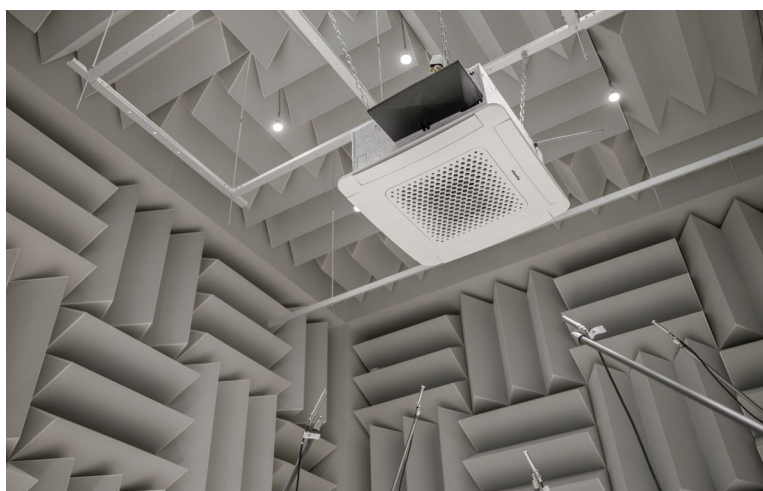
- ▶ EN 23741; Determining the sound power levels of noise sources
- ▶ EN 45001; General criteria for the operation of test laboratories
- ▶ ISO 5801; Industrial fans; performance testing using standardised airways
- ▶ ISO 5221; Air distribution and air diffusion; rules to methods of measuring air flow rate in an air handling duct

The entering air temperature of the ceiling cassette is selected as the reference/air temperature, which should not be confused with the ambient temperature.

In practice, most ceiling cassettes are mainly positioned underneath the slab ceiling and within a suspended ceiling. Due to the temperature stratification that occurs, the entering air temperature differs from the air temperature in the room (measured at a height of 1.5 m).

In cooling mode, the room temperature is significantly lower than the entering air temperature, depending on the distance from the air inlet. Therefore, if an entering air temperature of 27°C is assumed when calculating the output, the room temperature will be much lower.

To avoid the build-up of heat in heating mode, the position of the outlet louvres can be varied. The warm air can therefore be targeted specifically to where it is needed.

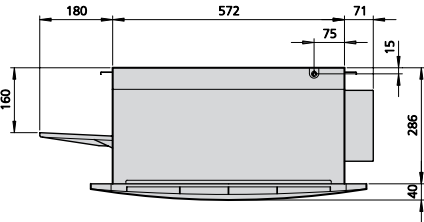


Sound measurement laboratory, example: models 1 – 4

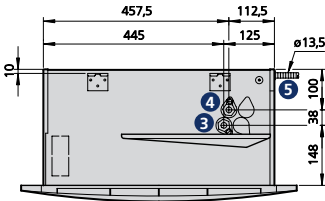
KaCool D AF

Models 1 – 4, continuously variable EC fans

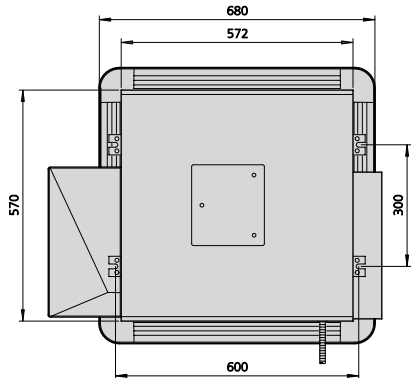
Technical drawings (dimensions in mm)



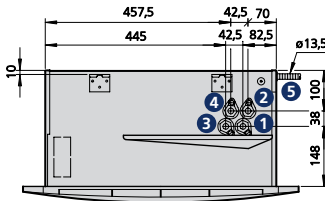
Front view



Water connection side 2-pipe



Top view



Water connection side 4-pipe

- 2-pipe:
- 3 Water inlet
 - 4 Water outlet
 - 5 Condensation drain
- 4-pipe:
- 1 Hot water inlet
 - 2 Hot water outlet
 - 3 Cold water inlet
 - 4 Condensation outlet
 - 5 Condensation drain

Specifications

Water connections

Model	2-pipe	4-pipe
1	1/2"	1/2"
2-4	3/4"	1/2"

Weights

Model	Basic unit		Panel	Total	
	2-pipe	4-pipe		2-pipe	4-pipe
	[kg]	[kg]	[kg]	[kg]	[kg]
1	21	24	3	24	27
2	23	24	3	26	27
3	23	24	3	26	27
4	24	24	3	27	27

Water contents

Model	2-pipe	4-pipe	
	Cooling circuit / Heating circuit	Cooling circuit	Heating circuit
	[l]	[l]	[l]
1	1.6	1.7	0.7
2	2.2	1.7	0.7
3	2.2	2.0	0.4
4	2.2	2.0	0.4

**Design:
2-pipe**

Model	Control signal	Air volume	Cooling outputs ¹⁾		Outlet air temperature ¹⁾	Water volume Cooling ¹⁾	Pressure loss Cooling ¹⁾	Condensate flow ¹⁾	Heat outputs ²⁾	Outlet air temperature ²⁾	Water volume Heating ²⁾	Pressure loss Heating ²⁾	Power consumption	Current consumption	Specific fan power	Sound pressure level ³⁾	Sound power level
	[V]	V [m³/h]	Q _{kg} [W]	Q _{ts} [W]	t _{L2} [°C]	[l/h]	[kPa]	[l/h]	Q _h [W]	t _{L2} [°C]	[l/h]	[kPa]	P [W]	I [A]	[Ws/m³]	[dB(A)]	[dB(A)]
1	10	450	2829	2186	12	486	18.8	1.0	5995	60	515	20.9	17	0.17	134	38	47
	8	405	2589	1992	12	445	16.1	1.0	5516	61	474	18.0	13	0.14	118	35	44
	6	365	2372	1817	12	408	13.7	0.9	5081	62	437	15.5	10	0.11	103	33	42
	4	320	2123	1618	12	365	11.2	0.8	4579	63	394	12.9	8	0.09	88	29	38
	2	270	1841	1393	12	317	8.7	0.7	4004	64	344	10.1	5	0.06	71	25	34
2	10	600	4495	3340	10	773	27.0	1.8	8938	64	769	26.8	32	0.30	192	46	55
	8	530	3983	2943	10	685	22.6	1.7	7964	65	685	22.6	24	0.23	164	43	52
	6	460	3469	2547	10	597	18.5	1.5	6981	65	600	18.6	18	0.18	138	39	48
	4	385	2917	2125	11	502	14.3	1.3	5916	66	509	14.6	12	0.13	110	34	43
	2	305	2324	1676	11	400	10.2	1.0	4763	67	410	10.6	7	0.08	83	28	37
3	10	680	4972	3731	11	855	29.2	2.0	10249	65	881	30.6	42	0.38	224	50	59
	8	595	4401	3287	11	757	24.2	1.8	9066	65	780	25.3	31	0.29	190	46	55
	6	505	3787	2813	10	651	19.2	1.6	7798	66	670	20.1	22	0.21	155	41	50
	4	420	3200	2361	10	550	14.8	1.3	6583	67	566	15.4	14	0.15	123	36	45
	2	335	2602	1905	10	447	10.7	1.1	5349	68	460	11.2	9	0.10	93	30	39
4	10	770	5377	4024	11	925	29.1	2.2	11303	64	972	31.7	56	0.48	261	53	62
	8	725	5063	3764	12	871	26.2	2.1	10731	64	923	29.0	49	0.43	242	52	61
	6	675	4714	3478	12	811	23.1	2.0	10090	65	868	26.0	42	0.37	222	50	59
	4	620	4330	3165	12	745	19.9	1.9	9378	65	806	22.9	34	0.31	199	47	56
	2	565	3947	2855	12	679	16.9	1.7	8656	66	744	19.9	28	0.26	178	45	54

¹⁾ at CHW 7/12°C, t_{L1} = 27°C, 48% relative humidity.

²⁾ at LPHW 70/60°C, t_{L1} = 20°C

³⁾ Sound pressure data at: room size 100 m³, reverberation time 0.5 seconds, sound absorption 9 dB(A).

Design:
4-pipe

Model	Control signal	Air volume	Cooling outputs ¹⁾		Outlet air temperature ¹⁾	Water volume Cooling ¹⁾	Pressure loss Cooling ¹⁾	Condensate flow ¹⁾	Heat outputs ²⁾	Outlet air temperature ²⁾	Water volume Heating ²⁾	Pressure loss Heating ²⁾	Power consumption	Current consumption	Specific fan power	Sound pressure level ³⁾	Sound power level
	[V]	V [m³/h]	Q _{kg} [W]	Q _{ss} [W]	t _{L2} [°C]	[l/h]	[kPa]	[l/h]	Q _h [W]	t _{L2} [°C]	[l/h]	[kPa]	P [W]	I [A]	[Ws/m³]	[dB(A)]	[dB(A)]
1	10	410	2623	1955	13	451	14.4	1.1	4114	50	354	20.3	14	0.14	119	36	45
	8	385	2474	1843	13	425	13.0	1.0	3894	50	335	18.7	12	0.13	110	34	43
	6	360	2325	1730	13	400	11.7	1.0	3673	50	316	17.1	10	0.11	102	32	41
	4	320	2085	1548	13	359	9.7	0.9	3314	51	285	14.6	8	0.09	88	29	38
	2	280	1843	1365	12	317	7.8	0.8	2950	51	254	12.2	6	0.07	74	26	35
2	10	590	3366	2595	14	579	20.2	1.2	5576	48	479	29.0	31	0.29	188	46	55
	8	540	3136	2410	14	539	17.9	1.2	5181	49	445	25.9	25	0.24	168	43	52
	6	475	2831	2165	13	487	15.1	1.1	4659	49	401	22.0	19	0.19	143	40	49
	4	400	2469	1875	13	424	12.0	0.9	4041	50	347	17.7	13	0.14	116	35	44
	2	310	2014	1516	12	346	8.6	0.8	3272	52	281	12.8	7	0.08	84	29	38
3	10	580	3964	2991	12	682	29.6	1.6	3904	40	336	35.4	30	0.28	184	45	54
	8	495	3402	2556	12	585	23.4	1.4	3460	41	298	28.9	21	0.20	151	41	50
	6	420	2904	2171	12	499	18.3	1.2	3054	42	263	23.5	14	0.15	123	36	45
	4	350	2435	1811	12	419	14.0	1.0	2659	43	229	18.7	10	0.11	98	31	40
	2	285	1998	1477	12	343	10.3	0.8	2274	44	196	14.4	6	0.07	76	27	36
4	10	680	4409	3366	12	758	31.9	1.7	4278	39	368	39.3	42	0.38	224	50	59
	8	585	3926	2983	12	675	26.3	1.5	3894	40	335	33.8	30	0.28	186	46	55
	6	495	3451	2610	11	593	21.3	1.3	3509	41	302	28.6	21	0.20	151	41	50
	4	410	2984	2244	11	513	16.8	1.2	3120	43	268	23.6	14	0.14	119	36	45
	2	330	2523	1886	10	434	12.7	1.0	2725	45	234	19.0	8	0.09	91	30	39

¹⁾ at CHW 7/12 °C, tL1 = 27 °C, 48% relative humidity.

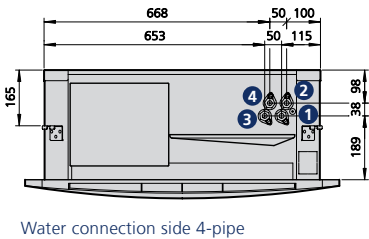
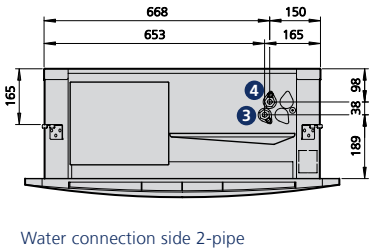
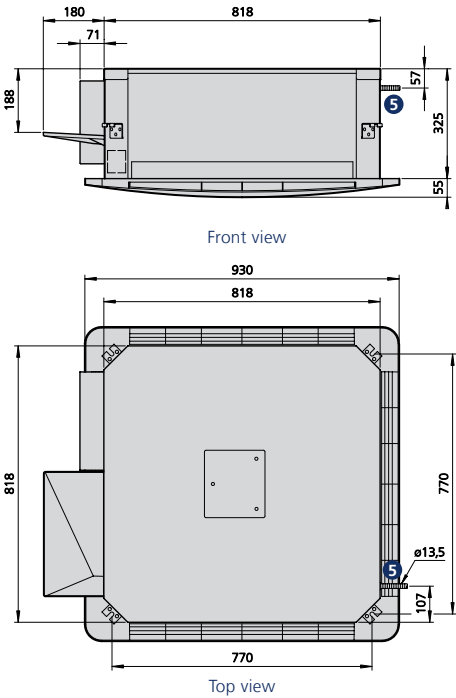
²⁾ at LPHW 70/60 °C, tL1 = 20 °C

³⁾ Sound pressure data at: room size 100 m³, reverberation time 0.5 seconds, sound absorption 9 dB(A).

KaCool D AF

Models 5 – 7, continuously variable EC fans

Technical drawings (dimensions in mm)



- 2-pipe:
- 3 Water inlet
 - 4 Water outlet
 - 5 Condensation drain
- 4-pipe:
- 1 Cold water inlet
 - 2 Condensation outlet
 - 3 Hot water inlet
 - 4 Hot water outlet
 - 5 Condensation drain

Specifications

Water connections

Model	2-pipe	4-pipe
5-7	3/4"	3/4"

Weights

Model	Basic unit		Panel	Total	
	2-pipe	4-pipe		2-pipe	4-pipe
	[kg]	[kg]	[kg]	[kg]	[kg]
5	40	43	5	45	48
6	45	48	5	50	53
7	45	48	5	50	53

Water contents

Model	2-pipe	4-pipe	
	Cooling circuit / Heating circuit	Cooling circuit	Heating circuit
	[l]	[l]	[l]
5	2.2	1.8	0.8
6	3.7	3.2	0.8
7	3.7	3.2	0.8

Design:
2-pipe

Model	Control signal	Air volume	Cooling outputs ¹⁾		Outlet air temperature ¹⁾	Water volume Cooling ¹⁾	Pressure loss Cooling ¹⁾	Condensate flow ¹⁾	Heat outputs ²⁾	Outlet air temperature ²⁾	Water volume Heating ²⁾	Pressure loss Heating ²⁾	Power consumption	Current consumption	Specific fan power	Sound pressure level ³⁾	Sound power level
	[V]	V [m³/h]	Q _{kg} [W]	Q _{ks} [W]	t _{L2} [°C]	[l/h]	[kPa]	[l/h]	Q _h [W]	t _{L2} [°C]	[l/h]	[kPa]	P [W]	I [A]	[Ws/m³]	[dB(A)]	[dB(A)]
5	10	1215	7039	5203	14	1210	38.0	2.9	14958	57	1286	42.1	80	0.72	236	40	49
	8	1045	6214	4586	14	1069	30.8	2.6	13198	58	1135	34.0	55	0.52	188	38	47
	6	880	5391	3971	14	927	24.2	2.3	11442	59	984	26.7	36	0.36	145	34	43
	4	715	4540	3337	13	781	18.1	1.9	9629	60	828	20.0	21	0.22	106	28	37
	2	545	3627	2658	12	624	12.4	1.5	7685	62	661	13.6	11	0.12	71	18	27
6	10	1305	9393	6597	12	1615	28.7	4.5	18271	62	1571	27.3	95	0.84	263	45	54
	8	1145	8322	5800	12	1431	23.1	4.0	16105	62	1385	21.8	69	0.63	216	40	49
	6	970	7138	4927	12	1227	17.6	3.5	13724	62	1180	16.4	45	0.44	168	34	43
	4	775	5798	3951	12	997	12.1	2.9	11052	63	950	11.1	26	0.27	120	28	37
	2	565	4328	2895	12	744	7.2	2.3	8147	63	701	6.4	12	0.13	75	22	31
7	10	1735	12078	8887	12	2077	61.6	5.1	25907	65	2227	70.0	167	1.40	346	56	65
	8	1480	10447	7652	12	1796	47.1	4.5	22207	65	1909	52.7	114	0.99	277	49	58
	6	1230	8823	6430	11	1517	34.5	3.8	18560	65	1596	37.8	73	0.67	214	43	52
	4	980	7171	5192	11	1233	23.5	3.2	14890	65	1280	25.2	42	0.41	156	35	44
	2	735	5514	3961	11	948	14.5	2.5	11266	66	969	15.1	21	0.22	104	28	37

Design:
4-pipe

Model	Control signal	Air volume	Cooling outputs ¹⁾		Outlet air temperature ¹⁾	Water volume Cooling ¹⁾	Pressure loss Cooling ¹⁾	Condensate flow ¹⁾	Heat outputs ²⁾	Outlet air temperature ²⁾	Water volume Heating ²⁾	Pressure loss Heating ²⁾	Power consumption	Current consumption	Specific fan power	Sound pressure level ³⁾	Sound power level
	[V]	V [m³/h]	Q _{kg} [W]	Q _{ks} [W]	t _{L2} [°C]	[l/h]	[kPa]	[l/h]	Q _h [W]	t _{L2} [°C]	[l/h]	[kPa]	P [W]	I [A]	[Ws/m³]	[dB(A)]	[dB(A)]
5	10	1105	6186	4656	14	1064	20.7	2.4	10160	47	874	27.7	63	0.59	205	39	48
	8	955	5468	4089	14	940	16.3	2.2	8922	48	767	22.4	44	0.43	164	36	45
	6	810	4757	3531	14	818	12.5	2.0	7705	48	662	17.6	29	0.30	128	32	41
	4	675	4077	3001	14	701	9.3	1.7	6550	49	563	13.5	18	0.20	98	26	35
	2	550	3429	2500	13	590	6.6	1.5	5457	50	469	10.0	11	0.13	72	18	27
6	10	1440	7487	5697	15	1287	33.2	2.9	12264	45	1054	41.1	122	1.05	304	50	59
	8	1270	6765	5127	15	1163	27.3	2.6	11121	46	956	34.8	89	0.80	252	44	53
	6	1085	5958	4493	15	1024	21.4	2.3	9838	47	846	28.3	60	0.56	199	38	47
	4	875	5008	3751	14	861	15.4	2.0	8320	48	715	21.3	35	0.35	144	31	40
	2	645	3915	2905	14	673	9.6	1.6	6561	50	564	14.3	16	0.18	91	24	33
7	10	1595	8454	6490	15	1454	39.1	3.1	13173	45	1133	45.6	136	1.17	308	53	62
	8	1515	8113	6216	15	1395	36.2	3.0	12697	45	1092	42.8	120	1.05	286	50	59
	6	1360	7441	5678	15	1280	30.9	2.8	11753	46	1011	37.5	93	0.83	246	46	55
	4	1125	6393	4842	14	1099	23.4	2.5	10261	47	882	29.8	59	0.55	189	40	49
	2	820	4963	3713	13	853	14.7	2.0	8183	50	704	20.2	28	0.28	122	31	40

¹⁾ at CHW 7/12 °C, t_{L1} = 27 °C, 48% relative humidity.

²⁾ at LPHW 70/60 °C, t_{L1} = 20 °C

³⁾ Sound pressure data at: room size 100 m³, reverberation time 0.5 seconds, sound absorption 9 dB(A).

03 ▶ Design information



Information on planning and design

The unit size of chilled water air conditioning systems depends on the cooling outputs calculated as well as on the structural conditions.

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

The usual cold water temperature spread is approximately 5K. Take into account the effective unit outputs in line with the technical conditions of installation and use. Check the suitability of all components (circulation pump etc.) for use with cold water, noting the minimum temperatures.

Choice of installation site

Take into account the following requirements when choosing your installation location:

- ▶ no obstacles to air distribution and air intake
- ▶ sealed ceiling system to ensure air routing parallel to the ceiling
- ▶ minimum gap of 1.5 m between the unit and the nearest wall and a maximum installation height of the unit of 3.5 m above floor level
- ▶ pre-adjustment of louvres for optimum air discharge
- ▶ ease of access to pipes and electrical connections
- ▶ positioning of the cooling unit to fit in with the architecture and environment (e.g. ceiling lights)

Avoid:

- ▶ location with direct sunlight
- ▶ installation close to heat sources
- ▶ impaired air circulation due to lamps, furniture or shelves

Ceiling-mounted

KaCool D AF ceiling cassettes are manufactured to European standard ceiling grid dimensions. Models 5 – 7 can be installed centrally within four grids. The ceiling panels are then simply trimmed to fill in the gaps.

Caution!

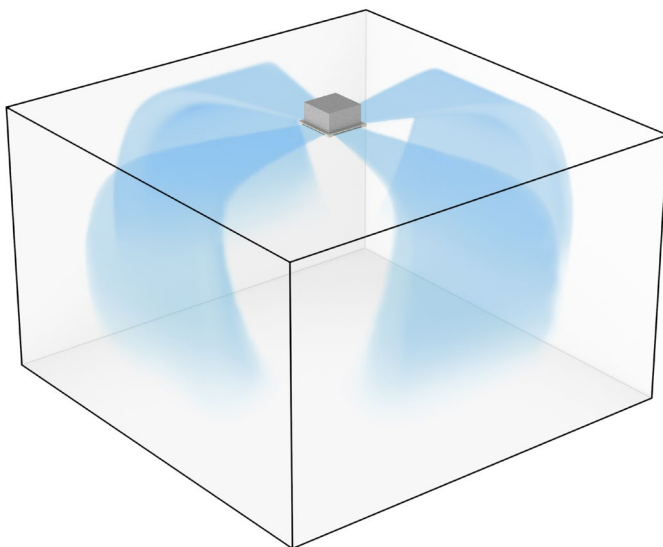
Provide access panels for maintenance work on the unit with closed ceiling systems. Ensure that the unit is precisely horizontal to prevent the condensation tray from overflowing. Ensure that the depth of the suspended ceiling is sufficient to accommodate the unit.

AF - AtmosFeel

Coanda effect

The air outlet is located at the side to guarantee maximum comfort (AtmosFeel). This cool air flows along the ceiling, is dispersed and falls to the floor (see figures). This avoids draughts as much as possible.

In heating mode, the position of the slats can be altered, if required, with the ABS design panel, which means that the air stream can be specifically directed downwards.



Casing panels

ABS design panel

The ABS design panel is supplied as standard with KaCool D AF units, combining design, maximum comfort (AtmosFeel) and unbeatable value for money.

It is available in two different sizes:

- 1) Model 1 – 4: 680x680 mm
- 2) Model 5 – 7: 930x930 mm



1) Model 1 – 4: 680x680 mm

Metal grid casing panel

A painted galvanised steel casing panel can also be used as an alternative to the ABS design casing panel, available for 625x625 mm ceiling grids (models 1 - 4) and 900 x 900 mm (models 5 – 7).

It is supplied as standard in traffic white, similar to RAL 9016, but in larger order volumes can also be adapted to customer requirements.

It is available in two different sizes:

- 1) Model 1 – 4: 625x625 mm
- 2) Model 5 – 7: 900x900 mm



1) Model 1 – 4: 625x625 mm



2) Model 5 – 7: 930x930 mm



2) Model 5 – 7: 900x900 mm

Air connections

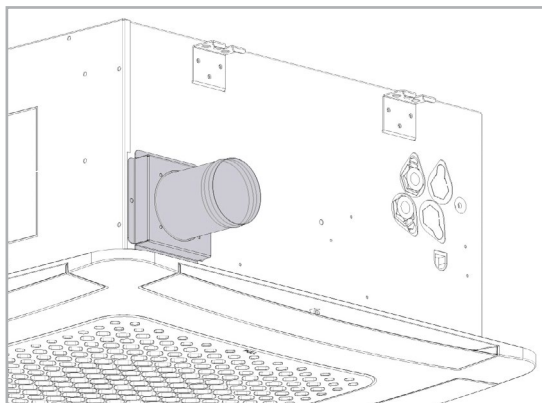
Primary air spigots for the fresh air supply

KaCool D AF units can be supplied with primary air, which is then supplied to the room through the units. The pre-conditioned air needs to be cleaned and have a minimum temperature of 14°C and a maximum temperature of 25°C.

A primary air spigot, available as an accessory, is needed for the connection. It is fixed to the side of the cassette. The connection diameter is 80 mm.

Models 1 – 4: max. two primary air connections, each 80 m³/h

Models 5 – 7: one primary air connection, max. 120 m³/h

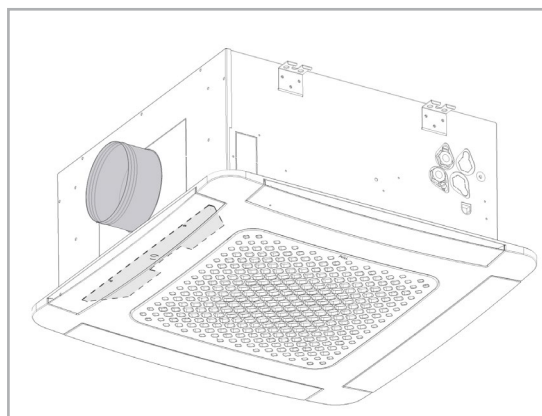


Fresh air connection, models 1 – 4

External air outlet

An air line can be connected to the ceiling cassette to provide adjacent rooms (e.g. changing rooms) with conditioned air. A pre-punched opening with a diameter of 150 mm needs to be removed on the side of the cassette to which an on-site flange must be fitted. An insulated air line and outlets can be connected to it. Seal the respective air outlets with adhesive tape.

Make sure that you keep the pressure loss at the outlet and air line as low as possible (max. 15 Pa total pressure loss). As a result, up to 15% of the total air volume of the ceiling cassette can be moved.



Models 1 – 4

Valve kits

The accessories range includes 2-way and 3-way valves. The valve kit contains an Open / Close actuator and connecting pipes as standard. Other valves (e.g. continuous) are available on request. The valves are supplied as separate accessories and need to be fitted on site. Any condensation produced is collected in a valve drip tray, provided with every unit and drained to the condensation pump of the ceiling cassette.

Actuators

Voltage supply	Current consumption	Power consumption
	[A]	[W]
230 V	0.25	1.8
24 V	0.35	1.8

Valve lift 2.5 mm
M 30 x 1.5 threaded connection
Actuator mode: On / Off, NC (normally closed)

Valves

Model	Connection		KVS value	
	2-pipe	4-pipe	2-pipe	4-pipe
1	1/2 "	2x1/2 "	1.7	1.7
2	3/4 "	2x1/2 "	2.8	1.7
3	3/4 "	2x1/2 "	2.8	1.7
4	3/4 "	2x1/2 "	2.8	1.7
5	3/4 "	2x3/4 "	2.8	2.8
6	3/4 "	2x3/4 "	4.0	2.8
7	3/4 "	2x3/4 "	4.0	2.8

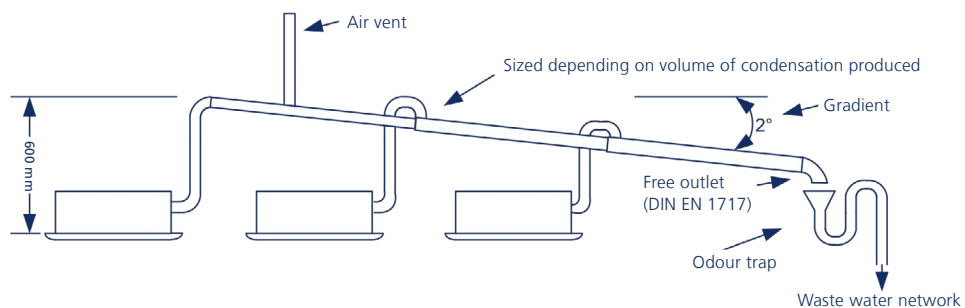
Built-in pre-fitted valves

There is an option to factory integrate the valves into the ceiling cassette with larger order volumes. The valves can then either be accessed from below after removing the condensation tray or from the side. The side cover of the housing can be removed for this purpose.



Condensation drain

Condensation will be produced if the ceiling cassettes are operated at a temperature below the dew point. The condensation from the heat exchanger drips into the condensation tray underneath. From here, it is pumped out of the unit by a condensation pump. The condensation produced from the condensation pump hose has to be drained from the unit down a 2% gradient. The condensation has to be collected in a pool pump on site if it has to be drained higher than the integrated pump allows. Accumulating condensate quantities can be taken from the calculation program.

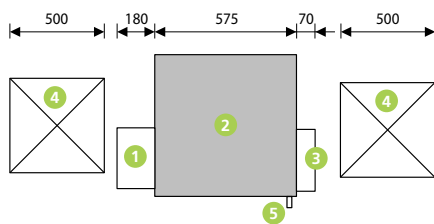


Schematic diagram

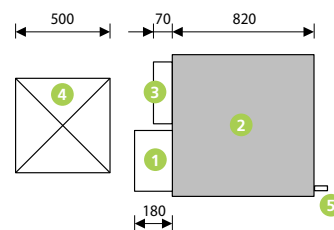
Service opening connection

Appropriate service openings are needed to service and maintain units installed in permanently sealed ceilings.

Models 1–4

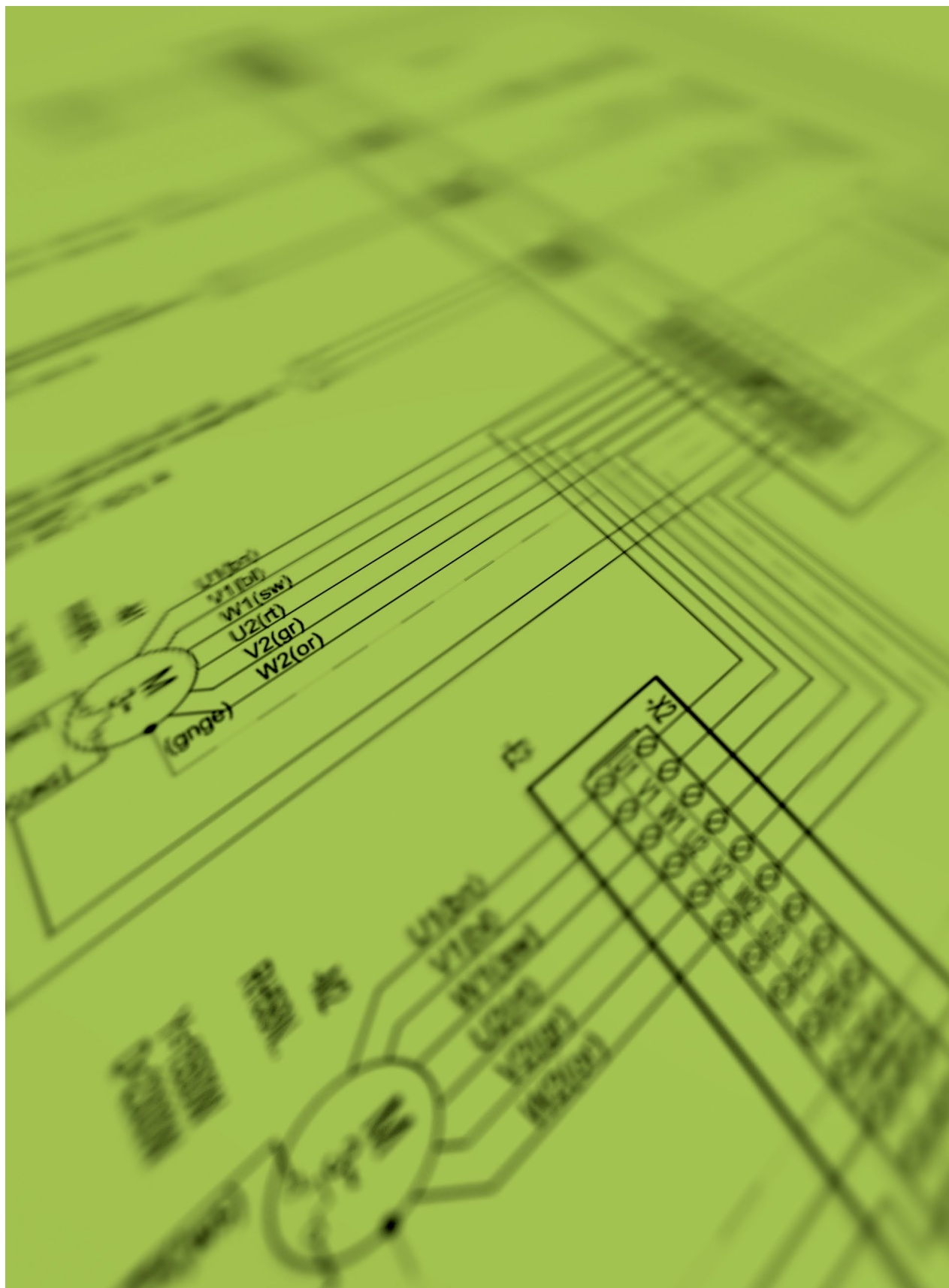


Models 5–7



- 1 Condensation tray for valves
- 2 Ceiling cassette
- 3 Electrical junction box
- 4 Service openings (suggested 500x500)
- 5 Condensation connection (depending on the design of the transition between the condensation connection and the on-site condensation line, it may be necessary to provide for an additional service opening)

04 ► Controls



Control overview of KaCool D AF with EC Fans

KaCool D AF units with EC fans can be selected with various control configurations. All models of the cassettes have a built-in PCB.

A float switch monitors the condensation level in the condensation tray and switches on the condensation pump as required. If the condensation level continues to rise, despite the pump running, the cooling valve is closed and an alarm is emitted which can be evaluated on site.

The Kampmann KaControl is the most convenient and comprehensive control.

A high-performance parameterised microprocessor is designed to carry out all necessary functions. Each KaCool D AF unit therefore has its own “intelligence” and can be operated in groups via Kampmann-T-LAN or CAN bus networks.

Connection to building automation systems

KaCool D AF with KaControl can be equipped with plug-in communication interfaces for controlled operation in individual rooms or for linking into higher-order control systems: BACnet, CAN bus, LON, KNX and Modbus.

Infra-red remote control

The infra-red remote control is available for retrofitting into existing buildings.

Product features

- ▶ convenient operation of all cassette functions:
 - ▶ temperature
 - ▶ fan speed
 - ▶ mode

Room thermostat type 30155

Room thermostat for manual 3-stage or continuously variable speed control in automatic mode for surface-mounted wall installation in an attractive retrained design.

Product features

- ▶ colour: pure white (similar to RAL 9010)
- ▶ user-friendly
- ▶ functional and robust design
- ▶ 2- and 4-pipe applications
- ▶ Day/ECO/Off operating mode with room frost protection function
- ▶ built-in room sensor, connection option for external room sensor
- ▶ digital input for switchover between ECO and OFF
- ▶ digital output for heating/cooling changeover with 2-pipe systems
- ▶ only in conjunction with 230 V actuator

KaController operating unit

The „face“ of the KaControl building automation system is the KaController unit.

Product features

- ▶ room operating units for wall mounting with a high-quality design
- ▶ available with or without function buttons on the side
- ▶ plastic housing, colour similar to RAL 9010
- ▶ communication interface to the Kampmann T-LAN bus system
- ▶ push-turn navigator dial with endless turn/lock function
- ▶ built-in weekly switching program
- ▶ password-protected parameter level

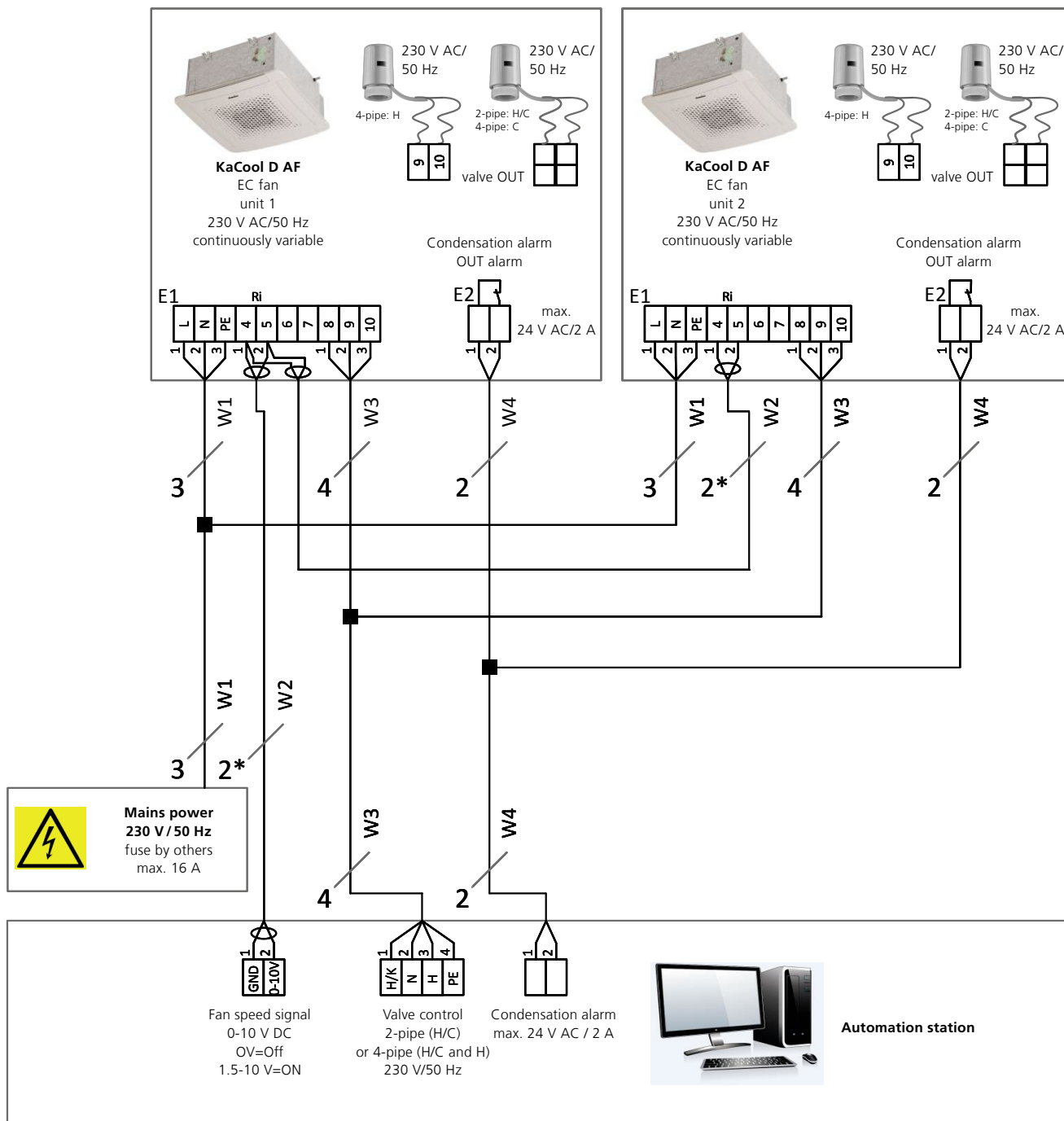
KaControl SEL control panel

For the central control and monitoring of up to 24 temperature zones, units groups or rooms.

Product features

- ▶ 3 timer programs; for 24 zones
- ▶ summer compensation
- ▶ room temperature setpoints / actual values
- ▶ central heating/cooling switchover in 2-pipe systems by external switching contact
- ▶ centralised temperature target value specification by an external signal 0 – 10 V
- ▶ demand for heating via digital output
- ▶ demand for cooling via digital output
- ▶ collective fault alert in Kampmann system via digital output
- ▶ fault detection in chiller or heat pump
- ▶ heating/cooling changeover
- ▶ heat generator activation
- ▶ chiller or heating/cooling heat pump activation
- ▶ fault monitoring in single units (only if all units have Modbus cards, max. 24)
- ▶ switchover of individual control zones:
 - ▶ ON / OFF or ECO / DAY
 - ▶ ON / OFF or ECO / DAY entire system via external contact
- ▶ optional BACnet gateway

Electrical cabling – BMS control



*) Lay shielded cables e.g. B. J-Y(St)Y, 0.8 mm separately from power cables.

W1: Voltage supply

W2: Fan speed signal 0-10 V DC, Ri = 100 kOhm, max. line length 10 m from the BMS system to the 2nd unit

W3: Valve control

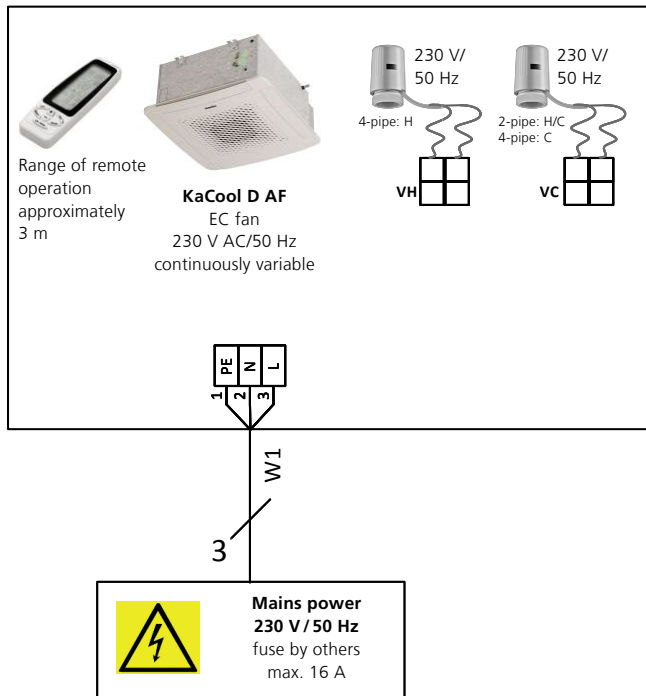
W4: Condensation alarm message

The number of connecting wires required including fuses is given on the individual control units.

Electrical supply: observe the technical connection requirements laid down by the utility companies!

Cabling – Infra-red remote control

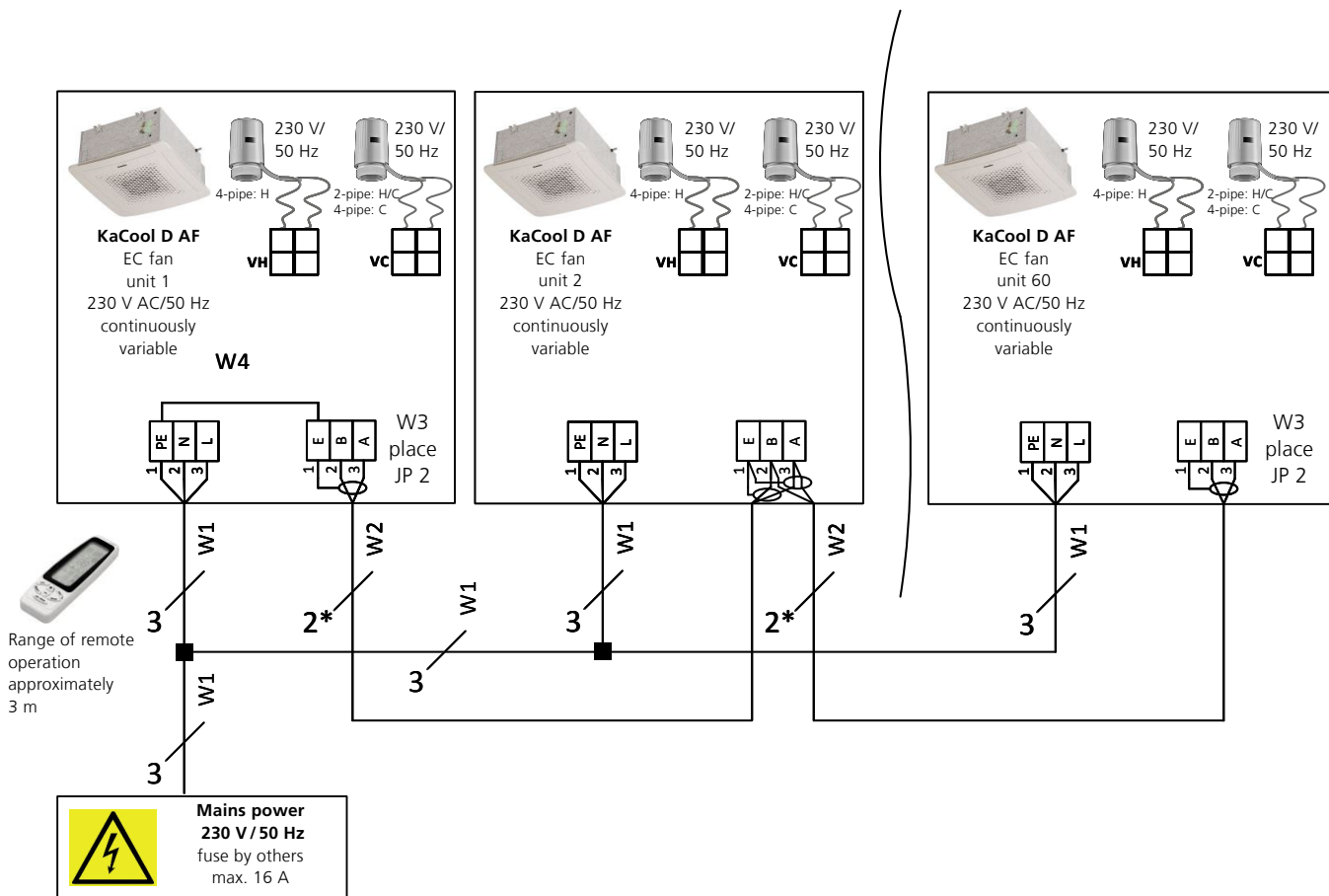
Single unit, infra-red remote control



W1: Voltage supply

The number of connecting wires required including fuses is given on the individual control units.
Electrical supply: observe the technical connection requirements laid down by the utility companies!

Group formation, infra-red remote control



*) Lay shielded data cable, twisted pairs, e.g. UNITRONIC® BUS LD 1 x 2 x 0.22 mm² or similar, linear but separate from power lines.

W1: Voltage supply

W2: Bus signal RS485, max. cable length 700 m

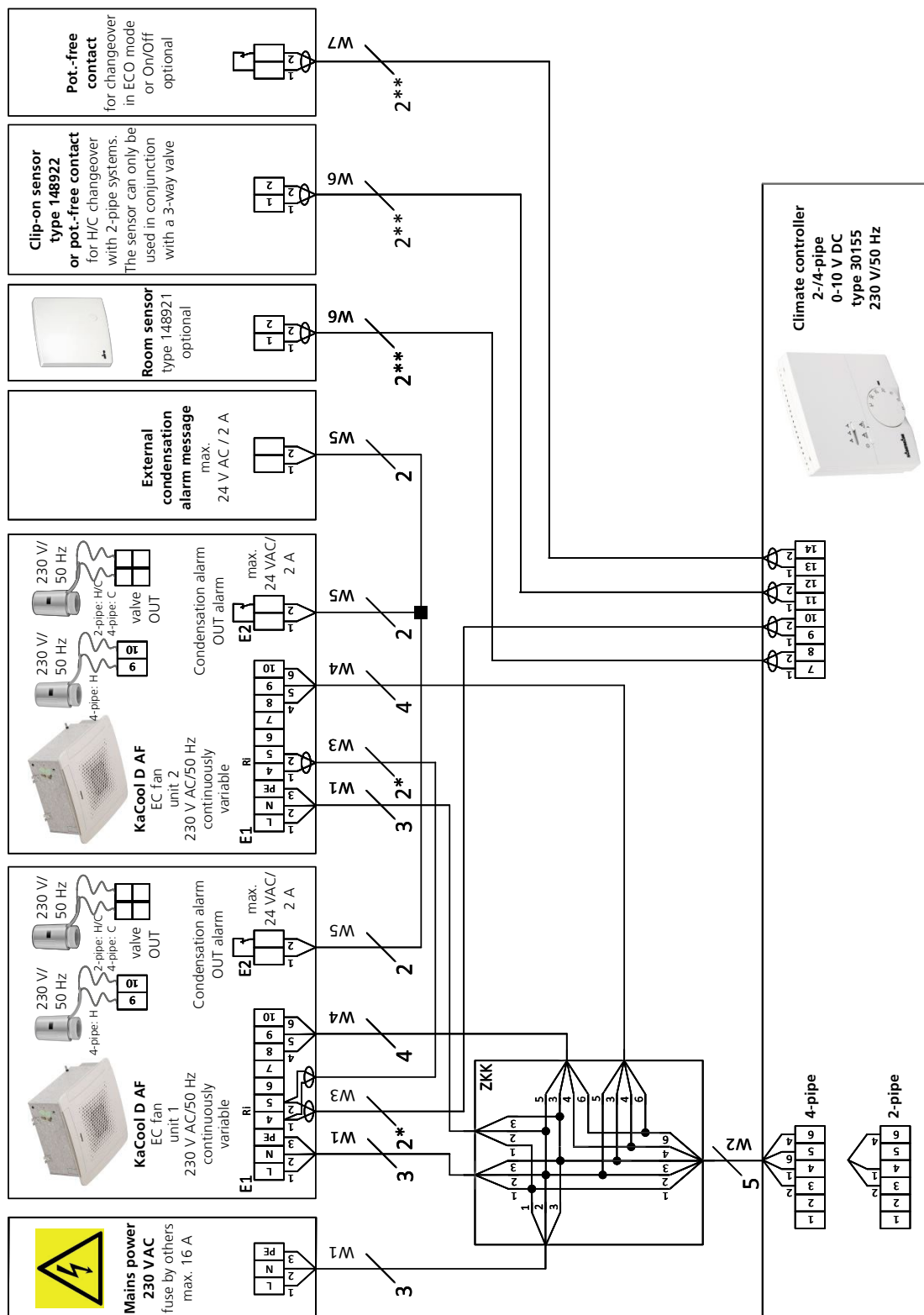
W3: Place JP 2 "End of the line" for 120 Ohm terminal resistance at the first and last unit

W4: Insert on-site wire jumper

The number of connecting wires required including fuses is given on the individual control units.

Electrical supply: observe the technical connection requirements laid down by the utility companies!

Electrical cabling – Control by climate controller type 30155



*) Lay shielded cables e.g. B. J-Y(ST)Y, 0.8 mm separately from power cables!

**) Lay sensor connection cable 0.5 mm² e.g. J-Y(ST)Y, 2 x 2 x 0.8 mm, max. 50 m, separately from power cables!

W1: Voltage supply

W2: Voltage supply, valve control; only 4 wires with 2-pipe systems – wire 6 is omitted

W3: Fan speed signal 0-10 V DC, Ri = 100 kOhm, max. line length 10 m from the climate controller to the 2nd unit

W4: Valve control; only 3 wires with 2-pipe systems – wire 6 is omitted

W5: Condensation alarm message to external control

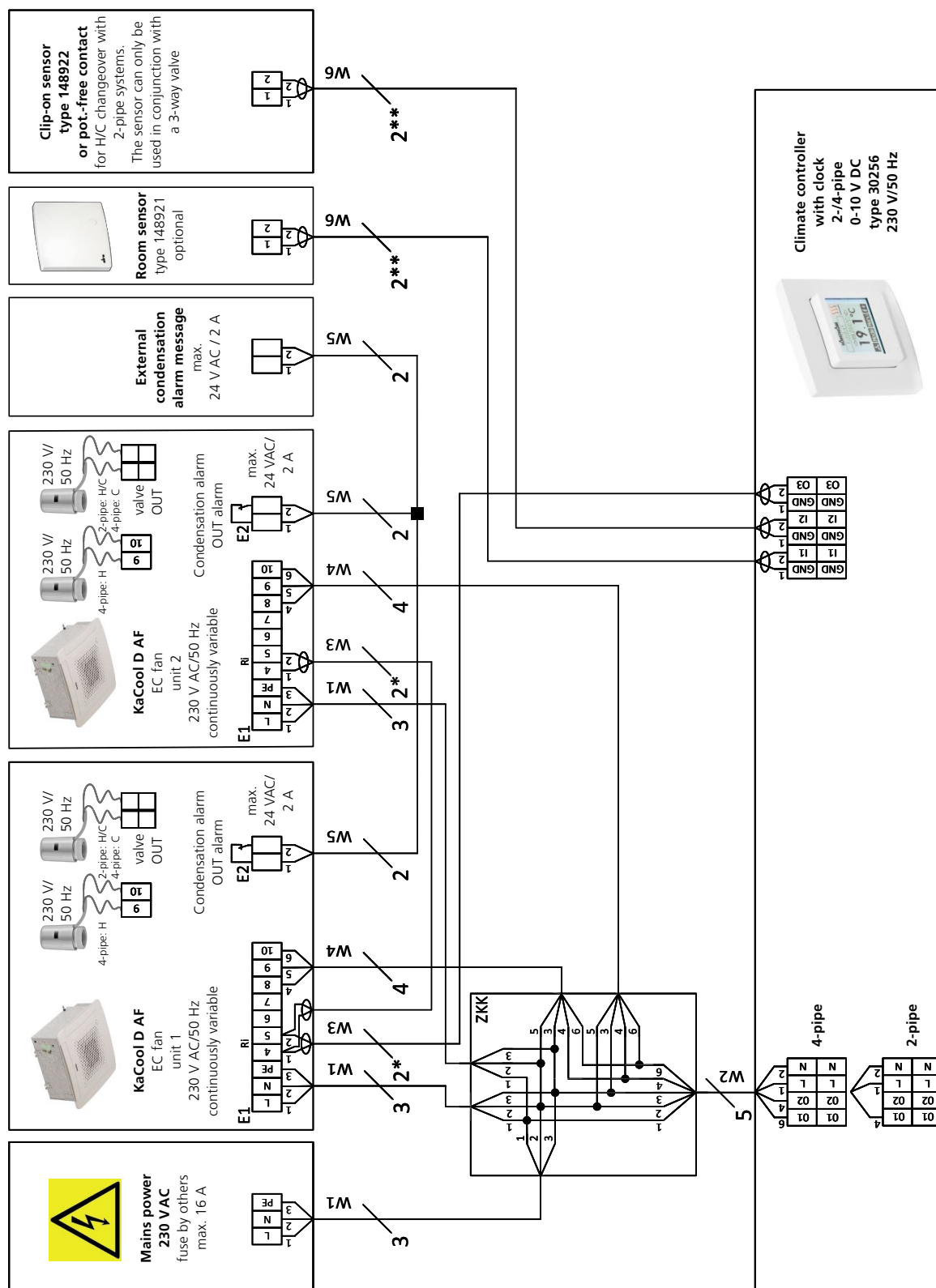
W6: Low voltage signal

W7: Low voltage signal; a wire jumper needs to be inserted if the input is not used

The number of connecting wires required including fuses is given on the individual control units.

Electrical supply: observe the technical connection requirements laid down by the utility companies!

Electrical cabling – Control by climate controller with clock type 30256



*) Lay shielded cables e.g. B. J-Y(ST)Y, 0.8 mm separately from power cables!

**) Lay sensor connection cable 0.5 mm² e.g. J-Y(ST)Y, 2 x 2 x 0.8 mm, max. 50 m, separately from high-voltage cables!

W1: Voltage supply

W2: Voltage supply, valve control; only 4 wires with 2-pipe systems – wire 6 is omitted

W3: Fan speed signal 0-10 V DC, Ri = 100 kOhm, max. line length 10 m from the climate controller to the 2nd unit

W4: Valve control; only 3 wires with 2-pipe systems – wire 6 is omitted

W5: Condensation alarm message to external control

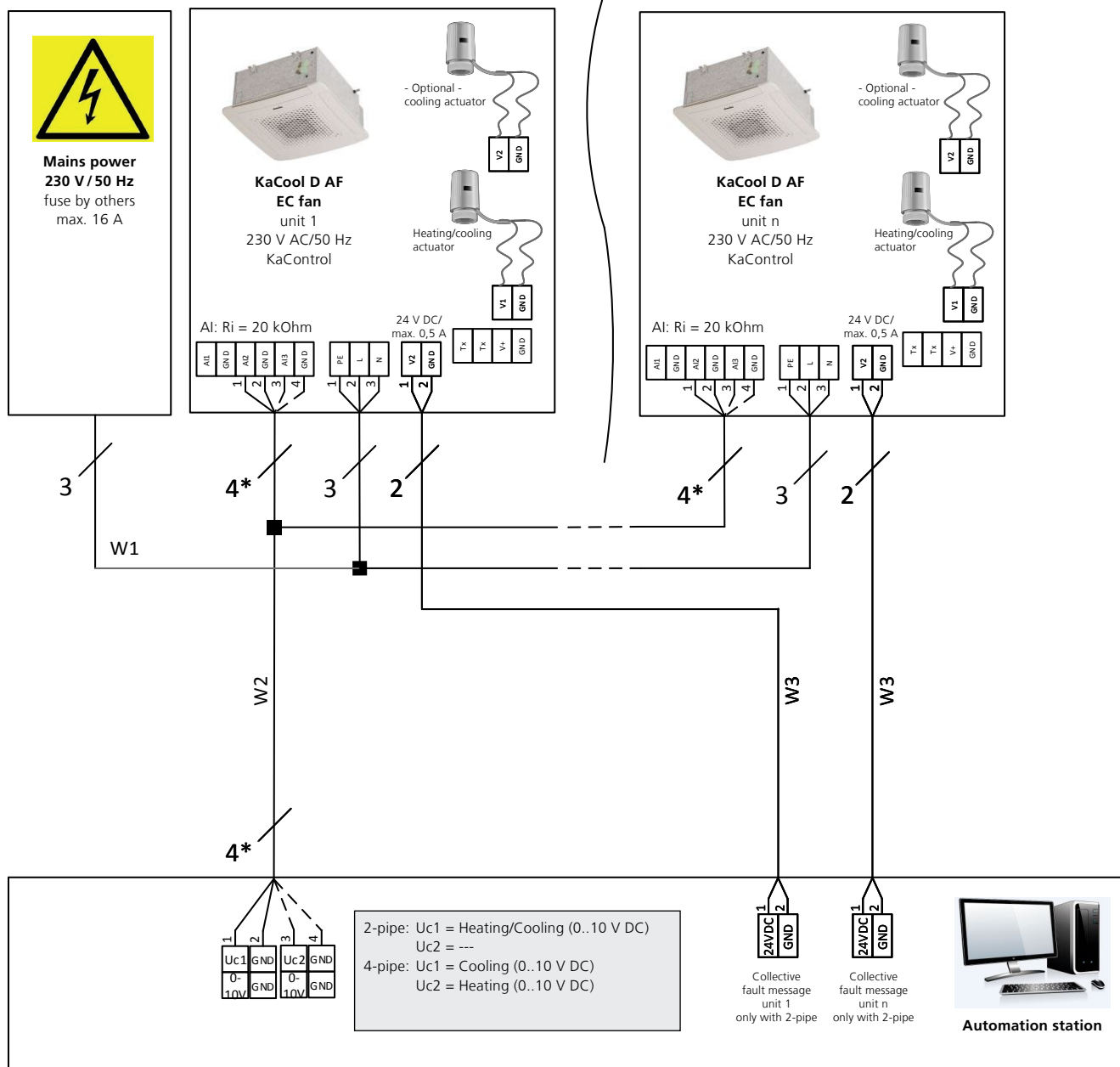
W6: Low voltage signal; if the input is to remain inoperational, the ECO function needs to be selected and the input unwired.

The number of connecting wires required including fuses is given on the individual control units.

Electrical supply: observe the technical connection requirements laid down by the utility companies!

Cabling – KaControl

BMS, KaControl



*) Low voltage line, lay separately from power cables!

W1: Voltage supply

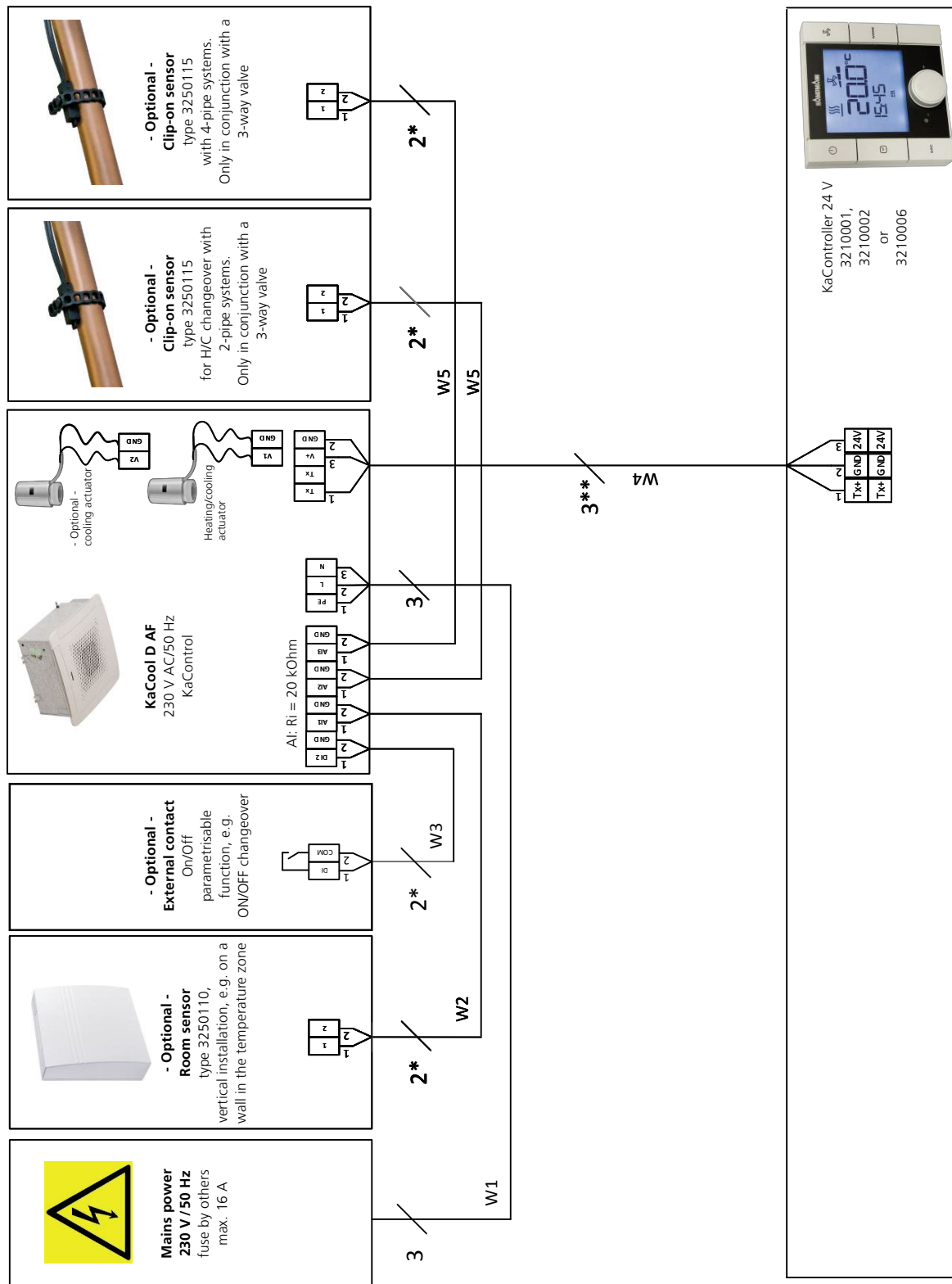
W2: Control signal for fan and actuators

W3: Collective fault message, only with 2-pipe units, non-floating, 24 V DC/max. 0.5A

The number of connecting wires required including fuses is given on the individual control units.

Electrical supply: observe the technical connection requirements laid down by the utility companies!

Stand-alone unit, KaControl



*) Lay shielded cable e.g. B. J-Y(St)Y, 0.8 mm separately from power cables.

**) Lay shielded data cable, twisted pairs, e.g. UNITRONIC® BUS LD 2 x 2 x 0.22 mm² or similar, linear but separately from power lines.

W1: Voltage supply

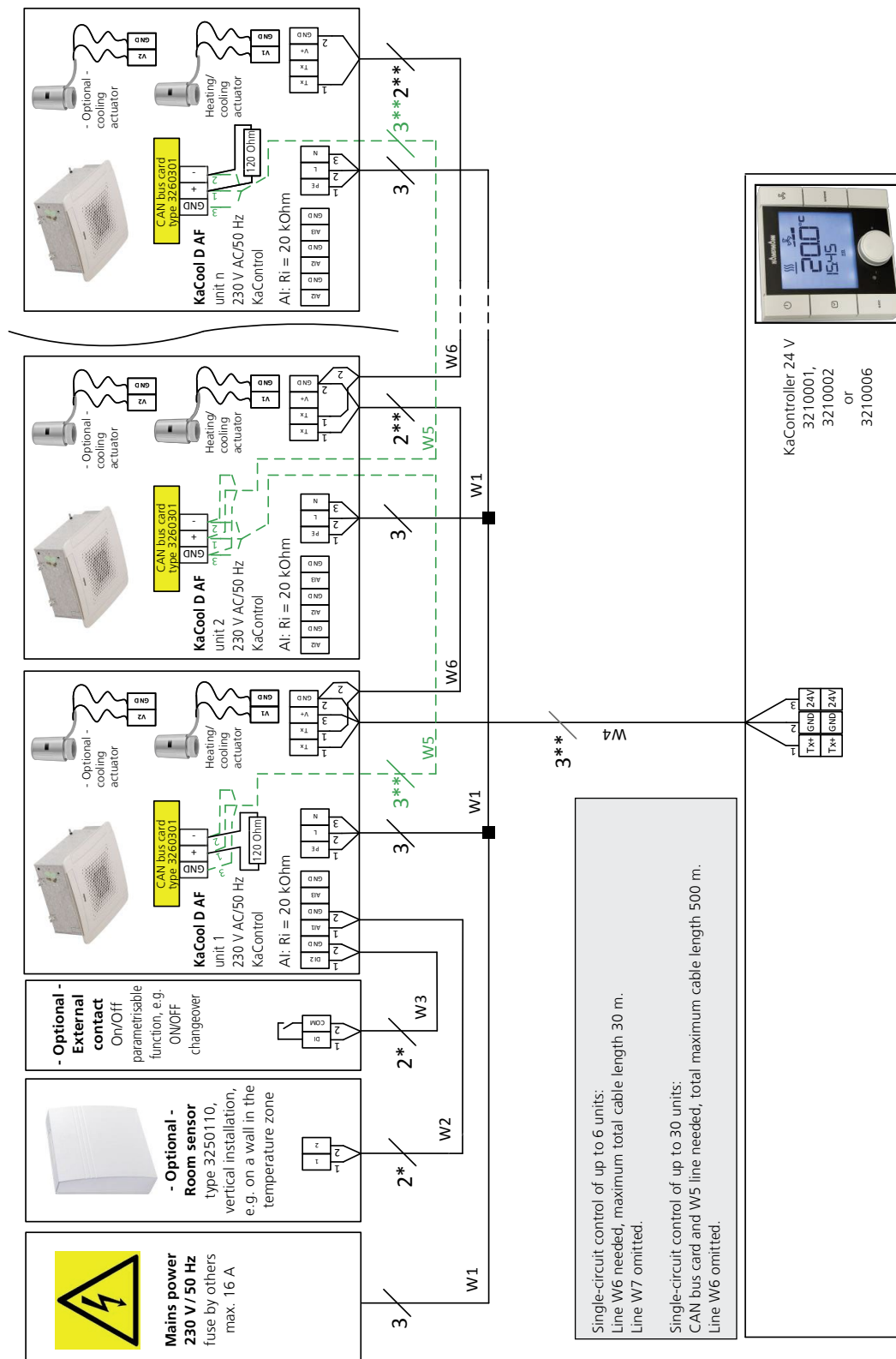
W2: Analogue input AI1 (optionally connectible), max. cable length 10 m, from 1 mm² 30 m, disconnect factory-fitted intake sensor.

W3: Digital input DI1 (optionally connectible), max. cable length 30 m, from 1 mm² 100 m

W4: Bus signal (tLan), max. cable length 30 m

W5: Analogue input AI1 (optionally connectible), max. cable length 10 m, from 1 mm² 30 m

KaControl group formation max. 6 units or 30 units with CAN bus card



*) Lay shielded cable e.g. B. J-Y(ST)Y, 0.8 mm separately from high-voltage cables.

**) Lay shielded data cable, twisted pairs, e.g. UNITRONIC® BUS LD 2 x 2 x 0.22 mm² or similar, linear but separately from power lines.

W1: Voltage supply

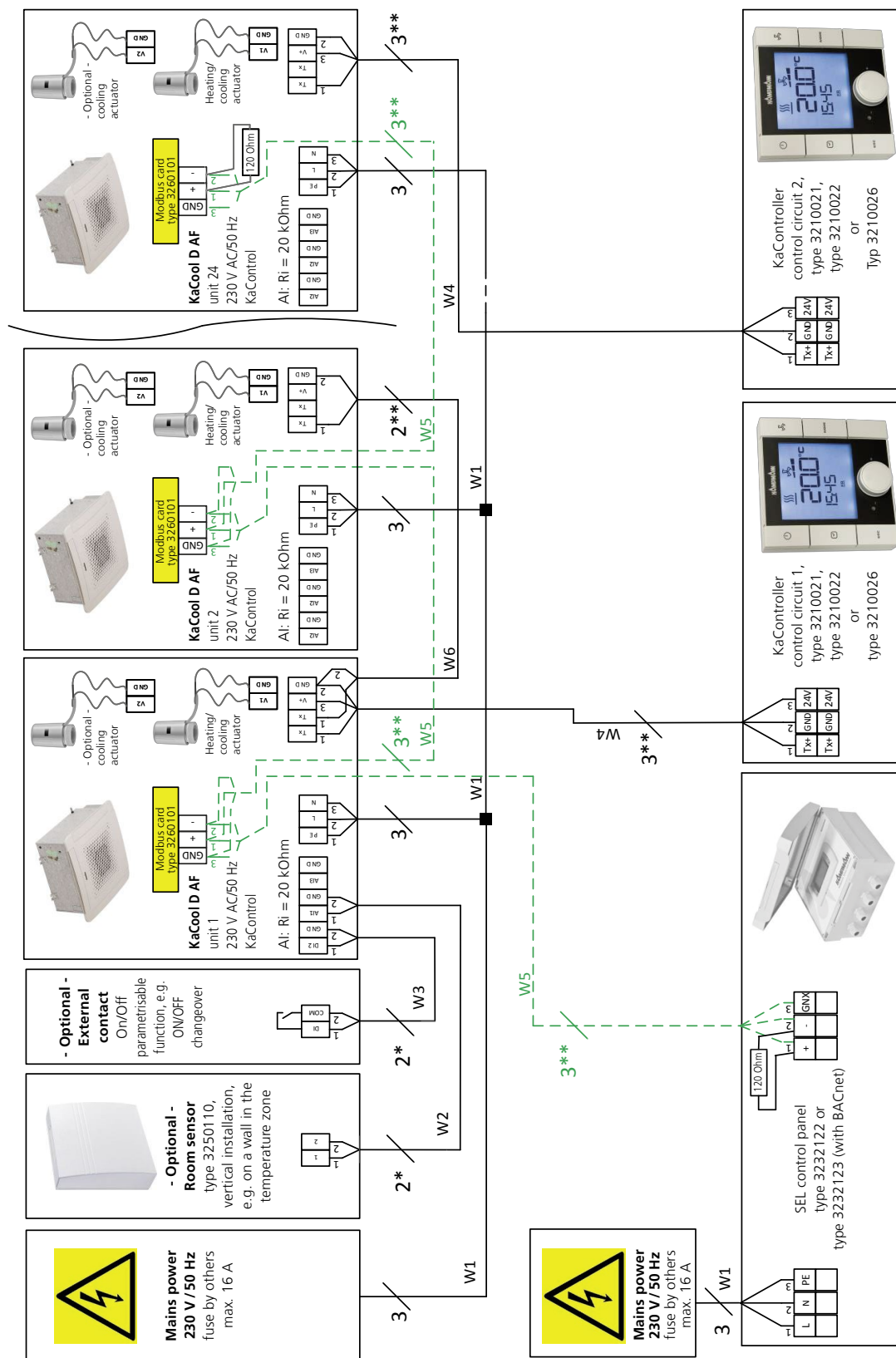
W2: Analogue input AI1 (optionally connectible), max. cable length 10 m, from 1 mm² 30 m, disconnect factory-fitted intake sensor

W3: Digital input DI1 (optional connection), max. cable length 30 m, from 1 mm² 100 m

W4, W6: Bus signal (tLan), max. cable length in each case 30 m

W5: Bus signal (CAN bus)

Electrical cabling – control via KaControl SEL control panel



*) Lay shielded cables e.g. B. J-Y(St)Y, 0.8 mm separately from high-voltage cables.

**) Lay shielded data line in pairs e.g. UNITRONIC® BUS LD 2 x 2 x 0.22 mm² or similar, linear but separately from power lines.

W1: Voltage supply

W2: Analogue input AI1 (optionally connectible), max. cable length 10 m, from 1 mm² 30 m, disconnect factory-fitted intake sensor

W3: Digital input DI1 (optionally connectible), max. cable length 30 m, from 1 mm² 100 m

W4, W6: Bus signal (tLan), max. cable length in each case 30 m

W5: Bus signal (Modbus)

05 ▶ Ordering information

KaCool D AF, 2-pipe

Model	Design	Cooling output ¹⁾	Heat output ²⁾	Air volume	Sound pressure level ³⁾	Control option	Art. no.
		[W]	[W]	[m³/h]	[db(A)]		
1	EC	2017 – 2776	3848 – 5268	269 – 398	25 – 35	without built-in control	32500821200100
						KaControl	325008212001C1
						IR control	325008212001IR
2	EC	2217 – 4406	4189 – 8186	269 – 550	25 – 43	without built-in control	32500822200100
						KaControl	325008222001C1
						IR control	325008222001IR
3	EC	2792 – 5163	5171 – 9859	328 – 660	30 – 49	without built-in control	32500823200100
						KaControl	325008232001C1
						IR control	325008232001IR
4	EC	4123 – 5598	8212 – 10878	550 – 760	44 – 53	without built-in control	32500824200100
						KaControl	325008242001C1
						IR control	325008242001IR
5	EC	4286 – 6346	8460 – 12852	623 – 1023	27 – 41	without built-in control	32500825200100
						KaControl	325008252001C1
						IR control	325008252001IR
6	EC	5500 – 9775	9218 – 17298	662 – 1270	29 – 46	without built-in control	32500826200100
						KaControl	325008262001C1
						IR control	325008262001IR
7	EC	5501 – 11259	10089 – 22656	669 – 1536	35 – 51	without built-in control	32500827200100
						KaControl	325008272001C1
						IR control	325008272001IR

¹⁾ at CHW 7/12 °C, t_{L1} = 27 °C, 48% relative humidity

²⁾ at LPHW 70/60 °C, t_{L1} = 20 °C.

³⁾ Sound pressure data at: room size 100 m³, reverberation time 0.5 seconds, sound absorption 9 dB(A).

KaCool D AF, 4-pipe


Model	Design	Cooling output ¹⁾	Heat output ²⁾	Air volume	Sound pressure level ³⁾	Control option	Art. no.
		[W]	[W]	[m³/h]	[db(A)]		
1	EC	1937 – 2818	2450 – 3500	269 – 398	25 – 35	without built-in control	32500821400100
						KaControl	325008214001C1
						IR control	325008214001IR
2	EC	1958 – 3485	2450 – 4450	269 – 550	25 – 43	without built-in control	32500822400100
						KaControl	325008224001C1
						IR control	325008224001IR
3	EC	2046 – 3981	1910 – 3300	269 – 550	25 – 43	without built-in control	32500823400100
						KaControl	325008234001C1
						IR control	325008234001IR
4	EC	2723 – 4574	2390 – 3710	328 – 660	30 – 49	without built-in control	325008244000C1
						KaControl	325008244001C1
						IR control	325008244001IR
5	EC	4163 – 6365	5800 – 9000	623 – 1023	27 – 41	without built-in control	32500825400100
						KaControl	325008254001C1
						IR control	325008254001IR
6	EC	4419 – 7391	6300 – 10500	662 – 1270	29 – 46	without built-in control	32500826400100
						KaControl	325008264001C1
						IR control	325008264001IR
7	EC	4623 – 9034	6800 – 12500	669 – 1536	35 – 51	without built-in control	32500827400100
						KaControl	325008274001C1
						IR control	325008274001IR

¹⁾ at CHW 7/12 °C, t_{L1} = 27 °C, 48% relative humidity

²⁾ at LPHW 70/60 °C, t_{L1} = 20 °C.

³⁾ Sound pressure data at: room size 100 m³, reverberation time 0.5 seconds, sound absorption 9 dB(A).

Accessories





Figure	Article	Properties	Suitable for	Art. no.
Valves				
	2-way valve kit	Open / Close 2-pipe 230 V drive	KaCool D AF without KaControl, Model 0 – 1	325009012110
			KaCool D AF without KaControl, Model 2 – 4	325009022110
			KaCool D AF without KaControl, Model 5	325009032110
			KaCool D AF without KaControl, Models 6 – 7	325009042110
		Open / Close 2-pipe 24 V drive	KaCool D AF with KaControl, Models 0 – 1	325009012112
			KaCool D AF with KaControl, Models 2 – 4	325009022112
			KaCool D AF with KaControl, Model 5	325009032112
			KaCool D AF with KaControl, Models 6 – 7	325009042112
		Open / Close 4-pipe with 230 V drive	KaCool D AF without KaControl, Models 0 – 4	325009014110
			KaCool D AF without KaControl, Models 5 – 7	325009024110
		Open / Close 4-pipe 24 V drive	KaCool D AF with KaControl, Models 0 – 4	325009014112
			KaCool D AF with KaControl, Models 5 – 7	325009024112
	3-way valve kit	Open / Close 2-pipe wih 230 V drive	KaCool D AF without KaControl, Models 0 – 1	325009012120
			KaCool D AF without KaControl, Models 2 – 4	325009022120
			KaCool D AF without KaControl, Model 5	325009032120
			KaCool D AF without KaControl, Models 6 – 7	325009042120
		Open / Close 2-pipe 24 V drive	KaCool D AF with KaControl, Models 0 – 1	325009012122
			KaCool D AF with KaControl, Models 2 – 4	325009022122
			KaCool D AF with KaControl, Model 5	325009032122
			KaCool D AF with KaControl, Models 6 – 7	325009042122
		Open / Close 4-pipe with 230 V drive	KaCool D AF without KaControl, Models 0 – 4	325009014120
			KaCool D AF without KaControl, Models 5 – 7	325009024120
		Open / Close 4-pipe 24 V drive	KaCool D AF with KaControl, Models 0 – 4	325009014122
			KaCool D AF with KaControl, Models 5 – 7	325009024122
				more »

Accessories

Figure	Article	Properties	Suitable for	Art. no.
Connections				
	Primary air connection spigot	For the connection of external primary air.	KaCool D AF models 0-4	325009010300
			KaCool D AF models 5-8	325009020300
	ABS design panel RAL 9016	Included with units with article number 325008XXX001XX.	KaCool D AF models 0-4, without IR remote control	Included as standard
			KaCool D AF models 0-4, with IR remote control	
			KaCool D AF models 5-8, without IR remote control	
			KaCool D AF models 5-8, with IR remote control	
	RAL 9016 metal panel	The ABS design panel is included with ceiling cassettes with article number 325008XXX001XX. To order these units without design panel, replace the 1 in the article number by a 0 and order the metal casing panel separately.	KaCool D AF models 0-4, without IR remote control	325009010020
			KaCool D AF models 0-4, with IR remote control	325009010021
			KaCool D AF models 5-8, without IR remote control	325009020020
			KaCool D AF models 5-8, with IR remote control	325009020020
Control accessories, electro-mechanical				
	EC climate controller	Heating/cooling climate controller 2- / 4-pipe systems. Operating modes AUTO / MAN / OFF. Fan speed can be set using 3-stage switch (parametrisable). Room frost protection function, internal temperature sensor, DIP switch for function selection. Plastic housing, pure white, similar to RAL 9010, surface-mounted Three inputs for: external flow sensor (47 kOhm) / heating/cooling changeover contact, external room temperature sensor (47 kOhm), ECO/Day or On/Off changeover Three outputs for: speed control (0-10 V DC/5 mA), fan actuators (230 VAC/5(1) A) Operating voltage: 230 V AC / 50 Hz / <2 VA Protection class IP30 Dimensions W x H x D: 110 x 111 x 26 mm	Ceiling cassettes with EC fan without KaControl, only in conjunction with valve kits with 230V actuator	196000030155
	EC climate controller with clock	Climate controller for heating / cooling systems in 2-/4-pipe configurations with timer program. Summer/winter time changeover, mode switch (with room frost protection monitoring), manual 10-stage speed switch. Flush-mounted, pure white, similar to RAL 9010. Two inputs for: external dewpoint sensor, external room temperature sensor, heating/cooling, ECO/Day or On/Off changeover Analogue output: 0-10 V/5 mA 2 switching contacts per 230 V/3 (0.5) A Control range: 5-30 °C heating and 18...40 °C cooling Power reserve: approx. 3 days Operating voltage: 230 V/50 Hz / <2.2 VA Protection class: IP 30 Dimensions W x H x D: 81 x 85 x 18 mm (installation height, +29 mm installation height, flush)	Ceiling cassettes with EC fan without KaControl, only in conjunction with valve kits with 230V actuator	196000030256
				more »

Accessories

Figure	Article	Properties	Suitable for	Art. no.
KaControl accessories				
	KaController operating unit with one-touch operation	Room control unit, wall-mounted, in a high-quality design, plastic housing, colour similar to RAL 9010, large LCD multifunctional display, built-in room temperature sensor, communication interface to the Kampmann T-LAN bus system, automatically switching LED backlighting, press/turn navigator dial with endless turn/lock function, individually adjustable basic display, integrated day, night and week program, password-protected parameter level for C1 control option	All models	196003210001
	KaController operating unit with side operating keys	For quick access to fan settings, operating modes, Eco mode, time and timer program, otherwise as art. no. 196003210001	All models	196003210002
	KaController without function keys, black	Room control unit for wall mounting, high-quality design, plastic housing, Traffic black (similar to RAL 9017), otherwise as art. no. 196003210001	All KaControl secondary units	196003210006
	KaControl SEL panel without BACnet	KaControl electronics housed in a surface-mounted wall housing, wired ready-for-use, including KaControl operating unit for the central control of Kampmann products via a serial bus communication (Modbus); for integration of a maximum of 24 units (Modbus subscribers) (optionally with a maximum of 6 BACnet objects in a BACnet/IP network)	All models	196003232122
	KaControl SEL panel with BACnet			196003232123
	KaControl room temperature sensor	For wall mounting, IP30 surface-mounted, white RAL 9010, alternative to the temperature sensor in the KaController	All models	196003250110
	Pipe clip-on sensor	For detecting the temperature of the medium, including strap, 3 m cable, to protect the unit from frost	All models	196003250115
				more »

Figure	Article	Properties	Suitable for	Art. no.
KaControl accessories				
	Serial CAN bus card	To increase the number of units in a single-circuit control system	All models	196003260101
	Serial Modbus card	For connection to Modbus networks	All models	196003260101
	Serial Konnex card	For integration into KNX/EIB networks	All models	196003260701
	Serial LON FTT10A card	For integration into a LON FTT10A network	All models	196003260501

Kampmanngroup.com/kacool-d-af

Kampmann GmbH
Friedrich-Ebert-Str. 128 - 130
49811 Lingen (Ems)
Germany

T +49 591 7108-660
F +49 591 7108-173
E export@kampmann.de
W Kampmanngroup.com