



CVK

**TRENCH HEATING AND COOLING
UNITS**



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CVK VERANO UNITS



THE PROPER TEMPERATURE THROUGHOUT THE YEAR

Trench heating and cooling units are mounted in the floor void. As the part of the system they ensure the proper temperature and optimal microclimate in both summer and winter. 2-pipe fan assisted units (CVK2) use the same 2-pipe installation both for heating or cooling, while 4-pipe units (CVK4) have 2 separate circuits: one for heating and one for cooling. Such a system is most suitable for low-temperature installations (i.e. to work with air source heat pumps), thanks to the highly efficient exchanger for both cooling and heating and to a fan in EC technology powered by a safe voltage 24 V DC.

The smooth regulation of the fan mode with an analogue 0-10 V signal guarantees that the device is adjusted to the actual room heating or cooling thermal requirements. Climaconvector units can be equipped with automatic balancing valves that precisely regulate the flow and pressure in the installation. CVK units are equipped with a drip tray that allows removing condensate drainage by gravity or by a condensate pump (which is additional equipment). Warm or cold air is distributed by the fan directly to the glass façade to create a barrier that reduces heat loss in the winter and heat gains in the summer. This feature ensures that an appropriate microclimate in the room throughout the whole year is secured.

The heating and cooling outputs have been tested in accordance with the European Standard EN 16430. The recommended control system, wireless control or solutions allows CVK unit to be incorporated into BMS systems (BACnet standards, KNX and Modbus) and ensures the CVK unit can work in any building, regardless of the planned control or automation system. Details of the installation are included in the CVK4 units Installation and maintains manual chapter.



ADVANTAGES



HIGHLY EFFICIENT HEAT EXCHANGER AND FAN

Made of aluminium fins and copper tubes highly efficient heat exchanger with the modern EC 24V DC fan maintain thermal comfort in the room.



LEVELLING FEET SYSTEM

Levelling feet allows to adjust the height of the heater in easy and fast way.



HYDRONIC INSTALLATION BALANCING

Units can be equipped with PICV valves and 0-10 V thermal actuators that regulate installation pressure and heating/cooling water temperature.



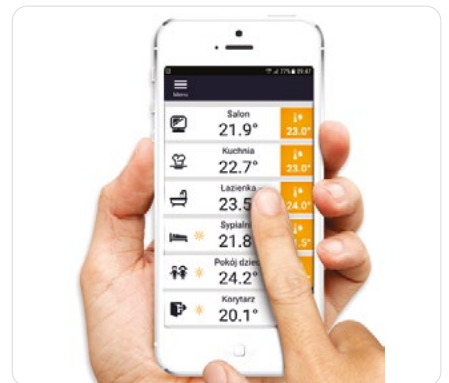
DEDICATED CONTROL SYSTEM

Modern room controllers allow for full control of heater operations.



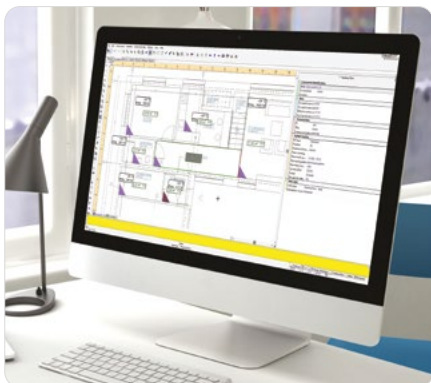
BMS CONTROLS

VERANO offers 3 types of BMS control solutions for fan assisted units: BACnet, KNX and Modbus controls.



WIRELESS CONTROL

Now it's a child's play to precisely control the CVK units with use of your mobile, tablet or computer.



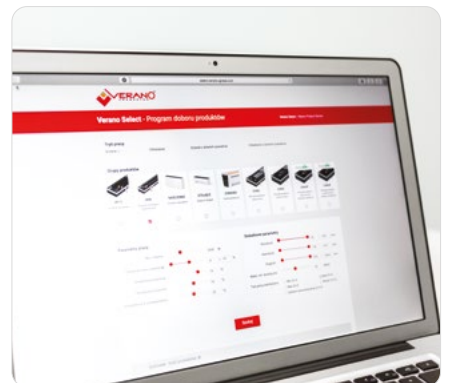
TOOL FOR DESIGNERS

Our products are available in the renowned INSTALSOFT, SANKOM and AUTODESK REVIT design programs.



EN 16430 STANDARD

CVK units have been tested according to the European Standard EN 16430. That confirms high quality of the products.



VERANO SELECT

This online software allows selecting the proper heating and cooling units according to the requested heating/cooling loads.



HIGH QUALITY



CVK fan assisted units are designed for heating and cooling residential, office, service, hotel, sacral, sport and other types of buildings.

Calculation and selection software, a wide range of available finishing variants and an individual approach to each project make VERANO products the first choice solution.

The trouble-free and economical use of our devices is appreciated throughout world - CVK units ensure the comfort of users of luxury apartments, modern office buildings or industrial New York salons.

Knowledge and experience in the design of heating and cooling devices is based on analyzes, tests and measurements carried out over many years. Scientific and research cooperation with scientists of Warsaw University of Technology, Krakow University of Technology, Lublin University of Technology, Polish Academy of Sciences among others, as well as private research centers allows to continue improvement and verification of the performance of our products.

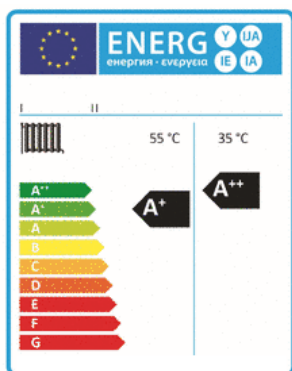
Excellent technical properties of CVK units have been confirmed at the HLK Stuttgart. Measurements of heating and cooling capacity were carried out in accordance with EN-16430.

CVK heating and cooling units are manufactured in Poland in accordance with EU regulations.

Verano trench convectors are characterized by following documents required by the European Union:

- National declaration of properties in accordance with EN 16430
- EU declaration of properties
- Hygienic certificate PZH.

RESEARCH AND DEVELOPMENT



New CVK units are modern appliances with high efficient heating and cooling outputs. CVK units are available in 4 heights. The shallowest one is only 90 mm high.

The devices have been designed for ecological sources of heat and cold - heat pumps.



The research of heating and cooling power of CVK trench units was carried out in a specially prepared climatic chamber, in accordance with the requirements of the European Standard EN-16430 in cooperation with the HLK Stuttgart laboratory at the Institut für GebäudeEnergetik Universität Stuttgart.



The acoustic power measurement of the CVK series units is carried out in accordance with the European standard EN ISO 3744 at the headquarters of VERANO. The measurement is made at points located on the measuring surface surrounding the tested fan coil over the sound reflecting plane. Thanks to the use of a digital sound analyzer, it is possible to measure broadband as well as in octave bands.



CVK2 90 MM HIGH

PRODUCT VISUALIZATION



EQUIPMENT

STANDARD EQUIPMENT:

- casing made of galvanized steel sheet in RAL 9005 black,
- highly efficient cooper-aluminium heat exchanger with air vent,
- modern fan with silent and efficient 24V DC EC motor,
- connection space cover,
- fan cover with airflow baffle,
- water connection: 2 x 1/2" female thread,
- trench struts,
- levelling legs,
- condensate drain pan,
- connection stub for condensate drainage installation.

ADDITIONAL EQUIPMENT:

- decorative frame (F or L type) made of natural or anodized aluminium,
- decorative grille made of natural or anodized aluminium, roll-up or linear type,
- casing made of galvanised steel sheet in any RAL colour,
- condensate pump,
- assembly protection fibreboard for transporting and installation,
- raised floor kit,
- casing protective film,
- foil sleeve for heat exchanger,
- anti dust filter (requires rasing the trench 10 mm)
- BMS controls.

DIMENSIONS

DIMENSIONS	[mm]
Trench height (H)	90
Trench bottom width (B)	350
Top width / Grille width (Bk)	374
Trench length (L)	950 ÷ 2000

Non- standard (NS) heater lengths are available on request.

ORDER CODE:

CVK2-9/35/L (L/P)

Trench height [cm]

Trench width [cm]

Trench Length L [cm]

Connection side L- Left / P - Right



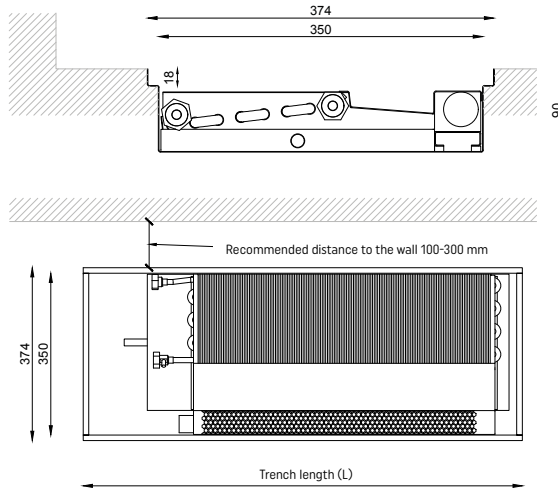
90 MM HIGH

CVK2-9/35/L (L/P)



ORDER CODE

DIMENSIONS	[mm]
Trench height (H)	90
Trench bottom width (B)	350
Top width / Grille width (Bk)	374
Trench length (L)	950÷2000
CONNECTION	TYPE
Connection thread	½" female thread
Connection side	Left (L) standard, Right (P) option
ACCESSORIES	TYPE
Grille 18 mm high	roll-up / linear / modular
Frame	L or F
Additional accessories	<ul style="list-style-type: none"> • drainage pump • fibreboard cover • raised floor kit, • anti dust filter



Trench length	Operating mode	Heat output for $t_f/t_c/\theta_a$ °C			Cooling sensible output for $t_f/t_c/\theta_a$ °C		Total cooling output for $t_f/t_c/\theta_a$ °C		Sound pressure level	Sound power level	Electric power demand	Current	Number of fan motors
		55/45/20	45/40/20	35/30/20	17/19/28	7/12/27	17/19/28	7/12/27					
L [mm]	[-]	Φ [W]			Φ [W]		Φ [W]		Lp [dB(A)]	Lw [dB(A)]	P [W]	I [A]	[-]
950	Min	235	174	95	34	51	34	71	<18	<26	0,8	0,03	1
	Med	438	325	177	76	115	76	150	<18	<26	1,2	0,05	
	Max	630	467	254	134	202	134	260	<18	<26	2,2	0,09	
	Boost	908	674	366	283	427	283	540	28	36	6,0	0,25	
1100	Min	270	200	109	39	59	39	82	<18	<26	0,8	0,03	1
	Med	504	374	203	87	131	87	174	<18	<26	1,2	0,05	
	Max	725	538	292	154	232	154	290	<18	<26	2,4	0,10	
	Boost	1045	775	421	325	490	325	650	28	36	7,0	0,29	
1250	Min	349	259	141	50	75	50	110	<18	<26	0,8	0,03	1
	Med	651	483	262	112	169	112	230	<18	<26	1,2	0,05	
	Max	935	694	377	199	300	199	400	<18	<26	2,7	0,11	
	Boost	1348	1000	544	419	632	419	860	28	36	9,2	0,38	
1450	Min	408	303	164	59	89	59	130	<18	<26	0,8	0,03	1
	Med	760	564	307	131	197	131	270	<18	<26	1,5	0,06	
	Max	1093	811	441	232	350	232	480	<18	<26	2,9	0,12	
	Boost	1576	1169	635	490	739	490	1010	28	36	10,4	0,43	
1650	Min	470	349	190	68	103	68	150	<18	<26	1,5	0,06	2
	Med	877	651	354	151	228	151	310	<18	<26	2,4	0,10	
	Max	1260	935	508	268	404	268	560	18	26	4,4	0,18	
	Boost	1817	1348	732	565	852	565	1180	31	39	12,0	0,50	
1800	Min	506	375	204	73	110	73	160	<18	<26	1,5	0,06	2
	Med	943	700	380	163	246	163	340	<18	<26	2,4	0,10	
	Max	1355	1005	546	288	434	288	610	18	26	4,6	0,19	
	Boost	1953	1449	787	608	917	608	1280	31	39	13,0	0,54	
2000	Min	584	433	235	84	127	84	180	<18	<26	1,5	0,06	2
	Med	1089	808	439	188	283	188	400	<18	<26	2,4	0,10	
	Max	1565	1161	631	333	502	333	710	18	26	4,8	0,20	
	Boost	2257	1674	910	702	1058	702	1470	31	39	15,2	0,63	

- Standard heating and cooling output [W] compliant to EN-16430.
- Cooling output according to the relative humidity 47%.
- Control voltages for the respective modes of operation: Min - 2 V, Med - 4 V, Max - 6 V, Boost - 10 V.
- Min, Med, Max fan speeds are for continuous operations, the Boost mode is for speed heating or cooling.
- Sound power level according to ISO-3745 standard, sound pressure level measured at distance of 2 m to the heater, in a 100 m3 volume room. Reverb time - 0,5 s, room damping - 8 dB(A).



CORRECTIVE FACTORS FOR 90 MM HIGH CVK2 UNITS

Heat output corrective factors for CVK2 90 mm high units for installation temperatures other than 55/45/20 °C for heating and 17/19/28 °C for cooling.

HEATING						COOLING						
Supply and return temperatures [°C]		Room air temperature [°C]				Supply and return temperatures [°C]		Room air temperature [°C]				
t _s	t _r	12	16	20	24	t _s	t _r	24	25	26	27	28
75	70	2,071	1,929	1,787	1,646	6	8	1,476	1,539	1,601	1,662	1,723
	65	1,982	1,840	1,699	1,558		9	1,444	1,507	1,570	1,632	1,693
	60	1,893	1,752	1,611	1,470		10	1,412	1,476	1,539	1,601	1,662
	55	1,805	1,664	1,523	1,383		11	1,379	1,444	1,507	1,570	1,632
70	65	1,893	1,752	1,611	1,470	7	12	1,346	1,412	1,476	1,539	1,601
	60	1,805	1,664	1,523	1,383		9	1,412	1,476	1,539	1,601	1,662
	55	1,717	1,576	1,435	1,295		10	1,379	1,444	1,507	1,570	1,632
	50	1,629	1,488	1,348	1,208		11	1,346	1,412	1,476	1,539	1,601
65	60	1,717	1,576	1,435	1,295	8	12	1,313	1,379	1,444	1,507	1,570
	55	1,629	1,488	1,348	1,208		13	1,280	1,346	1,412	1,476	1,539
	50	1,541	1,400	1,261	1,121		10	1,346	1,412	1,476	1,539	1,601
	45	1,453	1,313	1,173	1,035		11	1,313	1,379	1,444	1,507	1,570
60	55	1,541	1,400	1,261	1,121	10	12	1,280	1,346	1,412	1,476	1,539
	50	1,453	1,313	1,173	1,035		13	1,246	1,313	1,379	1,444	1,507
	45	1,365	1,226	1,087	0,948		12	1,212	1,280	1,346	1,412	1,476
	40	1,278	1,139	1,000	0,862		13	1,178	1,246	1,313	1,379	1,444
55	50	1,365	1,226	1,087	0,948	12	14	1,143	1,212	1,280	1,346	1,412
	45	1,278	1,139	1,000	0,862		15	1,108	1,178	1,246	1,313	1,379
	40	1,191	1,052	0,914	0,776		14	1,072	1,143	1,212	1,280	1,346
	35	1,104	0,965	0,828	0,691		15	1,036	1,108	1,178	1,246	1,313
50	45	1,191	1,052	0,914	0,776	16	16	1,000	1,072	1,143	1,212	1,280
	40	1,104	0,965	0,828	0,691		17	0,963	1,036	1,108	1,178	1,246
	35	1,017	0,879	0,742	0,606		18	0,770	0,849	0,926	1,000	1,072
	30	0,930	0,793	0,657	0,521		19	0,729	0,810	0,888	0,963	1,036
45	40	1,017	0,879	0,742	0,606	17	19	0,688	0,770	0,849	0,926	1,000
	35	0,931	0,793	0,657	0,521		20	0,645	0,729	0,810	0,888	0,963
	30	0,845	0,708	0,572	0,437		21	0,511	0,602	0,688	0,770	0,849
	25	0,759	0,623	0,487	0,353		22	0,463	0,557	0,645	0,729	0,810
40	30	0,759	0,623	0,487	0,353	19	22	0,463	0,557	0,645	0,729	0,810
	25	0,674	0,538	0,403	0,270							

HEAT OUTPUT CORRECTIVE FACTORS FOR CVK UNITS ACCORDING TO THE GRILLE TYPE

GRILLE TYPE	AIRFLOW	CORRECTIVE FACTOR
Roll-up double T-bar profile aluminium grille - 13 mm gap	67%	1,00
Roll-up double T-bar profile aluminium grille - 9 mm gap	63%	0,99
Roll-up closed profile aluminium grille	62%	1,00
Modular snap on profile aluminium grille	62%	0,97
Linear snap on profile aluminium grille	62%	1,08
Linear stainless steel grille	71%	1,09

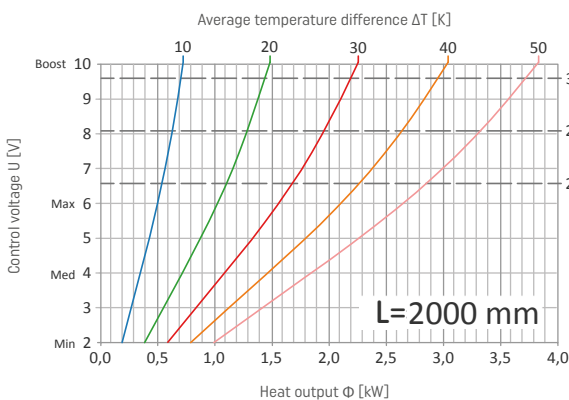
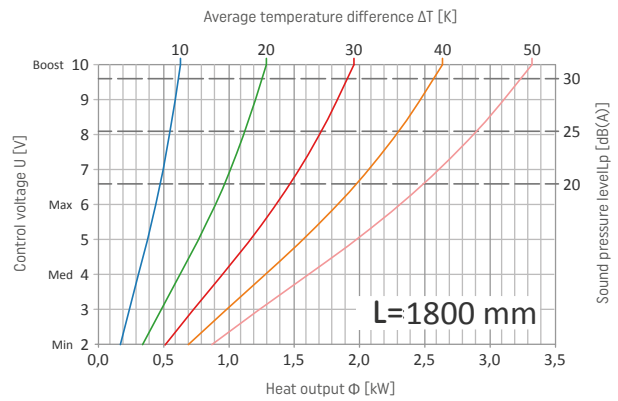
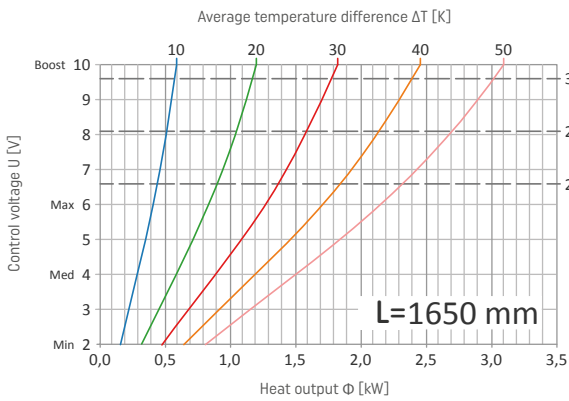
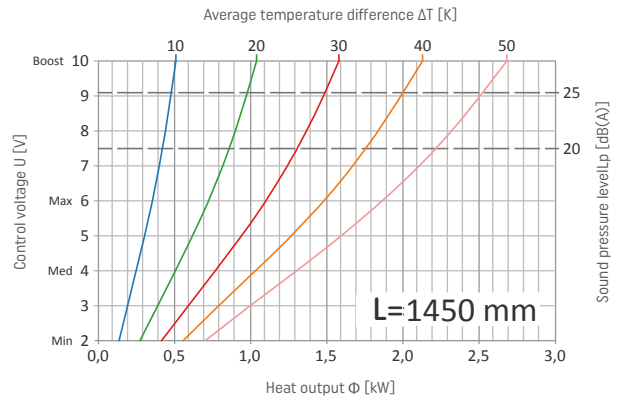
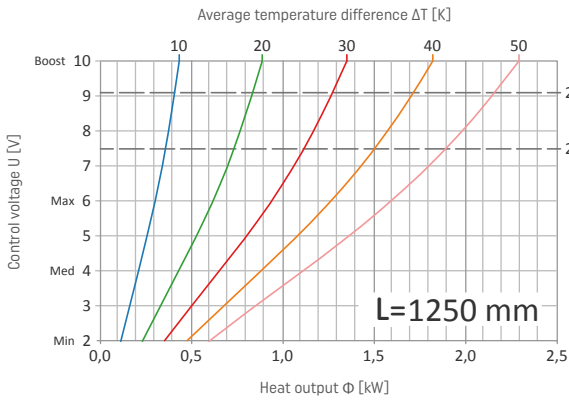
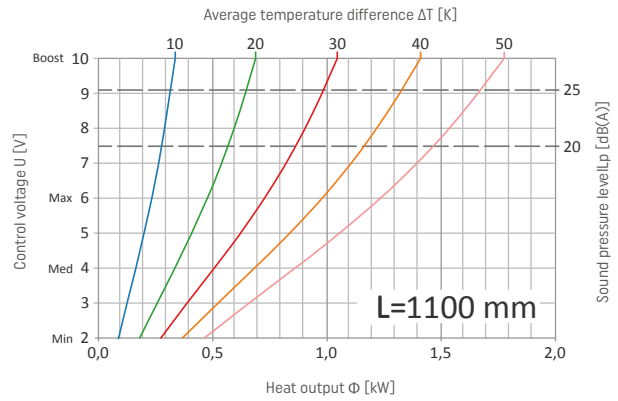
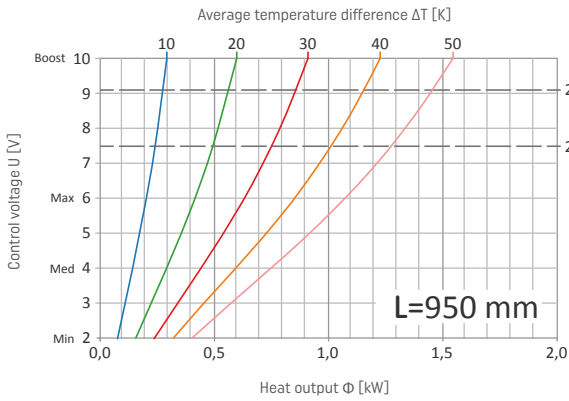


HEATING OUTPUT AND SOUND PRESSURE OF CVK2-9/35/L

The graphs present how heat output Φ [W] depends on the respective average temperature differences ΔT [K], for control voltages U [V]. The graphs also present the sound pressure levels for the respective heater operating conditions.

NOTE!

An example readout of control voltages and sound pressure for different values of heat output is on page no.52.



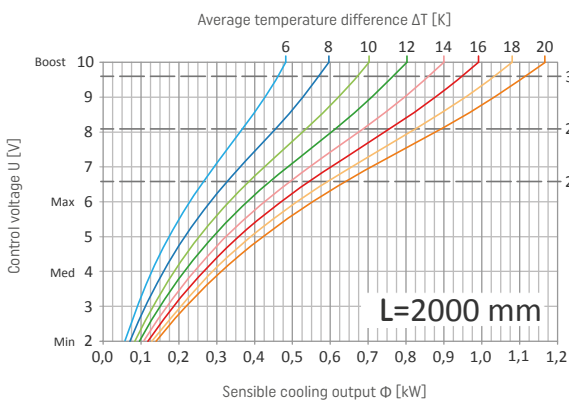
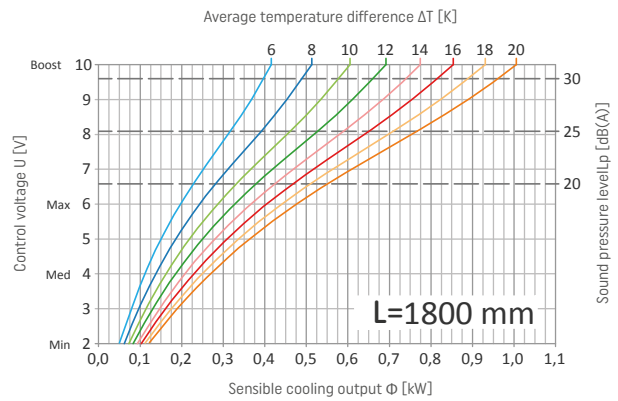
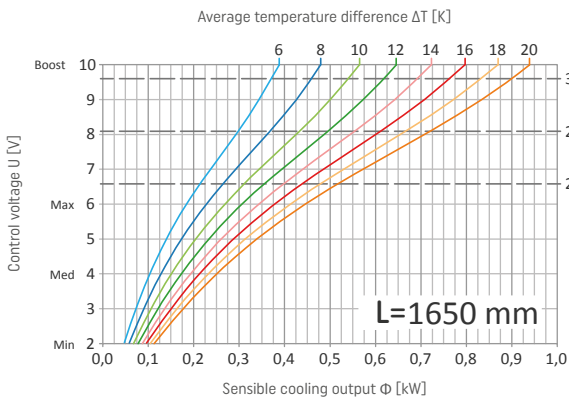
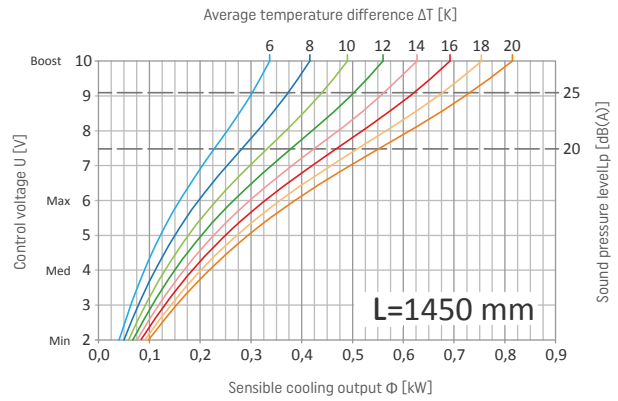
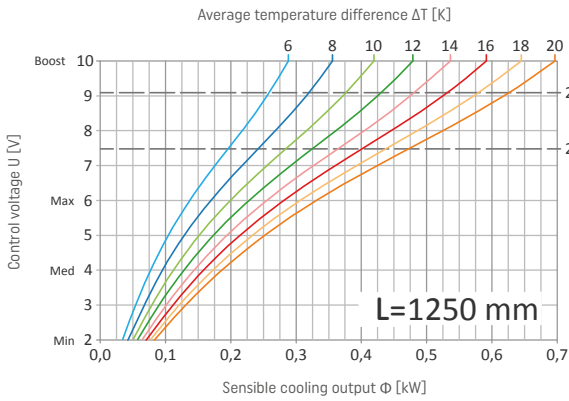
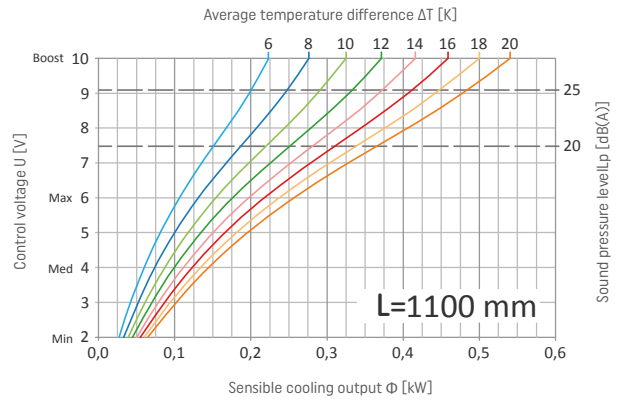
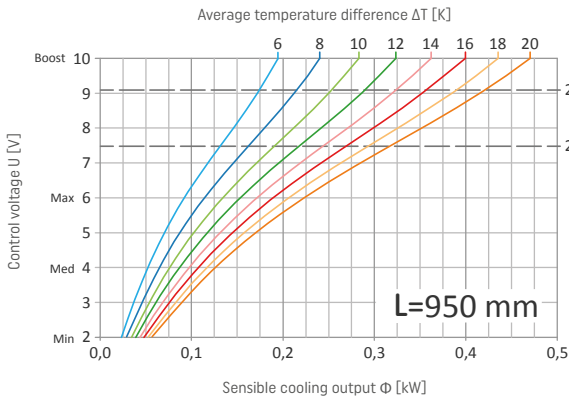


COOLING OUTPUT AND SOUND PRESSURE OF CVK2-9/35/L

The graphs present how cooling output Φ [W] depends on the respective average temperature differences ΔT [K], for control voltages U [V]. The graphs also present the sound pressure levels for the respective heater operating conditions.

NOTE!

An example readout of control voltages and sound pressure for different values of cooling output is on page no. 52.







CVK2 120 MM HIGH

PRODUCT VISUALIZATION



EQUIPMENT

STANDARD EQUIPMENT:

- casing made of galvanized steel sheet in RAL 9005 black,
- highly efficient cooper-aluminium heat exchanger with air vent,
- modern fan with silent and efficient 24V DC EC motor,
- connection space cover,
- fan cover with airflow baffle,
- water connection: 2 x 1/2" female thread,
- trench struts,
- levelling legs,
- condensate drain pan,
- connection stub for condensate drainage installation.

ADDITIONAL EQUIPMENT:

- decorative frame (F or L type) made of natural or anodized aluminium,
- decorative grille made of natural or anodized aluminium, roll-up or linear type,
- casing made of galvanised steel sheet in any RAL colour,
- condensate pump,
- assembly protection fibreboard for transporting and installation,
- raised floor kit,
- casing protective film,
- foil sleeve for heat exchanger,
- anti dust filter (requires rasing the trench 10 mm)
- BMS controls.

DIMENSIONS

DIMENSIONS	[mm]
Trench height (H)	120
Trench bottom width (B)	350
Top width / Grille width (Bk)	374
Trench length (L)	950 ÷ 2000

Non- standard (NS) heater lengths are available on request.

ORDER CODE:

CVK2-12/35/L (L/P)

Trench height [cm]

Trench width [cm]

Trench Length L [cm]

Connection side L- Left / P - Right

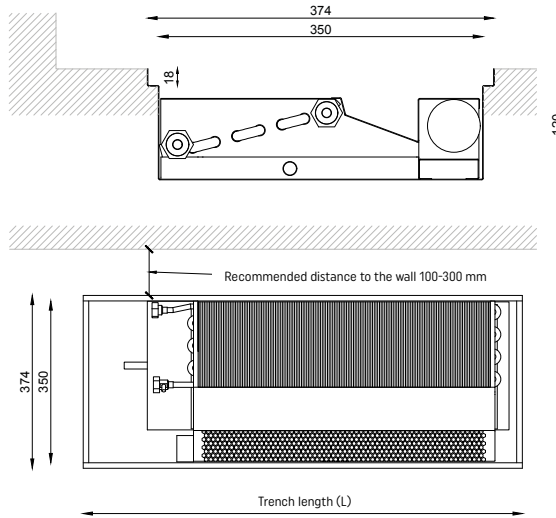


120 MM HIGH

CVK2-12/35/L (L/P)

ORDER CODE

DIMENSIONS	[mm]
Trench height (H)	120
Trench bottom width (B)	350
Top width / Grille width (Bk)	374
Trench length (L)	950÷2000
CONNECTION	TYPE
Connection thread	½" female thread
Connection side	Left (L) standard, Right (P) option
ACCESSORIES	TYPE
Grille 18 mm high	roll-up / linear / modular
Frame	L or F
Additional accessories	<ul style="list-style-type: none"> • drainage pump • fibreboard cover • raised floor kit, • anti dust filter



Trench length	Operating mode	Heat output for $t_f/t_r/\theta_a$ °C			Cooling sensible output for $t_f/t_r/\theta_a$ °C		Total cooling output for $t_f/t_r/\theta_a$ °C		Sound pressure level	Sound power level	Electric power demand	Current	Number of fan motors
		55/45/20	45/40/20	35/30/20	17/19/28	7/12/27	17/19/28	7/12/27					
L [mm]	[-]	Φ [W]			Φ [W]		Φ [W]		Lp [dB(A)]	Lw [dB(A)]	P [W]	I [A]	[-]
950	Min	490	362	195	44	64	44	90	<18	<26	1,0	0,04	1
	Med	890	658	354	142	207	142	260	18	26	2,2	0,09	
	Max	1220	901	485	248	362	248	460	28	36	5,3	0,22	
	Boost	1609	1189	640	436	637	436	830	40	48	18,0	0,75	
1100	Min	575	424	229	51	75	51	110	<18	<26	1,0	0,04	1
	Med	1043	771	415	167	244	167	310	18	26	2,4	0,10	
	Max	1431	1057	569	290	424	290	560	28	36	6,0	0,25	
	Boost	1886	1393	750	511	747	511	980	40	48	20,7	0,86	
1250	Min	728	537	289	65	95	65	130	<18	<26	1,0	0,04	1
	Med	1322	976	526	211	308	211	410	18	26	2,7	0,11	
	Max	1812	1338	721	367	536	367	730	28	36	7,2	0,30	
	Boost	2389	1764	950	647	945	647	1280	40	48	26,4	1,10	
1450	Min	850	628	338	76	111	76	160	<18	<26	1,2	0,05	1
	Med	1544	1141	614	246	359	246	490	18	26	2,9	0,12	
	Max	2117	1564	842	429	627	429	870	28	36	8,2	0,34	
	Boost	2791	2062	1110	756	1105	756	1500	40	48	30,8	1,28	
1650	Min	980	724	390	88	129	88	180	<18	<26	2,0	0,08	2
	Med	1781	1315	708	284	415	284	570	21	29	4,4	0,18	
	Max	2441	1803	971	495	723	495	1000	31	39	10,6	0,44	
	Boost	3219	2377	1280	872	1274	872	1650	43	51	36,0	1,50	
1800	Min	1064	786	423	95	139	95	200	<18	<26	2,0	0,08	2
	Med	1935	1429	769	309	452	309	630	21	29	4,6	0,19	
	Max	2651	1958	1054	538	786	538	1090	31	39	11,3	0,47	
	Boost	3495	2582	1390	947	1384	947	1800	43	51	38,7	1,61	
2000	Min	1217	899	484	109	159	109	220	<18	<26	2,0	0,08	2
	Med	2212	1634	880	353	516	353	720	21	29	4,8	0,20	
	Max	3032	2240	1206	615	899	615	1250	31	39	12,5	0,52	
	Boost	3998	2953	1590	1083	1582	1083	2080	43	51	44,4	1,85	

- Standard heating and cooling output [W] compliant to EN-16430.
- Cooling output according to the relative humidity 47%.
- Control voltages for the respective modes of operation: Min - 2 V, Med - 4 V, Max - 6 V, Boost - 10 V.
- Min, Med, Max fan speeds are for continuous operations, the Boost mode is for speed heating or cooling.
- Sound power level according to ISO-3745 standard, sound pressure level measured at distance of 2 m to the heater, in a 100 m3 volume room. Reverb time - 0,5 s, room damping - 8 dB(A).



CORRECTIVE FACTORS FOR 120 MM HIGH CVK2 UNITS

Heat output corrective factors for CVK2 120 mm high units for installation temperatures other than 55/45/20 °C for heating and 17/19/28 °C for cooling.

HEATING						COOLING						
Supply and return temperatures [°C]		Room air temperature [°C]				Supply and return temperatures [°C]		Room air temperature [°C]				
t _s	t _r	12	16	20	24	t _s	t _r	24	25	26	27	28
75	70	2,093	1,948	1,803	1,659	6	8	1,433	1,489	1,545	1,600	1,653
	65	2,002	1,857	1,713	1,569		9	1,404	1,461	1,517	1,572	1,627
	60	1,912	1,767	1,623	1,479		10	1,375	1,433	1,489	1,545	1,600
	55	1,821	1,677	1,533	1,390		11	1,346	1,404	1,461	1,517	1,572
70	65	1,912	1,767	1,623	1,479	7	12	1,316	1,375	1,433	1,489	1,545
	60	1,821	1,677	1,533	1,390		9	1,375	1,433	1,489	1,545	1,600
	55	1,731	1,587	1,443	1,300		10	1,346	1,404	1,461	1,517	1,572
	50	1,641	1,497	1,354	1,212		11	1,316	1,375	1,433	1,489	1,545
65	60	1,731	1,587	1,443	1,300	8	12	1,286	1,346	1,404	1,461	1,517
	55	1,641	1,497	1,354	1,212		13	1,256	1,316	1,375	1,433	1,489
	50	1,551	1,407	1,265	1,123		10	1,316	1,375	1,433	1,489	1,545
	45	1,461	1,318	1,176	1,035		11	1,286	1,346	1,404	1,461	1,517
60	55	1,551	1,407	1,265	1,123	10	12	1,256	1,316	1,375	1,433	1,489
	50	1,461	1,318	1,176	1,035		13	1,226	1,286	1,346	1,404	1,461
	45	1,372	1,229	1,088	0,947		12	1,195	1,256	1,316	1,375	1,433
	40	1,283	1,141	1,000	0,860		13	1,163	1,226	1,286	1,346	1,404
55	50	1,372	1,229	1,088	0,947	12	14	1,132	1,195	1,256	1,316	1,375
	45	1,283	1,141	1,000	0,860		15	1,099	1,163	1,226	1,286	1,346
	40	1,194	1,053	0,912	0,773		14	1,067	1,132	1,195	1,256	1,316
	35	1,106	0,965	0,825	0,687		15	1,034	1,099	1,163	1,226	1,286
50	45	1,194	1,053	0,912	0,773	16	16	1,000	1,067	1,132	1,195	1,256
	40	1,106	0,965	0,825	0,687		17	0,966	1,034	1,099	1,163	1,226
	35	1,018	0,878	0,739	0,601		18	0,931	0,999	1,067	1,132	1,195
	30	0,930	0,791	0,652	0,516		19	0,896	0,966	1,034	1,100	1,167
45	40	1,018	0,878	0,739	0,601	17	19	0,747	0,823	0,896	0,966	1,034
	35	0,930	0,791	0,652	0,516		20	0,707	0,785	0,860	0,931	1,000
	30	0,843	0,704	0,567	0,431		21	0,667	0,747	0,823	0,896	0,966
	25	0,756	0,618	0,482	0,348		22	0,625	0,707	0,785	0,860	0,931
40	30	0,756	0,618	0,482	0,348	19	21	0,537	0,625	0,707	0,785	0,860
	25	0,670	0,533	0,398	0,265		22	0,491	0,582	0,667	0,747	0,823

HEAT OUTPUT CORRECTIVE FACTORS FOR CVK UNITS ACCORDING TO THE GRILLE TYPE

GRILLE TYPE	AIRFLOW	CORRECTIVE FACTOR
Roll-up double T-bar profile aluminium grille - 13 mm gap	67%	1,00
Roll-up double T-bar profile aluminium grille - 9 mm gap	63%	0,99
Roll-up closed profile aluminium grille	62%	1,00
Modular snap on profile aluminium grille	62%	0,97
Linear snap on profile aluminium grille	62%	1,08
Linear stainless steel grille	71%	1,09

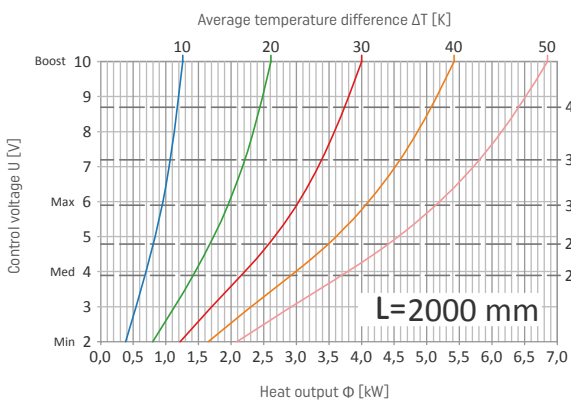
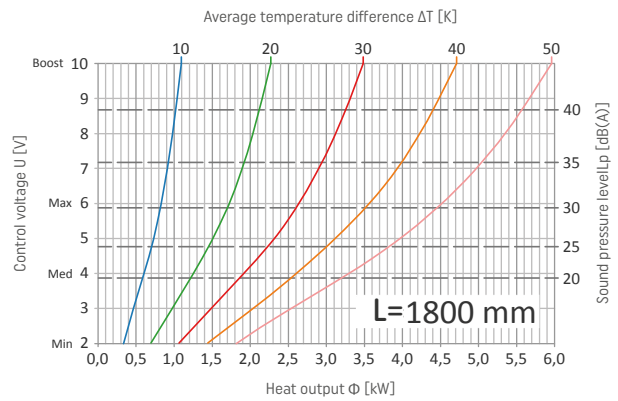
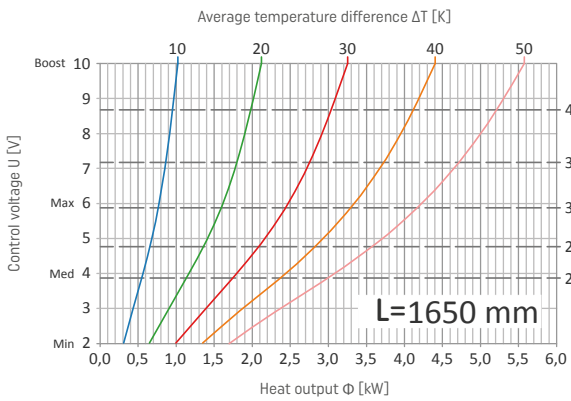
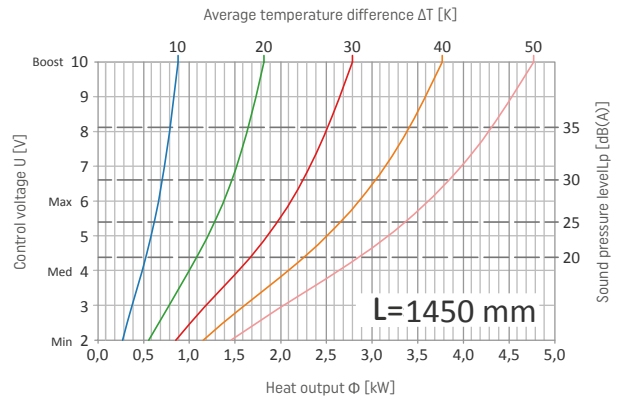
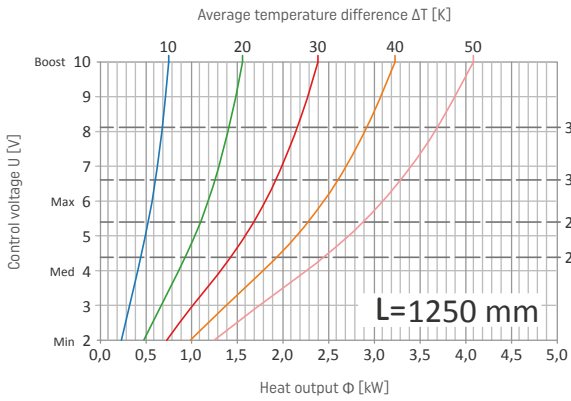
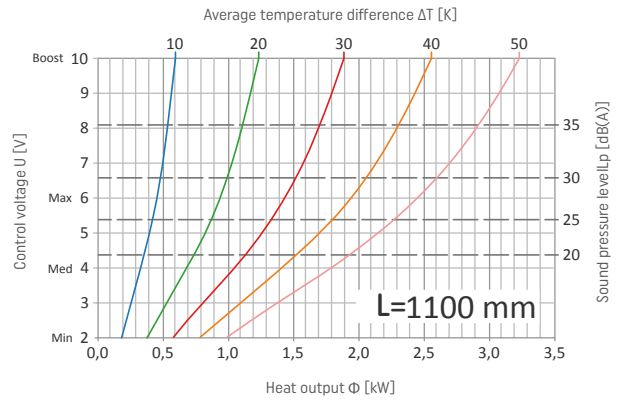
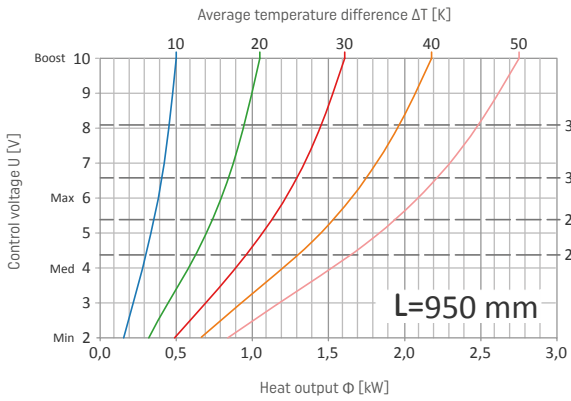


HEATING OUTPUT AND SOUND PRESSURE OF CVK2-12/35/L

The graphs present how heat output Φ [W] depends on the respective average temperature differences ΔT [K], for control voltages U [V]. The graphs also present the sound pressure levels for the respective heater operating conditions.

NOTE!

An example readout of control voltages and sound pressure for different values of heat output is on page no.52.



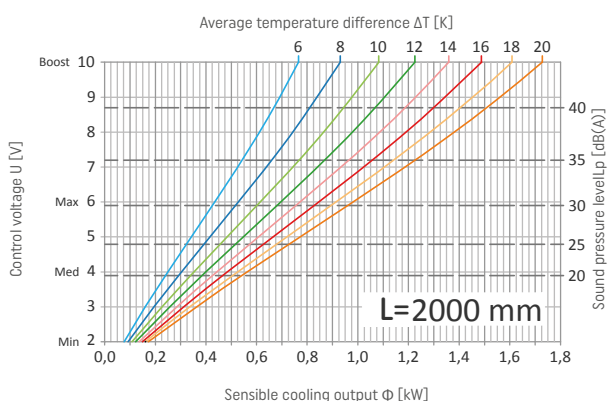
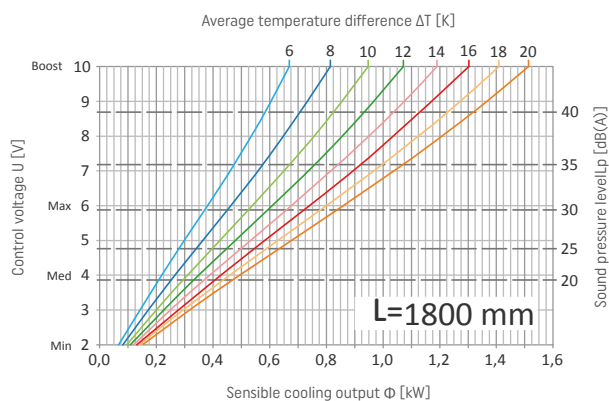
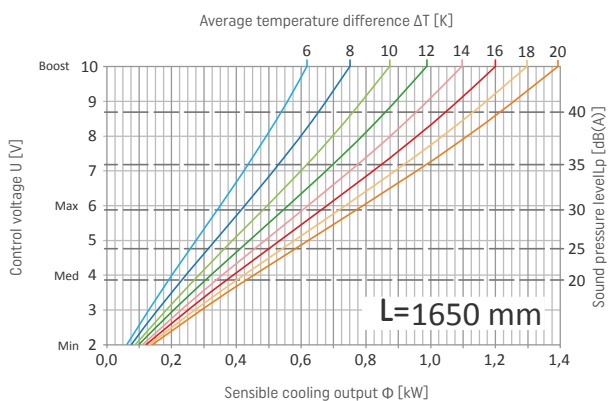
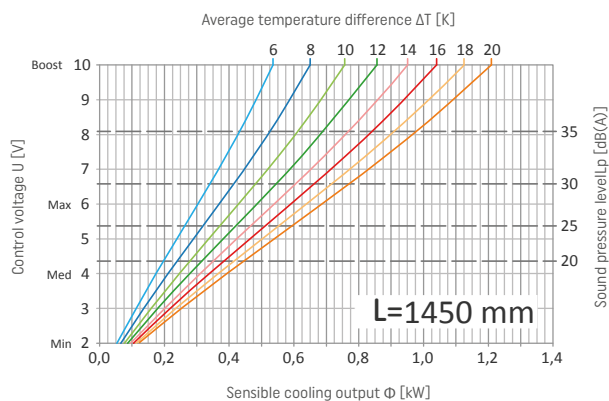
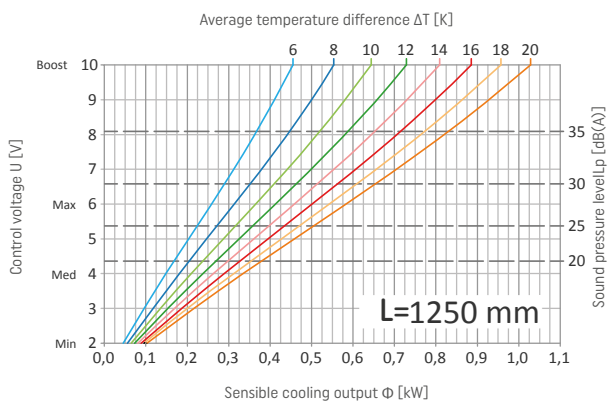
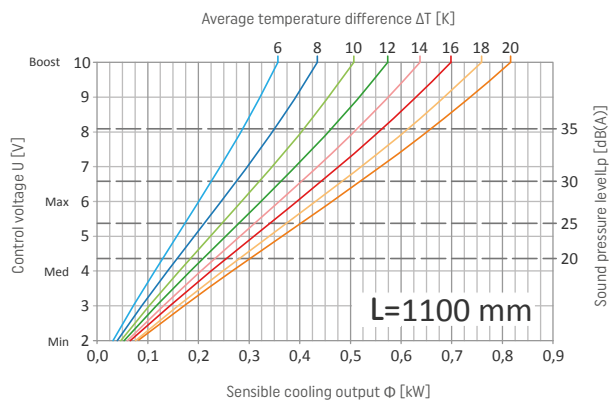
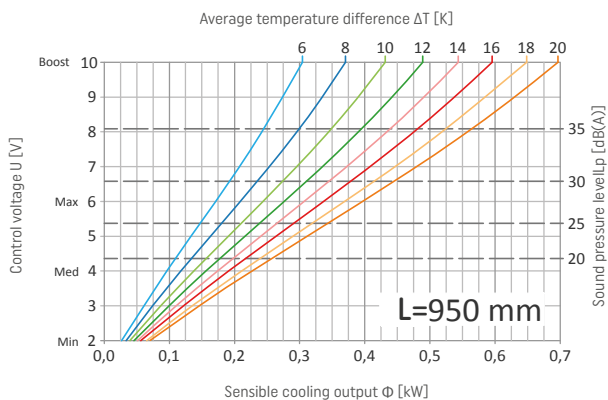


COOLING OUTPUT AND SOUND PRESSURE OF CVK2-12/35/L

The graphs present how cooling output Φ [W] depends on the respective average temperature differences ΔT [K], for control voltages U [V]. The graphs also present the sound pressure levels for the respective heater operating conditions.

NOTE!

An example readout of control voltages and sound pressure for different values of cooling output is on page no. 52.







CVK2 140 MM HIGH

PRODUCT VISUALIZATION



EQUIPMENT

STANDARD EQUIPMENT:

- casing made of galvanized steel sheet in RAL 9005 black,
- highly efficient cooper-aluminium heat exchanger with air vent,
- modern fan with silent and efficient 24V DC EC motor,
- connection space cover,
- fan cover with airflow baffle,
- water connection: 2 x 1/2" female thread,
- trench struts,
- levelling legs,
- condensate drain pan,
- connection stub for condensate drainage installation.

ADDITIONAL EQUIPMENT:

- decorative frame (F or L type) made of natural or anodized aluminium,
- decorative grille made of natural or anodized aluminium, roll-up or linear type,
- casing made of galvanised steel sheet in any RAL colour,
- condensate pump,
- assembly protection fibreboard for transporting and installation,
- raised floor kit,
- casing protective film,
- foil sleeve for heat exchanger,
- anti dust filter (requires rasing the trench 10 mm)
- BMS controls.

DIMENSIONS

DIMENSIONS	[mm]
Trench height (H)	140
Trench bottom width (B)	350
Top width / Grille width (Bk)	374
Trench length (L)	800 ÷ 3250

Non- standard (NS) heater lengths are available on request.

ORDER CODE:

CVK2-14/35/L (L)

Trench height [cm]

Trench width [cm]

Trench Length L [cm]

Connection side L- Left / P - Right



140 MM HIGH

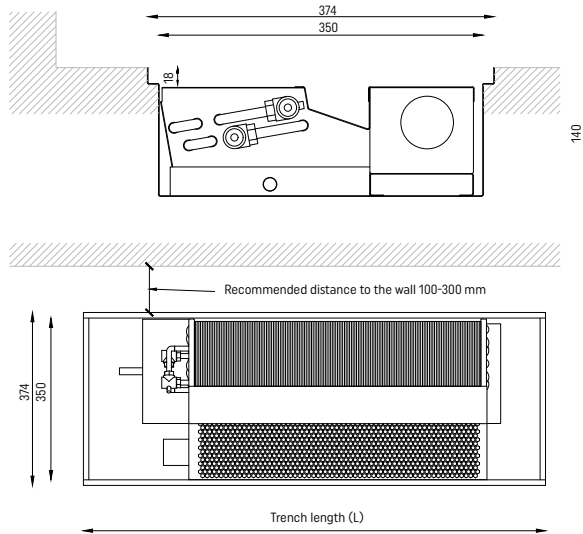
CVK2-14/35/L (L/P)

ORDER CODE

DIMENSIONS	[mm]
Trench height (H)	140
Trench bottom width (B)	350
Top width / Grille width (Bk)	374
Trench length (L)	800÷3250
CONNECTION	TYPE
Connection thread	½" female thread
Connection side	Left (L) standard, Right (P) option
ACCESSORIES	TYPE
Grille 18 mm high	roll-up / linear / modular
Frame	L or F

Additional accessories

- drainage pump
- fibreboard cover
- raised floor kit,
- anti dust filter



Trench length	Operating mode	Heat output for $t_s/t_r/\theta_s$ °C			Cooling sensible output for $t_s/t_r/\theta_s$ °C		Total cooling output for $t_s/t_r/\theta_s$ °C		Sound pressure level	Sound power level	Electric power demand	Current	Number of fan motors
		55/45/20	45/40/20	35/30/20	17/19/28	7/12/27	17/19/28	7/12/27					
L [mm]	[-]	Φ [W]			Φ [W]		Φ [W]		Lp [dB(A)]	Lw [dB(A)]	P [W]	I [A]	[-]
800	Min	482	360	197	52	88	52	120	<18	<26	0,8	0,03	1
	Med	847	632	347	179	304	179	370	18	26	1,7	0,07	
	Max	1223	911	500	310	527	310	570	25	33	4,1	0,17	
	Boost	1737	1295	710	492	836	492	930	40	48	19,2	0,80	
1000	Min	688	513	281	74	126	74	180	<18	<26	1,2	0,05	1
	Med	1208	901	494	255	433	255	520	19	27	2,7	0,11	
	Max	1742	1299	712	442	751	442	900	26	34	6,0	0,25	
	Boost	2476	1845	1012	701	1191	701	1470	41	49	21,6	0,90	
1250	Min	976	728	399	105	178	105	250	<18	<26	1,5	0,06	1
	Med	1715	1278	701	362	615	362	800	23	31	3,2	0,13	
	Max	2473	1843	1011	627	1065	627	1400	29	37	8,0	0,33	
	Boost	3514	2620	1437	995	1691	995	2220	41	49	33,6	1,40	
1550	Min	1170	872	479	126	214	126	300	<18	<26	2,0	0,08	2
	Med	2056	1532	841	434	737	434	980	24	32	4,4	0,18	
	Max	2965	2210	1212	751	1276	751	1720	30	38	10,1	0,42	
	Boost	4213	3140	1723	1193	2027	1193	2660	43	51	40,8	1,70	
1750	Min	1376	1025	562	148	251	148	353	<18	<26	2,4	0,10	2
	Med	2417	1801	988	510	867	510	1190	24	32	5,3	0,22	
	Max	3485	2597	1425	883	1500	883	2050	30	38	12,0	0,50	
	Boost	4952	3691	2025	1402	2382	1402	3220	43	51	43,2	1,80	
2000	Min	1664	1240	680	179	304	179	420	18	26	2,7	0,11	2
	Med	2923	2179	1195	617	1048	617	1430	24	32	5,8	0,24	
	Max	4215	3142	1724	1068	1815	1068	2420	31	39	14,0	0,58	
	Boost	5990	4465	2449	1696	2882	1696	3840	44	52	55,2	2,30	
2250	Min	1952	1455	798	210	357	210	490	20	28	2,9	0,12	2
	Med	3430	2557	1403	724	1230	724	1680	26	34	6,3	0,26	
	Max	4946	3686	2022	1253	2129	1253	2910	32	40	15,9	0,66	
	Boost	7028	5239	2874	1990	3381	1990	4570	44	52	67,2	2,80	
2500	Min	2063	1538	844	222	377	222	530	20	28	3,6	0,15	3
	Med	3625	2702	1482	765	1300	765	1780	26	34	8,0	0,33	
	Max	5227	3896	2137	1325	2251	1325	3080	33	41	18,0	0,75	
	Boost	7428	5536	3037	2103	3573	2103	4830	45	53	64,8	3,00	
2750	Min	2352	1753	962	253	430	253	590	20	28	3,9	0,16	3
	Med	4132	3080	1689	872	1482	872	2050	27	35	8,4	0,35	
	Max	5958	4441	2436	1510	2566	1510	3560	33	41	20,0	0,83	
	Boost	8466	6310	3462	2397	4073	2397	5580	45	53	76,8	3,20	
3000	Min	2640	1968	1080	284	483	284	670	21	29	4,1	0,17	3
	Med	4638	3457	1897	979	1663	979	2340	27	35	8,9	0,37	
	Max	6688	4985	2735	1695	2880	1695	4000	33	41	21,9	0,91	
	Boost	9504	7084	3886	2691	4572	2691	6260	45	53	88,8	3,70	
3250	Min	2929	2183	1198	315	535	315	740	22	30	4,4	0,18	3
	Med	5145	3835	2104	1086	1845	1086	2590	28	36	9,4	0,39	
	Max	7419	5530	3034	1880	3194	1880	4440	34	42	23,8	0,99	
	Boost	10543	7858	4311	2985	5072	2985	7044	46	54	100,8	4,20	

- Standard heating and cooling output [W] compliant to EN-16430.
- Cooling output according to the relative humidity 47%.
- Control voltages for the respective modes of operation: Min - 2 V, Med - 4 V, Max - 6 V, Boost - 10 V.
- Min, Med, Max fan speeds are for continuous operations, the Boost mode is for speed heating or cooling.
- Sound power level according to ISO-3745 standard, sound pressure level measured at distance of 2 m to the heater, in a 100 m3 volume room. Reverb time - 0,5 s, room damping - 8 dB(A).



CORRECTIVE FACTORS FOR 140 MM HIGH CVK2 UNITS

Heat output corrective factors for CVK2 140 mm high units for installation temperatures other than 55/45/20 °C for heating and 17/19/28°C for cooling.

HEATING						COOLING						
Supply and return temperatures [°C]		Room air temperature [°C]				Supply and return temperatures [°C]		Room air temperature [°C]				
t _s	t _r	12	16	20	24	t _s	t _r	24	25	26	27	28
75	70	2,047	1,909	1,771	1,633	6	8	1,653	1,745	1,837	1,928	2,019
	65	1,961	1,823	1,685	1,547		9	1,607	1,699	1,791	1,883	1,974
	60	1,875	1,737	1,599	1,462		10	1,561	1,653	1,745	1,837	1,928
	55	1,788	1,651	1,513	1,376		11	1,515	1,607	1,699	1,791	1,883
70	65	1,875	1,737	1,599	1,462	7	12	1,468	1,561	1,653	1,745	1,837
	60	1,788	1,651	1,513	1,376		9	1,561	1,653	1,745	1,837	1,928
	55	1,702	1,565	1,427	1,290		10	1,515	1,607	1,699	1,791	1,883
	50	1,616	1,479	1,342	1,205		11	1,468	1,561	1,653	1,745	1,837
65	60	1,702	1,565	1,427	1,290	8	12	1,422	1,515	1,607	1,699	1,791
	55	1,616	1,479	1,342	1,205		13	1,375	1,468	1,561	1,653	1,745
	50	1,530	1,393	1,256	1,119		10	1,468	1,561	1,653	1,745	1,837
	45	1,444	1,307	1,171	1,034		11	1,422	1,515	1,607	1,699	1,791
60	55	1,530	1,393	1,256	1,119	10	12	1,375	1,468	1,561	1,653	1,745
	50	1,444	1,307	1,171	1,034		13	1,329	1,422	1,515	1,607	1,699
	45	1,359	1,222	1,085	0,949		12	1,282	1,375	1,468	1,561	1,653
	40	1,273	1,136	1,000	0,864		13	1,235	1,329	1,422	1,515	1,607
55	50	1,359	1,222	1,085	0,949	12	14	1,189	1,282	1,375	1,468	1,561
	45	1,273	1,136	1,000	0,864		15	1,142	1,235	1,329	1,422	1,515
	40	1,188	1,051	0,915	0,779		14	1,094	1,189	1,282	1,375	1,468
	35	1,102	0,966	0,830	0,695		15	1,047	1,142	1,235	1,329	1,422
50	45	1,188	1,051	0,915	0,779	16	16	1,000	1,094	1,189	1,282	1,375
	40	1,102	0,966	0,830	0,695		17	0,953	1,047	1,142	1,235	1,329
	35	1,017	0,881	0,745	0,610		18	0,713	0,809	0,905	1,000	1,094
	40	1,017	0,881	0,745	0,610		19	0,665	0,761	0,857	0,953	1,047
45	35	0,932	0,796	0,661	0,526	17	19	0,616	0,713	0,809	0,905	1,000
	30	0,847	0,712	0,577	0,442		20	0,568	0,665	0,761	0,857	0,953
	30	0,762	0,627	0,493	0,359		21	0,420	0,519	0,616	0,713	0,809
	35	0,678	0,543	0,409	0,276		22	0,370	0,469	0,568	0,665	0,761

HEAT OUTPUT CORRECTIVE FACTORS FOR CVK UNITS ACCORDING TO THE GRILLE TYPE

GRILLE TYPE	AIRFLOW	CORRECTIVE FACTOR
Roll-up double T-bar profile aluminium grille - 13 mm gap	67%	1,00
Roll-up double T-bar profile aluminium grille - 9 mm gap	63%	0,99
Roll-up closed profile aluminium grille	62%	1,00
Modular snap on profile aluminium grille	62%	0,97
Linear snap on profile aluminium grille	62%	1,08
Linear stainless steel grille	71%	1,09

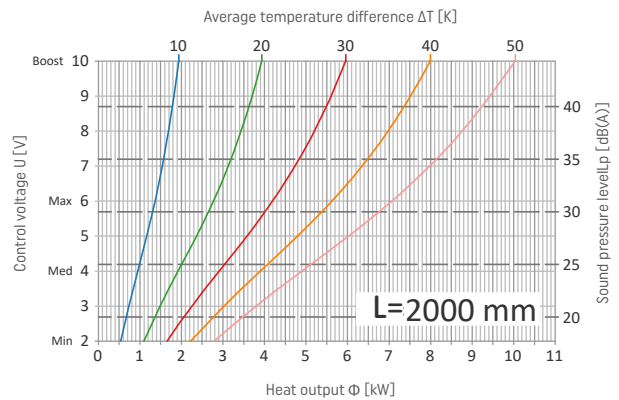
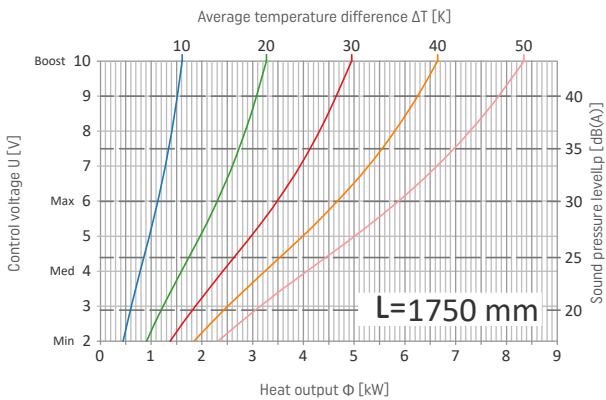
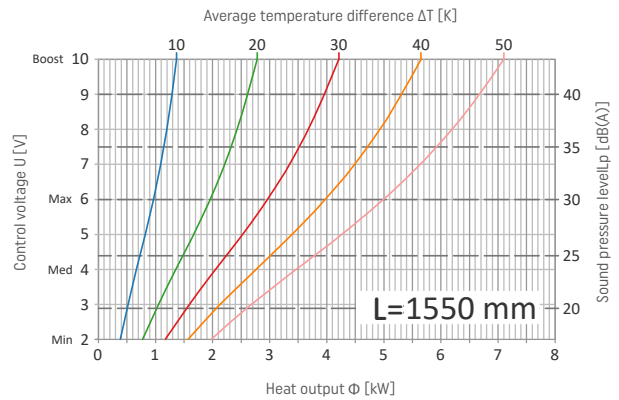
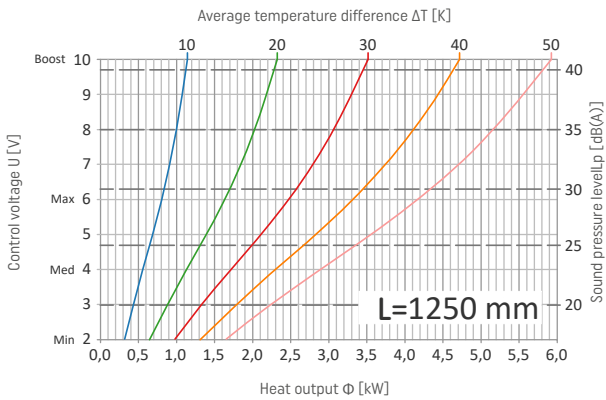
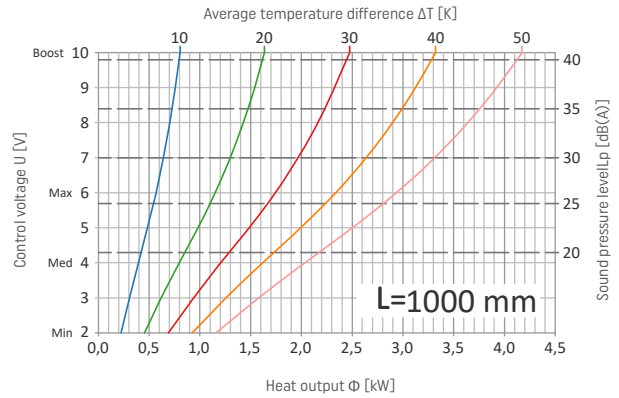
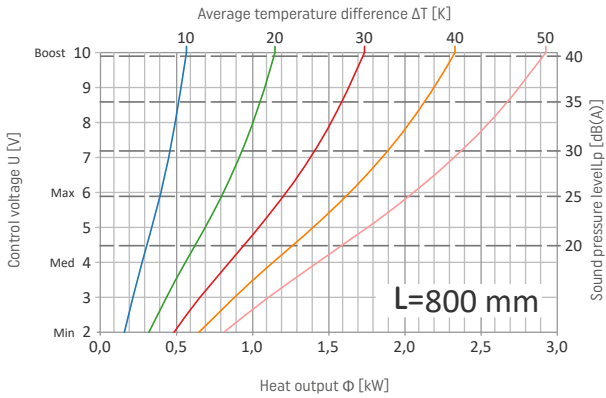


HEATING OUTPUT AND SOUND PRESSURE OF CVK2-14/35/L

The graphs present how heat output Φ [W] depends on the respective average temperature differences ΔT [K], for control voltages U [V]. The graphs also present the sound pressure levels for the respective heater operating conditions.

NOTE!

An example readout of control voltages and sound pressure for different values of heat output is on page no.52.



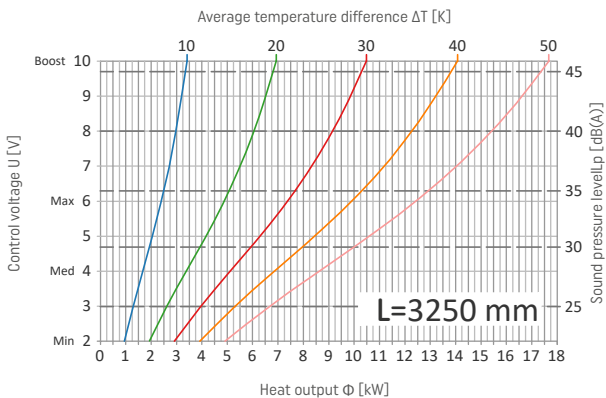
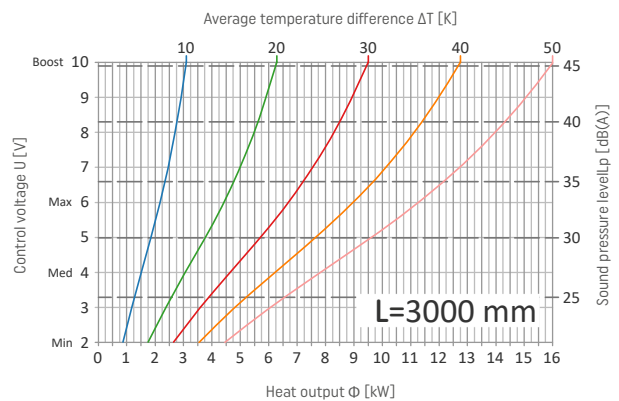
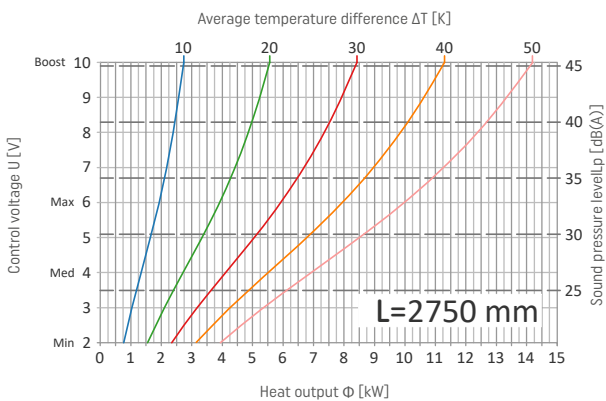
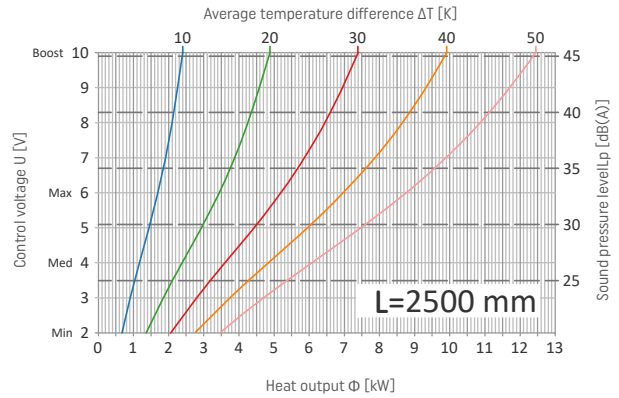
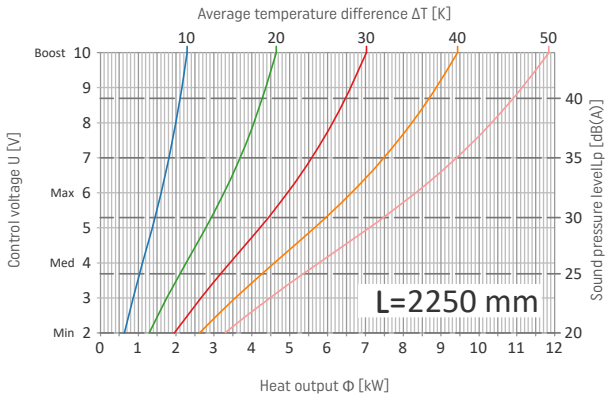


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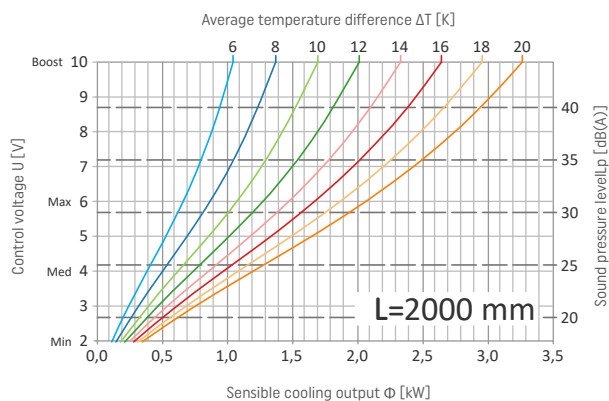
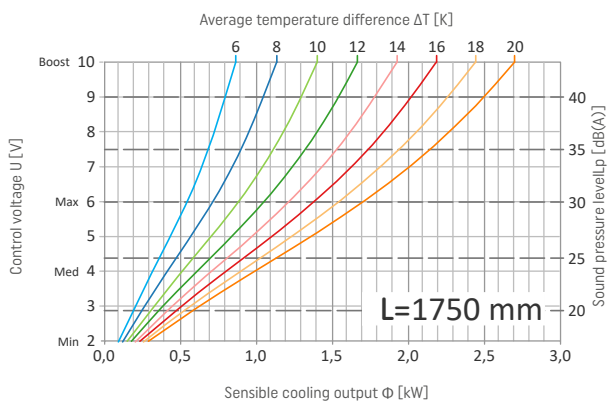
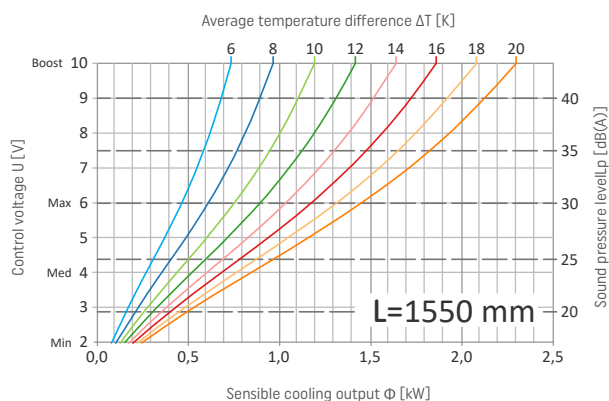
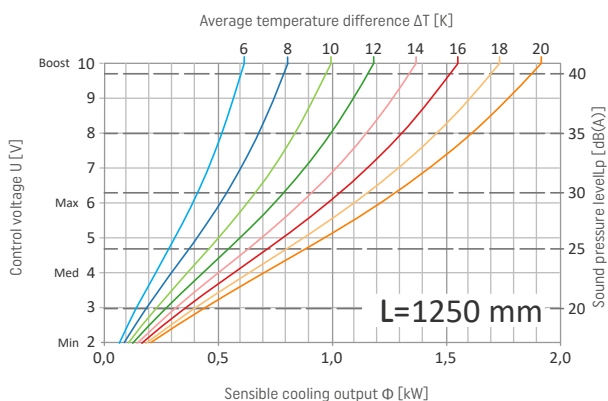
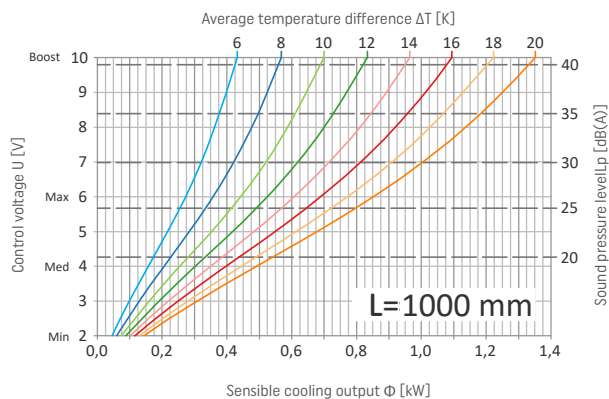
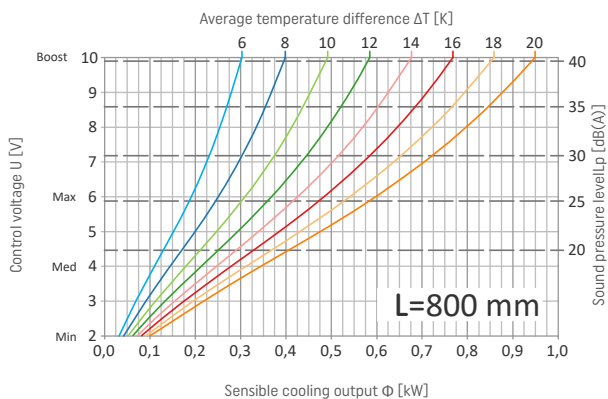


COOLING OUTPUT AND SOUND PRESSURE OF CVK2-14/35/L

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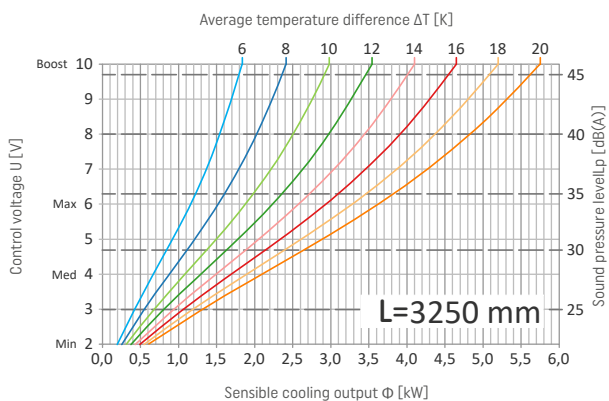
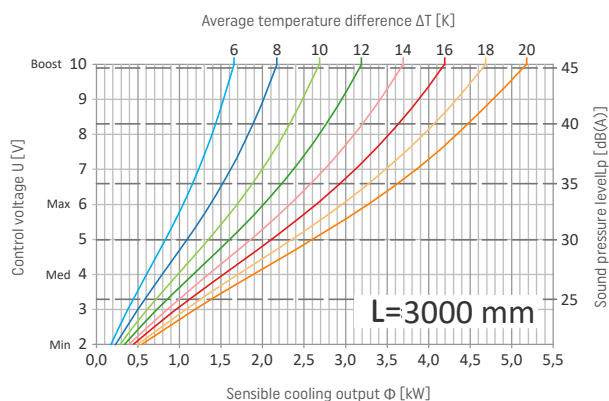
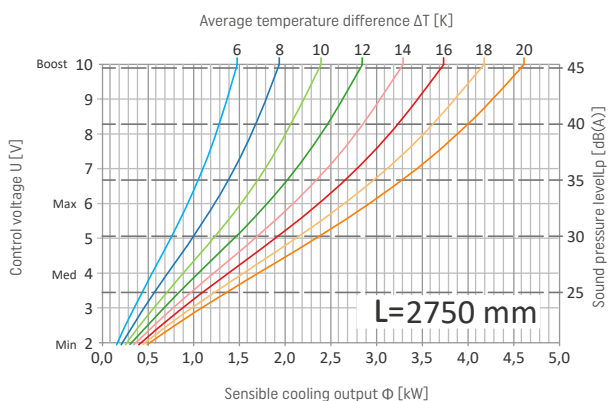
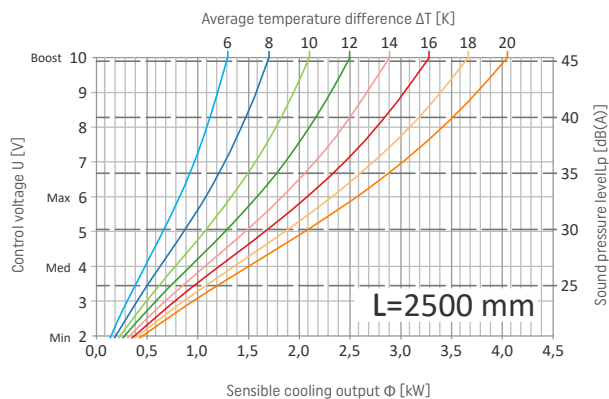
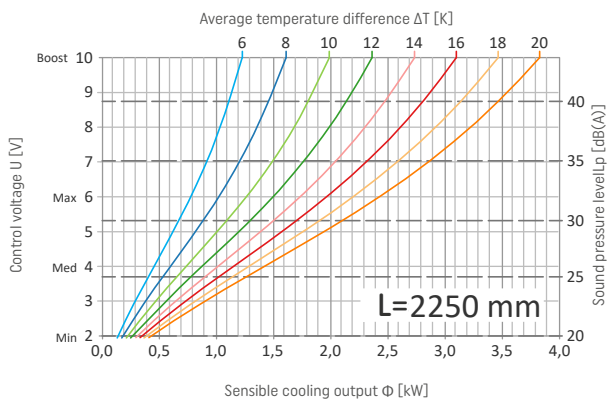


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CVK2 180 MM HIGH

PRODUCT VISUALIZATION



EQUIPMENT

STANDARD EQUIPMENT:

- casing made of galvanized steel sheet in RAL 9005 black,
- highly efficient cooper-aluminium heat exchanger with air vent,
- modern fan with silent and efficient 24V DC EC motor,
- connection space cover,
- fan cover with airflow baffle,
- water connection: 2 x 1/2" female thread,
- trench struts,
- levelling legs,
- condensate drain pan,
- connection stub for condensate drainage installation.

ADDITIONAL EQUIPMENT:

- decorative frame (F or L type) made of natural or anodized aluminium,
- decorative grille made of natural or anodized aluminium, roll-up or linear type,
- casing made of galvanised steel sheet in any RAL colour,
- condensate pump,
- assembly protection fibreboard for transporting and installation,
- raised floor kit,
- casing protective film,
- foil sleeve for heat exchanger,
- anti dust filter (requires rasing the trench 10 mm)
- BMS controls.

DIMENSIONS

DIMENSIONS	[mm]
Trench height (H)	180
Trench bottom width (B)	350
Top width / Grille width (Bk)	374

Trench length (L) 800 ÷ 3250

Non- standard (NS) heater lengths are available on request.

ORDER CODE:

CVK2-18/35/L (L/P)

Trench height [cm]

Trench width [cm]

Trench Length L [cm]

Connection side L- Left / P - Right



180 MM HIGH

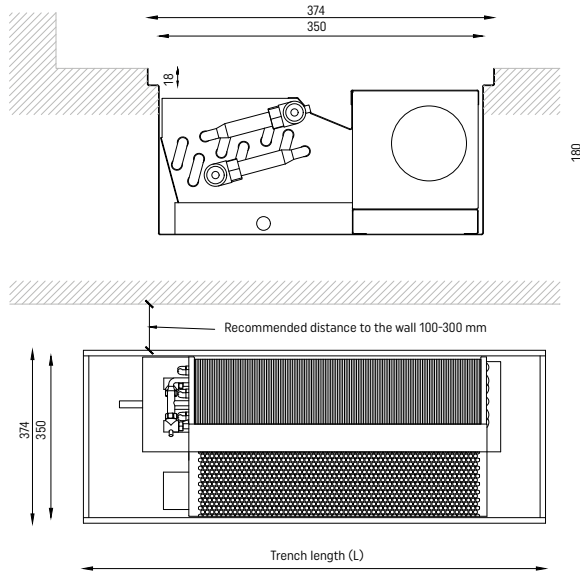
CVK2-18/35/L (L/P)



ORDER CODE

DIMENSIONS	[mm]
Trench height (H)	180
Trench bottom width (B)	350
Top width / Grille width (Bk)	374
Trench length (L)	800÷3250
CONNECTION	TYPE
Connection thread	½" female thread
Connection side	Left (L) standard, Right (P) option
ACCESSORIES	TYPE
Grille 18 mm high	roll-up / linear / modular
Frame	L or F

- Additional accessories
- drainage pump
 - fibreboard cover
 - raised floor kit,
 - anti dust filter



Trench length	Operating mode	Heat output for $t_s/t_r/\theta_s$ °C			Cooling sensible output for $t_s/t_r/\theta_s$ °C		Total cooling output for $t_s/t_r/\theta_s$ °C		Sound pressure level Lp [dB(A)]	Sound power level Lw [dB(A)]	Electric power demand P [W]	Current I [A]	Number of fan motors
		55/45/20	45/40/20	35/30/20	17/19/28	7/12/27	17/19/28	7/12/27					
800	Min	871	648	354	216	378	216	450	<18	<26	2,0	0,08	1
	Med	1559	1159	633	459	803	459	900	21	29	3,9	0,16	
	Max	2086	1551	846	647	1132	647	1280	29	37	7,5	0,31	
	Boost	2656	1975	1078	857	1500	857	1724	42	50	21,6	0,90	
1000	Min	1228	913	498	304	532	304	633	<18	<26	2,2	0,09	1
	Med	2197	1633	891	647	1132	647	1420	23	31	4,4	0,18	
	Max	2939	2185	1193	912	1596	912	1971	32	40	8,9	0,37	
	Boost	3743	2783	1519	1208	2114	1208	2620	43	51	25,2	1,05	
1250	Min	1703	1266	691	422	739	422	972	<18	<26	2,7	0,11	1
	Med	3047	2265	1236	897	1570	897	2040	25	33	6,5	0,27	
	Max	4076	3031	1654	1264	2212	1264	2870	35	43	14,4	0,60	
	Boost	5191	3860	2107	1676	2933	1676	3810	46	54	42,0	1,75	
1550	Min	2099	1561	852	520	910	520	1230	19	27	4,1	0,17	2
	Med	3756	2792	1524	1105	1934	1105	2580	26	34	8,2	0,34	
	Max	5024	3736	2039	1558	2727	1558	3630	34	42	16,4	0,68	
	Boost	6399	4758	2597	2065	3614	2065	4750	46	54	46,8	1,95	
1750	Min	2455	1826	996	608	1064	608	1460	20	28	4,4	0,18	2
	Med	4393	3266	1783	1293	2263	1293	3060	26	34	8,7	0,36	
	Max	5877	4370	2385	1823	3190	1823	4310	35	43	17,8	0,74	
	Boost	7486	5566	3038	2416	4228	2416	5640	46	54	50,4	2,10	
2000	Min	2930	2179	1189	726	1271	726	1700	20	28	4,8	0,20	2
	Med	5243	3899	2128	1543	2700	1543	3600	27	35	10,8	0,45	
	Max	7015	5216	2847	2176	3808	2176	5010	36	44	23,3	0,97	
	Boost	8934	6643	3625	2884	5047	2884	6640	48	56	67,2	2,80	
2250	Min	3406	2532	1382	843	1475	843	2020	20	28	5,3	0,22	2
	Med	6094	4531	2473	1794	3140	1794	4240	28	36	13,0	0,54	
	Max	8153	6062	3308	2529	4426	2529	5900	38	46	28,8	1,20	
	Boost	10384	7720	4214	3351	5864	3351	7800	49	57	84,0	3,50	
2500	Min	3683	2738	1495	912	1596	912	2180	21	29	6,3	0,26	3
	Med	6590	4900	2674	1940	3395	1940	4580	28	36	14,2	0,59	
	Max	8816	6555	3578	2735	4786	2735	6470	37	45	30,5	1,27	
	Boost	11228	8348	4556	3624	6342	3624	8470	48	56	88,4	3,68	
2750	Min	4158	3092	1687	1030	1803	1030	2500	22	30	7,0	0,29	3
	Med	7440	5532	3019	2190	3833	2190	5250	29	37	15,2	0,63	
	Max	9953	7401	4039	3087	5402	3087	7300	38	46	32,2	1,34	
	Boost	12677	9426	5144	4092	7161	4092	9680	49	57	92,4	3,85	
3000	Min	4634	3445	1880	1147	2007	1147	2790	21	29	7,5	0,31	3
	Med	8290	6164	3364	2440	4270	2440	5850	29	37	17,3	0,72	
	Max	11091	8247	4501	3440	6020	3440	8130	38	46	37,7	1,57	
	Boost	14126	10503	5732	4559	7978	4559	10780	50	58	109,2	4,55	
3250	Min	5109	3798	2073	1265	2214	1265	3118	22	30	8,0	0,33	3
	Med	9141	6797	3709	2690	4708	2690	6540	30	38	19,5	0,81	
	Max	12229	9092	4962	3793	6638	3793	9030	40	48	43,2	1,80	
	Boost	15575	11580	6320	5027	8797	5027	12050	51	59	126,0	5,25	

- Standard heating and cooling output [W] compliant to EN-16430.
- Cooling output according to the relative humidity 47%.
- Control voltages for the respective modes of operation: Min - 2 V, Med - 4 V, Max - 6 V, Boost - 10 V.
- Min, Med, Max fan speeds are for continuous operations, the Boost mode is for speed heating or cooling.
- Sound power level according to ISO-3745 standard, sound pressure level measured at distance of 2 m to the heater, in a 100 m3 volume room. Reverb time - 0,5 s, room damping - 8 dB(A).



CORRECTIVE FACTORS FOR 180 MM HIGH CVK2 UNITS

Heat output corrective factors for CVK2 180 mm high units for installation temperatures other than 55/45/20 °C for heating and 17/19/28 °C for cooling.

HEATING						COOLING						
Supply and return temperatures [°C]		Room air temperature [°C]				Supply and return temperatures [°C]		Room air temperature [°C]				
t _s	t _r	12	16	20	24	t _s	t _r	24	25	26	27	28
75	70	2,060	1,920	1,780	1,640	6	8	1,700	1,800	1,900	2,000	2,100
	65	1,972	1,832	1,693	1,553		9	1,650	1,750	1,850	1,950	2,050
	60	1,885	1,745	1,605	1,466		10	1,600	1,700	1,800	1,900	2,000
	55	1,797	1,658	1,518	1,380		11	1,550	1,650	1,750	1,850	1,950
70	65	1,885	1,745	1,605	1,466	7	12	1,500	1,600	1,700	1,800	1,900
	60	1,797	1,658	1,518	1,380		9	1,600	1,700	1,800	1,900	2,000
	55	1,710	1,571	1,432	1,293		10	1,550	1,650	1,750	1,850	1,950
	50	1,623	1,484	1,345	1,207		11	1,500	1,600	1,700	1,800	1,900
65	60	1,710	1,571	1,432	1,293	8	12	1,450	1,550	1,650	1,750	1,850
	55	1,623	1,484	1,345	1,207		13	1,400	1,500	1,600	1,700	1,800
	50	1,536	1,397	1,258	1,120		10	1,500	1,600	1,700	1,800	1,900
	45	1,449	1,310	1,172	1,034		11	1,450	1,550	1,650	1,750	1,850
60	55	1,536	1,397	1,258	1,120	10	12	1,400	1,500	1,600	1,700	1,800
	50	1,449	1,310	1,172	1,034		13	1,350	1,450	1,550	1,650	1,750
	45	1,362	1,224	1,086	0,949		12	1,300	1,400	1,500	1,600	1,700
	40	1,276	1,138	1,000	0,863		13	1,250	1,350	1,450	1,550	1,650
55	50	1,362	1,224	1,086	0,949	12	14	1,200	1,300	1,400	1,500	1,600
	45	1,276	1,138	1,000	0,863		15	1,150	1,250	1,350	1,450	1,550
	40	1,189	1,052	0,914	0,778		14	1,100	1,200	1,300	1,400	1,500
	35	1,103	0,966	0,829	0,693		15	1,050	1,150	1,250	1,350	1,450
50	45	1,189	1,052	0,914	0,778	16	16	1,000	1,100	1,200	1,300	1,400
	40	1,103	0,966	0,829	0,693		17	0,950	1,050	1,150	1,250	1,350
	35	1,017	0,880	0,744	0,608		18	0,700	0,800	0,900	1,000	1,100
	40	1,017	0,880	0,744	0,608		19	0,650	0,750	0,850	0,950	1,050
45	35	0,931	0,795	0,659	0,523	17	19	0,600	0,700	0,800	0,900	1,000
	30	0,846	0,709	0,574	0,439		20	0,550	0,650	0,750	0,850	0,950
	30	0,761	0,625	0,490	0,356		21	0,400	0,500	0,600	0,700	0,800
	35	0,676	0,540	0,406	0,273		22	0,350	0,450	0,550	0,650	0,750

HEAT OUTPUT CORRECTIVE FACTORS FOR CVK UNITS ACCORDING TO THE GRILLE TYPE

GRILLE TYPE	AIRFLOW	CORRECTIVE FACTOR
Roll-up double T-bar profile aluminium grille - 13 mm gap	67%	1,00
Roll-up double T-bar profile aluminium grille - 9 mm gap	63%	0,99
Roll-up closed profile aluminium grille	62%	1,00
Modular snap on profile aluminium grille	62%	0,97
Linear snap on profile aluminium grille	62%	1,08
Linear stainless steel grille	71%	1,09

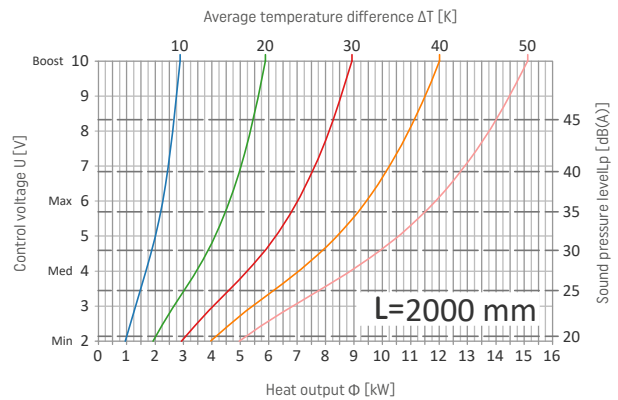
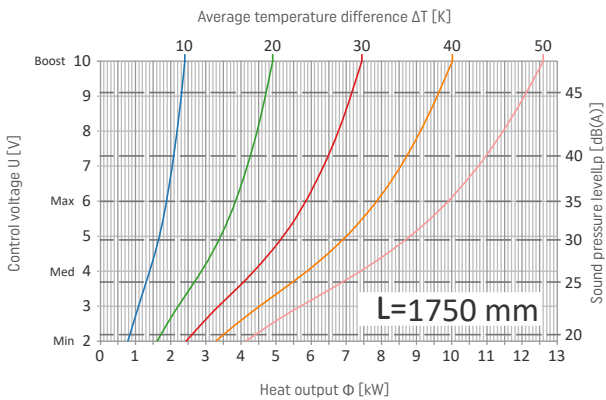
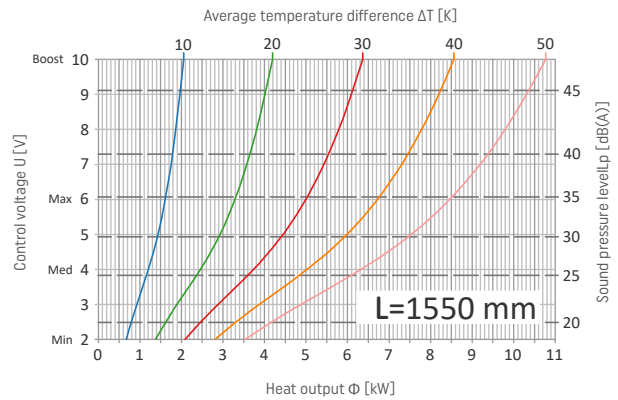
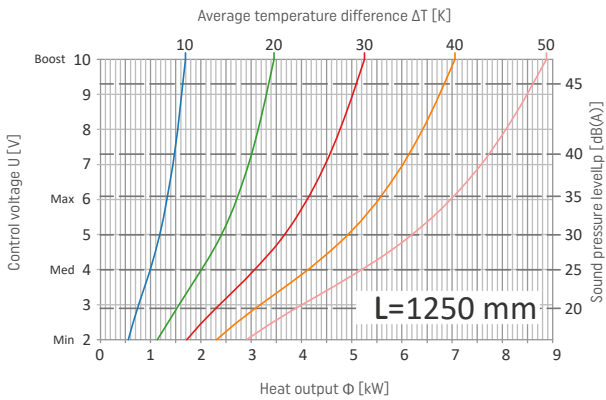
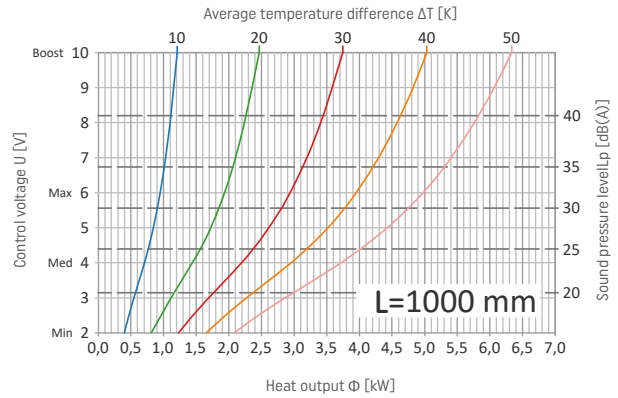
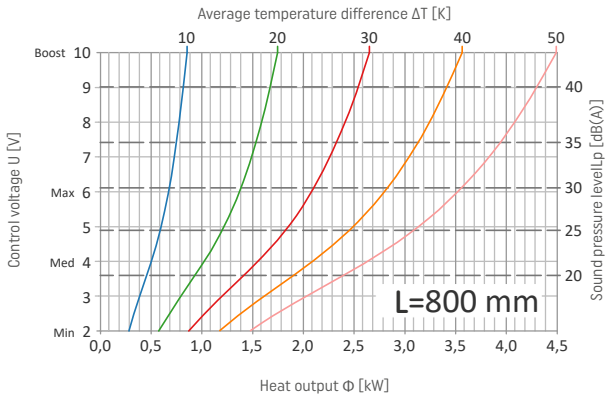


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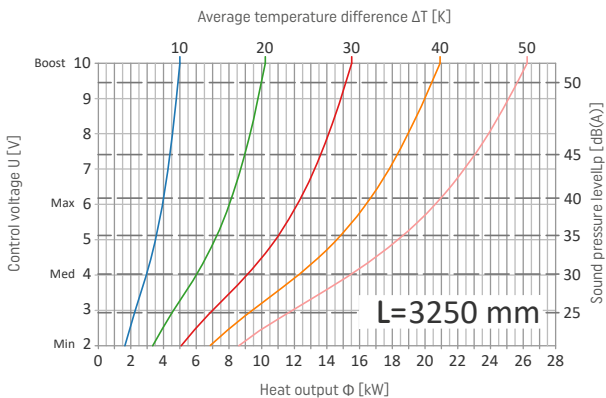
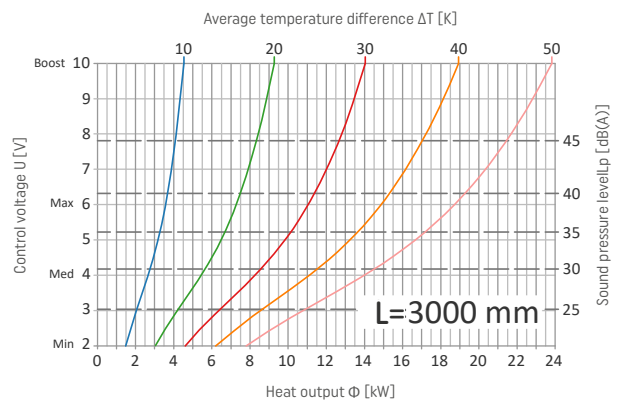
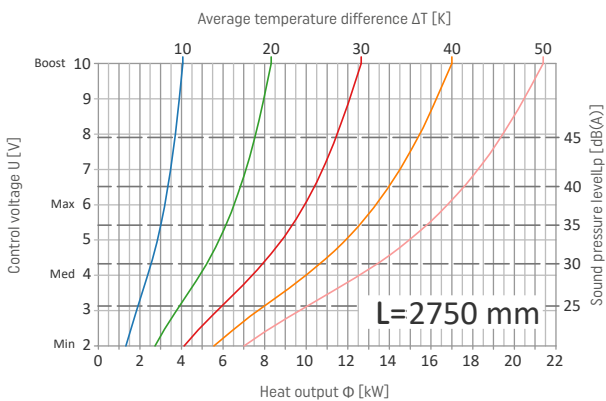
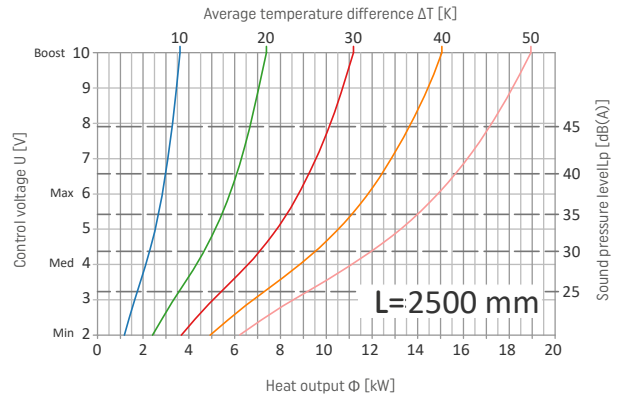
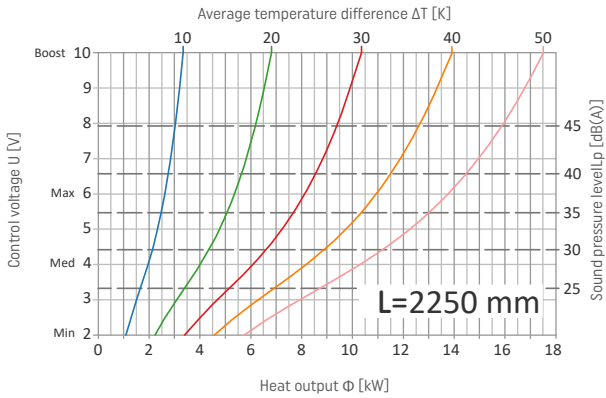


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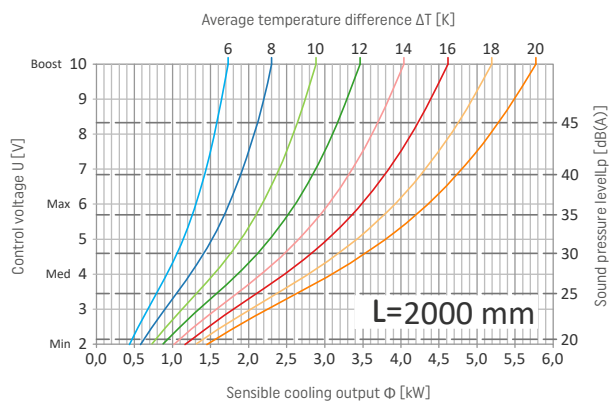
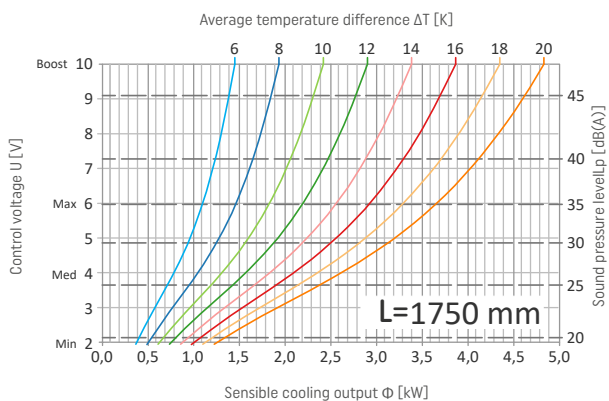
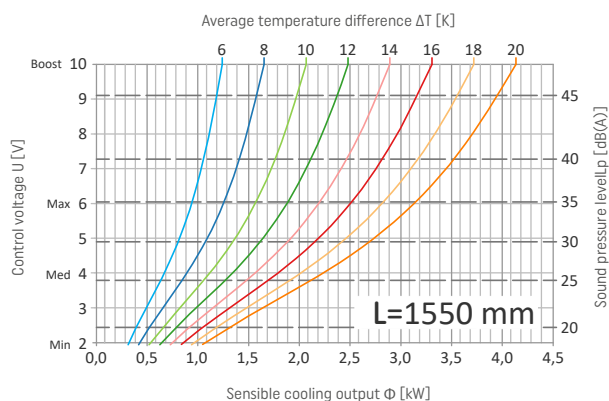
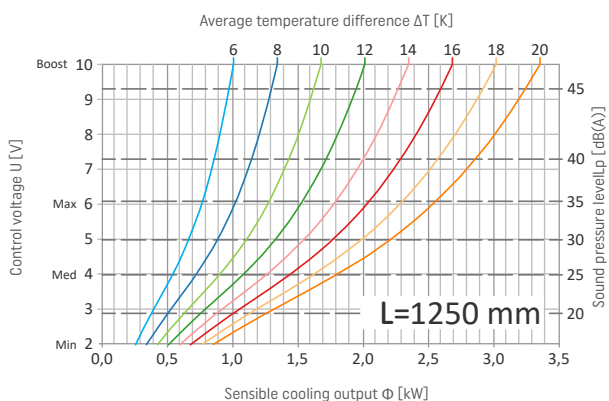
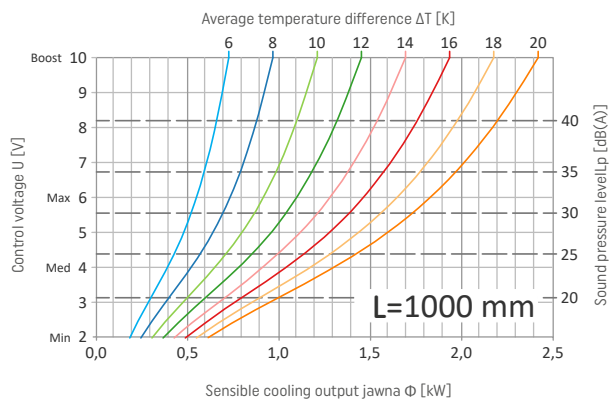
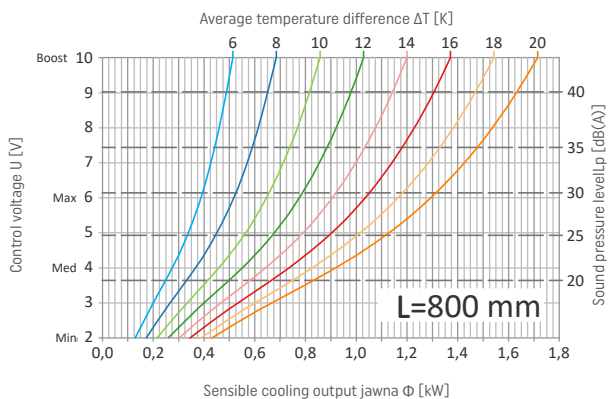


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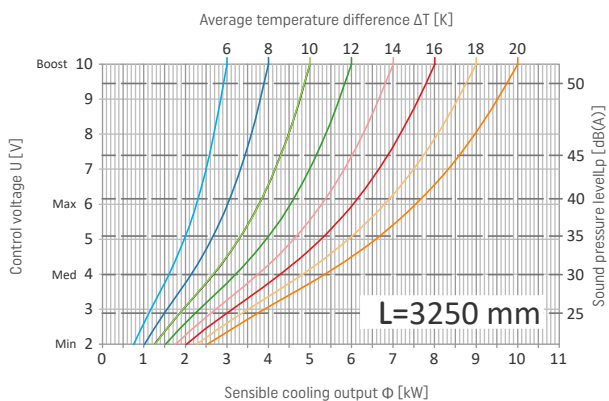
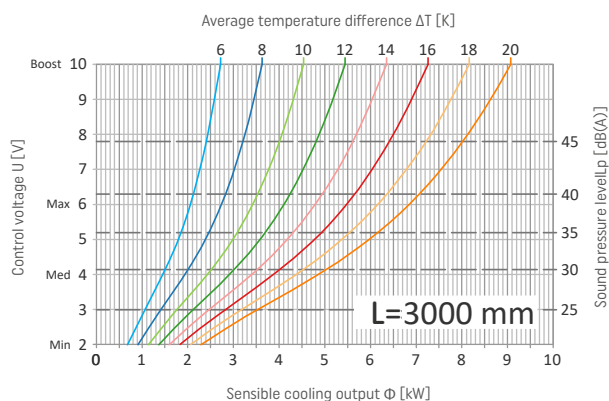
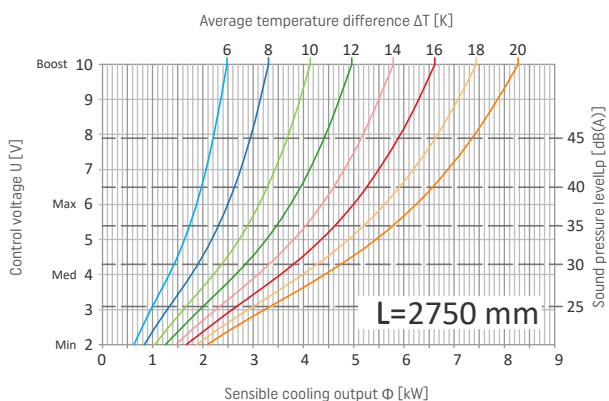
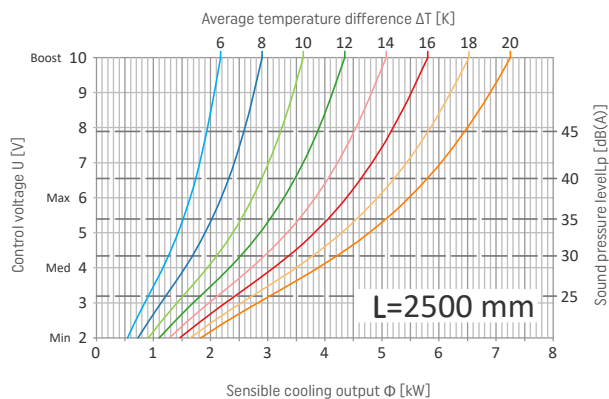
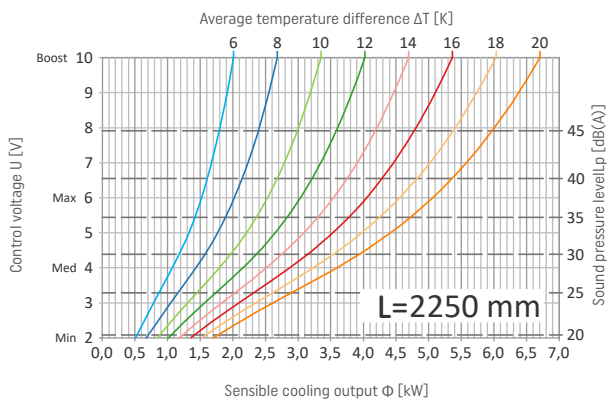


COOLING OUTPUT AND SOUND PRESSURE OF CVK2-18/35/L

The graphs present how cooling output Φ [W] depends on the respective average temperature differences ΔT [K], for control voltages U [V]. The graphs also present the sound pressure levels for the respective heater operating conditions.

NOTE!

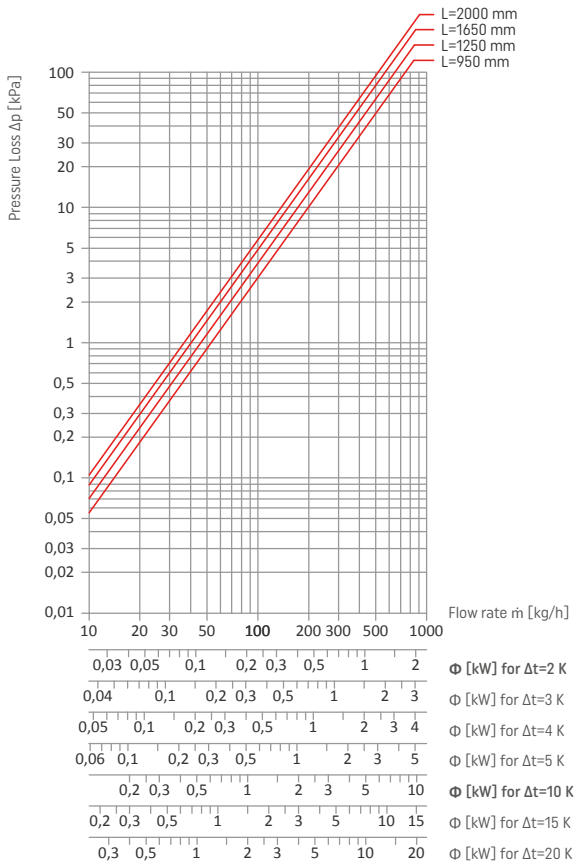
An example readout of control voltages and sound pressure for different values of cooling output is on page no. 52.



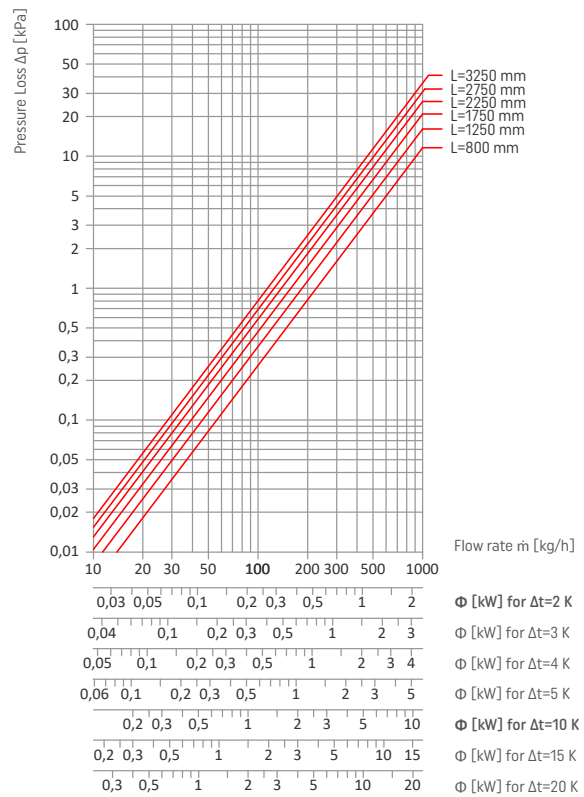


PRESSURE LOSS

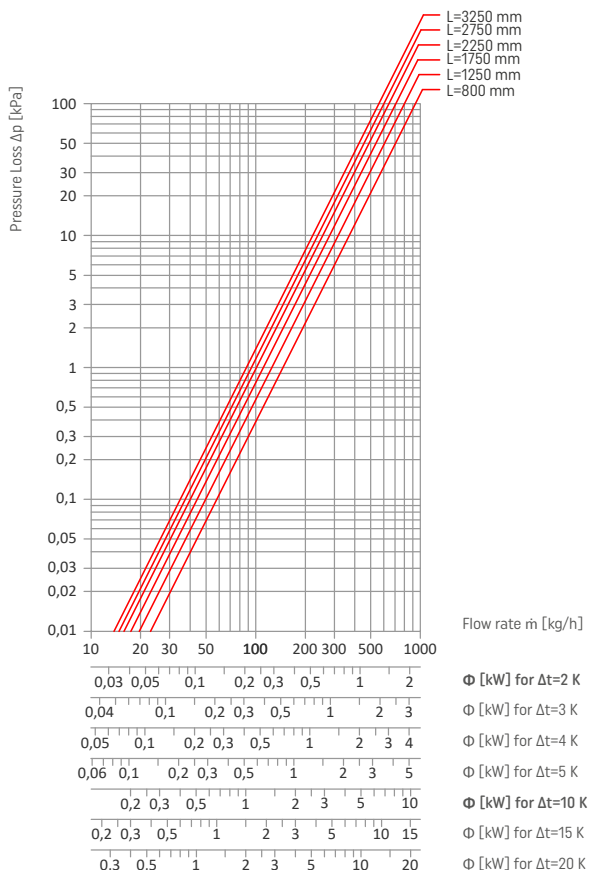
CVK2-9/35/L, CVK2-12/35/L HEATING / COOLING



CVK2-14/35/L HEATING / COOLING



CVK2-18/35/L HEATING / COOLING



CVK2 WATER CAPACITY

UNIT TYPE	CVK2-9, CVK2-12	CVK2-14/35	CVK2-18
OPERATING MODE	HEATING / COOLING		
TRENCH LENGTH L [mm]	WATER CAPACITY [dm ³]		
800	-	0,44	0,65
950	0,39	-	-
1000	-	0,58	0,86
1100	0,46	-	-
1250	0,56	0,79	1,17
1450	0,64	-	-
1550	-	1,01	1,50
1650	0,76	-	-
1750	-	1,15	1,72
1800	0,83	-	-
2000	0,91	1,36	2,02
2250	-	1,56	2,33
2500	-	1,72	2,57
2750	-	1,93	2,88
3000	-	2,13	3,18
3250	-	2,33	3,48

DECLARED PROPERTIES

- Maximum permissible operating pressure: **1,6 MPa.**
- Test pressure: **2,08 MPa.**
- Maximum hydraulic pressure: **2,7 MPa.**
- Minimum operating temperature: **6 °C**
- Maximum operating temperature: **110 °C**







CVK4 140 mm HIGH

PRODUCT VISUALIZATION



EQUIPMENT

STANDARD EQUIPMENT:

- casing made of galvanized steel sheet
- in RAL 9005 black,
- highly efficient cooper-aluminium heat exchanger with air vent,
- modern fan with silent and efficient 24V DC EC motor,
- connection space cover,
- fan cover with airflow baffle,
- water connection:
2 x 1/2" female thread (heating)
2 x 1/2" female thread (cooling),
- trench struts,
- levelling legs,
- condensate drain pan,
- connection stub for condensate drainage installation.

ADDITIONAL EQUIPMENT:

- decorative frame (F or L type) made of natural or anodized aluminium,
- decorative grille made of natural or anodized aluminium, roll-up or linear type
- casing powder coated in any RAL colour,
- condensate pump,
- assembly protection fibreboard for transporting and installation,
- raised floor kit,
- casing protective film,
- foil sleeve for heat exchanger,
- anti dust filter
- (requires raising the trench 10 mm),
- BMS controls.

DIMENSIONS

DIMENSIONS	[mm]
Trench height (H)	140
Trench bottom width (B)	350
Top width / Grille width (Bk)	374
Trench length (L)	800 ÷ 3250

Non- standard (NS) heater lengths are available on request.

ORDER CODE:

CVK4-14/35/L (L/P)

Trench height [cm]

Trench width [cm]

Trench Length L [cm]

Connection side L- Left / P - Right



140 mm HIGH

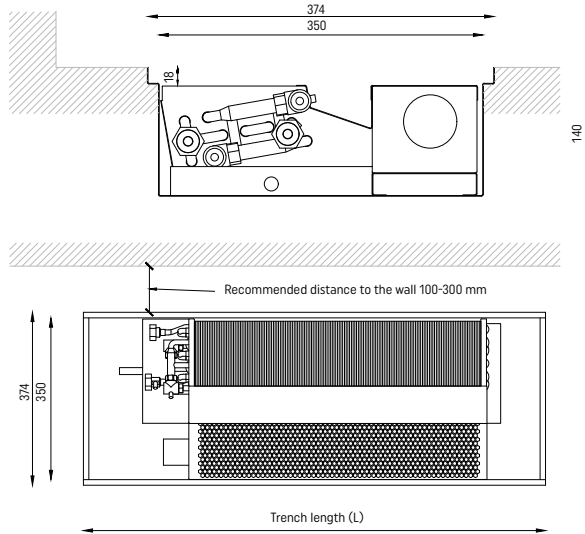
CVK4-14/35/L (L/P)

ORDER CODE

DIMENSIONS	[mm]
Trench height (H)	140
Trench bottom width (B)	350
Top width / Grille width (Bk)	374
Trench length (L)	800÷3250
CONNECTION	TYPE
Connection thread	½" female thread
Connection side	Left (L) standard, Right (P) option
ACCESSORIES	TYPE
Grille 18 mm high	roll-up / linear / modular
Frame	L or F

Additional accessories

- drainage pump
- fibreboard cover
- raised floor kit,
- anti dust filter



Trench length	Operating mode	Heat output for $t_s/t_r/\theta_s$ °C			Cooling sensible output for $t_s/t_r/\theta_s$ °C		Total cooling output for $t_s/t_r/\theta_s$ °C		Sound pressure level Lp [dB(A)]	Sound power level Lw [dB(A)]	Electric power demand P [W]	Current I [A]	Number of fan motors
		55/45/20	45/40/20	35/30/20	17/19/28	7/12/27	17/19/28	7/12/27					
L [mm]	[-]	Φ [W]			Φ [W]		Φ [W]						
800	Min	339	253	138	46	77	46	100	<18	<26	0,8	0,03	1
	Med	639	476	261	167	279	167	340	18	26	1,7	0,07	
	Max	939	699	383	295	493	295	540	25	33	4,1	0,17	
	Boost	1326	988	541	481	803	481	890	40	48	19,2	0,80	
1000	Min	483	360	197	65	109	65	150	<18	<26	1,2	0,05	1
	Med	911	679	372	239	399	239	490	19	27	2,7	0,11	
	Max	1338	997	546	421	703	421	860	26	34	6,0	0,25	
	Boost	1890	1408	771	685	1144	685	1430	41	49	21,6	0,90	
1250	Min	686	511	280	92	154	92	220	<18	<26	1,5	0,06	1
	Med	1293	963	527	339	566	339	730	23	31	3,2	0,13	
	Max	1899	1414	774	598	998	598	1310	29	37	8,0	0,33	
	Boost	2683	1998	1094	972	1623	972	2140	41	49	33,6	1,40	
1550	Min	823	613	336	111	185	111	260	<18	<26	2,0	0,08	2
	Med	1550	1155	632	406	678	406	920	24	32	4,4	0,18	
	Max	2277	1696	929	716	1196	716	1620	30	38	10,1	0,42	
	Boost	3217	2396	1312	1166	1947	1166	2596	43	51	40,8	1,70	
1750	Min	967	720	394	130	217	130	310	<18	<26	2,4	0,10	2
	Med	1822	1357	743	477	796	477	1090	24	32	5,3	0,22	
	Max	2677	1993	1091	842	1406	842	1930	30	38	12,0	0,50	
	Boost	3781	2816	1542	1370	2288	1370	3090	43	51	43,2	1,80	
2000	Min	1169	871	477	157	262	157	360	18	26	2,7	0,11	2
	Med	2204	1642	899	577	963	577	1280	24	32	5,8	0,24	
	Max	3238	2411	1320	1019	1701	1019	2270	31	39	14,0	0,58	
	Boost	4574	3406	1865	1657	2767	1657	3690	44	52	55,2	2,30	
2250	Min	1372	1022	559	185	309	185	430	20	28	2,9	0,12	2
	Med	2587	1926	1055	677	1130	677	1550	26	34	6,3	0,26	
	Max	3799	2829	1549	1195	1995	1195	2730	32	40	15,9	0,66	
	Boost	5366	3996	2188	1945	3248	1945	4390	44	52	67,2	2,80	
2500	Min	1450	1080	591	195	326	195	460	20	28	3,6	0,15	3
	Med	2734	2036	1115	716	1196	716	1640	26	34	8,0	0,33	
	Max	4015	2990	1637	1263	2109	1263	2910	33	41	18,0	0,75	
	Boost	5671	4223	2312	2055	3431	2055	4640	45	53	64,8	3,00	
2750	Min	1653	1231	674	222	371	222	520	20	28	3,9	0,16	3
	Med	3116	2320	1270	816	1363	816	1890	27	35	8,4	0,35	
	Max	4576	3408	1866	1440	2404	1440	3340	33	41	20,0	0,83	
	Boost	6464	4814	2636	2342	3911	2342	5357	45	53	76,8	3,20	
3000	Min	1856	1382	757	250	417	250	590	21	29	4,1	0,17	3
	Med	3498	2605	1426	916	1529	916	2150	27	35	8,9	0,37	
	Max	5138	3826	2095	1616	2698	1616	3750	33	41	21,9	0,91	
	Boost	7257	5404	2959	2630	4391	2630	6010	45	53	88,8	3,70	
3250	Min	2059	1533	839	277	463	277	650	22	30	4,4	0,18	3
	Med	3880	2889	1582	1016	1696	1016	2390	28	36	9,4	0,39	
	Max	5699	4244	2323	1793	2994	1793	4160	34	42	23,8	0,99	
	Boost	8050	5994	3282	2917	4871	2917	6760	46	54	100,8	4,20	

- Standard heating and cooling output [W] compliant to EN-16430.
- Cooling output according to the relative humidity 47%.
- Control voltages for the respective modes of operation: Min - 2 V, Med - 4 V, Max - 6 V, Boost - 10 V.
- Min, Med, Max fan speeds are for continuous operations, the Boost mode is for speed heating or cooling.
- Sound power level according to ISO-3745 standard, sound pressure level measured at distance of 2 m to the heater, in a 100 m3 volume room. Reverb time - 0,5 s, room damping - 8 dB(A).



CORRECTIVE FACTORS FOR 140 MM HIGH CVK4 UNITS

Heat output corrective factors for CVK4 140 mm high units for installation temperatures other than 55/45/20 °C for heating and 17/19/28 °C for cooling.

HEATING						COOLING						
Supply and return temperatures [°C]		Room air temperature [°C]				Supply and return temperatures [°C]		Room air temperature [°C]				
t _s	t _r	12	16	20	24	t _s	t _r	24	25	26	27	28
75	70	2,052	1,913	1,774	1,636	6	8	1,626	1,713	1,800	1,887	1,973
	65	1,965	1,826	1,688	1,550		9	1,582	1,670	1,757	1,844	1,930
	60	1,878	1,740	1,601	1,463		10	1,538	1,626	1,713	1,800	1,887
	55	1,792	1,653	1,515	1,377		11	1,494	1,582	1,670	1,757	1,844
70	65	1,878	1,740	1,601	1,463	7	12	1,450	1,538	1,626	1,713	1,800
	60	1,792	1,653	1,515	1,377		9	1,538	1,626	1,713	1,800	1,887
	55	1,705	1,567	1,429	1,291		10	1,494	1,582	1,670	1,757	1,844
	50	1,619	1,481	1,343	1,205		11	1,450	1,538	1,626	1,713	1,800
65	60	1,705	1,567	1,429	1,291	8	12	1,405	1,494	1,582	1,670	1,757
	55	1,619	1,481	1,343	1,205		13	1,361	1,450	1,538	1,626	1,713
	50	1,532	1,395	1,257	1,120		10	1,450	1,538	1,626	1,713	1,800
	45	1,446	1,308	1,171	1,034		11	1,405	1,494	1,582	1,670	1,757
60	55	1,532	1,395	1,257	1,120	10	12	1,361	1,450	1,538	1,626	1,713
	50	1,446	1,308	1,171	1,034		13	1,316	1,405	1,494	1,582	1,670
	45	1,360	1,223	1,085	0,949		12	1,272	1,361	1,450	1,538	1,626
	40	1,274	1,137	1,000	0,864		13	1,227	1,316	1,405	1,494	1,582
55	50	1,360	1,223	1,085	0,949	12	14	1,182	1,272	1,361	1,450	1,538
	45	1,274	1,137	1,000	0,864		15	1,137	1,227	1,316	1,405	1,494
	40	1,188	1,051	0,915	0,779		14	1,091	1,182	1,272	1,361	1,450
	35	1,103	0,966	0,830	0,694		15	1,046	1,137	1,227	1,316	1,405
50	45	1,188	1,051	0,915	0,779	16	16	1,000	1,091	1,182	1,272	1,361
	40	1,103	0,966	0,830	0,694		17	0,954	1,046	1,137	1,227	1,316
	35	1,017	0,881	0,745	0,609		18	0,721	0,815	0,908	1,000	1,091
	40	1,017	0,881	0,745	0,609		19	0,674	0,768	0,862	0,954	1,046
45	35	0,932	0,796	0,660	0,525	17	19	0,626	0,721	0,815	0,908	1,000
	30	0,847	0,711	0,576	0,441		20	0,578	0,674	0,768	0,862	0,954
	30	0,762	0,626	0,491	0,358		21	0,432	0,530	0,626	0,721	0,815
	35	0,677	0,542	0,408	0,275		22	0,382	0,481	0,578	0,674	0,768

HEAT OUTPUT CORRECTIVE FACTORS FOR CVK UNITS ACCORDING TO THE GRILLE TYPE

GRILLE TYPE	AIRFLOW	CORRECTIVE FACTOR
Roll-up double T-bar profile aluminium grille - 13 mm gap	67%	1,00
Roll-up double T-bar profile aluminium grille - 9 mm gap	63%	0,99
Roll-up closed profile aluminium grille	62%	1,00
Modular snap on profile aluminium grille	62%	0,97
Linear snap on profile aluminium grille	62%	1,08
Linear stainless steel grille	71%	1,09

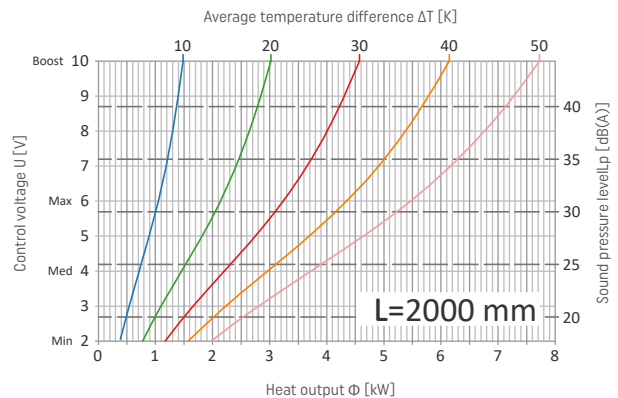
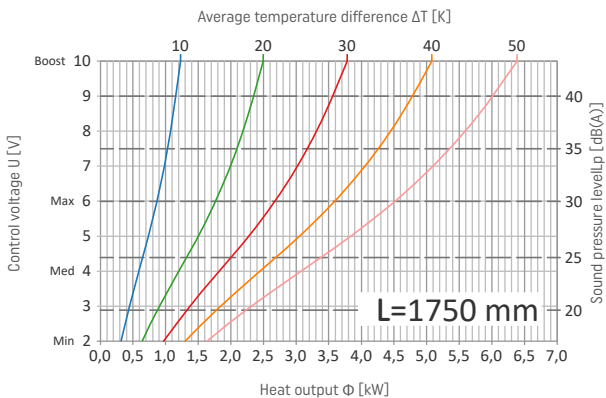
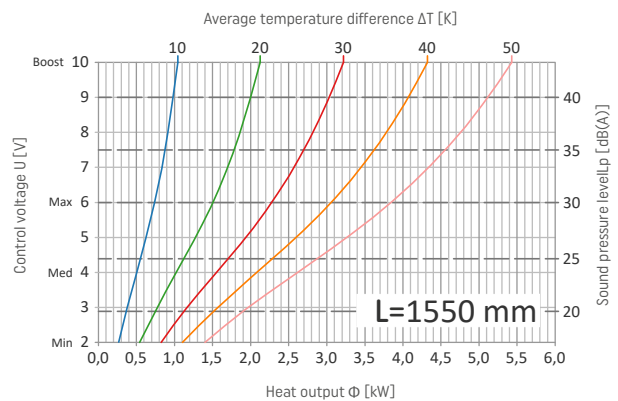
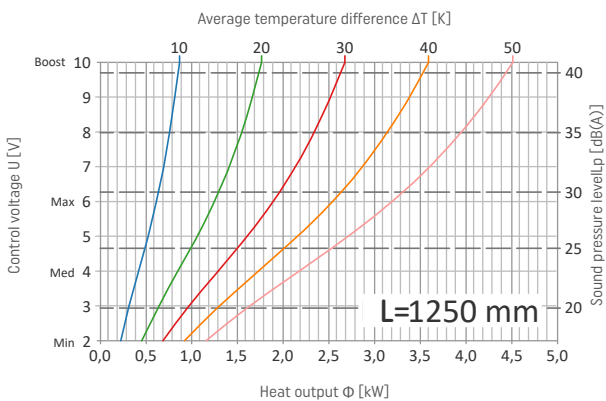
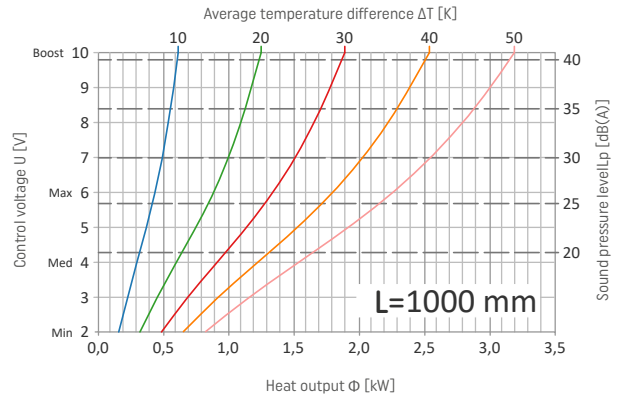
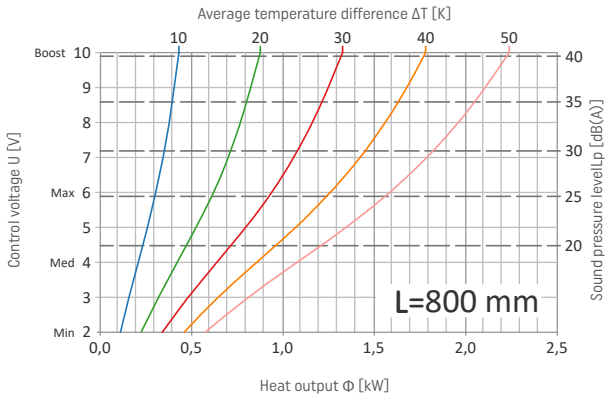


HEATING OUTPUT AND SOUND PRESSURE OF CVK4-14/35/L

The graphs present how heat output Φ [W] depends on the respective average temperature differences ΔT [K], for control voltages U [V]. The graphs also present the sound pressure levels for the respective heater operating conditions.

NOTE!

An example readout of control voltages and sound pressure for different values of heat output is on page no. 52.



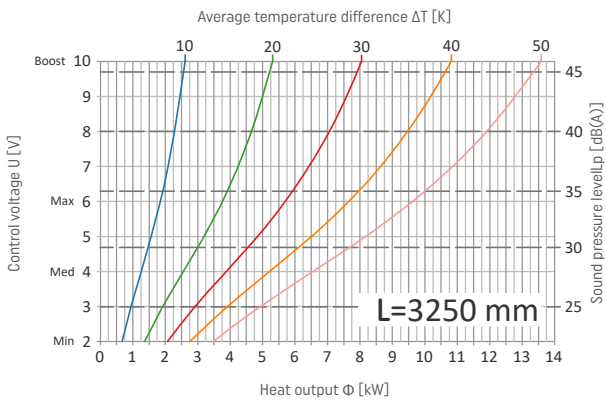
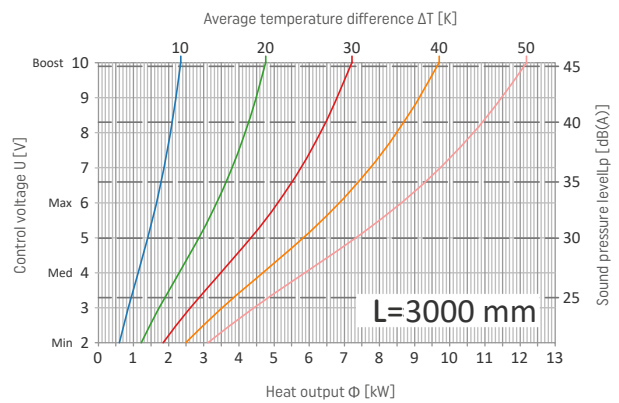
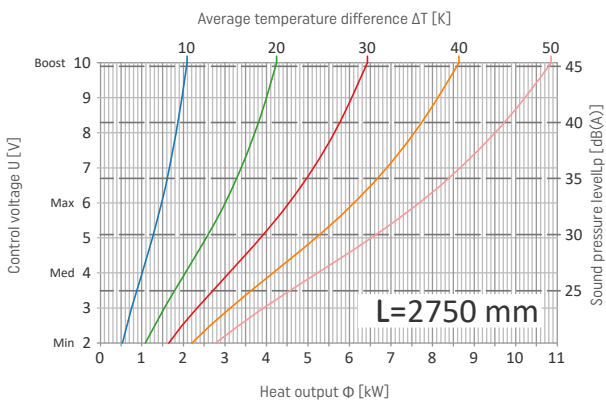
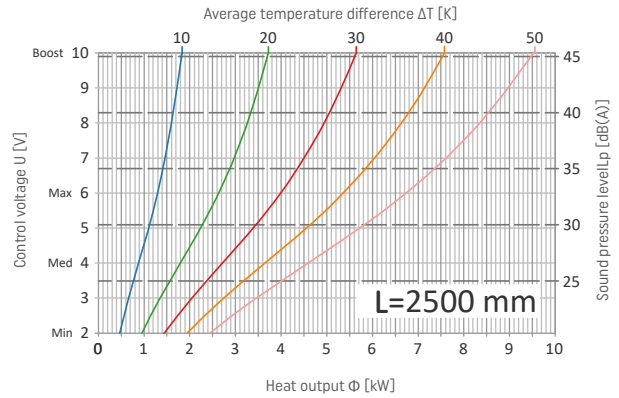
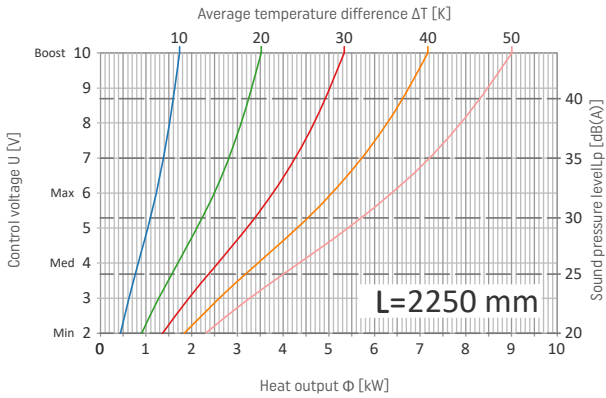


HEATING OUTPUT AND SOUND PRESSURE OF CVK4-14/35/L

The graphs present how heat output Φ [W] depends on the respective average temperature differences ΔT [K], for control voltages U [V]. The graphs also present the sound pressure levels for the respective heater operating conditions.

NOTE!

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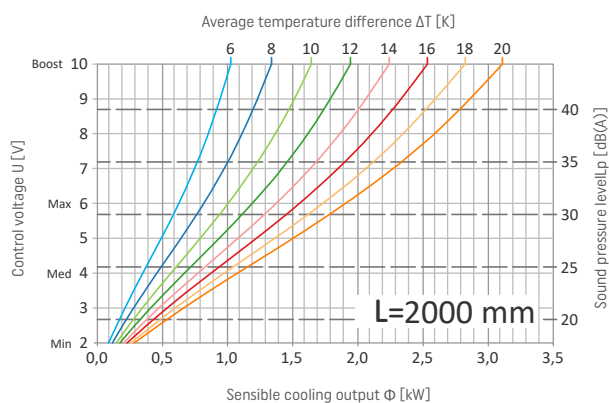
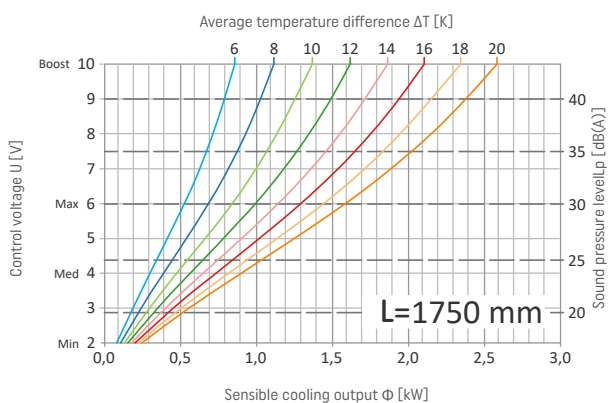
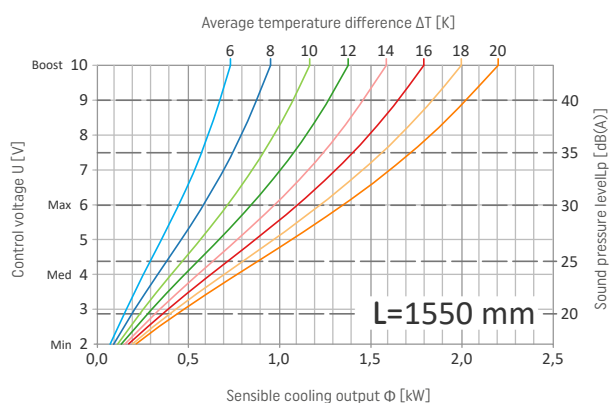
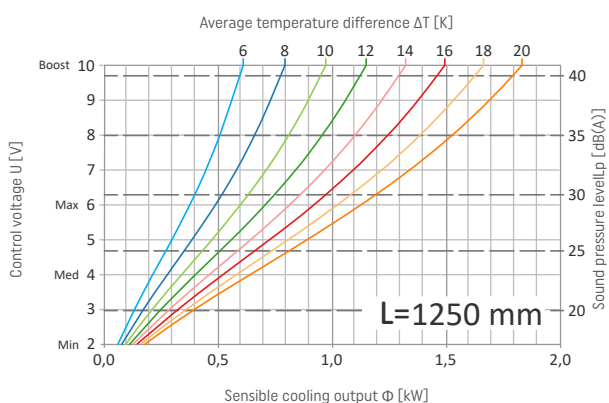
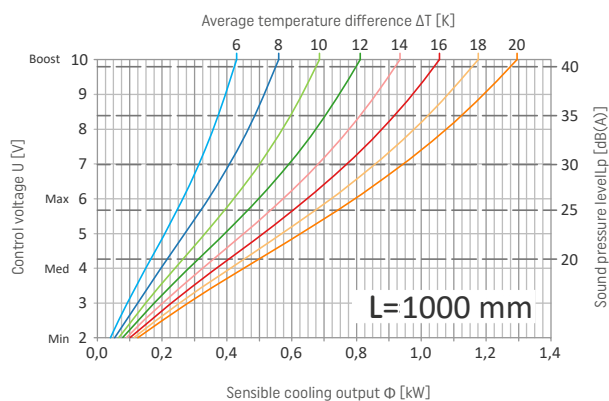
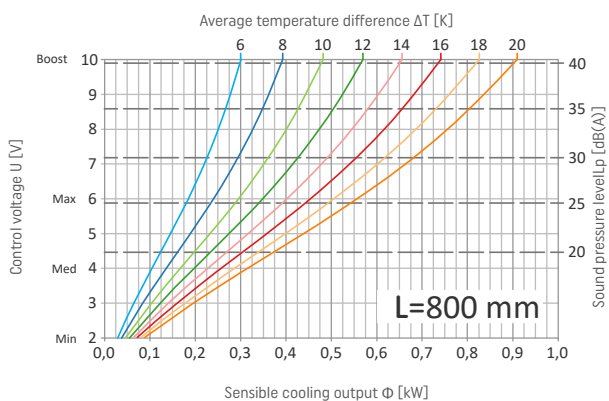


COOLING OUTPUT AND SOUND PRESSURE OF CVK4-14/35/L

The graphs present how cooling output Φ [W] depends on the respective average temperature differences ΔT [K], for control voltages U [V]. The graphs also present the sound pressure levels for the respective heater operating conditions.

NOTE!

An example readout of control voltages and sound pressure for different values of cooling output is on page no. 52.



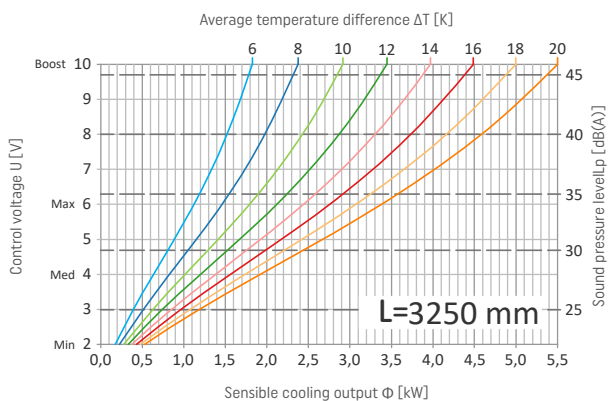
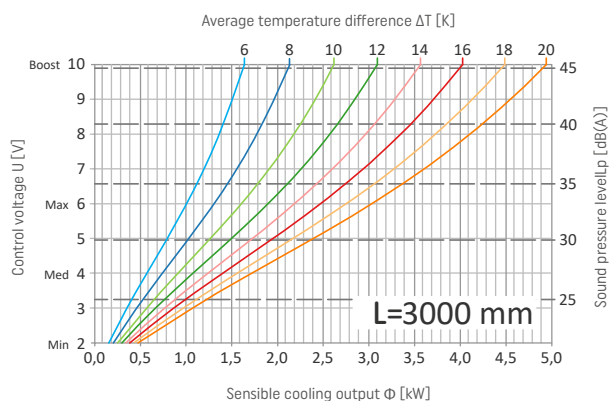
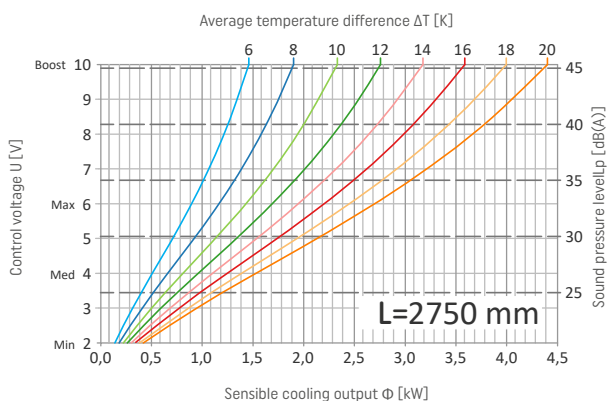
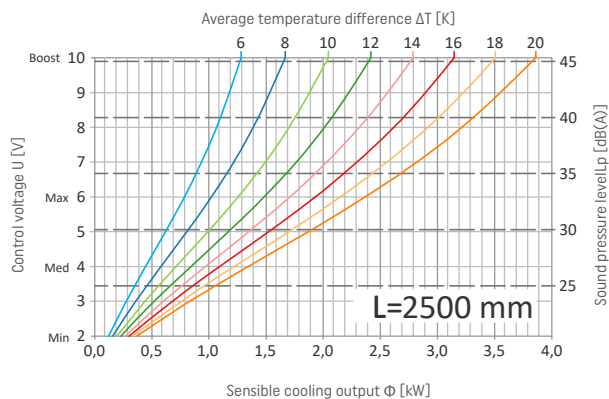
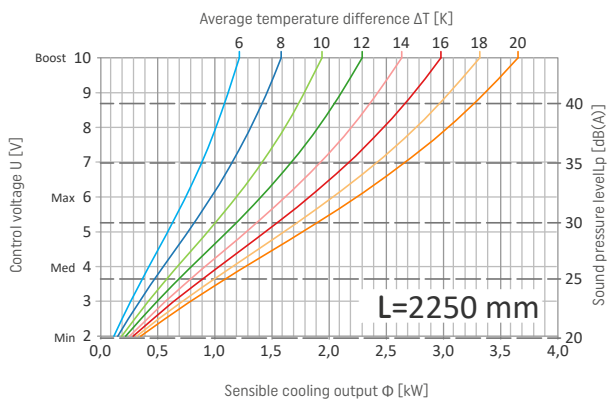


COOLING OUTPUT AND SOUND PRESSURE OF CVK4-14/35/L

The graphs present how cooling output Φ [W] depends on the respective average temperature differences ΔT [K], for control voltages U [V]. The graphs also present the sound pressure levels for the respective heater operating conditions.

NOTE!

An example readout of control voltages and sound pressure for different values of cooling output is on page no. 52.







CVK4 180 MM HIGH

PRODUCT VISUALIZATION



EQUIPMENT

STANDARD EQUIPMENT:

- casing made of galvanized steel sheet
- in RAL 9005 black,
- highly efficient cooper-aluminium heat exchanger with air vent,
- modern fan with silent and efficient 24V DC EC motor,
- connection space cover,
- fan cover with airflow baffle,
- water connection:
2 x 1/2" female thread (heating)
2 x 1/2" female thread (cooling),
- trench struts,
- levelling legs,
- condensate drain pan,
- connection stub for condensate drainage installation.

ADDITIONAL EQUIPMENT:

- decorative frame (F or L type) made of natural or anodized aluminium,
- decorative grille made of natural or anodized aluminium, roll-up or linear type
- casing powder coated in any RAL colour,
- condensate pump,
- assembly protection fibreboard for transporting and installation,
- raised floor kit,
- casing protective film,
- foil sleeve for heat exchanger,
- anti dust filter (requires rasing the trench 10 mm),
- BMS controls.

DIMENSIONS

DIMENSIONS	[mm]
Trench height (H)	180
Trench bottom width (B)	350
Top width / Grille width (Bk)	374

Trench length (L) 800 ÷ 3250

Non- standard (NS) heater lengths are available on request.

ORDER CODE:

CVK4-18/35/L (L/P)

Trench height [cm]

Trench width [cm]

Trench Length L [cm]

Connection side L- Left / P - Right



180 mm HIGH

CVK4-18/35/L (L/P)

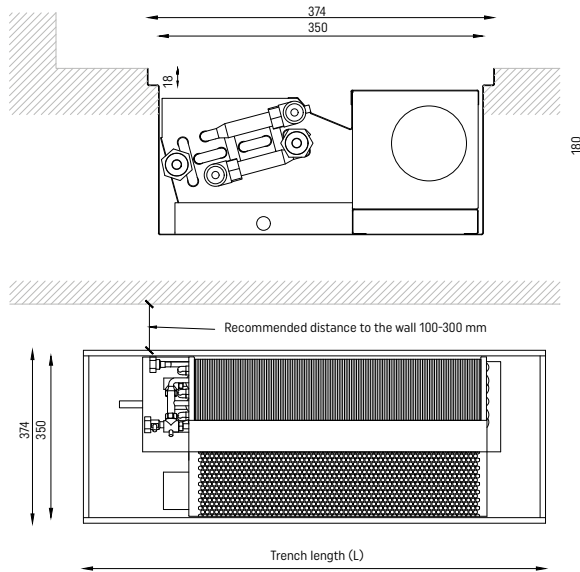


ORDER CODE

DIMENSIONS	[mm]
Trench height (H)	180
Trench bottom width (B)	350
Top width / Grille width (Bk)	374
Trench length (L)	800÷3250
CONNECTION	TYPE
Connection thread	½" female thread
Connection side	Left (L) standard, Right (P) option
ACCESSORIES	TYPE
Grille 18 mm high	roll-up / linear / modular
Frame	L or F

Additional accessories

- drainage pump
- fibreboard cover
- raised floor kit,
- anti dust filter



Trench length	Operating mode	Heat output for $t_s/t_r/\theta_s$ °C			Cooling sensible output for $t_s/t_r/\theta_s$ °C		Total cooling output for $t_s/t_r/\theta_s$ °C		Sound pressure level Lp [dB(A)]	Sound power level Lw [dB(A)]	Electric power demand P [W]	Current I [A]	Number of fan motors
		55/45/20	45/40/20	35/30/20	17/19/28	7/12/27	17/19/28	7/12/27					
800	Min	727	541	296	179	296	179	360	<18	<26	2,0	0,08	1
	Med	1131	842	461	394	651	394	700	21	29	3,9	0,16	
	Max	1424	1060	580	557	920	557	1040	29	37	7,5	0,31	
	Boost	1674	1247	682	732	1210	732	1370	42	50	21,6	0,90	
1000	Min	1024	762	417	253	418	253	510	<18	<26	2,2	0,09	1
	Med	1594	1187	649	555	917	555	1132	23	31	4,4	0,18	
	Max	2006	1493	817	785	1297	785	1600	32	40	8,9	0,37	
	Boost	2359	1756	961	1031	1704	1031	2100	43	51	25,2	1,05	
1250	Min	1420	1057	579	350	578	350	730	<18	<26	2,7	0,11	1
	Med	2211	1646	901	769	1271	769	1670	25	33	6,5	0,27	
	Max	2782	2071	1134	1089	1800	1089	2340	35	43	14,4	0,60	
	Boost	3272	2436	1333	1430	2363	1430	3070	46	54	42,0	1,75	
1550	Min	1751	1303	713	432	714	432	960	19	27	4,1	0,17	2
	Med	2725	2029	1110	948	1567	948	2120	16	34	8,2	0,34	
	Max	3430	2553	1397	1342	2218	1342	2960	34	42	16,4	0,68	
	Boost	4033	3003	1643	1763	2913	1763	3880	46	54	46,8	1,95	
1750	Min	2048	1525	834	505	834	505	1140	20	28	4,4	0,18	2
	Med	3187	2373	1299	1109	1833	1109	2480	26	34	8,7	0,36	
	Max	4012	2987	1635	1570	2594	1570	3500	35	43	17,8	0,74	
	Boost	4718	3512	1922	2062	3407	2062	4600	46	54	50,4	2,10	
2000	Min	2444	1820	996	603	996	603	1330	20	28	4,8	0,20	2
	Med	3805	2833	1550	1324	2188	1324	2920	27	35	10,8	0,45	
	Max	4788	3565	1951	1874	3097	1874	4130	36	44	23,3	0,97	
	Boost	5631	4192	2294	2461	4067	2461	5350	48	56	67,2	2,80	
2250	Min	2841	2115	1158	700	1157	700	1580	20	28	5,3	0,22	2
	Med	4421	3292	1801	1538	2541	1538	3430	28	36	13,0	0,54	
	Max	5565	4143	2267	2178	3599	2178	4860	38	46	28,8	1,20	
	Boost	6544	4872	2667	2860	4726	2860	6300	49	57	84,0	3,50	
2500	Min	3072	2287	1252	758	1253	758	1720	21	29	6,3	0,26	3
	Med	4781	3560	1948	1664	2750	1664	3770	28	36	14,2	0,59	
	Max	6018	4480	2452	2355	3892	2355	5260	37	45	30,5	1,27	
	Boost	7077	5269	2883	3093	5111	3093	6910	48	56	88,4	3,68	
2750	Min	3468	2582	1413	855	1413	855	1960	22	30	7,0	0,29	3
	Med	5398	4019	2200	1878	3103	1878	4250	29	37	15,2	0,63	
	Max	6794	5058	2768	2659	4394	2659	6020	38	46	32,2	1,34	
	Boost	7990	5949	3256	3492	5770	3492	7800	49	57	92,4	3,85	
3000	Min	3865	2878	1575	953	1575	953	2190	21	29	7,5	0,31	3
	Med	6015	4478	2451	2093	3459	2093	4800	29	37	17,3	0,72	
	Max	7571	5636	3085	2963	4896	2963	6710	38	46	37,7	1,57	
	Boost	8903	6628	3628	3891	6430	3891	8810	50	58	109,2	4,55	
3250	Min	4261	3172	1736	1051	1737	1051	2450	22	30	8,0	0,33	3
	Med	6632	4938	2702	2307	3812	2307	5290	30	38	19,5	0,81	
	Max	8347	6214	3401	3267	5399	3267	7390	40	48	43,2	1,80	
	Boost	9816	7308	4000	4290	7089	4290	9710	51	59	126,0	5,25	

- Standard heating and cooling output [W] compliant to EN-16430.
- Cooling output according to the relative humidity 47%.
- Control voltages for the respective modes of operation: Min - 2 V, Med - 4 V, Max - 6 V, Boost - 10 V.
- Min, Med, Max fan speeds are for continuous operations, the Boost mode is for speed heating or cooling.
- Sound power level according to ISO-3745 standard, sound pressure level measured at distance of 2 m to the heater, in a 100 m3 volume room. Reverb time - 0,5 s, room damping - 8 dB(A).



CORRECTIVE FACTORS FOR 180 MM HIGH CVK4 UNITS

Heat output corrective factors for CVK4 180 mm high units for installation temperatures other than 55/45/20 °C for heating and 17/19/28 °C for cooling.

HEATING						COOLING						
Supply and return temperatures [°C]		Room air temperature [°C]				Supply and return temperatures [°C]		Room air temperature [°C]				
t _s	t _r	12	16	20	24	t _s	t _r	24	25	26	27	28
75	70	2,053	1,914	1,775	1,637	6	8	1,610	1,695	1,779	1,863	1,946
	65	1,966	1,827	1,689	1,550		9	1,567	1,652	1,737	1,821	1,905
	60	1,879	1,740	1,602	1,464		10	1,525	1,610	1,695	1,779	1,863
	55	1,792	1,654	1,516	1,378		11	1,482	1,567	1,652	1,737	1,821
70	65	1,879	1,740	1,602	1,464	7	12	1,439	1,525	1,610	1,695	1,779
	60	1,792	1,654	1,516	1,378		9	1,525	1,610	1,695	1,779	1,863
	55	1,706	1,567	1,429	1,292		10	1,482	1,567	1,652	1,737	1,821
	50	1,619	1,481	1,343	1,206		11	1,439	1,525	1,610	1,695	1,779
65	60	1,706	1,567	1,429	1,292	8	12	1,396	1,482	1,567	1,652	1,737
	55	1,619	1,481	1,343	1,206		13	1,353	1,439	1,525	1,610	1,695
	50	1,533	1,395	1,257	1,120		10	1,439	1,525	1,610	1,695	1,779
	45	1,447	1,309	1,171	1,034		11	1,396	1,482	1,567	1,652	1,737
60	55	1,533	1,395	1,257	1,120	10	12	1,353	1,439	1,525	1,610	1,695
	50	1,447	1,309	1,171	1,034		13	1,309	1,396	1,482	1,567	1,652
	45	1,360	1,223	1,086	0,949		12	1,266	1,353	1,439	1,525	1,610
	40	1,274	1,137	1,000	0,864		13	1,222	1,309	1,396	1,482	1,567
55	50	1,360	1,223	1,086	0,949	12	14	1,178	1,266	1,353	1,439	1,525
	45	1,274	1,137	1,000	0,864		15	1,134	1,222	1,309	1,396	1,482
	40	1,188	1,051	0,915	0,778		14	1,089	1,178	1,266	1,353	1,439
	35	1,103	0,966	0,829	0,694		15	1,045	1,134	1,222	1,309	1,396
50	45	1,188	1,051	0,915	0,778	16	16	1,000	1,089	1,178	1,266	1,353
	40	1,103	0,966	0,829	0,694		17	0,955	1,045	1,134	1,222	1,309
	35	1,017	0,881	0,745	0,609		18	0,910	0,999	1,089	1,178	1,266
	30	0,932	0,795	0,660	0,525		19	0,864	0,953	1,043	1,133	1,222
45	40	1,017	0,881	0,745	0,609	17	19	0,819	0,908	0,997	1,086	1,175
	35	0,932	0,795	0,660	0,525		20	0,773	0,862	0,951	1,040	1,129
	30	0,846	0,711	0,575	0,441		21	0,727	0,816	0,905	0,994	1,083
	25	0,761	0,626	0,491	0,357		22	0,681	0,770	0,859	0,948	1,037
40	35	0,846	0,711	0,575	0,441	19	20	0,635	0,724	0,813	0,902	0,991
	30	0,761	0,626	0,491	0,357		21	0,589	0,678	0,767	0,856	0,945
	25	0,676	0,541	0,405	0,271		22	0,543	0,632	0,721	0,810	0,899
	20	0,591	0,456	0,320	0,186		23	0,497	0,586	0,675	0,764	0,853
35	30	0,761	0,626	0,491	0,357	19	21	0,451	0,540	0,629	0,718	0,807
	25	0,676	0,541	0,405	0,271		22	0,405	0,494	0,583	0,672	0,761
	20	0,591	0,456	0,320	0,186		23	0,359	0,448	0,537	0,626	0,715
	15	0,506	0,371	0,235	0,101		24	0,313	0,402	0,491	0,580	0,669

HEAT OUTPUT CORRECTIVE FACTORS FOR CVK UNITS ACCORDING TO THE GRILLE TYPE

GRILLE TYPE	AIRFLOW	CORRECTIVE FACTOR
Roll-up double T-bar profile aluminium grille - 13 mm gap	67%	1,00
Roll-up double T-bar profile aluminium grille - 9 mm gap	63%	0,99
Roll-up closed profile aluminium grille	62%	1,00
Modular snap on profile aluminium grille	62%	0,97
Linear snap on profile aluminium grille	62%	1,08
Linear stainless steel grille	71%	1,09

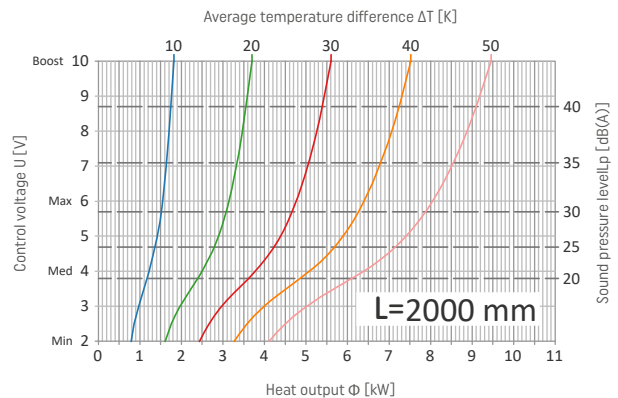
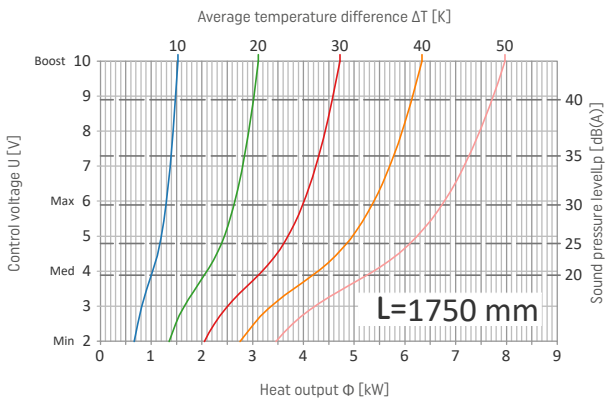
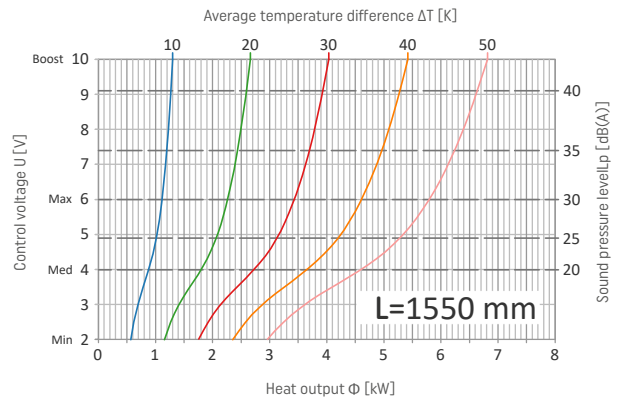
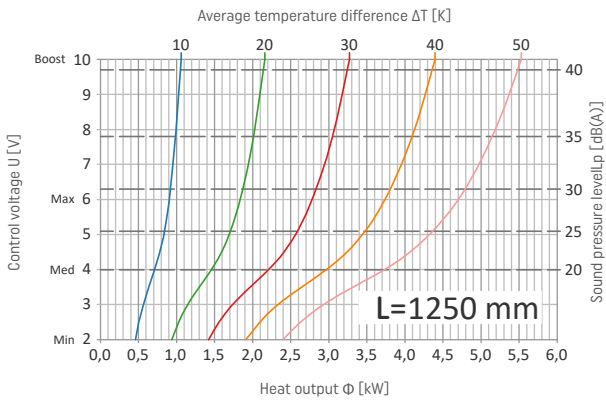
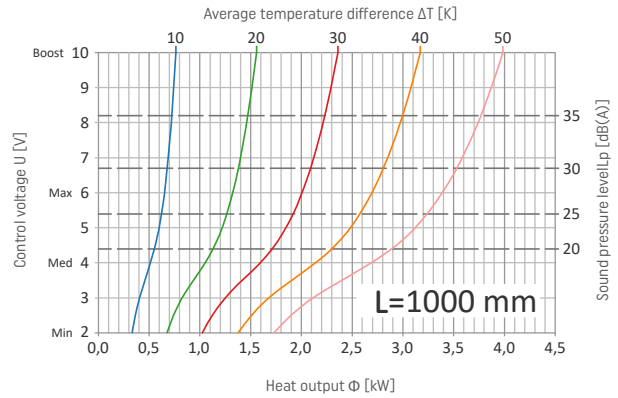
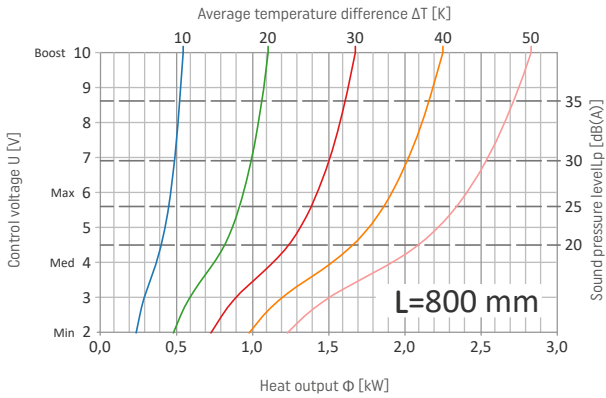


HEATING OUTPUT AND SOUND PRESSURE OF CVK4-18/35/L

The graphs present how heat output Φ [W] depends on the respective average temperature differences ΔT [K], for control voltages U [V]. The graphs also present the sound pressure levels for the respective heater operating conditions.

NOTE!

An example readout of control voltages and sound pressure for different values of heat output is on page no. 52.



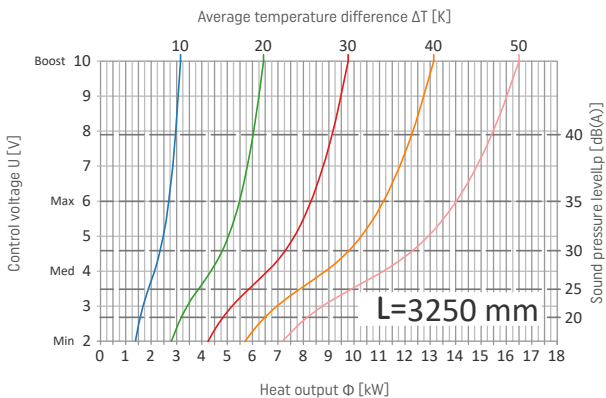
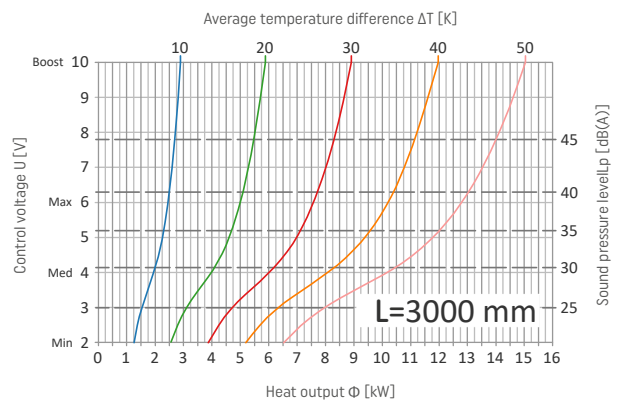
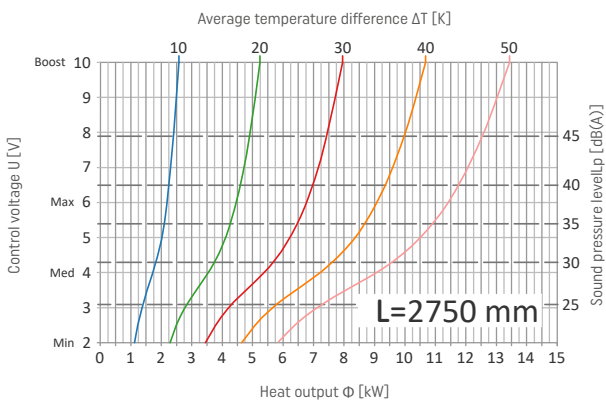
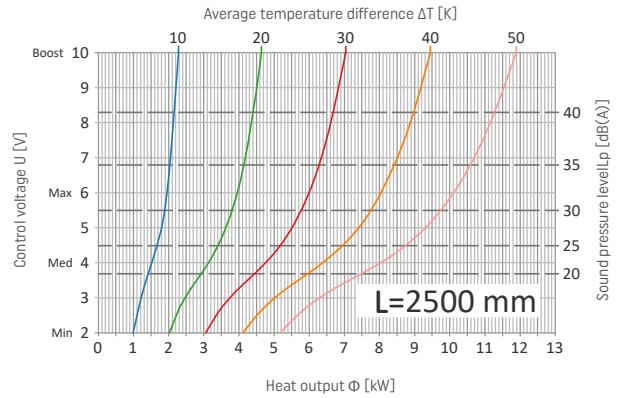
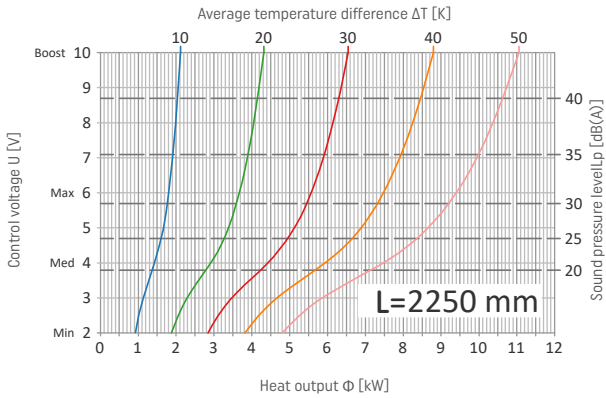


HEATING OUTPUT AND SOUND PRESSURE OF CVK4-18/35/L

The graphs present how heat output Φ [W] depends on the respective average temperature differences ΔT [K], for control voltages U [V]. The graphs also present the sound pressure levels for the respective heater operating conditions.

NOTE!

An example readout of control voltages and sound pressure for different values of heat output is on page no. 52.



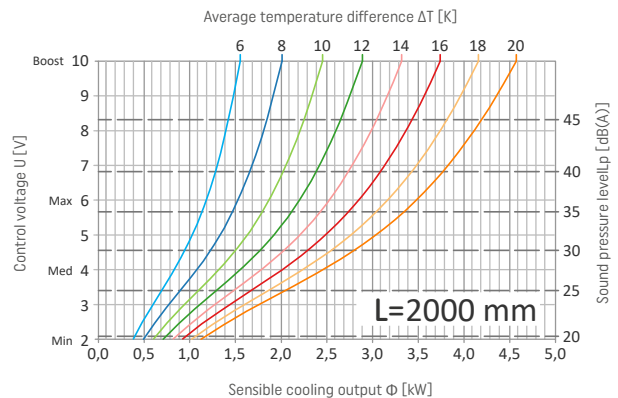
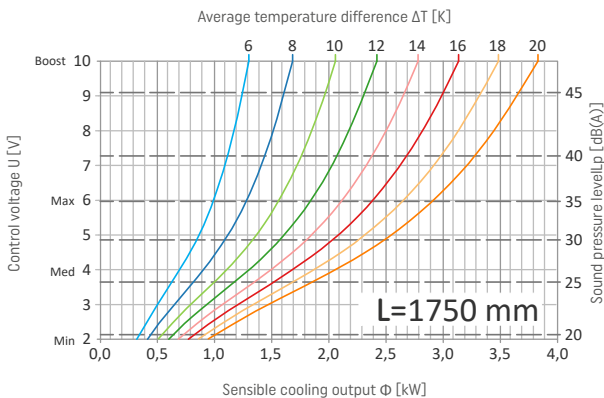
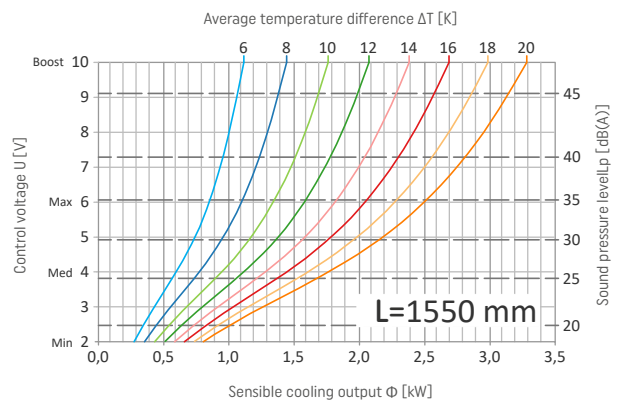
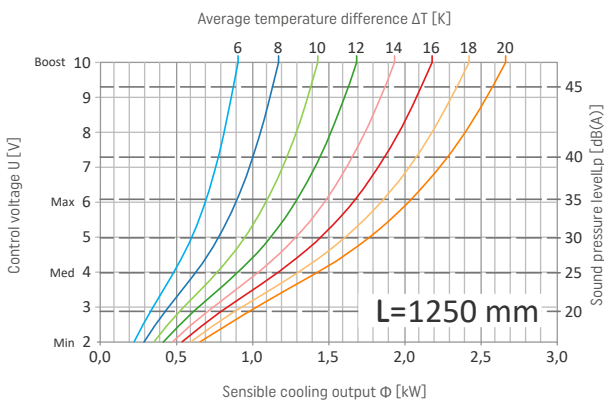
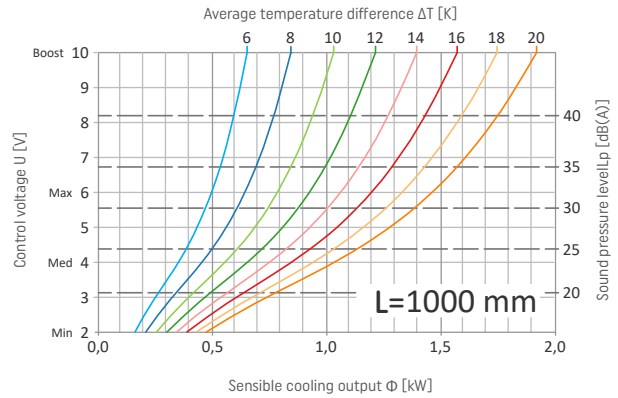
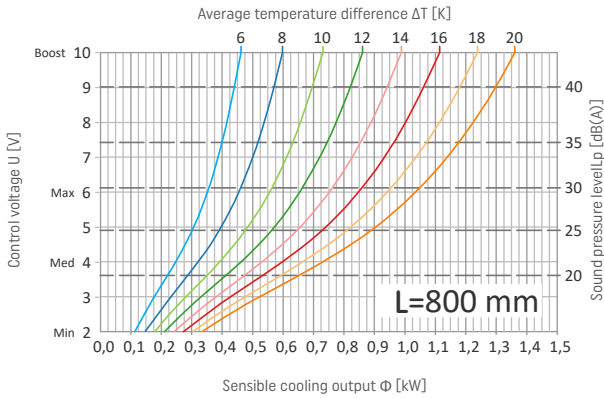


COOLING OUTPUT AND SOUND PRESSURE OF CVK4-18/35/L

The graphs present how cooling output Φ [W] depends on the respective average temperature differences ΔT [K], for control voltages U [V]. The graphs also present the sound pressure levels for the respective heater operating conditions.

NOTE!

An example readout of control voltages and sound pressure for different values of cooling output is on page no. 52.



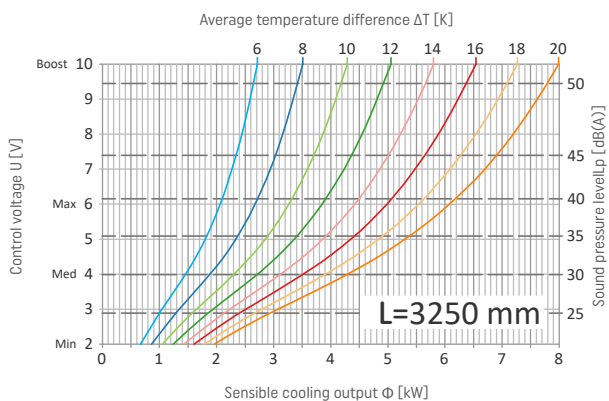
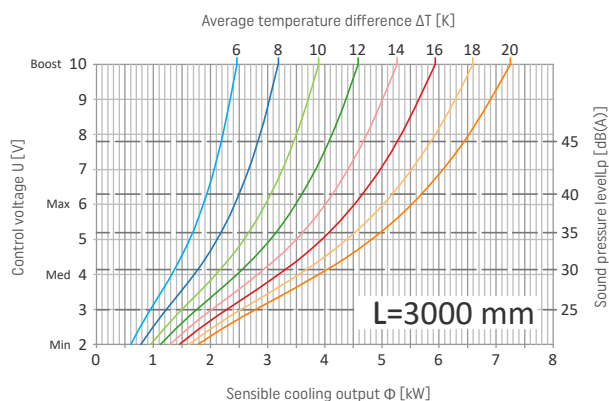
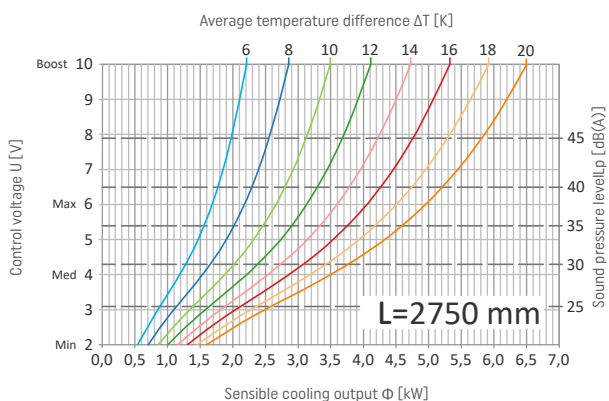
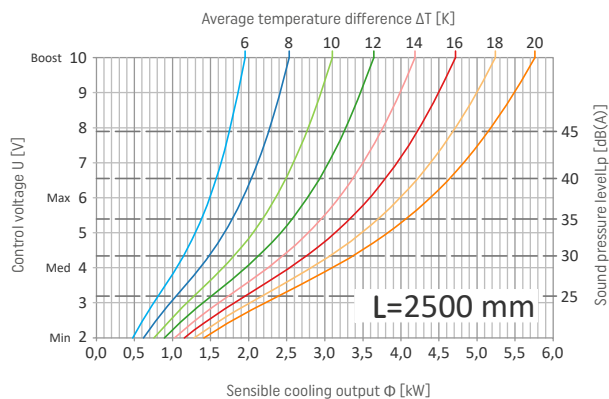
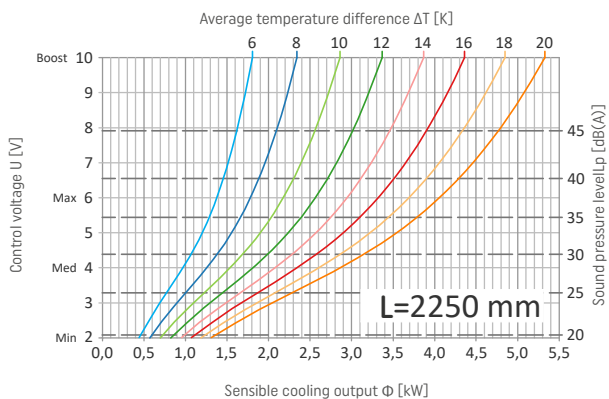


COOLING OUTPUT AND SOUND PRESSURE OF CVK4-18/35/L

The graphs present how cooling output Φ [W] depends on the respective average temperature differences ΔT [K], for control voltages U [V]. The graphs also present the sound pressure levels for the respective heater operating conditions.

NOTE!

An example readout of control voltages and sound pressure for different values of cooling output is on page no. 52.





CVK4-14 AND CVK4-18 WATER CAPACITY

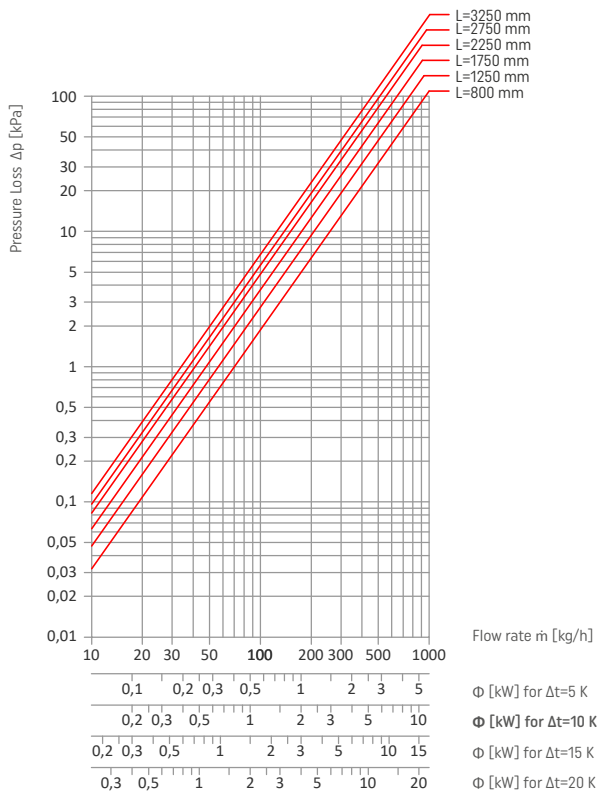
HEATER TYPE	CVK4-14, CVK4-18	
	HEATING	COOLING
	TRENCH LENGTH L [mm]	WATER CAPACITY [dm ³]
800	0,21	0,44
1000	0,28	0,58
1250	0,38	0,79
1550	0,50	1,01
1750	0,57	1,15
2000	0,67	1,36
2250	0,77	1,56
2500	0,85	1,72
2750	0,95	1,93
3000	1,06	2,13
3250	1,16	2,33

DECLARED PROPERTIES

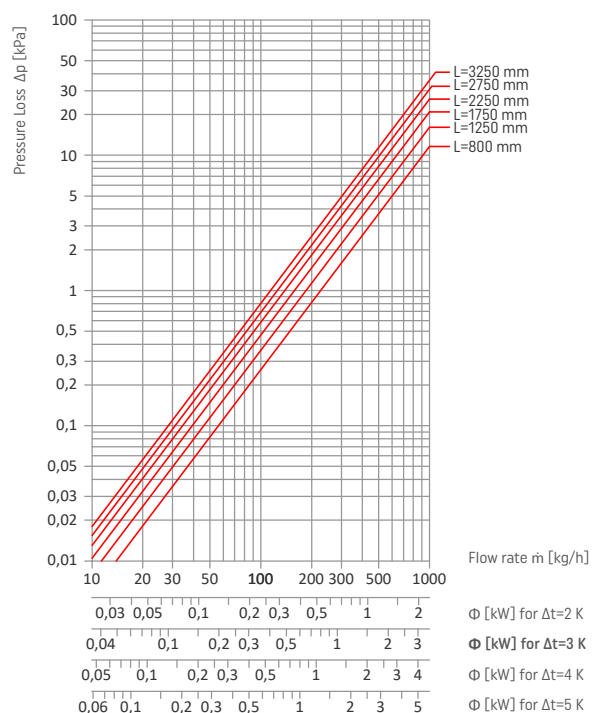
- Maximum permissible operating pressure: **1,6 MPa.**
- Test pressure: **2,08 MPa.**
- Maximum hydraulic pressure: **2,7 MPa.**
- Minimum operating temperature: **6 °C**
- Maximum operating temperature: **110 °C**

PRESSURE LOSS

CVK4-14/35/L, CVK4-18/35/L
HEATING



CVK4-14/35/L, CVK4-18/35/L
COOLING





CVK UNIT SELECTION

The selection of heating and cooling unit should be based on the sensible cooling power. To determine the heating power, proceed in the same way as in the case of cooling power.

Exemplary calculations::

Example calculations for the following convector: CVK2-14/35/L
Required sensible cooling output: 845 W
Installation temperatures: $t_s/t_r/\theta_i = 12/16/26$ °C.

METHOD 1 Based on conversion factors.

Read out the right conversion factor for project installation temperatures. In this case conversion factor is 1,189.

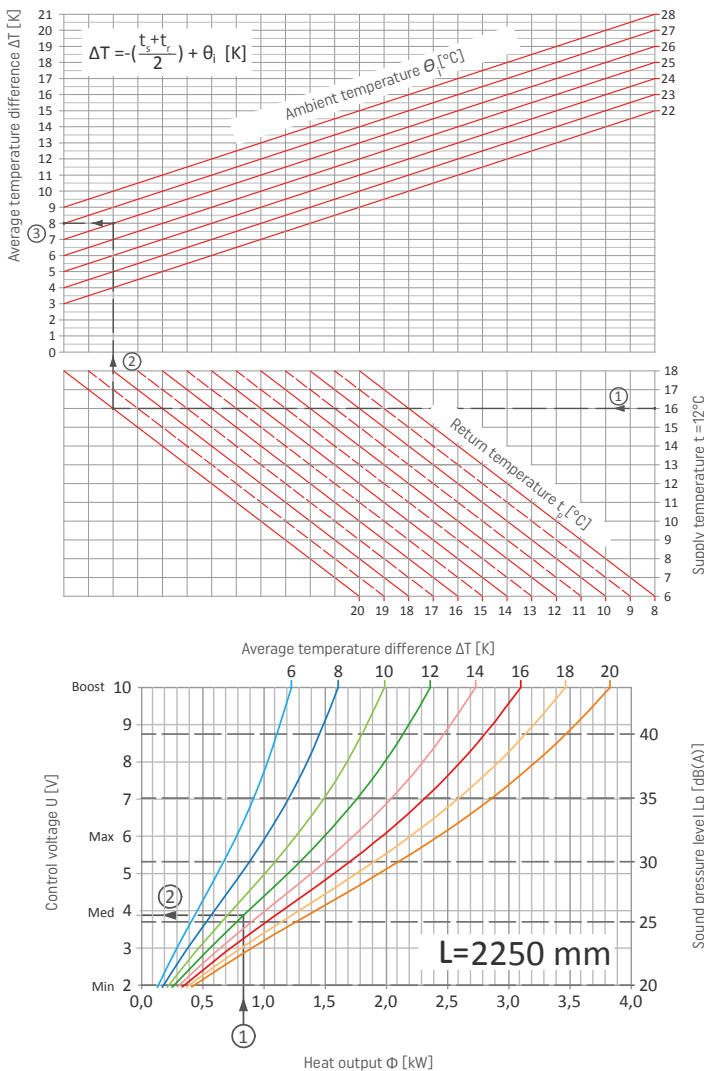
Next, divide required cooling output value by conversion factor. The result is 711 W which is required cooling output value for standard installation temperatures 17/19/28 °C.

Last step is to select the CVK units which has slightly higher output than 711 W for installation temperatures 17/18/28 °C. For example CVK2-14/35/225 unit's sensible cooling output is 724 W. But with project installation temperatures it achieves 860 W (724 W multiplied by conversion factor 1,189).

METHOD 2 Based on cooling output and noise level

For installation temperatures read out the average temperature difference (using the graph or equation below).

The example of average temperature readout for installation temperatures: supply: $t_s=12$ °C, return: $t_r=16$ °C, ambient temperature $\theta_i=26$ °C.



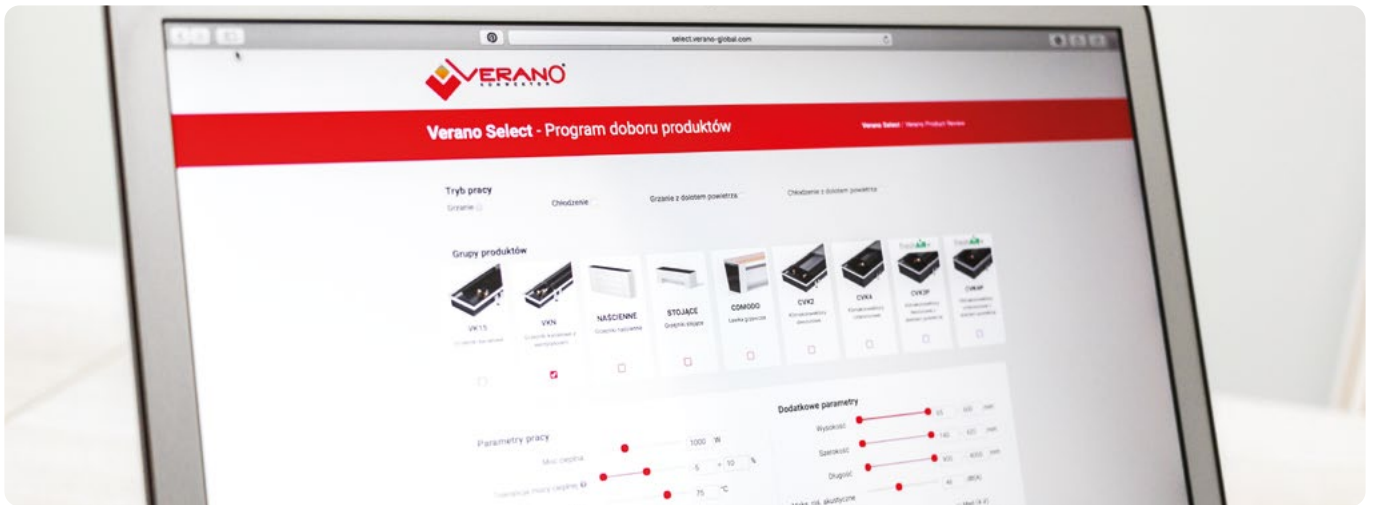
1. Draw a horizontal line starting from the supply temperature (12 °C). End the line on the crossing with return temperature line (16 °C).
2. Draw a vertical line to the crossing with ambient temperature line (26 °C).
3. Draw a horizontal line to the left end of the graph. This line indicates the average temperature difference - which is $\Delta T=12$ °C.

1. Next step is to select the unit of suitable dimensions. For example CVK2-14/35/225. For this unit use the graph on the page 22.
2. Draw a vertical line starting with the required output value (845 W). End the line on the crossing with average temperature curved line ($\Delta T=12$ °C).
3. Draw a horizontal line to the left end of the graph. Read out the control voltage value which is 3,9 V. Draw a line to the right end of the graph and read out the Sound pressure level which in this case is 25 dB.



CVK UNIT SELECTION

- METHOD 3
Based on **VERANO SELECT** program



VERANO SELECT programme allows for precise CVK unit selection for any installation temperatures. In this way many of values can be precisely define as a heating or cooling outputs, sound pressure level, pressure drop, water flow and many others. The results of the selection can be print as a table or XLS file.

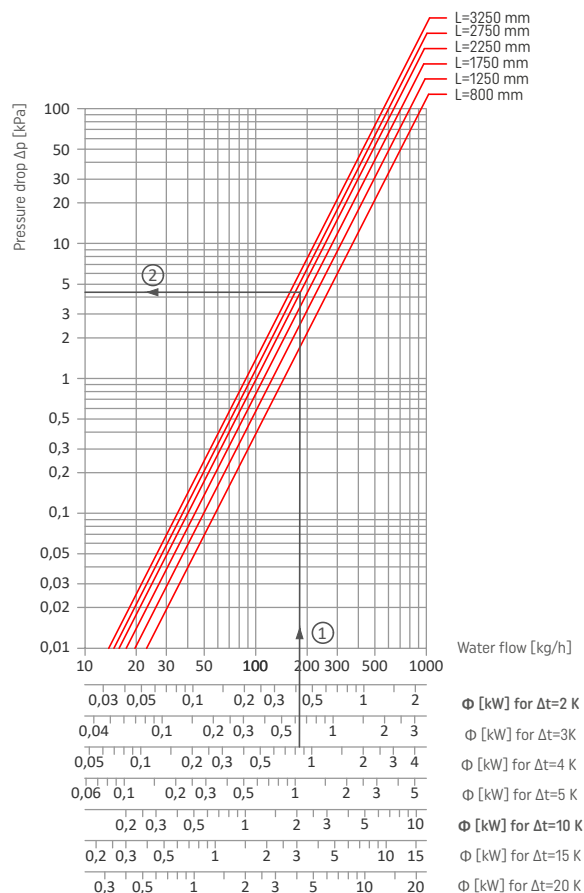
To use VERANO SELECT programme visit our website www.select.verano-global.com or use the QR code.



PRESSURE LOSS

To define pressure loss value use the graph on the right. For previously selected CVK2-14/35/225 unit difference between supply and return temperature is $\Delta t=4$ K and cooling output is 0,845 kW.

- Use the axis for $\Delta t=4$ K value. Draw a vertical line up starting with cooling output value (0,845kW). End the line on crossing with the length of the CVK unit (2250 mm).
- Draw a horizontal line to the left end of the graph. Read out the pressure loss $\Delta p=4,4$ kPa.





CVK UNITS CONTROL OPTIONS

Heating and cooling CVK units are designed to be installed in a floor void. One can distinguish two basic models of this product that are different through the way they are built and function:

2-PIPES CVK2 UNITS

The heat exchanger has only a single pipe circuit that can be used for heating or cooling. Only one set of valves and thermal actuator is required.

4-PIPES CVK4 UNITS

Two independent copper pipe circuits - one for heating and one for cooling and 2 sets of valves and thermal actuators are required (one for heating and one for cooling installation connection).

As CVK unit is a part of the heating/cooling system in the building they proper operation rely on:

- central heating installation being fitted correctly
- chilling/cooling installation being fitted correctly
- the valves and controls have been fitted, connected and configured properly.

The complete set of controls includes:

- room air controller that should be connected to the thermal actuators and fans,
- 24 V DC rail power supply (transformer)

Thanks to the built-in temperature sensor Room Temperature Controller measure the ambient temperature to keep it on the constant, required level:

- by adjusting the thermostatic valve opening/closing angle
- by adjusting the fan speed.

Due to the ambient temperature sensor the Room Temperature Controller should not be covered by any obstacles such as furniture or curtains.

Each heating/ cooling zone should be controlled by the single Room Temperature Controller.

For BMS systems Room Controller and Temperature sensor is usually split into 2 separate devices.

Due to the use of electric safe fans and low-voltage actuators, fan assisted units must be supplied with 24 V DC power converter.

The 24 V DC power supply should be protec-

ted by an appropriate overcurrent circuit breaker and an installation switch off that allows the power cut off while conducting service work on VERANO products.

It is forbidden to connect the unit directly to the 230 V AC power grid.

An example of power supply selection is shown on page 56.

The recommended type of wiring in the controlling system is LIY or LIYCY.

NOTE!

Electric wiring should be done only by the electrical skilled worker who can confirm his membership in an approved self-certification scheme. Power can only be switched back on when the correctness of the whole wiring was checked and approved.

CVK UNITS OPERATIONS IN VARIOUS CONTROL SYSTEMS

CVK Climaconvectors are suitable for any building and they are easy to select thanks to a variety of available options controlling the unit.

CONTROLLING BY STANDARD ROOM AIR CONTROLLER

Each heating zone has a separate controller, which is responsible for readout of the temperature in the room and controlling the work of connected heating/cooling units. The controllers are not connected to each other, while each of them must be programmed separately.

Example: VER-24S, VER-24 WiFi, SIEMENS RDG160T

CONTROLLIN BY ROOM AIR CONTROLLER CONNECTED TO INTERNET

The optional feature, that, when built into the standard wall mounted controller, allows you to manage your heating/cooling system through the smartphone application or a secure website. Through the app you can manage the multiple devices or even create the entire home automation system.

Example: VERANO VER-24 WiFi

BUILDING MANAGEMENT SYSTEM (BMS)

The system that integrates the various technical installations in the building to allow single point of management is commonly known as the BMS. BMS is quite practical in the office and commercial buildings, yet these days might be also met in residential housing installations. When concerning connecting the CVK units into the BMS system, please be aware of such a solution benefits:

- including CVK as a part of the general HVAC in the building by coordinating its operation together with ventilation, A/C and heating/cooling sources,
- combining the operation of multiple home technical appliances into one management scheme by coordination the work between window blinds, lighting, audio / video devices etc.
- better management of your heating system i.e. by more flexible and quicker temperature control from a central communication point
- more flexibility for open space heating/cooling functions such as re-arranging the heating zones when complementing open space re-arrangements.

VERANO offers solutions that enable connecting CVK units into the following BMS systems:

- KNX
- BACnet
- Modbus

Example: Siemens RDG160KN (for KNX system), Produal TRC-1A4R and TRC-3A (for MODBUS and BACKNET systems)



CVK UNITS HYDRONIC CONTROLLING

The advantage of heating and cooling units against the standard off-the-shelf radiators is the optional functionality for providing the cooling during the summertime.

However, using the CVK units requires two separate water circuits, where one is dedicated to heating and the other to cooling (for four-pipe CVK4 units) or alternatively adapting the current installation for servicing LTHW (low-temperature heating water) in the heating season and a coolant from the chiller during the summertime (in the case of 2-pipe CVK2 units). When specifying please bear in mind that the final thermal output of the units is reflected by the differences in the installation water/fluid temperature i.e. the one between the supply and return of the water.

For most of specifications it might be:

- $\Delta t = 2K$ for cooling,
- $\Delta t = 10K$ for heating.

Thermostatic and lockshield valves must comply special requirements due to the high water flow caused by small Δt temperatures.

The range of operation of standard radiator valves used in classic wall, floor or trench convectors allow for maximum flow of the fluid at the level of 150-200 l/h, while valves dedicated to cooling and heating units allow for flow of up to 500 l/h. The use of valves that have an incorrect flow range may cause the noise from the installation noise and could limit the heating and cooling outputs.

Valves designed for use in duct fan coil units allow for the precise temperature controlling in rooms thanks to the integrated differential pressure control. Maintaining a constant flow of heating or cooling medium ensures stable and consistent operation of the fan coil in a wide range of disposable pressure. Autonomous regulation and compensation of differential pressure fluctuations allows for limiting the remaining regulatory armature (e.g. resignation from balancing valves) and facilitates both the design of new installations and the modernization of existing buildings.

THERMAL ACTUATORS AND PICV VALVES

SIEMENS VPD MINI-COMBI VALVES

- Recommended for CVK units
- Pre-set value of kv - achieved by limiting the valve stroke
- Possibility of manual and temporary operation of the installation during assembly works
- The choice of valve depends on flow and the minimum required differential pressure across the valve Δp_{min} :
 VPD A-45 - range 45-104 l/h, Δp_{min} - 0.06 bar
 VPD A-90 - range 90-185 l/h, Δp_{min} - 0.08 bar
 VPD A-145 - range 145-318 l/h, Δp_{min} - 0.1 bar
 VPD B-200 - range 200-483 l/h, Δp_{min} - 0.2 bar
- Model A - measuring pressure drop 0.05 bar (5 kPa)
- Model B - measuring pressure drop 0.1 bar (10 kPa)
- Maximum permissible pressure working: 1000 kPa (10 bar)
- Thermal actuator thread: M30x1,5

0-10V DC CONTROLLING THERMAL ACTUATOR

- Supplied with 24 V DC
- 7,7 W temporary power consumption,
- 1 W constant power consumption
- max current: 320 mA
- max opening/closing time: 150 s



SIEMENS MINI-COMBI VPD VALVE



0-10 V DC THERMAL ACTUATOR



CVK UNIT ADDITIONAL EQUIPMENT

- Pressure module condensate drain - extend the trench length by 100 mm
- Assembly protective fiberboard cover
- Anti dust filter in black colour installed on the fan - increase the trench high by 10 mm
- Support system for raised floor
- Decorative grille and frame
- Valves and control devices

RAIL POWER SUPPLY SELECTION

1. Using the tables for CVK units into this catalogue define the maximum fan power demand and maximum current. Choose the maximum value for units (value for boost mode).
2. Using the data sheet for thermal actuator define the maximum power demand and maximum current. For 0-10 V actuator maximum power is 7,7W and maximum current is 0,32A.
3. Using the data sheet for the controller define the maximum power demand and maximum current. For VER-24(S) maximum power is 1,3W and maximum current is 0,06A.

4. Sum up all power values. Then sum up all current values.
5. Choose the proper rail power supply by choosing the one that has slightly higher power and current values than your power and current values.

Selecting rail power supply with power demand value lower than heater power demand might cause turning off the fan on higher fan speed, and eventually fan failure.

EXAMPLE OF RAIL POWER SUPPLY SELECTION:

There are 3 heating and cooling units in the room:

- 1x CVK2-14/35/155
- 2x CVK2-14/35/225.

There are 3 thermal actuators (each one for one CVK unit). And one Room air controller VER-24.

Using the power and current data for CVK units and controls following values has been defined:

TYPE	MAX POWER	MAX CURRENT
1 x CVK2-14/35/155 heating and cooling unit	1 x 40,8	1 x 1,7
2 x CVK2-14/35/225 heating and cooling unit	2 x 67,2	2 x 2,8
3x 0-10 thermal actuator	3 x 7,7 W	3 x 0,32 A
1x VER-24 Room air controller	1 x 1,3 W	1 x 0,06 A
TOTAL:	199,6 W	8,32 A

Z240-24VDC RAIL POWER SUPPLY HAS BEEN SELECTED (240W / 10A)

CVK UNITS CONTROLS

The controlling function for Climaconvectors is handled through wall-mounted control panel that service the actuators and fans. It has the room thermostat built in that is responsible for measuring room ambient temperature and by regulating the opening angle of the actuating valves and fan revs it will keep the constant room temperature value.

It also offers the optional local temperature control that is managed over the Internet. Such a function is offered by the following controllers: VER-24 WiFi that is dedicated to CVK 2-pipe units and VER-44 WiFi the one to 4-pipe units.



VER-24 S / VER-24 WIFI

- for 2-pipes installation
- room air temperature controlling
- built-in temperature sensor
- inputs for 0-10V DC thermal actuator and for ON/OFF NC/NO thermal actuator
- 24 V DC supplied
- wireless controlling via Wifi (for VER-24 Wifi only)



VER-44 WIFI

- for 2-pipes and 4-pipes installations
- room air temperature controlling
- built-in temperature sensor
- inputs for 0-10V DC thermal actuator and for ON/OFF NC/NO thermal actuator
- 24 V DC supplied
- colour touch display

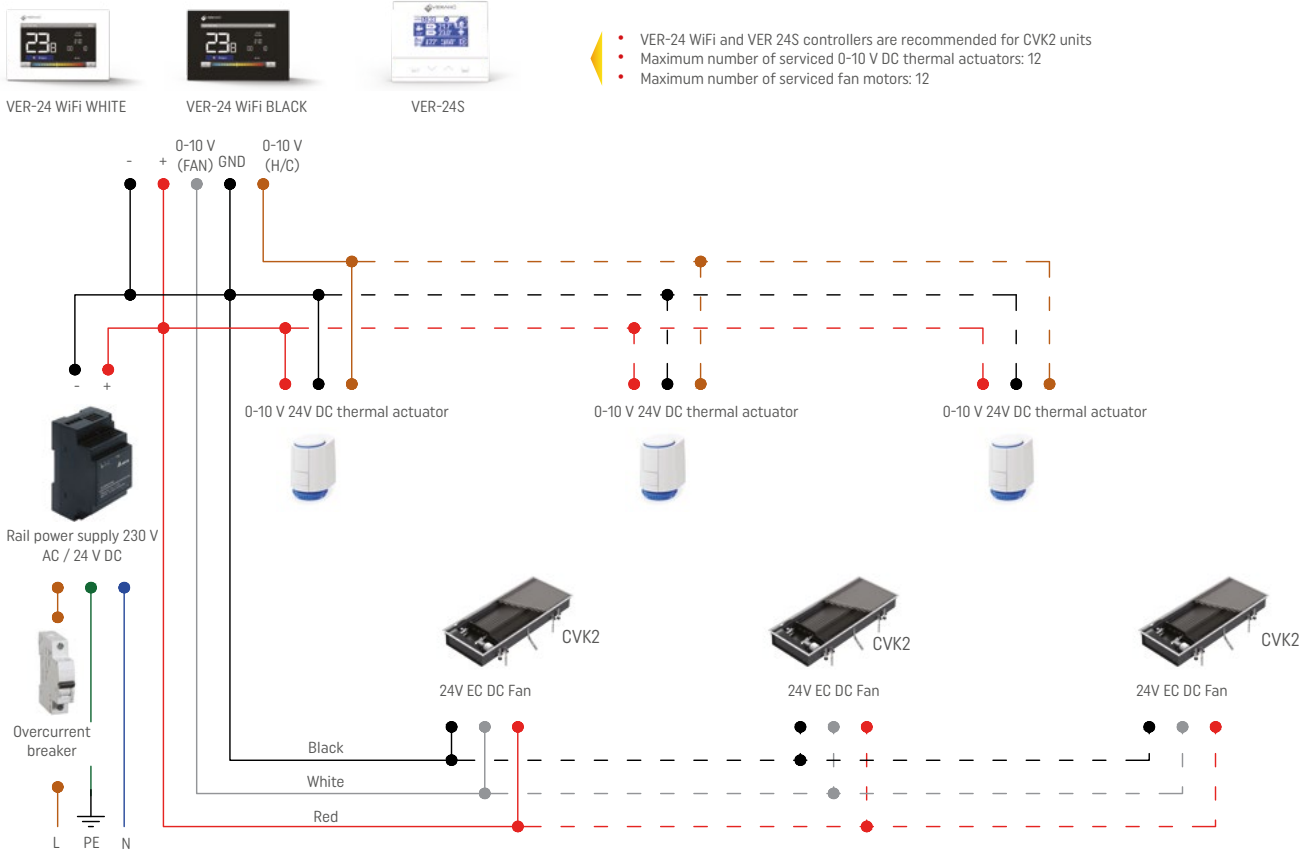


RDG160T

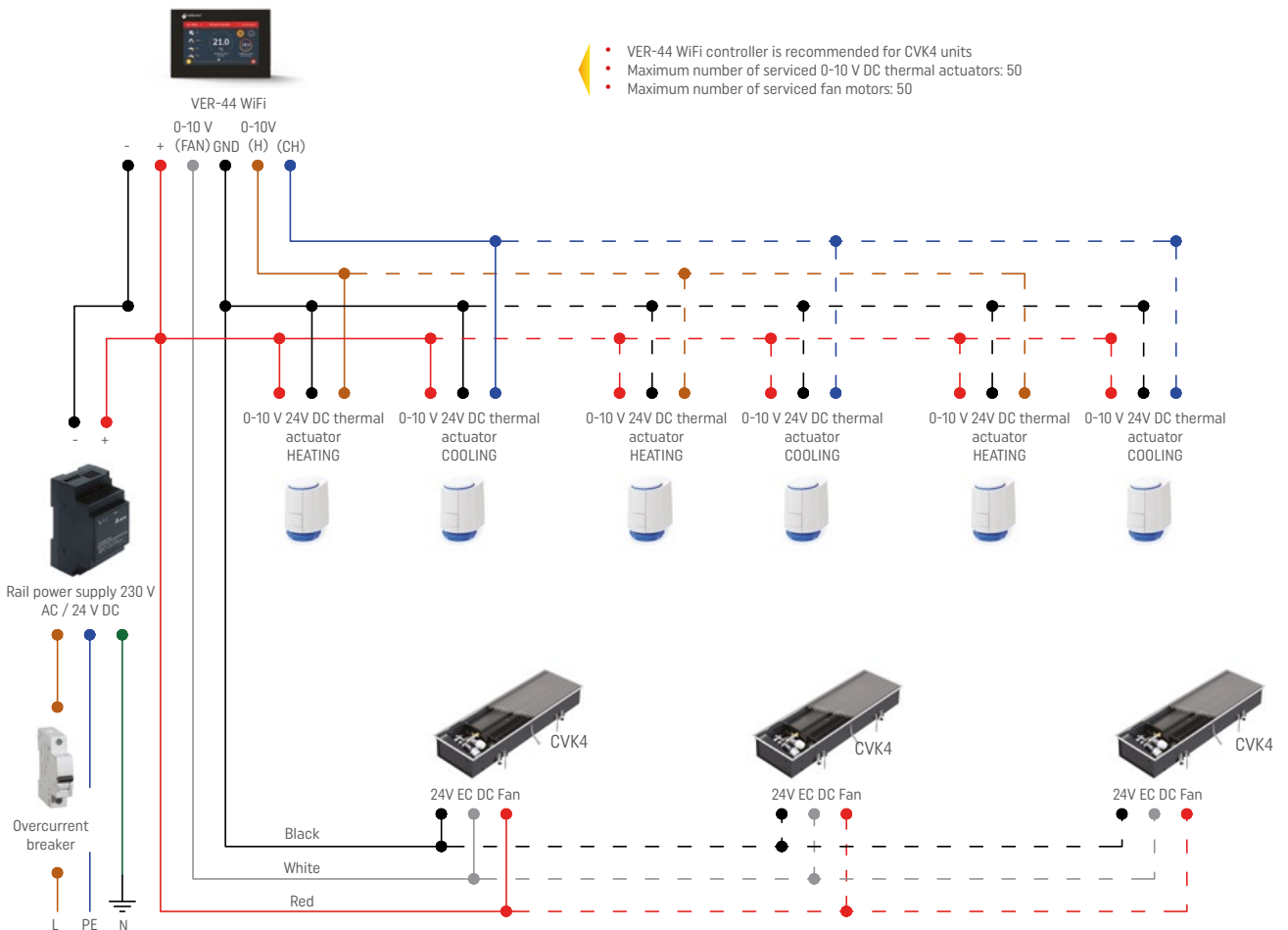
- for 2-pipes and 4-pipes installations
- room air temperature controlling
- built-in temperature sensor
- inputs for 0-10V DC thermal actuator and for ON/OFF NC/NO thermal actuator
- 24 V DC supplied



CVK2 CONNECTION SCHEME - WITH VER-24 / VER-24 S ROOM CONTROLLER

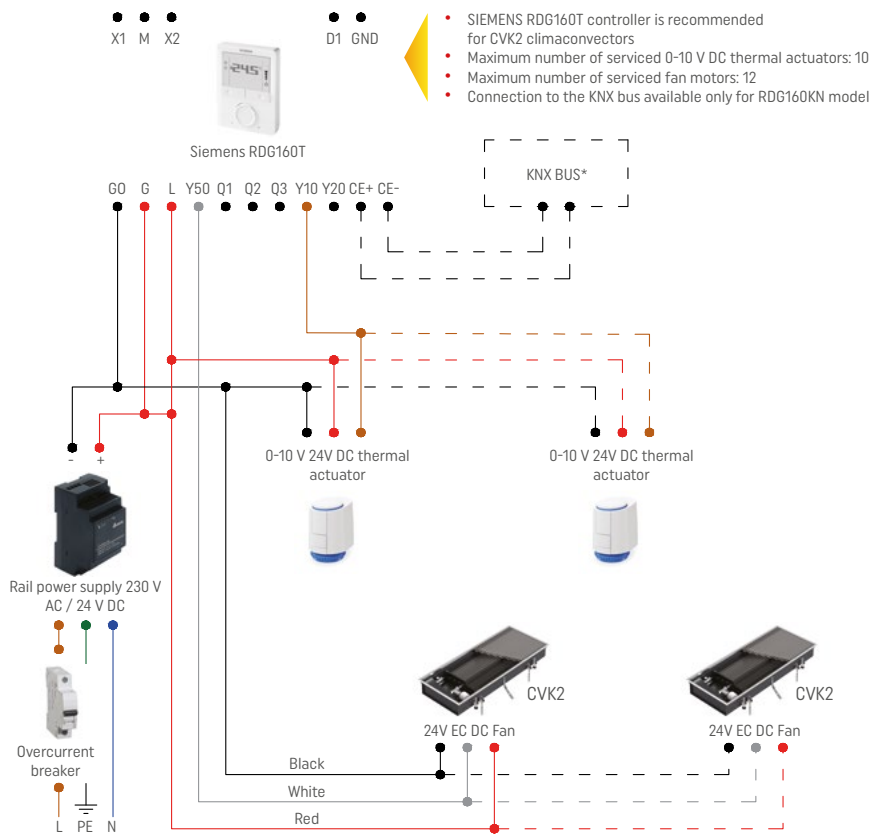


CVK4 CONNECTION SCHEME - WITH VER-44 WIFI ROOM CONTROLLER





CVK2 / CVK4 CONNECTION SCHEME - WITH RDG160T / RDG160KN ROOM CONTROLLER



An exemplary connection diagram of one or several CVK2 units

SETTING OF OPERATION PARAMETERS RDG160T

Press the two buttons on the regulator for at least 3 seconds. Then release both buttons and press the left button for another more than 3 seconds. Without releasing, turn the controller's knob half a turn anti-clockwise. The display will show the symbol of parameter, that confirms the entry into the service settings mode. The parameter is selected by turning the knob and confirming with the right button (OK). Use the knob to set the desired value, eg changing the setting P52=1, after changing P52=2. Use the right button to accept the selection. After finishing the settings, press the left button (ESC).

Configuration of RDG160T basic work parameters for CVK2 units

Configuration of switches inside the controller	
DIP1	ON
DIP2	OFF
DIP3	OFF
DIP4	OFF
DIP5	OFF



Recommended settings of individual work parameters

Parameter	Setting	Description
P01	0	Heating only
	1	Cooling only
P05	-3...3 K	Temperature sensor calibration
P30	0,5...6 K	P-band/switching differential in heating mode
P31	0,5...6 K	P-band/switching differential in cooling mode
P38	0	No additional external sensor
P40	0	
P42	0	
P46	2	Output of 0-10 V DC thermal actuator
P52	1	Fan operation - Active
P60	89 min	Fan kick interval in Comfort mode
P61	359 min	Fan kick interval in Economy mode

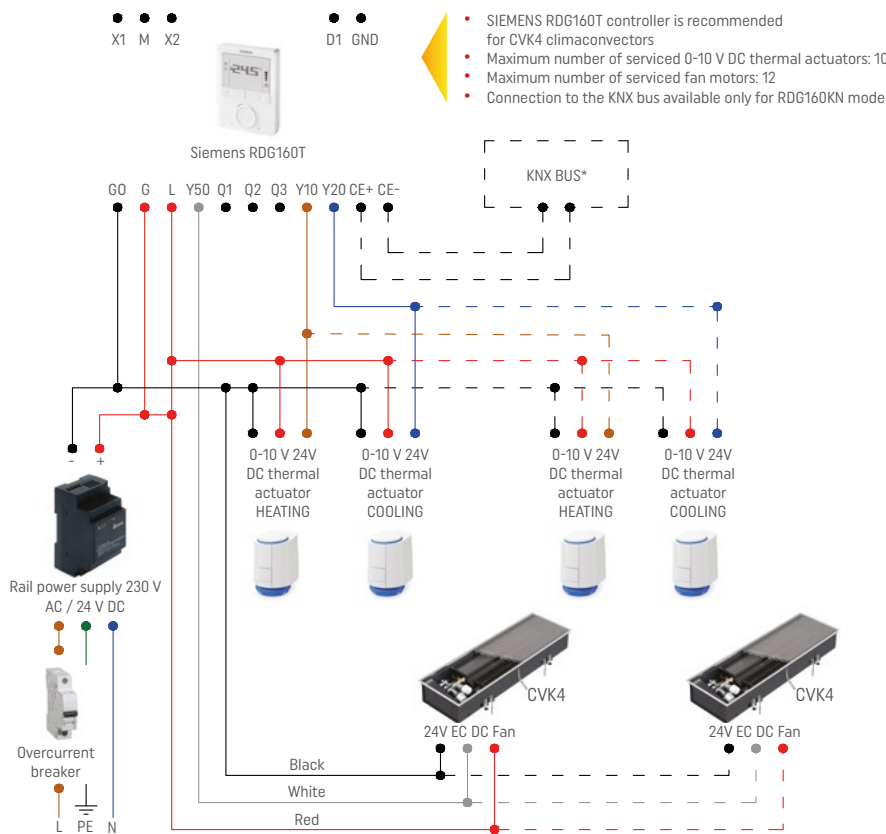
Configuration of RDG160T basic work parameters for CVK4 units

Configuration of switches inside the controller	
DIP1	OFF
DIP2	OFF
DIP3	ON
DIP4	OFF
DIP5	OFF



Recommended settings of individual work parameters

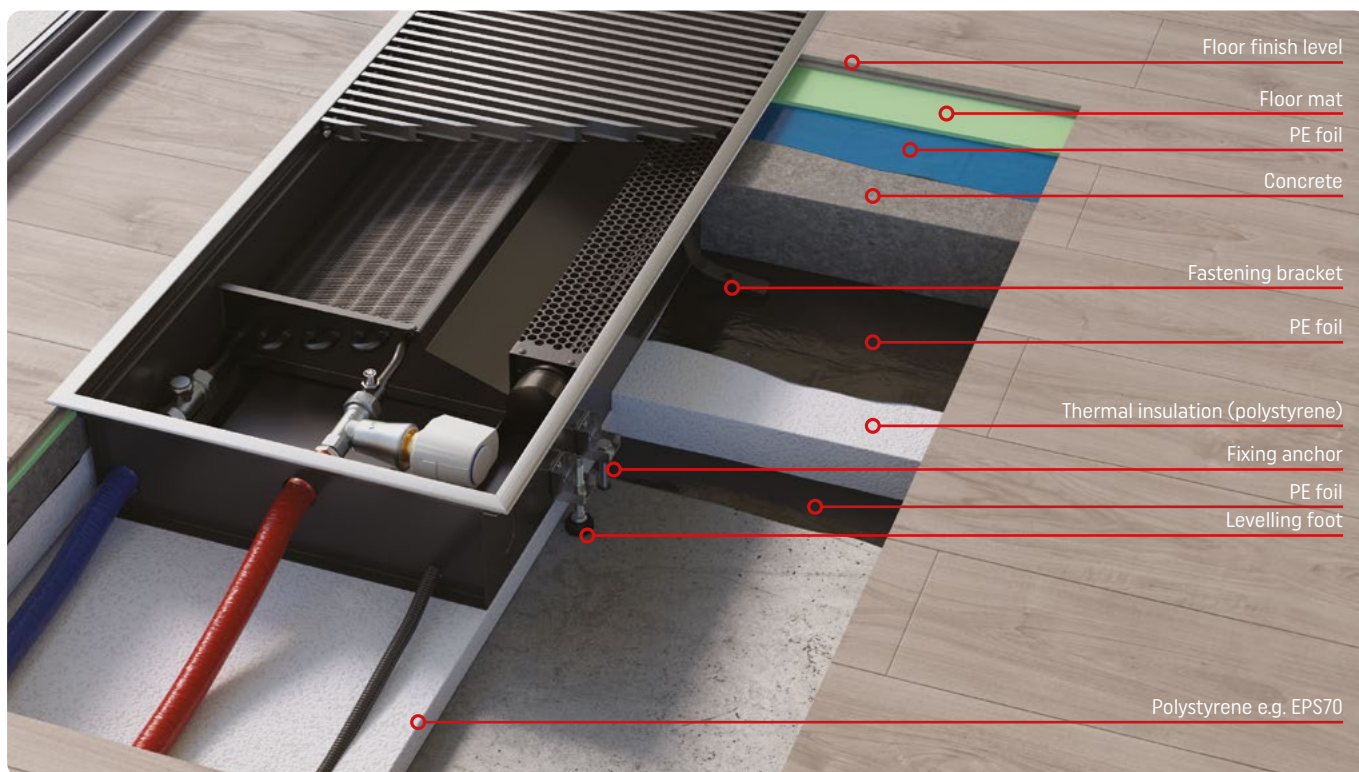
Parameter	Setting	Description
P01	4	Heating and cooling
P05	-3...3 K	Temperature sensor calibration
P30	0,5...6 K	P-band/switching differential in heating mode
P31	0,5...6 K	P-band/switching differential in cooling mode
P33	0,5...6 K	Dead zone between heating and cooling
P38	0	No additional external sensor
P40	0	
P42	0	
P46	2	Output of 0-10 V DC thermal actuator (heating)
P47	2	Output of 0-10 V DC thermal actuator (cooling)
P52	1	Fan operation - Active
P60	89 min	Fan kick interval in Comfort mode
P61	359 min	Fan kick interval in Economy mode



An exemplary connection diagram of one or several CVK4 units



CVK4 UNITS INSTALLATION AND MAINTAINS MANUAL



Before starting the assembly, take out and secure the heating kit (fan, airflow targeting sheet and heat exchanger). After that, install assembly struts on the casing edge.

Prepare a trench 100 mm wider and longer than the heater casing. The depth of the trench should be planned to ensure that the top of the grille is on the same level as floor finish level (take into account insulation in the bottom of the trench).

Put the heater casing in the centre of the trench. Point the places for fixing anchors holes in the concrete. Put out the heater casing of the trench.

Remember that fans polluted by dirt and dust coming from the construction works might cause damage of fans or higher sound power level of fans (louder fan work). Damage caused by fan being polluted are not covered by the warranty.

Prepare the appropriate holes for anchoring screws in concrete slab. Drill the holes on marked points and hammer the raw plugs into them.

Place the thermal insulation on the bottom of the trench (on the concrete slab). Remember to do the holes for fixing anchors and levelling feet in insulation. The recommended thermal insulation is Polystyrene.

The thermal insulation layer under the casing should be done of materials of relative deformation factor not less than 70 kPa while compressive strength is at 10%.

Strike the holes for connection pipes and for electric wires. You should strike 3 holes in one side of the casing (longer or shorter side).

Put the casing with levelling feet in the trench. Levelling feet should be placed on the concrete slab. Do not install levelling feet on thermal

insulation. Use the screwdriver to level the levelling feet.

Screw the heater casing using fixing anchors kits. Screw the M8 nut on the fixing anchor until resistance is felt.

Fill the rest of the free areas between the heater casing and thermal insulation with low expandable foam.

Leaving free space between the casing and thermal insulation can lead to increased volume of device.

Install all pipes and electric wires. Secure the connections and all the holes in the casing by using low expandable thermal foam insulation.

Make sure that the casing is properly settled in the trench and all connections are done. Make sure, that assembly struts are installed on the top edge. Put assembly fibreboard cover on the casing to avoid contamination inside the casing.

Pour the concrete around the casing. The minimum height of concrete should be at least 50 mm.

When the concrete gets dry, remove the assembly fibreboard cover and struts. After that, clean the inside of the casing and install the heating kits. In fan assisted trench units type CVK the heat exchanger should be on the glass facade / wall side.

Install valves and thermal actuators (if required) on the pipes of heat exchanger.

Connect the pipes to the valves. Supply pipe is to be connected to the heat exchanger pipe with air vent (on the room side). Connect electric wires to the fan. Use the electric scheme to do the wiring for the thermal actuator and the controls.

Carry in the tightness test for hydronic connections. After completing installation

works, cover the heater with the assembly fibreboard cover to avoid contamination of fan and heat exchanger with dust of the rest of building works. After finishing the rest of building works remove the assembly fibreboard cover. Then install the grille and frame on the casing edge.

Grilles, frames, thermostatic and lock shield valves, thermal actuators, rail power supplies and protective fibreboard are additional equipment accessories.

All assembly work should be carried by qualified in the construction and electrical installers.

Fan coil units can optionally be fitted with an adjustable edge. It enables levelling the discrepancy between the expected and the final height of finish floor level without the need to cut the floor.

When using a heating / cooling unit, do not cover it with a rug, furniture or curtains.

The grilles are resistant to pressure and abrasion for pedestrian traffic of low intensity.

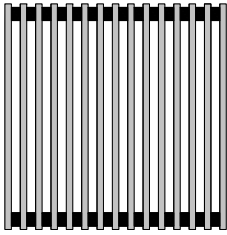
Avoid increased pressure on the grille bars, for example by placing furniture on them.

Periodic cleaning of the fan, heat exchanger and the inside of the casing is recommended due to the efficiency of the unit.



GRILLES

Roll-up grille double T-bar profile



TOP VIEW



SINGLE BAR
CROSS SECTION

STANDARD:

- Spacers 17 mm.
- Distance between the bars - 13 mm.
- Spacers made of black PVC.

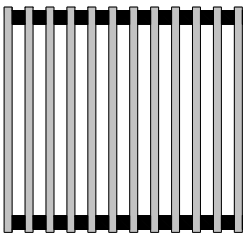
Maximum length of one grille section is 6 m.

OPTION:

- Spacers are available in other colours and size:
- grey 13 mm, 8 mm.

GRILLE TYPE	COLOUR	ORDER CODE
Roll-up grille, double T-bar profile - natural aluminium	Natural aluminium	ZDW-1,8/B/L
	Satin	ZADWS-1,8/B/L
Roll-up grille, double T-bar profile - anodized aluminium	Stainless steel	ZADWST-1,8/B/L
	Gold	ZADWZ-1,8/B/L
	Black	ZADWC-1,8/B/L

Roll-up grille closed profile



TOP VIEW



SINGLE BAR
CROSS SECTION

STANDARD:

- Spacers 13 mm.
- Distance between the bars - 13 mm.
- Spacers made of black PVC.

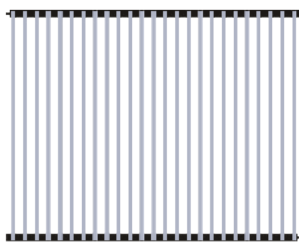
Maximum length of one grille section is 6 m.

OPTION:

- Spacers are available in other colours and size:
- grey 17 mm, 8 mm.

GRILLE TYPE	COLOUR	ORDER CODE
Roll-up grille, closed profile - natural aluminium	Natural aluminium	ZAL-1,8/B/L
Roll-up grille, closed profile - anodized aluminium	Satin	ZAALS-1,8/B/L
	Stainless steel	ZAALST-1,8/B/L

Modular grille (made of aluminium)



TOP VIEW

THE GRILLE IS AVAILABLE IN TWO VERSIONS:

- natural aluminium,
- anodized aluminium.

The grilles joints are made of black PVC only.



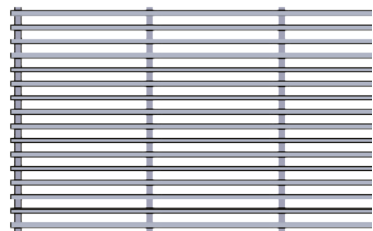
CROSS SECTION

GRILLE TYPE	COLOUR	ORDER CODE
Modular grille - natural aluminium	Natural aluminium	MPZ-1,8/B/L
Modular grille - anodized aluminium	Satin	MPZAS-1,8/B/L
	Stainless steel	MPZAST-1,8/B/L

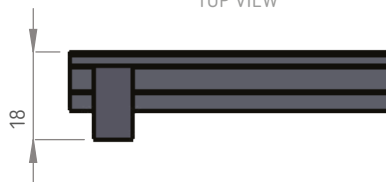


GRILLES

Linear grille



TOP VIEW



CROSS SECTION

GRILLE ENTIRELY MADE OF ALUMINIUM.

The grille is available in the following variants:

- natural aluminium (cross – bar joiners are coated in black RAL 9005),
- aluminium coated in any RAL colour (grille entirely coated in RAL),
- anodized aluminium (cross – bar joiners are coated in black RAL 9005).

It is possible to make a corner grille for corner section of the heaters at an angle of 90° and others.

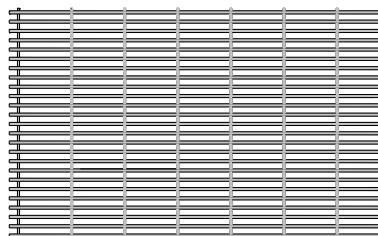
The corner grille can be made only if it is ordered with a heater at the same time.

Maximum length of one grille is 3 m.



GRILLE TYPE	COLOUR	ORDER CODE
Linear grille, snap profile - natural aluminium	Natural aluminium	PZW-1,8/B/L
Linear grille, snap profile - anodized aluminium	Satin	PZWAS-1,8/B/L
	Stainless steel	PZWAST-1,8/B/L
Linear grille, snap profile - any RAL colour	RAL colour	PZWR-1,8/B/L

Stainless steel



TOP VIEW

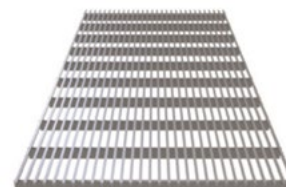


CROSS SECTION

THE GRILLE IS AVAILABLE ONLY AS A RIGID VERSION.

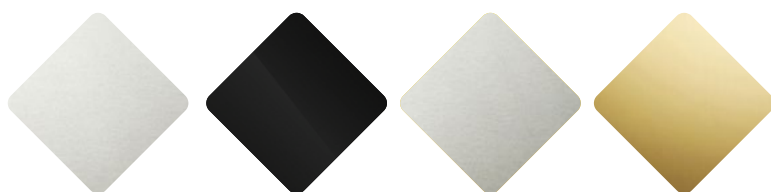
Maximum length of one section of the grille is 2 m.

Grille length longer than 2 m are made of several elements of equal lengths.



GRILLE TYPE	COLOUR	ORDER CODE
Stainless steel grille	Stainless steel	SN-1,8/B/L

Anodized aluminium colours



SATIN

BLACK

STAINLESS STEEL

GOLD

F and L frames are available in exact the same anodizing colours.

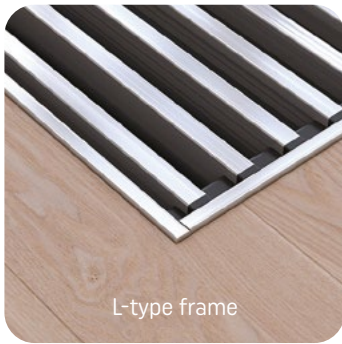
RAL Palette



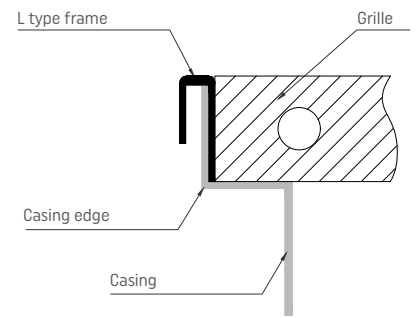
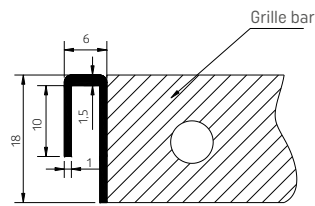
Frame and linear aluminium grilles are available in any RAL colour at additional surcharge.



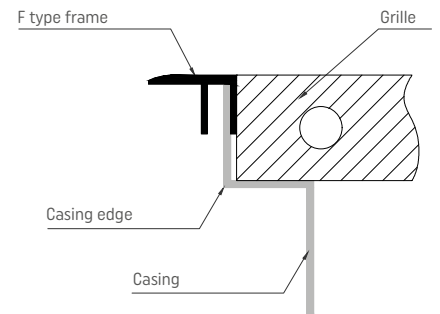
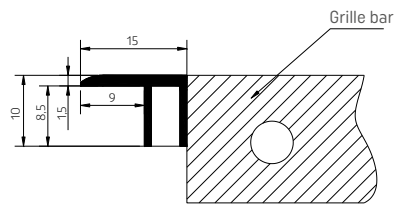
L AND F-TYPE FRAME



L-type frame



F-type frame



ADDITIONAL EQUIPMENT FOR CVK UNITS



Raised floor kit ZPP

Kit contains:

- 1x support
- 2x expansion bolt with a screw
- 4x nut and washer

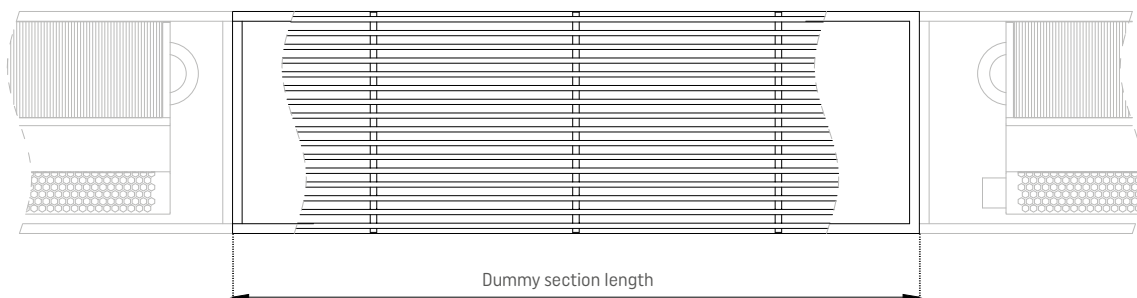
ZPP kit allow to level the unit up by 50 mm.
Other heights on request.

DUMMY SECTION

Trench units can be produced as non-standard units with custom length adjusted to any recess or bay.

It can be done as:

- extended casing,
- separate dummy section.





CORNER TRENCH AND GRILLE OPTIONS



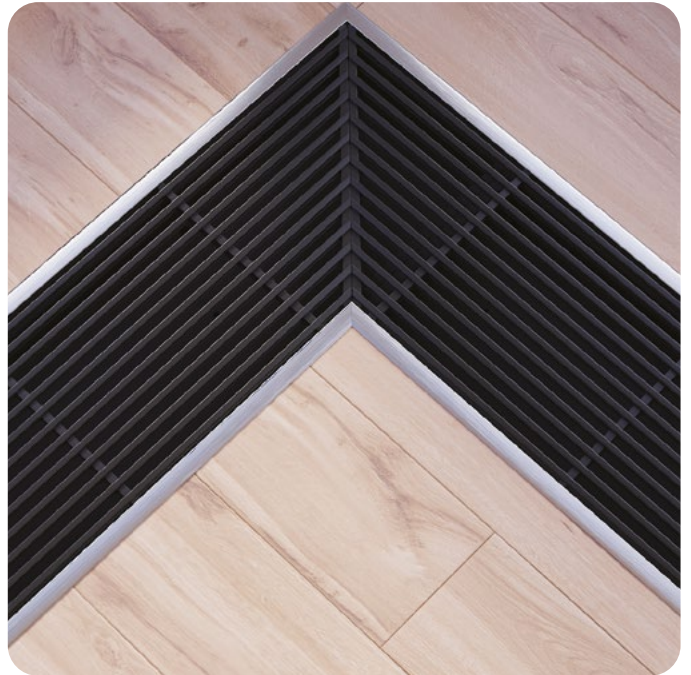
| Corner trench with linear grille and F-type frame.



| Corner trench with cross-bar grille and F-type frame.



| Corner trench with cross-bar grille and F-type frame.
Herringbone grille shape.



| Corner trench with linear grille and F-type frame.
Herringbone grille shape.



CERTYFICATES

Certificate for Raumheizkörper nach DIN EN 16430: 2015: Heizfall. Includes DIBt logo, HLK logo, and technical details of the test report.

Certificate for Unterflurkonvektors nach DIN EN 16430: 2015: Heizfall. Includes DIBt logo, HLK logo, and technical details of the test report.

ATEST HIGIENICZNY (Hygienic Certificate) for Klimakonvektor kanalny CVK2, CVK4. Issued by Narodowy Instytut Zdrowia Publicznego.

DEKLARACJA ZGODNOŚCI UE (EU Declaration of Conformity) for Klimakonvektor kanalny dwururowy CVK2. Issued by VERANO.

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G L O B A L



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VK15
NATURAL CONVECTION
TRENCH HEATERS

VK15
Natural convection
trench heaters



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VKN
FAN ASSISTED
TRENCH HEATERS

2020/06

VKN
Fan assisted
trench heaters



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**COMODO
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WALL-MOUNTED AND FLOOR-MOUNTED CONVECTORS

2022/11

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Wall mounted and
Floor mounted convectors



VERANO
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CVK
TRENCH HEATING AND COOLING
UNITS

CVK climaconvectors
Trench heating
and cooling units

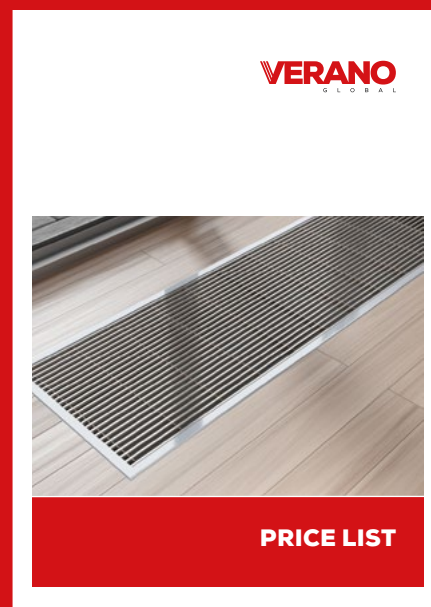


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FRESH AIR SUPPLY
SYSTEM

FRESHAIR+
Fresh air
supply system



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PRICE LIST

PRICE LIST
Trench heaters, trench heating and cooling
units, LST heaters, controls

VERANO GLOBAL

Vetterów 7a Street, 20-277 Lublin, POLAND
phone: +48 533 009 415

WWW.VERANO-GLOBAL.COM

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