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RADIK RC

energy saving panel radiators



RC





We need a radiant heat component for our own satisfaction and a pleasant feeling of thermal comfort. This fact is proved through personal experiences of each of us that are reflecting this knowledge to technical and environmental engineering. We were developing in a thermally asymmetric environment. Either **the sun was radiating or we enjoyed the warm from flames of a fire**, while chilliness affected us from the other side. We are therefore genetically accustomed to such conditions and we unconsciously orientate us according to warming beams coming from a heat source.

In our current houses we are not already affected by such significant temperature differences, as in the open air, where we were protected from the cold only through clothes. However, **we are still sensitive to a radiant heat component, which we perceive very favourably**. Studies have confirmed that if there is a radiant heat source in a room, it is possible to achieve the desired thermal comfort with less energy.



Changing of the seasons induces and/or may induce significant temperature differences. As a direct consequence, we need **in our houses, flats or offices a fully efficient radiator only several weeks** a year, while the rest of the time a radiator having a significantly lesser output is sufficient.

When deciding on heat sources, **you now have an option. You can select a radiator which will enable you** to adapt more correctly for a current course of temperatures during a heating season.



In a typical heating season, you will need to perform the adjustment of the radiator RADIK RC approximately 2-4 times. You now have an option to heat using the front heating panel only or both heating panels. This option enables you to use only the front panel of RADIK RC during the major part of the heating season. Namely with an increased proportion of the radiant heat component which you desire and with significant savings in heat energy. A reduced environmental burden is in this case obvious.

BENEFITS

of the radiators RADIK RC

Do not consume more than you need



Due to 2 performance levels RADIK RC supports an ecological approach to the heating. It is not necessary to consume excessive heat for 212 days within the heating season.



Save your energy costs



RADIK RC enables you to achieve the cost saving up to 15% of your average annual heating costs.



Thermal comfort for you - faster



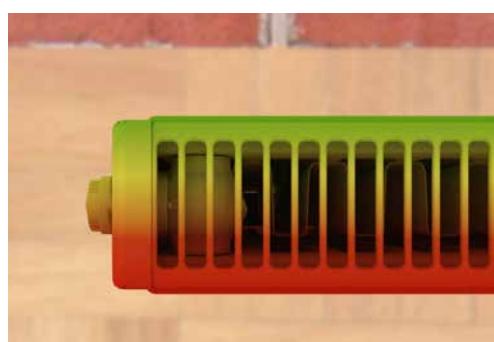
RADIK RC ensures the maximum utilization of radiant heat from the front panel and up to 50% faster warming when compared with conventional radiators.



Heat your rooms, not our environment



When that the rear panel of RADIK RC is closed, it is cold and acts as a shielding panel, thereby reducing heat losses of a wall behind the radiator by up to 33%.



RADIK RC

the radiator for your comfort

The radiant component represents a significant portion of the heat output of panel radiators, in a singlepanel radiator approximately by one-half. This very positive factor decreases to one third in double panel radiators, and of course even more in triple panel radiators.

Increasing the proportion of the radiant heating component offered by **RADIK RC enables to reduce the air temperature in a room and thus also the heating costs.**

The heat transferred within a room via radiation is dependent mainly on the temperature of the front panel for radiators comparable in terms of shape and material.

Heating water has the highest temperature in the place of the inflow of hot water to the radiator. From this point of view, water has always been distributed into all panels of the radiator in order to warm up the panels as soon as possible and evenly. However, investigations have revealed that this principle is not the highest attainable goal. Taking into account the importance of the radiant heat flow from the front panel of the radiator and the reaction time for desired temperature changes in the room, **there is a better solution.**

The result of the transfer of this knowledge from research into practice is RADIK RC, the panel radiator with the unique design of a controlled flow. RADIK RC allows a choice whether heating water will flow through the front panel only or partially or fully through the rear panel or eventually fully through both panels with usually about one-third portion of the radiant heat component. It does not relate to the flow initially through the front panel and subsequently through the rear panel, but parallel, thus having a reduced hydraulic loss and minor demands on the energy consumption by means of a circulating pump.



DESIGN VERSIONS

for everyone

RADIK RC PLAN

The panel radiator in the version PLAN with a flat front panel, and in the version VENTIL KOMPAKT, which allows a bottom connection to the heating system with a forced circulation.



RADIK RC LINE

The panel radiator in the version LINE with a flat front panel with fine horizontal grooves, and in the version VENTIL KOMPAKT, which allows a bottom connection to the heating system with a forced circulation.



RADIK RC VKU

The panel radiator in the version VENTIL KOMPAKT which allows right or left bottom connection to the heating system with a forced circulation. There are no hangers welded from the back side and therefore the radiator can be rotated.



Convenient application



Residential houses



Apartment buildings



Administrative buildings



Multipurpose buildings

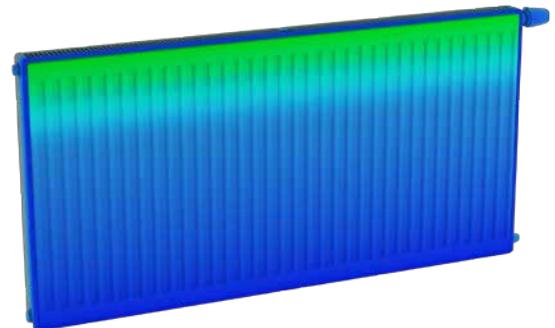
THE FIRST RADIATOR WITH A CONTROLLED FLOW RADIK RC

Function description of RADIK RC

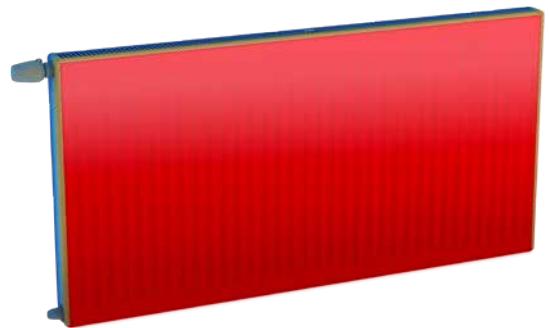
The radiator RADIK RC with controlled flow function is fitted with altered built-in distribution tappings linking the front and rear panel. The flow of heating water is controlled by a distribution valve located in the bottom part of the radiator flank wall on the side with a thermostatic valve.

Measurements of RADIK RC confirmed that by means of switching the flow into the front panel only, the decrease in the radiator output will not be equal to a one-half, however to about 73%. Because of the possibility to control the flow via the distribution valve, the radiator **RADIK RC acquired two power limits, 100% and 73%**. The radiator output up to the limit 73% covers approximately 87% of the heating season length.

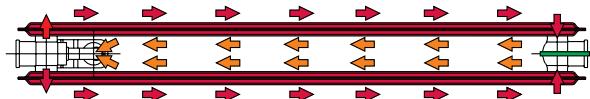
Based on long-term statistical data of outside temperatures, we need the nominal heat output of the radiator for three to five weeks a year only. Of course during this period it is necessary to maintain a temperature comfort, and also thus RADIK RC also enables to cover these conditions. However, a conventional radiator seems to be over-dimensioned for the majority of the heating season with all negative impacts on the energy consumption.



Rear panel - RADIK RC



Front panel - RADIK RC



RADIK RC - heating by both panels



RADIK RC - heating by front panel only

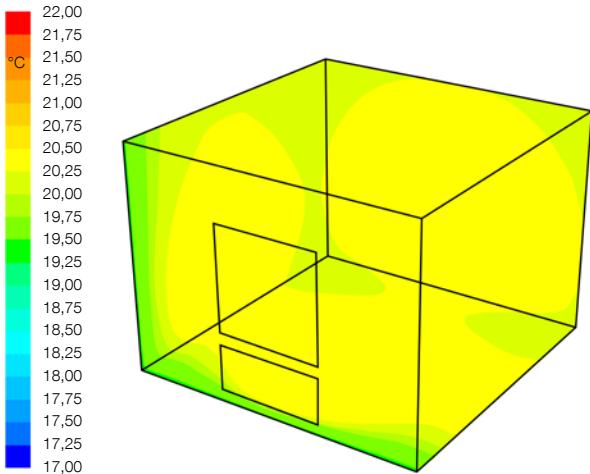
COMPARISON

with a conventional radiator

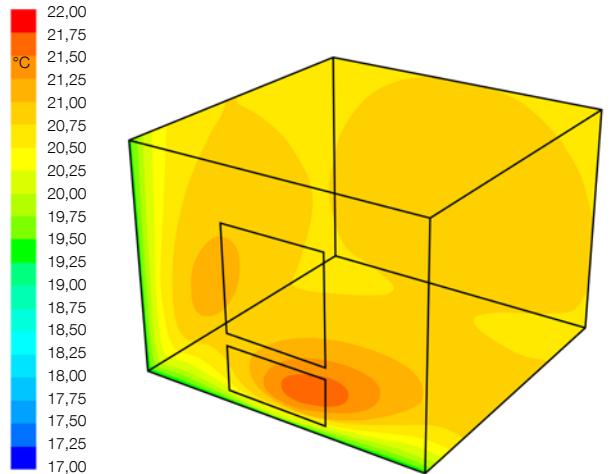
Function description of RADIK RC

RADIK RC enables the full closure of the heating water flow into the rear panel. While maintaining the same heat output, as compared with the flow through the both panels, the front panel has a higher mean temperature. And a higher mean temperature means a further increase of the radiant component. **Therefore, you have more pleasant feeling of the radiant heat.** Furthermore a greater part of the radiation component enables to lower the air temperature in the room.

The full capacity of the radiator using both panels **is therefore necessary during the heating season only for approximately 3 to 5 weeks.** Therefore throughout the majority of remaining period we can use the possibility of the heating only by the front panel RADIK RC. This results in an increase of the radiant heat component, a reduction of the required air temperature in the room and a reduction of the thermal losses through the external wall. Even more significant savings are achieved when the radiator is placed by a window reaching down to the floor, without any special shielding panel placed purposefully behind it.



Room temperature - conventional radiator



Room temperature - RADIK RC

Computer simulations of heat transfers in a room has been carried out. The goal was to investigate whether the front panel of a radiator has influence upon an average radiation temperature at all, and if so, what is the magnitude of such influence. The average radiation temperature is the effective temperature of all surrounding surfaces in the room. This temperature significantly influences the thermal comfort in the room. Using the radiators RADIK RC, it is possible to achieve the same thermal comfort with lower air temperature in the room. The simulation confirmed that in this case it is possible to heat the room on a lower air temperature and in such a way to realise energy saving for heating.

RADIK RC may be used with the closed rear panel for 87% of the average heating season. In such a way, the volume of circulating water in the heating system is reduced temporarily by approximately one-third.

COMPARISON

with a serial flow radiator

A positive aspect of **RADIK RC** is its parallel flow through the panels which reduces **the hydraulic resistance** as compared with the radiators with a serial panel flow. Also when switching the flow into the front panel only, **RADIK RC** has better flow parameters. Therefore, RADIK RC has better hydraulic parameters throughout the whole operation time than a radiator by which both panels are permanently flown through. RADIK RC has a reduced energy consumption a pump and improved effect on the environment pollution.

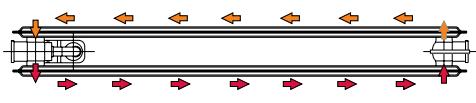
Data on saving possibilities of RADIK RC are based upon detailed measurements in a test laboratory. To verify functional characteristics of RADIK RC, virtually identical initial conditions were selected as for a compared radiator with permanently serial panel flow. Initially a full flow into both panels for RADIK RC was set. For a temperature gradient of 75/65 °C the flow was 145 kg/h. Under these standard conditions, the average temperature of the front panel reached 66.3 °C. Then the flow mode was switched into the front panel only using the distribution valve. The panel parameters have settled on the values that are listed in the following Table.

Further a comparison measurement has been performed for a radiator with a serial flow where the heating water first flows to the front panel and then the rear panel. The same conditions were set in particular the temperature gradient 75/65 °C. Due to a higher hydraulic resistance, the flow resulted to be 138.5 kg/h.

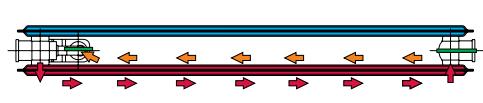
A benefit induced by the serial flow within the panels, namely the increased temperature of the front panel, lasts for only a limited time before the rear panel of the radiator warms up, approximately up to about 15 minutes. After this relatively short time the parameters has settled down on values that are listed in the following table. The test was carried out at the nominal output of the radiator and parameters according to the attached table bellow.

Comparison of values

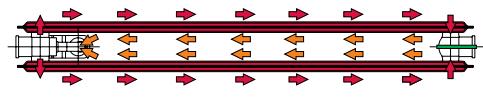
Serial flow	RADIK RC
75 °C	75 °C
138,5 kg/h	141,2 kg/h
64 °C	66,7 °C
59,6 °C	30,3 °C
41,9 °C	26,9 °C



Serial flow radiator



RADIK RC - heating by front panel only



RADIK RC - heating by both panels

GENERAL INFORMATION

Use

RADIK RC steel panel radiators are designed for central heating systems in buildings with the highest allowed working pressure of 10 bar where water or water solutions are used as the heating medium. The highest allowed working temperature is 110 °C. RADIK RC radiators are designed for single-pipe or twin-pipe systems with pressurized circulation. Radiators must be installed in a professional way in hot water systems which are carried out professionally according to VDI 2035 with regard to the protection against damage caused by corrosion and scale. Low water content in the radiator enables a flexible reaction of the heating system to the required room temperature and an effective thermoregulation.

The following main water quality attributes must be adhered to:

- pH range 8.5 – 9.5 (this applies for systems which do not contain aluminium),
- overall water hardness (content of Ca + Mg ions) up to 1 mmol/l,
- salinity within the range 300 – 500 µS/cm,
- oxygen content max. 0.1 mg/l.

RADIK RC version

The panel radiators in the version RADIK RC are the first radiators with a controlled flow. The unique structural design allows to control or completely close the rear panel of the radiator and thus to adjust their heat output according to current heat demands in the room. The control of radiators in the version RADIK RC is implemented in their bottom part where the distribution valve with the head is located. These radiators are further characterized by:

- a left or right bottom connection with a connecting pitch 50 mm,
- they are equipped with a built-in inside interface manifold and an inserted control valve.

Basic Equipment

All radiators in RADIK RC version are equipped with a distribution valve, a control head, an inserted control valve, an air vent and an appropriate number of blanking plugs. All models are supplied with side covers and a top grill.

Related norms

ČSN EN 442
DIN EN 442
ČSN 06 1101
ČSN 06 1122
ČSN 06 0310
ČSN 07 7401
DIN 55 900



GENERAL INFORMATION

Twin-pipe heating system

When installing RADIK RC steel panel radiators, it is necessary to preset the valve to such a position that the radiator will perform as calculated. It is the responsibility of the installer to make sure this has been done.

At the factory the valve is preset at level 8 and after rinsing and before the start of the heating test it must be set by a special key to the desired position.

Example of calculation

Solution to: level of presetting

Given: heat output

cooling of water

pressure loss of radiator with valve

heat capacity of water

Solution: weight low

level of presetting (see diagram): 4

Thermostatic heads

To set and regulate the temperature in a room it is necessary to fit a thermostatic head on RADIK RC radiators. For direct fitting only thermostatic heads can be used with connecting thread M 30 x 1.5.

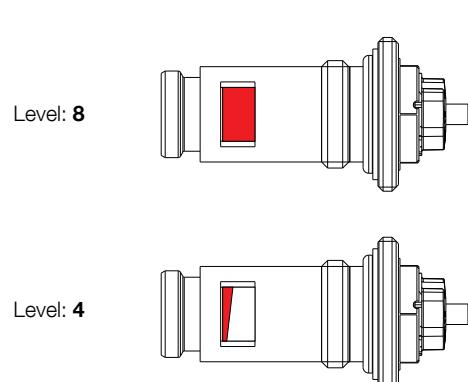
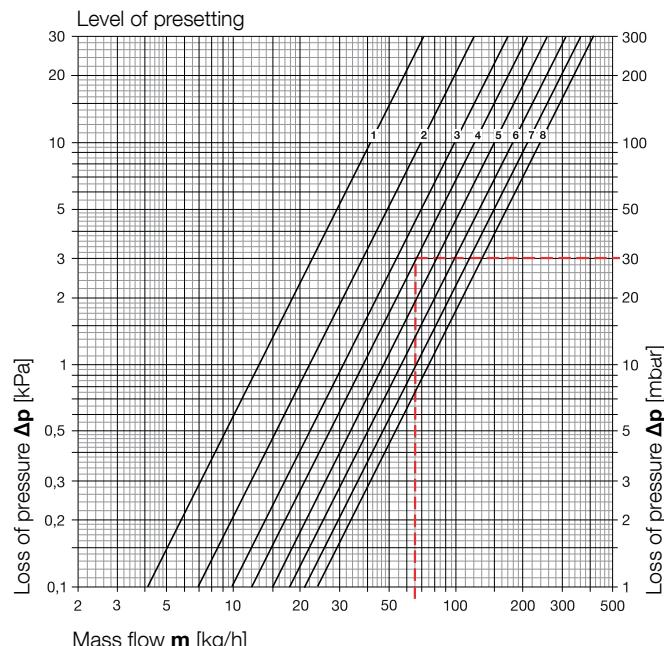


$$\begin{aligned}
 Q &= 1135 \text{ W} \\
 t_1 - t_2 &= 15 \text{ K (65/50 °C)} \\
 \Delta p &= 30 \text{ mbar} \\
 c &= 1,163 \text{ Wh/kg.K} \\
 m &= \frac{Q}{c \cdot (t_1 - t_2)} = \frac{1135}{1,163 \cdot 15} = 65 \text{ kg/h}
 \end{aligned}$$

Table

RADIK RC Radiators without connecting fittings	Level of valve presetting								Highest allowed working temperature [°C]	Highest allowed working pressure [bar]
	1	2	3	4	5	6	7	8		
Valve with presetting at eight levels and with thermostatic head	$k_v [\text{m}^3/\text{h}]$ 0,13	0,22	0,31	0,38	0,47	0,57	0,66	0,75	110	10
	$k_{vS} [\text{m}^3/\text{h}]$ 0,16	0,27	0,38	0,43	0,65	0,98	1,23	1,43		

The indicated values of k_v comply with proportionality interval of 2 K.





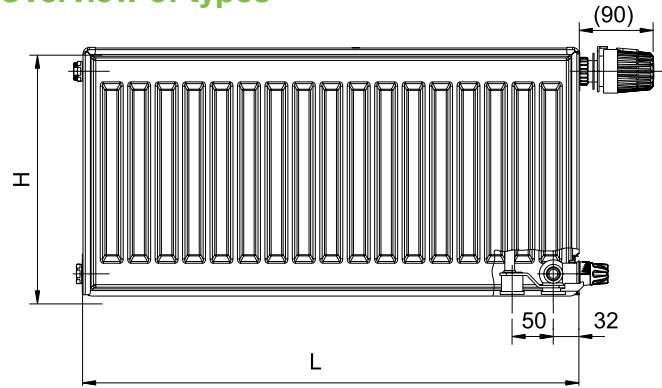
Technical data

Height H	300, 400, 500, 600, 700, 900 mm
Length L	400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1400, 1600, 1800, 2000, 2300, 2600, 3000 mm
Depth B	
Type 20 RC VKU	66 mm
Type 21 RC VKU	66 mm
Type 22 RC VKU	100 mm
Type 33 RC VKU	155 mm
Connecting pitch	50 mm
Connecting thread	6 x G1/2 inside
Highest allowed working pressure	10 bar
Highest allowed working temperature	110 °C
Radiator connection	right or left bottom

Description

The model **RADIK RC VKU** is a panel radiator in the RADIK RC version and in the version VENTIL KOMPAKT, which allows a **left or right bottom connection** to the heating system with a forced circulation. There are no hangers welded from the back side and therefore the radiators of the types 20, 21, 22 and 33 can be rotated.

Overview of types



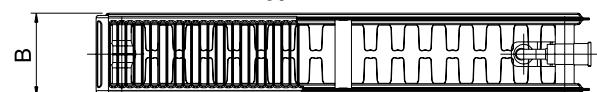
Type 20 RC VKU



Type 21 RC VKU

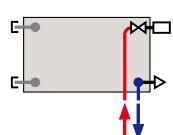


Type 22 RC VKU

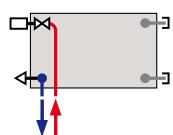


Type 33 RC VKU

Examples of connection to the heating system



right bottom
 $\varphi = 1$



left bottom
 $\varphi = 1$



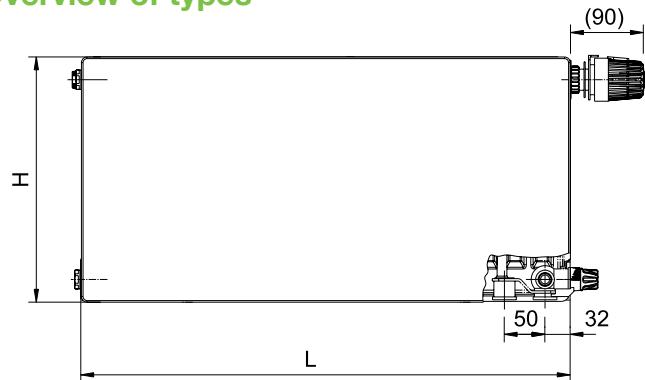
Technical data

Height H	300, 400, 500, 600, 700, 900 mm
Length L	400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1400, 1600, 1800, 2000 mm
Depth B	
Type 20 RC PLAN VK	68 mm
Type 21 RC PLAN VK	68 mm
Type 22 RC PLAN VK	102 mm
Type 33 RC PLAN VK	157 mm
Connecting pitch	50 mm
Connecting thread	6 x G1/2 inside
Highest allowed working pressure	10 bar
Highest allowed working temperature	110 °C
Radiator connection	right bottom

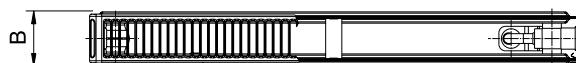
Description

The model **RADIK RC PLAN VK** is a panel radiator with a flat front panel in the version RADIK RC and in the version VENTIL KOMPAKT, which allows **a right bottom connection** to the heating system with a forced circulation. There are no hangers welded from the back side.

Overview of types



Type 20 RC PLAN VK



Type 21 RC PLAN VK

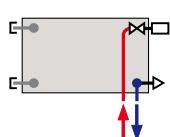


Type 22 RC PLAN VK



Type 33 RC PLAN VK

Examples of connection to the heating system



right bottom
 $\varphi = 1$



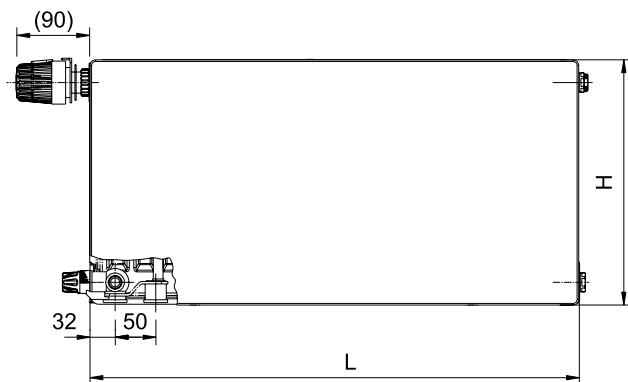
Technical data

Height H	300, 400, 500, 600, 700, 900 mm
Length L	400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1400, 1600, 1800, 2000 mm
Depth B	
Type 20 RC PLAN VKL	68 mm
Type 21 RC PLAN VKL	68 mm
Type 22 RC PLAN VKL	102 mm
Type 33 RC PLAN VKL	157 mm
Connecting pitch	50 mm
Connecting thread	6 x G1/2 inside
Highest allowed working pressure	10 bar
Highest allowed working temperature	110 °C
Radiator connection	left bottom

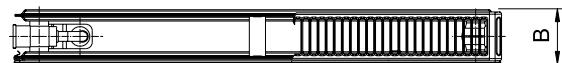
Description

The model **RADIK RC PLAN VKL** is a panel radiator with a flat front panel in the version RADIK RC and in the version VENTIL KOMPAKT, which allows **a left bottom connection** to the heating system with a forced circulation. There are no hangers welded from the back side.

Overview of types



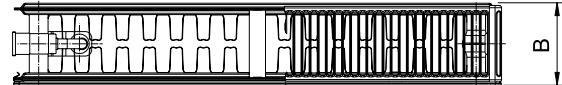
Type 20 RC PLAN VKL



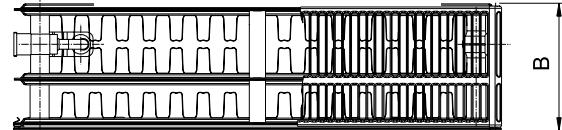
Type 21 RC PLAN VKL



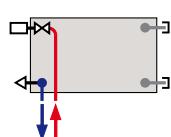
Type 22 RC PLAN VKL



Type 33 RC PLAN VKL



Examples of connection to the heating system



left bottom
 $\varphi = 1$



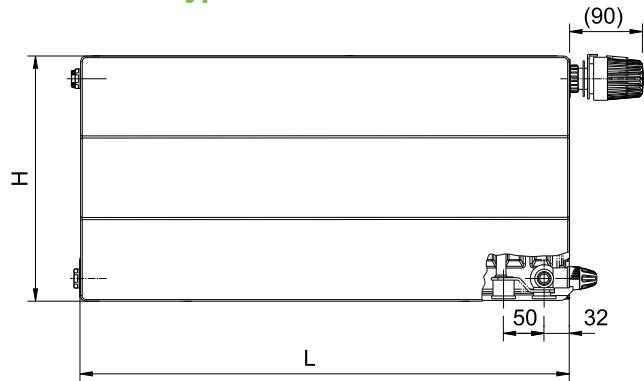
Technical data

Height H	300, 400, 500, 600, 700, 900 mm
Length L	400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1400, 1600, 1800, 2000 mm
Depth B	
Type 20 RC LINE VK	68 mm
Type 21 RC LINE VK	68 mm
Type 22 RC LINE VK	102 mm
Type 33 RC LINE VK	157 mm
Connecting pitch	50 mm
Connecting thread	6 x G1/2 inside
Highest allowed working pressure	10 bar
Highest allowed working temperature	110 °C
Radiator connection	right bottom

Description

The model **RADIK RC LINE VK** is a panel radiator with a flat front panel with fine horizontal grooves, in the version RADIK RC and in the version VENTIL KOMPAKT, which allows a **right bottom connection** to the heating system with a forced circulation. There are no hangers welded from the back side.

Overview of types



Type 20 RC LINE VK



Type 21 RC LINE VK

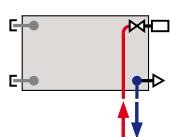


Type 22 RC LINE VK

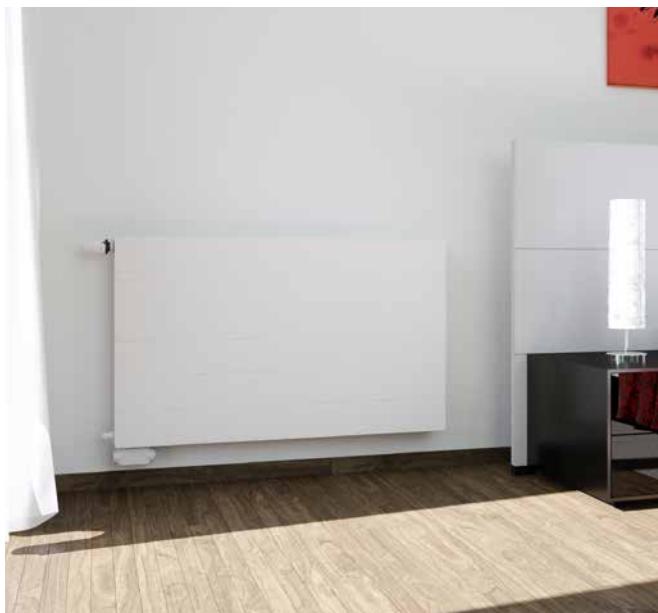


Type 33 RC LINE VK

Examples of connection to the heating system



right bottom
 $\varphi = 1$



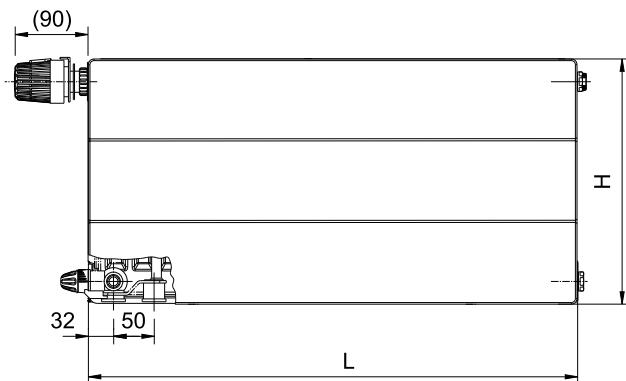
Technical data

Height H	300, 400, 500, 600, 700, 900 mm
Length L	400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1400, 1600, 1800, 2000 mm
Depth B	
Type 20 RC LINE VKL	68 mm
Type 21 RC LINE VKL	68 mm
Type 22 RC LINE VKL	102 mm
Type 33 RC LINE VKL	157 mm
Connecting pitch	50 mm
Connecting thread	6 x G1/2 inside
Highest allowed working pressure	10 bar
Highest allowed working temperature	110 °C
Radiator connection	left bottom

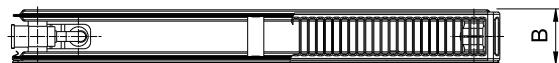
Popis

The model **RADIK RC LINE VKL** is a panel radiator with a flat front panel with fine horizontal grooves, in the version RADIK RC and in the version VENTIL KOMPAKT, which allows **a left bottom connection** to the heating system with a forced circulation. There are no hangers welded from the back side.

Overview of types



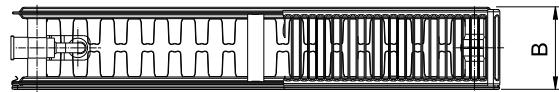
Type 20 RC LINE VKL



Type 21 RC LINE VKL

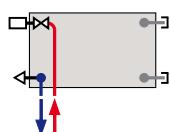


Type 22 RC LINE VKL



Type 33 RC LINE VKL

Examples of connection to the heating system



left bottom
 $\varphi = 1$

HEAT OUTPUT IN WATTS CERTIFIED TO EN 442

20 °C		Type 20 RC VKU				Type 21 RC VKU					
Length L [mm]	t ₁ /t ₂ [°C]	Height H [mm]									
		500	600	700	900	300	400	500	600	700	900
400	90/70	425	496	568	716	379	477	569	657	741	899
	75/65	335	391	447	559	298	375	447	515	580	702
	70/55	271	317	361	449	240	302	360	415	466	563
	55/45	173	201	228	280	152	191	227	261	292	351
500	90/70	531	620	710	895	474	596	711	821	926	1123
	75/65	419	489	559	699	373	469	559	644	725	877
	70/55	339	396	451	561	301	378	450	519	583	703
	55/45	216	252	285	350	190	238	283	326	366	438
600	90/70	637	744	852	1074	569	716	854	985	1111	1348
	75/65	503	587	670	839	447	562	670	773	870	1052
	70/55	407	475	541	673	361	453	540	622	700	844
	55/45	259	302	342	420	228	286	340	391	439	526
700	90/70	744	868	995	1253	663	835	996	1149	1296	1573
	75/65	587	685	782	979	522	656	782	902	1015	1228
	70/55	475	554	631	785	421	529	630	726	816	985
	55/45	302	352	399	490	266	334	397	457	512	614
800	90/70	850	992	1137	1432	758	954	1138	1314	1481	1797
	75/65	670	782	894	1118	596	750	894	1030	1160	1403
	70/55	543	633	721	897	481	604	720	830	933	1125
	55/45	345	402	455	560	304	381	453	522	585	701
900	90/70	956	1116	1279	1611	853	1074	1281	1478	1666	2022
	75/65	754	880	1005	1258	671	843	1005	1159	1305	1579
	70/55	611	712	811	1010	541	680	810	934	1050	1266
	55/45	388	453	512	630	342	429	510	587	658	789
1000	90/70	1062	1240	1421	1790	948	1193	1423	1642	1851	2247
	75/65	838	978	1117	1398	745	937	1117	1288	1450	1754
	70/55	678	792	901	1122	601	756	900	1037	1166	1407
	55/45	431	503	569	700	380	476	567	652	731	877
1100	90/70	1168	1364	1563	1969	1042	1312	1565	1806	2037	2471
	75/65	922	1076	1229	1538	820	1031	1229	1417	1595	1929
	70/55	746	871	992	1234	661	831	990	1141	1283	1547
	55/45	474	553	626	770	418	524	624	718	804	964
1200	90/70	1275	1488	1705	2148	1137	1431	1708	1970	2222	2696
	75/65	1006	1174	1340	1678	894	1124	1340	1546	1740	2105
	70/55	814	950	1082	1346	721	907	1080	1245	1399	1688
	55/45	518	604	683	840	456	572	680	783	877	1052
1400	90/70	1487	1736	1989	2506	1327	1670	1992	2299	2592	3145
	75/65	1173	1369	1564	1957	1043	1312	1564	1803	2030	2456
	70/55	950	1108	1262	1570	842	1058	1260	1452	1633	1969
	55/45	604	704	797	980	532	667	794	913	1024	1227
1600	90/70	1700	1984	2273	2864	1516	1908	2277	2627	2962	3595
	75/65	1341	1565	1787	2237	1192	1499	1787	2061	2320	2806
	70/55	1085	1266	1442	1795	962	1209	1440	1660	1866	2251
	55/45	690	805	911	1120	607	762	907	1044	1170	1403
1800	90/70	1912	2232	2557	3221	1706	2147	2561	2956	3333	4044
	75/65	1508	1760	2011	2516	1341	1687	2011	2318	2610	3157
	70/55	1221	1425	1623	2019	1082	1360	1620	1867	2099	2532
	55/45	776	906	1025	1260	683	858	1020	1174	1316	1578
2000	90/70	2124	2480	2841	3579	1895	2386	2846	3284	3703	4493
	75/65	1676	1956	2234	2796	1490	1874	2234	2576	2900	3508
	70/55	1357	1583	1803	2243	1202	1511	1800	2075	2332	2813
	55/45	863	1006	1139	1400	759	953	1134	1305	1462	1753
2300	90/70							3273	3777	4258	
	75/65							2569	2962	3335	
	70/55							2070	2386	2682	
	55/45							1304	1500	1682	
2600	90/70							3700	4269	4814	
	75/65							2904	3349	3770	
	70/55							2341	2697	3032	
	55/45							1474	1696	1901	
3000	90/70							4269	4926	5554	
	75/65							3351	3864	4350	
	70/55							2701	3112	3498	
	55/45							1701	1957	2193	

HEAT OUTPUT IN WATTS CERTIFIED TO EN 442

20 °C		Type 22 RC VKU						Type 33 RC VKU					
Length L [mm]	t ₁ /t ₂ [°C]	Height H [mm]											
		300	400	500	600	700	900	300	400	500	600	700	900
400	90/70	492	620	741	857	969	1185	699	883	1059	1229	1393	1707
	75/65	386	486	581	672	759	925	552	695	832	962	1089	1331
	70/55	311	392	468	541	610	742	447	562	670	774	875	1067
	55/45	196	246	294	340	382	462	284	356	422	485	547	664
500	90/70	616	775	926	1071	1212	1481	874	1104	1324	1537	1741	2133
	75/65	483	608	726	840	949	1157	690	869	1040	1203	1362	1664
	70/55	389	490	585	676	763	928	558	702	838	967	1093	1333
	55/45	245	308	367	424	478	578	355	444	527	606	683	830
600	90/70	739	930	1111	1285	1454	1777	1048	1325	1589	1844	2090	2560
	75/65	580	730	871	1007	1138	1388	827	1043	1247	1444	1634	1997
	70/55	467	588	701	811	915	1113	670	842	1005	1160	1312	1600
	55/45	294	370	441	509	573	694	426	533	633	727	820	996
700	90/70	862	1085	1296	1499	1696	2074	1223	1546	1854	2152	2438	2987
	75/65	676	851	1016	1175	1328	1619	965	1217	1455	1684	1906	2330
	70/55	545	686	818	946	1068	1299	782	983	1173	1354	1531	1867
	55/45	343	431	514	594	669	809	497	622	738	848	957	1161
800	90/70	985	1240	1481	1713	1939	2370	1398	1766	2119	2459	2786	3413
	75/65	773	973	1162	1343	1518	1850	1103	1390	1663	1925	2178	2662
	70/55	623	783	935	1081	1220	1484	893	1123	1340	1547	1749	2134
	55/45	392	493	588	679	764	925	569	711	844	969	1093	1327
900	90/70	1108	1395	1666	1928	2181	2666	1572	1987	2384	2766	3135	3840
	75/65	869	1094	1307	1511	1707	2082	1241	1564	1871	2165	2451	2995
	70/55	700	881	1052	1216	1373	1670	1005	1264	1508	1741	1968	2400
	55/45	441	554	661	764	860	1041	640	800	949	1090	1230	1493
1000	90/70	1231	1550	1852	2142	2423	2962	1747	2208	2649	3074	3483	4267
	75/65	966	1216	1452	1679	1897	2313	1379	1738	2079	2406	2723	3328
	70/55	778	979	1169	1351	1525	1855	1117	1404	1675	1934	2187	2667
	55/45	490	616	735	849	955	1156	711	889	1055	1211	1366	1659
1100	90/70	1354	1705	2037	2356	2665	3259	1922	2429	2914	3381	3831	4693
	75/65	1063	1338	1597	1847	2087	2544	1517	1912	2287	2647	2995	3661
	70/55	856	1077	1286	1487	1678	2041	1228	1544	1843	2128	2405	2934
	55/45	539	678	808	934	1051	1272	782	978	1160	1332	1503	1825
1200	90/70	1477	1860	2222	2570	2908	3555	2097	2650	3178	3688	4179	5120
	75/65	1159	1459	1742	2015	2276	2776	1655	2086	2495	2887	3268	3994
	70/55	934	1175	1403	1622	1830	2226	1340	1685	2010	2321	2624	3200
	55/45	588	739	882	1019	1146	1387	853	1067	1266	1454	1640	1991
1400	90/70	1723	2170	2592	2999	3392	4147	2446	3091	3708	4303	4876	5973
	75/65	1352	1702	2033	2351	2656	3238	1931	2433	2911	3368	3812	4659
	70/55	1090	1371	1637	1892	2135	2597	1564	1966	2346	2708	3061	3734
	55/45	686	862	1029	1188	1338	1619	995	1244	1477	1696	1913	2323
1600	90/70	1970	2480	2963	3427	3877	4740	2795	3533	4238	4918	5572	6826
	75/65	1546	1946	2323	2686	3035	3701	2206	2781	3326	3850	4357	5325
	70/55	1245	1567	1871	2162	2440	2968	1787	2246	2681	3095	3499	4267
	55/45	784	985	1176	1358	1529	1850	1137	1422	1688	1938	2186	2655
1800	90/70	2216	2790	3333	3855	4362	5332	3145	3974	4768	5533	6269	7680
	75/65	1739	2189	2614	3022	3415	4163	2482	3128	3742	4331	4901	5990
	70/55	1401	1763	2104	2433	2745	3339	2010	2527	3016	3481	3936	4800
	55/45	882	1109	1323	1528	1720	2081	1279	1600	1899	2180	2460	2987
2000	90/70	2462	3100	3703	4284	4846	5925	3494	4416	5297	6147	6966	8533
	75/65	1932	2432	2904	3358	3794	4626	2758	3476	4158	4812	5446	6656
	70/55	1557	1959	2338	2703	3050	3710	2234	2808	3351	3868	4373	5334
	55/45	980	1232	1470	1698	1911	2312	1421	1778	2110	2423	2733	3318
2300	90/70	2831	3565	4259	4926	5573	6408	4018	5078	6092	7070	8010	
	75/65	2222	2797	3340	3862	4363	5172	3997	4782	5534	6263		
	70/55	1790	2253	2689	3108	3508	4269	3229	3853	4448	5029		
	55/45	1126	1417	1690	1952	2197	2635	2044	2426	2786	3143		
2600	90/70	3201	4030	4814	5569	6300	7452	5741	6886	7992	9055		
	75/65	2512	3162	3775	4365	4932	5385	4519	5405	6256	7080		
	70/55	2023	2546	3040	3514	3965	4904	3651	4356	5029	5685		
	55/45	1273	1601	1910	2207	2484	3148	2311	2743	3149	3553		
3000	90/70	3693	4650	5555	6425	7270	8241	6624	7946	9221	10448		
	75/65	2898	3648	4356	5037	5691	6137	5214	6237	7218	8169		
	70/55	2335	2938	3507	4054	4575	5350	4212	5026	5802	6560		
	55/45	1469	1848	2204	2546	2866	3232	2666	3165	3634	4099		

RADIK RC PLAN/LINE VK, RADIK RC PLAN/LINE VKL

HEAT OUTPUT IN WATTS CERTIFIED TO EN 442

20 °C		Type 20 RC PLAN/LINE VK Type 20 RC PLAN/LINE VKL				Type 21 RC PLAN/LINE VK Type 21 RC PLAN/LINE VKL					
Length L [mm]	t ₁ /t ₂ [°C]	Height H [mm]									
		500	600	700	900	300	400	500	600	700	900
400	90/70	394	456	518	645	369	455	539	622	706	875
	75/65	312	361	410	509	291	358	424	489	554	684
	70/55	253	293	333	412	235	289	342	394	446	550
	55/45	162	188	213	262	149	183	216	249	280	344
500	90/70	493	570	648	806	462	569	674	778	882	1093
	75/65	390	452	513	637	364	448	530	611	692	856
	70/55	317	367	416	515	294	362	428	493	557	687
	55/45	203	235	266	328	186	229	270	311	351	430
600	90/70	591	684	777	968	554	683	809	933	1058	1312
	75/65	468	542	615	764	436	538	636	733	830	1027
	70/55	380	440	499	619	353	434	513	591	669	825
	55/45	243	282	319	394	223	275	324	373	421	516
700	90/70	690	798	907	1129	646	797	944	1089	1235	1531
	75/65	546	632	718	891	509	627	742	855	969	1198
	70/55	443	513	582	722	411	507	599	690	780	962
	55/45	284	329	372	459	261	320	378	435	491	602
800	90/70	788	912	1037	1290	738	911	1079	1244	1411	1749
	75/65	624	722	820	1018	582	717	848	978	1107	1369
	70/55	507	587	665	825	470	579	684	788	892	1100
	55/45	324	376	425	525	298	366	432	497	561	688
900	90/70	887	1026	1166	1452	831	1025	1213	1400	1588	1968
	75/65	702	813	923	1146	654	806	954	1100	1246	1540
	70/55	570	660	749	928	529	651	770	887	1003	1237
	55/45	365	423	478	590	335	412	486	559	631	774
1000	90/70	985	1140	1296	1613	923	1139	1348	1556	1764	2187
	75/65	780	903	1025	1273	727	896	1060	1222	1384	1711
	70/55	633	733	832	1031	588	724	855	985	1115	1375
	55/45	406	470	531	656	372	458	540	621	701	861
1100	90/70	1084	1254	1425	1774	1015	1253	1483	1711	1941	2405
	75/65	858	993	1128	1400	800	986	1166	1344	1522	1882
	70/55	697	807	915	1134	646	796	941	1084	1226	1512
	55/45	446	517	585	722	410	504	594	684	771	947
1200	90/70	1182	1368	1555	1935	1108	1366	1618	1867	2117	2624
	75/65	936	1084	1230	1528	872	1075	1272	1466	1661	2053
	70/55	760	880	998	1237	705	868	1027	1183	1338	1650
	55/45	487	564	638	787	447	549	648	746	841	1033
1400	90/70	1379	1596	1814	2258	1292	1594	1888	2178	2470	3061
	75/65	1092	1264	1435	1782	1018	1254	1484	1711	1938	2395
	70/55	887	1027	1164	1443	823	1013	1198	1380	1561	1925
	55/45	568	657	744	918	521	641	756	870	982	1205
1600	90/70	1576	1825	2073	2581	1477	1822	2157	2489	2823	3499
	75/65	1248	1445	1640	2037	1163	1434	1696	1955	2214	2738
	70/55	1014	1173	1331	1649	940	1158	1369	1577	1784	2200
	55/45	649	751	850	1050	596	733	864	994	1122	1377
1800	90/70	1773	2053	2332		1662	2050	2427	2800	3175	
	75/65	1404	1625	1845		1309	1613	1908	2200	2491	
	70/55	1140	1320	1497		1058	1303	1540	1774	2007	
	55/45	730	845	957		670	824	973	1119	1262	
2000	90/70	1970	2281	2592		1846	2277	2696	3111	3528	
	75/65	1560	1806	2050		1454	1792	2120	2444	2768	
	70/55	1267	1467	1663		1175	1447	1711	1971	2230	
	55/45	811	939	1063		745	916	1081	1243	1402	

RADIK RC PLAN/LINE VK, RADIK RC PLAN/LINE VKL

HEAT OUTPUT IN WATTS CERTIFIED TO EN 442

20 °C		Type 22 RC PLAN/LINE VK Type 22 RC PLAN/LINE VKL						Type 33 RC PLAN/LINE VK Type 33 RC PLAN/LINE VKL					
Length L [mm]	t ₁ /t ₂ [°C]	Height H [mm]											
		300	400	500	600	700	900	300	400	500	600	700	900
400	90/70	482	604	720	831	938	1144	681	860	1029	1191	1350	1655
	75/65	379	475	566	652	736	897	535	676	809	936	1059	1292
	70/55	306	383	456	526	594	723	431	545	652	756	853	1037
	55/45	194	242	288	332	374	454	271	343	412	477	537	646
500	90/70	602	755	900	1038	1172	1430	852	1075	1287	1489	1688	2069
	75/65	474	594	707	816	921	1122	669	845	1011	1171	1324	1616
	70/55	383	479	570	658	742	903	539	681	816	945	1066	1296
	55/45	242	303	360	415	467	568	339	429	515	597	671	808
600	90/70	723	906	1079	1246	1407	1716	1022	1290	1544	1786	2025	2483
	75/65	569	712	848	979	1105	1346	802	1013	1213	1405	1589	1939
	70/55	459	575	685	789	890	1084	646	817	979	1134	1280	1555
	55/45	291	363	432	498	561	682	407	515	618	716	805	970
700	90/70	843	1056	1259	1453	1641	2001	1192	1505	1801	2084	2363	2896
	75/65	664	831	990	1142	1289	1570	936	1182	1415	1639	1854	2262
	70/55	536	671	799	921	1039	1265	754	953	1142	1323	1493	1814
	55/45	339	424	504	580	654	795	475	601	720	836	939	1131
800	90/70	964	1207	1439	1661	1876	2287	1363	1720	2058	2382	2700	3310
	75/65	758	950	1131	1305	1473	1794	1070	1351	1618	1873	2118	2585
	70/55	613	767	913	1052	1187	1445	862	1089	1305	1512	1706	2073
	55/45	388	484	576	663	748	909	543	687	823	955	1073	1293
900	90/70	1084	1358	1619	1869	2110	2573	1533	1936	2316	2680	3038	3724
	75/65	853	1068	1273	1468	1657	2019	1203	1520	1820	2107	2383	2908
	70/55	689	862	1027	1184	1336	1626	970	1226	1468	1700	1920	2333
	55/45	436	545	648	746	841	1023	610	772	926	1074	1207	1454
1000	90/70	1205	1509	1799	2076	2345	2859	1703	2151	2573	2977	3375	4138
	75/65	948	1187	1414	1631	1841	2243	1337	1689	2022	2341	2648	3231
	70/55	766	958	1141	1315	1484	1807	1077	1362	1631	1889	2133	2592
	55/45	484	606	720	829	935	1136	678	858	1029	1194	1341	1616
1100	90/70	1325	1660	1979	2284	2579	3145	1874	2366	2830	3275	3713	4551
	75/65	1043	1306	1555	1794	2025	2467	1471	1858	2224	2575	2913	3554
	70/55	842	1054	1255	1447	1632	1987	1185	1498	1794	2078	2346	2851
	55/45	533	666	792	912	1028	1250	746	944	1132	1313	1476	1777
1200	90/70	1446	1811	2159	2492	2814	3431	2044	2581	3088	3573	4051	4965
	75/65	1138	1424	1697	1957	2209	2692	1604	2027	2426	2809	3178	3877
	70/55	919	1150	1369	1578	1781	2168	1293	1634	1957	2267	2559	3110
	55/45	581	727	864	995	1122	1363	814	1030	1235	1432	1610	1939
1400	90/70	1687	2113	2519	2907	3283	4003	2385	3011	3602	4168	4726	5793
	75/65	1327	1662	1980	2283	2577	3140	1872	2365	2831	3277	3707	4523
	70/55	1072	1342	1597	1841	2078	2529	1508	1906	2284	2645	2986	3628
	55/45	678	848	1008	1161	1309	1591	950	1202	1441	1671	1878	2262
1600	90/70	1927	2415	2878	3322	3752	4575	2725	3441	4117	4764	5401	6620
	75/65	1517	1899	2262	2610	2946	3589	2139	2702	3235	3746	4237	5170
	70/55	1225	1533	1825	2104	2374	2891	1724	2179	2610	3023	3413	4147
	55/45	775	969	1152	1327	1496	1818	1085	1373	1647	1910	2146	2585
1800	90/70	2168	2717	3238	3737	4220	5003	3066	3871	4632	5359	6076	
	75/65	1706	2137	2545	2936	3314	4207	3040	3640	4214	4766		
	70/55	1378	1725	2054	2367	2671	3193	2451	2936	3401	3839		
	55/45	872	1090	1296	1493	1683	2121	1545	1853	2148	2415		
2000	90/70	2409	3019	3598	4153	4689	5347	3407	4301	5146	5955	6751	
	75/65	1896	2374	2828	3262	3682	4264	3378	4044	4682	5296		
	70/55	1531	1916	2282	2630	2968	3215	2723	3262	3779	4266		
	55/45	969	1211	1440	1659	1870	2137	1717	2058	2387	2683		

COEFFICIENTS

FOR THE CONVERSION OF HEAT OUTPUTS ACCORDING TO THE OPERATING STATE

		Heat outputs RADIK RC valid for the bottom RIGHT connection	
Type		RADIK RC VKU	RADIK RC PLAN/LINE VK
		φ	φ
20 RC		1,00	1,00
		0,77	0,75
21 RC		1,00	1,00
		0,77	0,75
22 RC		1,00	1,00
		0,64	0,62
33 RC		1,00	1,00
		0,73	0,71
		Heat outputs RADIK RC valid for the bottom LEFT connection	
Type		RADIK RC VKU	RADIK RC PLAN/LINE VKL
		φ	φ
20 RC		1,00	1,00
		0,77	0,75
21 RC		1,00	-
		0,60	-
21 RC		-	1,00
		-	0,75
22 RC		1,00	1,00
		0,64	0,62
33 RC		1,00	-
		0,49	-
33 RC		-	1,00
		-	0,71

BASIC TECHNICAL PARAMETERS

RADIK RC VKU

		Type 20 RC VKU				Type 21 RC VKU					
Height H [mm]		500	600	700	900	300	400	500	600	700	900
Nominal heat output [W/m]		838	978	1117	1398	745	937	1117	1288	1450	1754
Temp. exponent n [-]		1,3005	1,3014	1,3192	1,3548	1,3197	1,3238	1,3278	1,3319	1,3405	1,3578
K _T	c ₀	0,051383		1,2872		0,033993			1,3505		
b	c ₁	0,7345		0,00005091		0,8309			-0,00002395		
Radiator weight [kg/m]		20,4	24,4	29,3	36,4	14,3	18,8	22,1	26,4	30,6	40,2
Water volume [l/m]		5,1	5,8	6,6	8,3	3,7	4,4	5,1	5,8	6,6	8,3

RADIK RC VKU

		Type 22 RC VKU						Type 33 RC VKU					
Height H [mm]		300	400	500	600	700	900	300	400	500	600	700	900
Nominal heat output [W/m]		966	1216	1452	1679	1897	966	1216	1452	1679	2341	2723	3328
Temp. exponent n [-]		1,3297	1,3316	1,3334	1,3353	1,3427	1,3297	1,3316	1,3334	1,3353	1,3187	1,3498	1,3626
K _T	c ₀	0,051202		1,34380000			0,074287			1,33630000			
b	c ₁	0,805500		-0,00000514			0,807300			-0,00000262			
Radiator weight [kg/m]		17	22,7	25,7	31,1	36,2	47,1	25,5	34	38,9	46,8	54,4	70,9
Water volume [l/m]		3,7	4,4	5,1	5,8	6,6	8,4	5,3	6,4	7,6	8,7	10,0	12,6

RADIK RC PLAN/LINE VK, RADIK RC PLAN/LINE VKL

		Type 20 RC PLAN/LINE VK Type 20 RC PLAN/LINE VKL						Type 21 RC PLAN/LINE VK Type 21 RC PLAN/LINE VKL					
Height H [mm]		500	600	700	900	300	400	500	600	700	900		
Nominal heat output [W/m]		780	903	1025	1273	727	896	1060	1222	1384	1711		
Temp. exponent n [-]		1,2801	1,2800	1,2859	1,2978	1,3098	1,3145	1,3192	1,3239	1,3311	1,3455		
K _T	c ₀	0,0874290		1,24660000			0,11665000			1,28640000			
b	c ₁	0,6584000		0,00006546			0,63580000			0,00006698			
Radiator weight [kg/m]		24,2	28,8	34,8	44,5	16,8	22,1	26,1	31,1	36,1	47,8		
Water volume [l/m]		5,1	5,8	6,6	8,3	3,7	4,4	5,1	5,8	6,6	8,3		

RADIK RC PLAN/LINE VK, RADIK RC PLAN/LINE VKL

		Type 22 RC PLAN/LINE VK Type 22 RC PLAN/LINE VKL						Type 33 RC PLAN/LINE VK Type 33 RC PLAN/LINE VKL					
Height H [mm]		300	400	500	600	700	900	300	400	500	600	700	900
Nominal heat output [W/m]		948	1187	1414	1631	1841	2243	1337	1689	2022	2341	2648	3231
Temp. exponent n [-]		1,3141	1,3174	1,3208	1,3241	1,3265	1,3314	1,3284	1,3252	1,3219	1,3187	1,3313	1,3565
K _T	c ₀	0,062397		1,32230000			0,063226			1,3417000			
b	c ₁	0,780800		0,00000157			0,828200			-0,0000116			
Radiator weight [kg/m]		19,6	25,9	29,7	35,7	41,7	54,8	28,2	37,4	42,9	51,5	59,9	78,7
Water volume [l/m]		3,7	4,4	5,1	5,8	6,6	8,4	5,3	6,4	7,6	8,7	10,0	12,6

Characteristic equation: $\Phi = K_T \cdot H^b \cdot \Delta T^{(c_0 + c_1 \cdot H)}$

DATA FOR FITTINGS

TABLE OF SIZES

20 RC VKU	21 RC VKU	22 RC VKU	33 RC VKU
20 RC PLAN VK	21 RC PLAN VK	22 RC PLAN VK	33 RC PLAN VK
20 RC PLAN VKL	21 RC PLAN VKL	22 RC PLAN VKL	33 RC PLAN VKL
20 RC LINE VK	21 RC LINE VK	22 RC LINE VK	33 RC LINE VK
20 RC LINE VKL	21 RC LINE VKL	22 RC LINE VKL	33 RC LINE VKL
D	37÷47	37÷47	37÷47
X1	70÷80	70÷80	87÷97 87÷97 (142÷152*)
X2	103÷113	103÷113	137÷147 192÷202

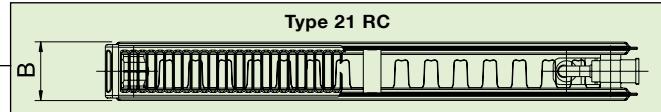
The values of parameters **X1** and **X2** depend on the type of brackets used, specifically on the distance D.

The value **X2** is increased by 2 mm for PLAN radiators.

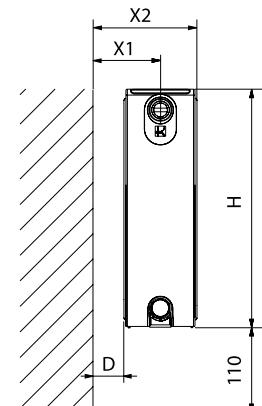
*The value **X1** is valid only for the Type 33 RC VKU with the bottom left connection.

OVERVIEW OF TYPES

Type	Number of panels	Number of convortor plates
Type 20 RC	2	0
Type 21 RC	2	1
Type 22 RC	2	2
Type 33 RC	3	3



Position of radiator



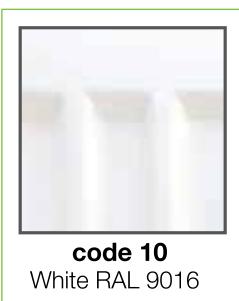
MOUNTING BENEFITS

Connection flexibility

The unique characteristic of the radiator RADIK RC VKU in the basic design is bottom connection either from the left or from the right without the need of auxiliary elements. In term of panels, the radiator is entirely the same. A slight modification consists only in the choice of a locking sleeve of the distribution valve head which controls the flow. The package includes everything. It is therefore not necessary to store extra the radiators for the left and right connections. For the forwarding of radiators on the building area it is only necessary to determine the size and number of the radiators and the installation company will adapt the radiators by means of the locking sleeve of the valve.

RADIK RC VKU brings a reduction of inventories both for the wholesale and the installing company and reduces the risk of errors by the confusion of the left connection for the right and vice versa.

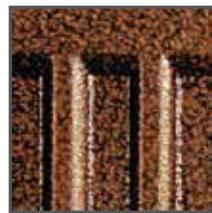
COLOUR CARD AND AVAILABLE VERSIONS



code 10
White RAL 9016



code 40
Alloy Black



code 45
Pearl Brown



code 35
Silber



code 42
Gold



code 32
Anthrazit Metallic



code 14
Jasmine



code 26
Pergamon



code 16
Bahama



code 22
Manhattan



code 37
Red RAL 3001



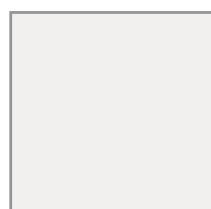
code 39
Black RAL 9005

PLAN SET / LINE SET - available versions of detachable front panels

The model RADIK RC VKU can be complemented with a new front panel in the version PLAN or LINE in basic white RAL 9016. Front panels are available also in other colours from RAL colour range with an extra charge.



LINE SET



PLAN SET

Notice:

The colour of the radiator may vary in comparison with the colour shown in the colour card. The standard paint finish is RAL 9016, other colours from KORADO colour range with an extra charge 30%. Radiators can be ordered also in other colours from RAL colour range with an extra charge 40%.

QUALITY AND SAFETY

Quality of steel panel radiators RADIK RC

The high quality of radiators RADIK RC has been confirmed by acquiring the right to use the national quality marks for the European markets. These marks declare that the stipulated requirements on quality of material, technology, production process and tests of radiators RADIK RC are strictly followed.

- **Quality management system according to ISO 9001:2008**



The well-established quality management system according to ISO 9001:2008 in combination with the national quality marks guarantees the highest degree in achieving a permanent quality of products and all activities of KORADO company on European as well as world-wide markets.

- **Quality mark for the English market**

- it has been granted for the following product range of the steel panel radiators RADIK RC



Reg. No. GZ	Model	Type
0572	RADIK RC VKU	Type 20 RC
0579	RADIK RC PLAN/LINE VK RADIK RC PLAN/LINE VKL	Type 20 RC
0580	RADIK RC PLAN/LINE VK RADIK RC PLAN/LINE VKL	Type 21 RC
0581	RADIK RC PLAN/LINE VK RADIK RC PLAN/LINE VKL	Type 22 RC
0582	RADIK RC PLAN/LINE VK RADIK RC PLAN/LINE VKL	Type 33 RC
1121	RADIK RC VKU	Type 21 RC
1122	RADIK RC VKU	Type 22 RC
1123	RADIK RC VKU	Type 33 RC

Steel panel radiators RADIK RC safety and conformity with the European directives and standards

- **European standard EN 442 for radiators**



Heat outputs of the steel panel radiators RADIK RC were measured according to EN 442 in an accredited laboratory HLK Stuttgart GmbH.

• by using **CE mark** the producer confirms that the steel panel radiators **RADIK RC** are in conformity with the characteristics stated in the Declaration of Performance issued in conformity with the directive of EP and the Council (EU) No. 305/2011. This conformity was approved by the notified body No.1015, Strojírenský zkušební ústav, s.p. Brno.

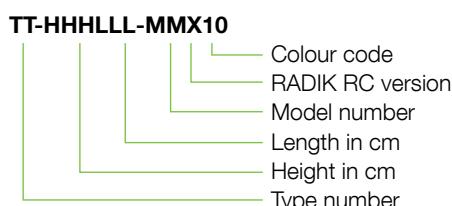


DATA FOR PLACING ORDER

Steel panel radiators	Version	Model	Type	Code for ordering
RADIK	RADIK RC VENTIL KOMPAKT	RADIK RC VKU	20 RC VKU	20-HHHLLL-C0X10
			21 RC VKU	21-HHHLLL-C0X10
			22 RC VKU	22-HHHLLL-C0X10
			33 RC VKU	33-HHHLLL-C0X10
	RADIK RC PLAN	RADIK RC PLAN VK	20 RC PLAN VK	20-HHHLLL-70X10
			21 RC PLAN VK	21-HHHLLL-70X10
			22 RC PLAN VK	22-HHHLLL-70X10
			33 RC PLAN VK	33-HHHLLL-70X10
	RADIK RC LINE	RADIK RC LINE VK	20 RC LINE VK	20-HHHLLL-90X10
			21 RC LINE VK	21-HHHLLL-90X10
			22 RC LINE VK	22-HHHLLL-90X10
			33 RC LINE VK	33-HHHLLL-90X10
			20 RC LINE VKL	20-HHHLLL-F0X10
			21 RC LINE VKL	21-HHHLLL-F0X10
			22 RC LINE VKL	22-HHHLLL-F0X10
			33 RC LINE VKL	33-HHHLLL-F0X10

ORDER CODE

Table for creation of a code



Example for creation of a code

RADIK RC VKU steel panel radiator.
type 22, height H = 500 mm, length L = 1800 mm,
colour White RAL 9016

Correct code: T T - H H H L L L - M M X 1 0
2 2 - 0 5 0 1 8 0 - C 0 X 1 0



RC

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