

Floor convectors

LINE LINE FAN LINE POOL





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HEATMANN

HEATMANN GmbH was founded in a small German town of Bückeberg in 2013. HEATMANN is a new, but rapidly developing manufacturer of heating equipment. We take pride in our team of experienced and highly qualified engineers, architects, designers and other partners who develop innovative heating solutions.

OUR VISION

Our main objective is to integrate ergonomic management, maintenance, cutting-edge technologies, energy efficiency and attractive and unique design. HEATMANN aims to manufacture heating equipment which would be not only energy efficient, but also outstanding in design and comfort.

EVOLUTION

HEATMANN introduced its first products to the German market in the Summer of 2013. In the Spring of 2014 the company has introduced its production in the United Kingdom, Switzerland, Austria, France, Italy, Spain, Russia and Poland.

PRODUCTS

Currently, HEATMANN manufactures freestanding / wall mounted convectors and trench convectors. These products were in development, including testing and upgrades, for more than 9 months. After the launch of mass production, these products have become high in demand due to their unique technological solutions and appealing appearance.

Later, in 2014, HEATMANN plans to introduce its newly created convectors intended for houses, public places and industrial buildings.

TECHNOLOGIES AND INNOVATIONS

HEATMANN founded its own laboratory, which develops innovative solutions and performs continuous testing of their products to reach optimal results, and become a leader in Western Europe. The laboratory has 5 professional and highly experienced German scientists and engineers.

LABORATORY

HEATMANN founded its own laboratory, which develops innovative solutions and performs continuous testing of their products to reach optimal results, and become a leader in Western Europe.

HEATMANN LABORATORY is in constant cooperation with top German scientists and engineers. In the process of development of exclusive technologies and products many specialists are involved. For example, specialists of materials science, who choose and further enhance the most effective and durable materials. Others include experts of cost-efficiency and statistics who choose solutions which prove to be of utmost effectiveness; skillful and experienced construction engineers who are continuously working to improve the ways products are designed; an environmental specialist who takes care that every newly developed technology would be eco-friendly and energy-saving, and a professor of thermal engineering who establishes aims and goals, and later supervises teamwork.

HEATMANN LABORATORY has already developed and adopted various technologies. Energy efficiency is one of the key areas of technological development. Our laboratory has pioneered and implemented MAX FLOW® technology, which guarantees the maximum possible volume of hot air flow through the heat exchanger.

A team specializing in environmental protection has developed ECO HEAT® heat exchangers, which use water resources economically, thereby contributing to saving the planet.

The innovations developed by HEATMANN scientists and engineers contribute to the global thermal engineering efficiency improvements.



CLIMATE BALANCE responds to temperature, wind, or solar thermal changes and as if an assistant of yours handles heating, effectively uses energy resources and maintains temperature.

CLIMATE BALANCE technology was developed to bind the heating system with environmental climate. This technology helps in heating process automation and reacts instantly to thermal changes in the environment. Process automation aids in maintaining comfortable room temperature and decreasing heating costs.

CLIMATE BALANCE technology which was developed at HEATMANN LABORATORY takes continual care of heating control. This denotes that when the sun shines, the technology automatically reduces heating since the room already receives sufficient amount of it. CLIMATE BALANCE will not allow your premises to overheat when the sun is shining outside, or to cool when you are ventilating the room.

CLIMATE BALANCE technology consists of CLIMATE BALANCE SENSOR® and CLIMATE BALANCE CONTROLLER®.

CLIMATE BALANCE SENSOR® is a special sensor which reacts to changes in heat and cold, solar rays, air movement, and other factors that may influence the amount of heat indoors. The sensor is installed on the windows for here is where it can monitor thermal changes in the room with the greatest accuracy.

CLIMATE BALANCE CONTROLLER® is part of the system which is responsible for the very regulation of thermal changes in the room.

Products with CLIMATE BALANCE technology will allow you to forget manual heating regulation and sustain the wanted temperature.



ENERGY SAVING technology uses a new generation EC fans, which due to their unique parts and structure significantly reduce the cost of electricity required for heating.

HEATMANN LABORATORY team has a set a goal to decrease the amount of heaters' electricity consumption in order to protect the environment and minimize heating costs.

The aim of ENERGY SAVING technology is to use the energy efficiently and make heating products safer.

HEATMANN LABORATORY has tailored new generation EC fans which use notably less energy because of its ergonomic structure that reduces friction between the machine elements and significantly more economical engine. The engine's ability to choose different speeds makes this technology more effective and much more attractive to use.

Up to
50%
less energy

Aforementioned technology enables to save up to 2 times more energy in comparison to standard fans which are mounted on convectors.



Unique product design ensures extremely high and rapid air circulation through the heat exchanger plates.

Developing MAX FLOW® technology our specialists have employed ECO HEAT heat exchangers which are characterized by their exceptional materials and architecture that increases the heat efficiency up to 1.5 times.

During construction testing scientists have discovered the most efficient design which ensures highest air permeability in a convection heating device. The construction of heat exchanger itself, its position and size, allowed to develop MAX FLOW® technology which enables faster air circulation between heat exchanger plates.

Therefore, due to MAX FLOW® technology the premises warm up faster and the thermal energy is used in a more effective manner. This solution decreases time lapse required to reach the needed temperature. This thus guarantees heating system to be dynamic, allowing the usage of heating the very moment it is needed.

The special construction enabled most convectors to be diminished in size. After adapting this solution, now we can manufacture smaller convectors with the same efficiency which means, that heating system will take considerably less space.

MAX FLOW® construction is another effective solution developed by HEATMANN LABORATORY and used in all of the company's products; therefore, they are of especially high efficiency.



Unique composition and design of the heat exchanger make it cost effective, efficient, it uses little water, and heats the premises faster.

Convection heating is based on the flow of water through the heat exchanger. The amount of water influences many factors associated with heating efficiency, energy consumption and costs.

HEATMANN LABORATORY has designed ECO HEAT heat exchangers that are an important step in heating equipment evolution.

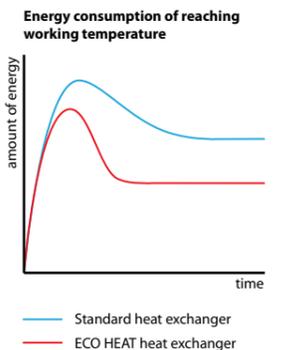
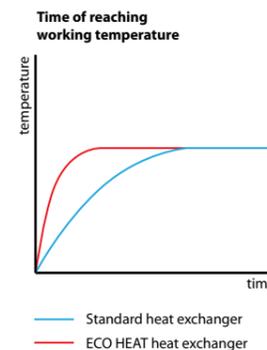
ECO HEAT heat exchangers are designed in a way that they would consume smaller amounts of water than the standard convectors. Laboratory experts designing the heat exchangers chose an improved metal alloy which carries heat faster and a reduced main pipe's cross-section, both of which are exactly what had an impact on the decrease of water capacity.



ECO HEAT heat exchanger design has not changed from the classical heat exchanger. However, after changing the structural materials, main tube's cross-section, as well as the layout and thickness of the heat exchanger's aluminum plates, we achieved astounding results. According to HEATMANN LABORATORY estimates, we increased the heat efficiency up to 1.5 times.

Water capacity has a huge impact on the heating processes. ECO HEAT heat exchanger capacity reduction lowers the amount of water in the heating system. That is what influences heating with faster hot water circulation, and energy costs, which then result that less energy is needed to heat a smaller amount of water.

ECO HEAT heat exchangers basically took a huge step forward towards optimizing the heating process. This decision is eco-friendly and minimizes the heating costs by using a small amount of water and energy resources. An increase in efficiency also guarantees a notably faster heating of the premises.



We care about the future of the Earth! Products with this label are made from 100% recyclable materials.

In a world where resources are limited they must be used responsibly and their reuse taken care of.

While developing convectors, HEATMANN LABORATORY specialists use only materials which can be recycled and used again.

All metals and alloys used in the production of convectors are designed in a way that allows them to be recycled and reused many times in the future.

Other convector elements, such as plastic or wood are also so chosen for they were in position to be reprocessed in the future.

HEATMANN is a socially responsible company that considers the preservation of nature and the way manufacturing impacts the environment, with great care. Therefore, when using the company's products, one can be rest assured that the products are made from 100 % recyclable materials.



LINE



“LINE” SERIES - FLOOR CONVECTORS WITH NATURAL CONVECTION

Floor convectors without a ventilator of a series “LINE” are devices functioning on the basis of a physical phenomenon called “natural convection”. Convection is understood as a vertical movement of a significant air flow generated by temperature difference of its macro-particles that move in upward direction during the temperature increase. Series “LINE” convectors are designed for

heating residential and office space, salesroom, hotels, showrooms, etc., mostly places with different kinds of glass or stain-glass windows, walls installed. Due to the unique functions our convectors provide not only economical room heating, but also a comfortable stay in it due to the fact that the glazed area is divided by a warm air flow curtain that additionally heats the air in the room.

ENERGY SAVING

Company “HEATMANN” using only the best materials in our heat-exchange units offers a very effective device in respect of the heating space capacity. Very high room heating velocity is acquired by the means of heating super small amount of heat-carrying agent and optimally

used materials in the whole heating system, and in such a manner high efficiency of this device is acquired. In comparison of classical steel radiators with the same heating capacity require ten times more water and consequently use more energy for heating this water.

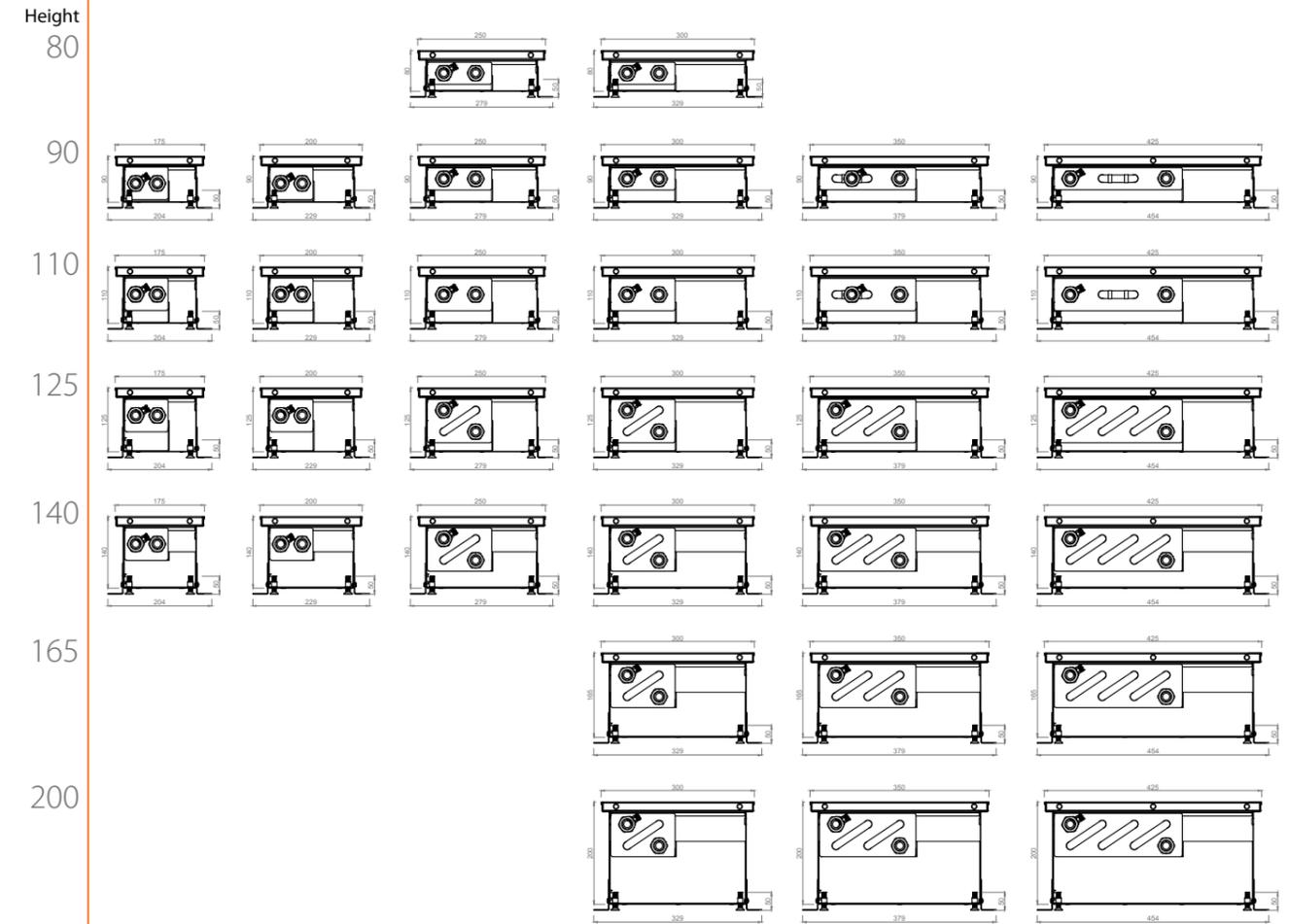
HIGH QUALITY MATERIALS

Our heat-exchange units are produced from the best heat conductive materials on the basis of copper, aluminium and brass, where all the components that have optimal form and size with unique dust proof and dirt

guard lacquer graphitic-grey coating, form one compact device guaranteeing maximum efficiency, functionality and the long-term usage possibility in household or industrial cleaning conditions, etc.

TECHNOLOGIES





CONVECTOR

Width	175, 200, 250, 300, 350, 425 mm
Height	80, 90, 110, 125, 140, 165, 200 mm
Length	800–4800 mm in step 100 mm
Height adjustment	0–35 mm
Stainless trough	galvanized steel covered with durable spray painting. Color: black matt or dark grey matt. Also stainless steel DIN 1,4301 (17 240)
Grill type	cross / linear
Grill material	anodized aluminium, wood, stainless steel
Heat medium connection	2 × G1/2" inner

OPERATING CONDITIONS

Max. working temperature	110 °C
Working overpressure	1,6 MPa (16 Bar)
Max. working overpressure	2,5 MPa (25 Bar)
Ambient temperature	+2°C – +40 °C
Relative humidity	20–70 %



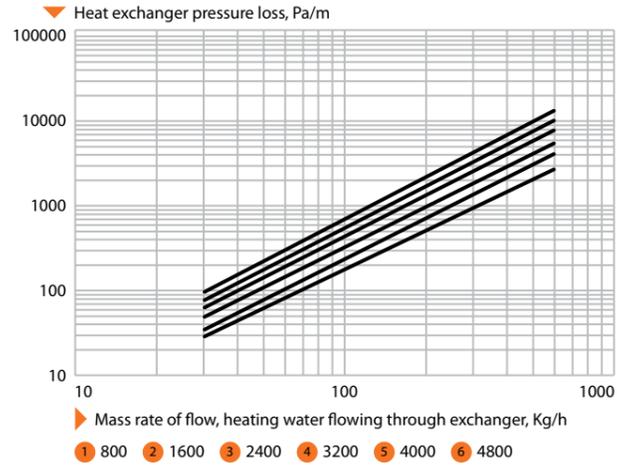
HEATING OUTPUT

Height	Width	Q [W]	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	
80	250	90/70/20°C	185	221	257	294	330	367	403	440	476	512	549	585	622	658	696	
		75/65/20°C	144	172	200	229	257	286	314	343	371	399	428	456	485	513	542	
	300	90/70/20°C	190	227	265	303	341	378	416	454	491	528	567	604	641	678	717	
		75/65/20°C	148	177	206	236	265	294	324	353	382	411	441	470	499	528	558	
90	175	90/70/20°C	128	154	179	205	230	256	281	307	331	358	382	408	433	459	484	
		75/65/20°C	98	118	137	157	176	196	215	235	254	274	293	313	332	352	371	
	200	90/70/20°C	153	183	214	244	274	304	334	364	396	426	456	486	516	547	577	
		75/65/20°C	117	140	164	187	210	233	256	279	303	326	349	372	395	419	442	
	250	90/70/20°C	220	263	307	351	393	437	481	524	568	612	655	699	741	785	829	
		75/65/20°C	171	205	239	273	306	340	374	408	442	476	510	544	577	611	645	
	300	90/70/20°C	234	280	326	372	418	465	511	557	603	649	696	742	788	834	880	
		75/65/20°C	182	218	254	290	326	362	398	434	470	506	542	578	614	650	686	
	350	90/70/20°C	269	322	375	428	481	535	588	641	693	746	800	853	906	959	1012	
		75/65/20°C	209	251	292	334	375	416	458	499	541	582	623	665	706	748	789	
	425	90/70/20°C	336	403	470	536	603	670	737	803	870	937	1002	1069	1136	1203	1269	
		75/65/20°C	261	313	365	416	468	520	572	623	675	727	778	830	882	934	985	
110	175	90/70/20°C	169	203	236	270	304	337	371	403	437	470	504	538	571	605	638	
		75/65/20°C	129	155	180	206	232	257	283	308	334	359	385	411	436	462	487	
	200	90/70/20°C	179	215	250	285	322	358	393	428	464	499	534	570	606	642	677	
		75/65/20°C	137	164	191	218	246	273	300	327	354	381	408	435	463	490	517	
	250	90/70/20°C	270	324	377	431	484	539	592	646	699	753	807	860	914	967	1021	
		75/65/20°C	207	248	289	330	371	413	454	495	536	577	618	659	700	741	782	
	300	90/70/20°C	297	355	413	472	531	589	648	707	766	825	883	941	1000	1059	1117	
		75/65/20°C	227	272	316	361	406	451	496	541	586	631	676	720	765	810	855	
	350	90/70/20°C	342	408	475	543	611	677	745	813	881	949	1015	1082	1150	1218	1285	
		75/65/20°C	261	313	363	415	467	519	570	622	674	726	777	828	880	932	983	
	425	90/70/20°C	394	471	549	628	705	784	861	939	1018	1095	1173	1251	1329	1406	1485	
		75/65/20°C	305	365	425	486	546	607	667	727	788	848	908	969	1029	1089	1150	
125	175	90/70/20°C	176	211	245	280	315	350	384	419	453	489	523	558	592	628	662	
		75/65/20°C	134	161	187	214	240	267	293	320	346	373	399	426	452	479	505	
	200	90/70/20°C	184	220	257	294	329	366	402	439	476	511	548	585	621	657	693	
		75/65/20°C	140	168	196	224	251	279	307	335	363	390	418	446	474	501	529	
	250	90/70/20°C	306	366	428	488	549	609	670	730	792	852	913	973	1034	1094	1155	
		75/65/20°C	235	281	328	374	421	467	514	560	607	653	700	746	793	839	886	
	300	90/70/20°C	341	409	477	544	612	680	748	815	883	951	1018	1086	1154	1222	1289	
		75/65/20°C	266	319	372	424	477	530	583	635	688	741	793	846	899	952	1004	
	350	90/70/20°C	392	470	549	626	704	782	860	937	1016	1094	1171	1249	1327	1405	1482	
		75/65/20°C	306	367	428	488	549	610	671	730	791	852	912	973	1034	1095	1155	
	425	90/70/20°C	514	616	718	820	922	1024	1126	1228	1330	1432	1533	1635	1737	1839	1941	
		75/65/20°C	398	477	556	635	714	793	872	951	1030	1109	1187	1266	1345	1424	1503	
140	175	90/70/20°C	181	217	252	289	324	360	395	432	468	503	540	575	611	646	683	
		75/65/20°C	138	165	192	220	247	274	301	329	356	383	411	438	465	492	520	
	200	90/70/20°C	190	229	267	303	342	380	416	455	493	531	567	606	644	682	719	
		75/65/20°C	145	174	203	231	260	289	317	346	375	404	432	461	490	519	547	
	250	90/70/20°C	324	388	451	515	580	644	708	771	835	900	964	1028	1092	1157	1220	
		75/65/20°C	249	298	347	396	446	495	544	593	642	692	741	790	839	889	938	
	300	90/70/20°C	362	434	507	579	650	722	794	865	937	1009	1081	1153	1225	1297	1369	
		75/65/20°C	278	333	389	444	499	554	609	664	719	774	829	885	940	995	1050	
	350	90/70/20°C	416	499	583	666	748	830	913	995	1078	1160	1243	1326	1409	1492	1574	
		75/65/20°C	320	383	447	511	574	637	700	764	827	890	953	1018	1081	1144	1208	
	425	90/70/20°C	570	682	794	908	1020	1133	1245	1359	1471	1583	1697	1810	1922	2034	2148	
		75/65/20°C	441	528	615	703	790	877	964	1052	1139	1226	1314	1401	1488	1575	1663	
165	300	90/70/20°C	380	455	529	605	679	755	831	905	981	1055	1131	1206	1281	1356	1431	
		75/65/20°C	291	349	406	464	521	579	637	694	752	809	867	925	982	1040	1097	
	350	90/70/20°C	437	523	608	696	781	868	956	1041	1128	1213	1301	1387	1473	1559	1646	
		75/65/20°C	335	401	467	534	599	666	733	798	865	930	997	1064	1129	1196	1262	
	425	90/70/20°C	650	779	908	1037	1165	1294	1423	1552	1680	1809	1938	2067	2196	2324	2453	
		75/65/20°C	500	599	698	797	896	995	1094	1193	1292	1391	1490	1589	1688	1787	1886	
200	300	90/70/20°C	386	462	539	615	692	768	845	922	997	1074	1150	1227	1303	1380	1456	
		75/65/20°C	296	354	413	471	530	588	647	706	764	823	881	940	998	1057	1115	
	350	90/70/20°C	444	531	620	707	796	883	972	1060	1147	1235	1323	1411	1499	1587	1674	
		75/65/20°C	340	407	475	542	610	676	744	812	879	947	1013	1081	1148	1216	1282	
	425	90/70/20°C	707	847	987	1128	1267	1407	1547	1688	1827	1967	2108	2248	2387	2527	2668	
		75/65/20°C	542	649	756	864	971	1078	1185	1293	1400	1507	1615	1722	1829	1936	2044	

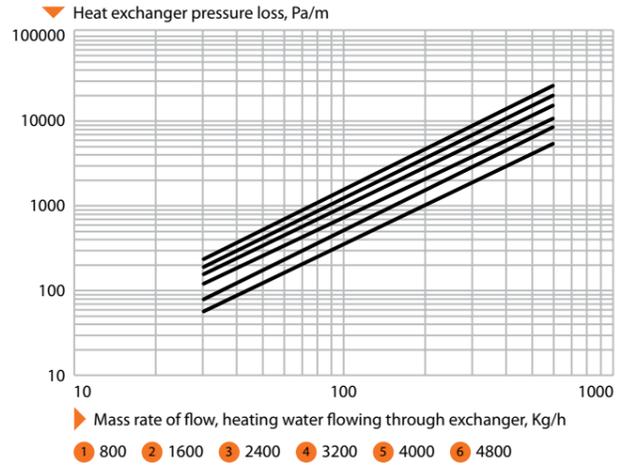
HEATING OUTPUT

Height	Width	Q [W]	2300	2400	2500	2600	2700	2800	2900	3000	3300	3500	3700	4000	4400	4500	4800	
80	250	90/70/20°C	732	768	805	841	878	914	951	987	1096	1169	1242	1352	1498	1534	1644	
		75/65/20°C	570	598	627	655	684	712	741	769	854	911	968	1053	1167	1195	1281	
	300	90/70/20°C	754	792	830	867	905	942	980	1018	1131	1205	1281	1394	1545	1582	1695	

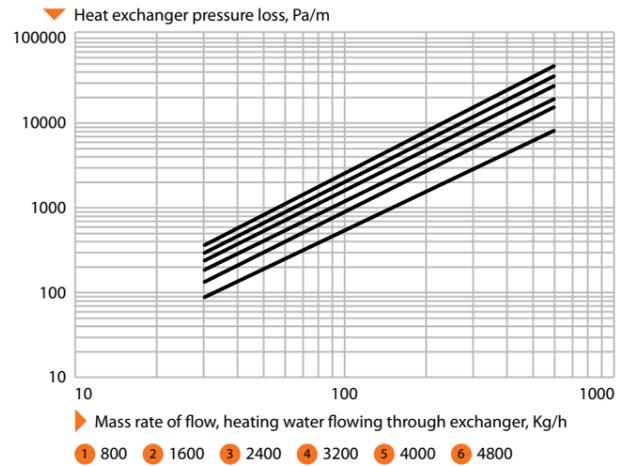
Pressure loss 2 tubular heat exchanger



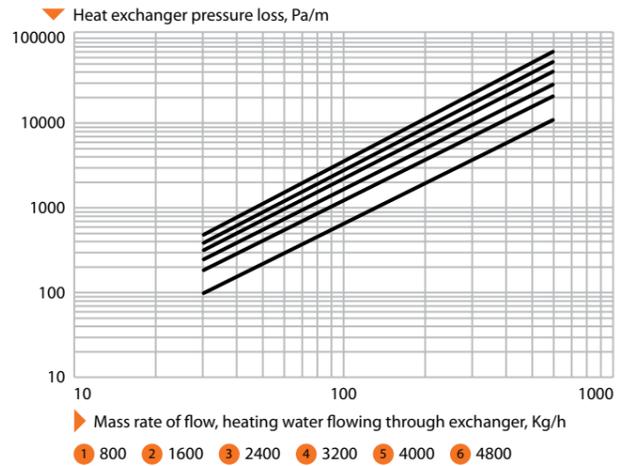
Pressure loss 4 tubular heat exchanger



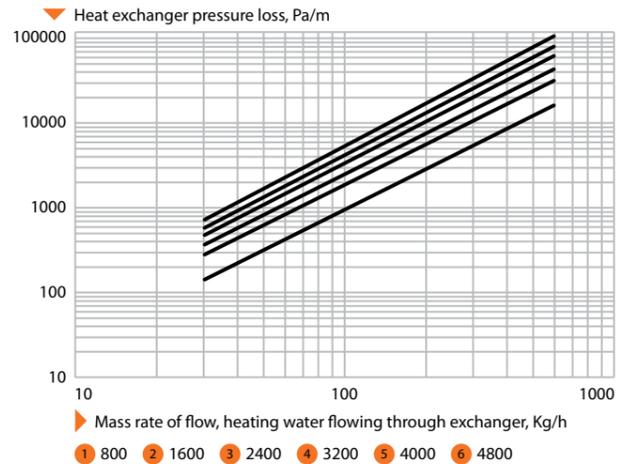
Pressure loss 6 tubular heat exchanger



Pressure loss 8 tubular heat exchanger



Pressure loss 10 tubular heat exchanger



HEATING OUTPUT RECALCULATION FOR ANOTHER TEMPERATURE GRADIENT

Convector heating output reckoning follows by recalculation of the standardized output Q_n 75/65/20 °C

$$Q = Q_n \times \psi \times (\Delta T/50)^m \text{ [W]}, \text{ where } \Delta T = (T_1+T_2)/2 - T_i \text{ [}^\circ\text{C]}$$

- Q_n [W] heating output for temperature gradient $T_1/T_2/T_i = 75/65/20$ °C
- ψ [-] mass rate of flow coefficient (for current flow rate $\psi=1$)
- T_1 [°C] input water temperature
- T_2 [°C] output water temperature
- T_i [°C] temperature in the room
- m [-] temperature exponent

Height	Width	Temperature exponent (m)
80	250	1,3689
	300	1,3755
90	175	1,4602
	200	1,4625
	250	1,3748
	300	1,3689
	425	1,3892
110	175	1,4786
	200	1,4793
	250	1,4602
	300	1,4679
	425	1,4025
125	175	1,4833
	200	1,4847
	250	1,4566
	300	1,3689
	425	1,4029
140	175	1,4945
	200	1,4961
	250	1,4431
	300	1,4533
	425	1,4034
165	300	1,4566
	425	1,4418
200	300	1,4622
	425	1,4609

QUICK CONVERSION TO $T_i=22^\circ\text{C}$ AND $T_i=15^\circ\text{C}$

- If you want to learn convector output for the room temperature of 22 °C or for a corridor temperature of 15°C - multiply heating output of the chosen convector by the "k" coefficient for $T_i=22$ °C, $k=0,95$
 $Q[90/70/22^\circ\text{C}] = 0,95 \times Q[90/70/20^\circ\text{C}]$

for $T_i=15$ °C, $k=1,14$
 $Q[75/65/15^\circ\text{C}] = 1,14 \times Q_n[75/65/20^\circ\text{C}]$

HEATING WATER FLOW RATE THROUGH EXCHANGER

$M = 0,86Q/(T_1-T_2)$ [kg/h]
 M [kg/h] mass rate of flow, heating water flowing through exchanger
 Q [W] convector heating output
 T_1-T_2 [°C] difference between input and output temperature
 0,86 [-] invariable for recalculation of units



LINE FAN



LINE FAN - FAN ASSISTED TRENCH CONVECTORS

The HEATMANN Company, dedicated to developing efficient convection heating equipment and implementing new technologies, introduces a new series LINE FAN Trench Convectors. The defining feature of these convectors as compared to the predecessor LINE series is a fan, which increases air movement through heat exchanger, thereby increasing heat circulation. As a result, the interior temperature increases 8 times faster than the tem-

perature in the premises with natural convection devices installed. Moreover, LINE FAN series are produced using unique ECO HEAT and ENERGY SAVING technologies developed by the HEATMANN LABORATORY, which make convectors efficient and cost-effective. These features combined with advanced control increase efficiency of convector and reduce heating costs.

MORE CONTROL OPTIONS

The new series provide for the possibility of controlling both the power of one convector and the power of up to 90 convectors simultaneously or of up to 10 thermoelectric heads. Moreover, you will be able to set the temperature

you need in a specific room / premises. The power of the fan can be controlled to a precision of 1%, from 0 to 100%, by CB CONTROLLER® thermostat, which handles the operation of LINE FAN convector.

MORE COMFORT

Besides efficiency, LINE FAN convectors are characterized by especially quiet operation. This effect is achieved by using new-generation fans of EC type, made applying a unique HEAT-

MANN technology – ENERGY SAVING. Hence, when you switch the fan on, you will hear close to nothing, while warm air will make your home more cozy and comfortable.

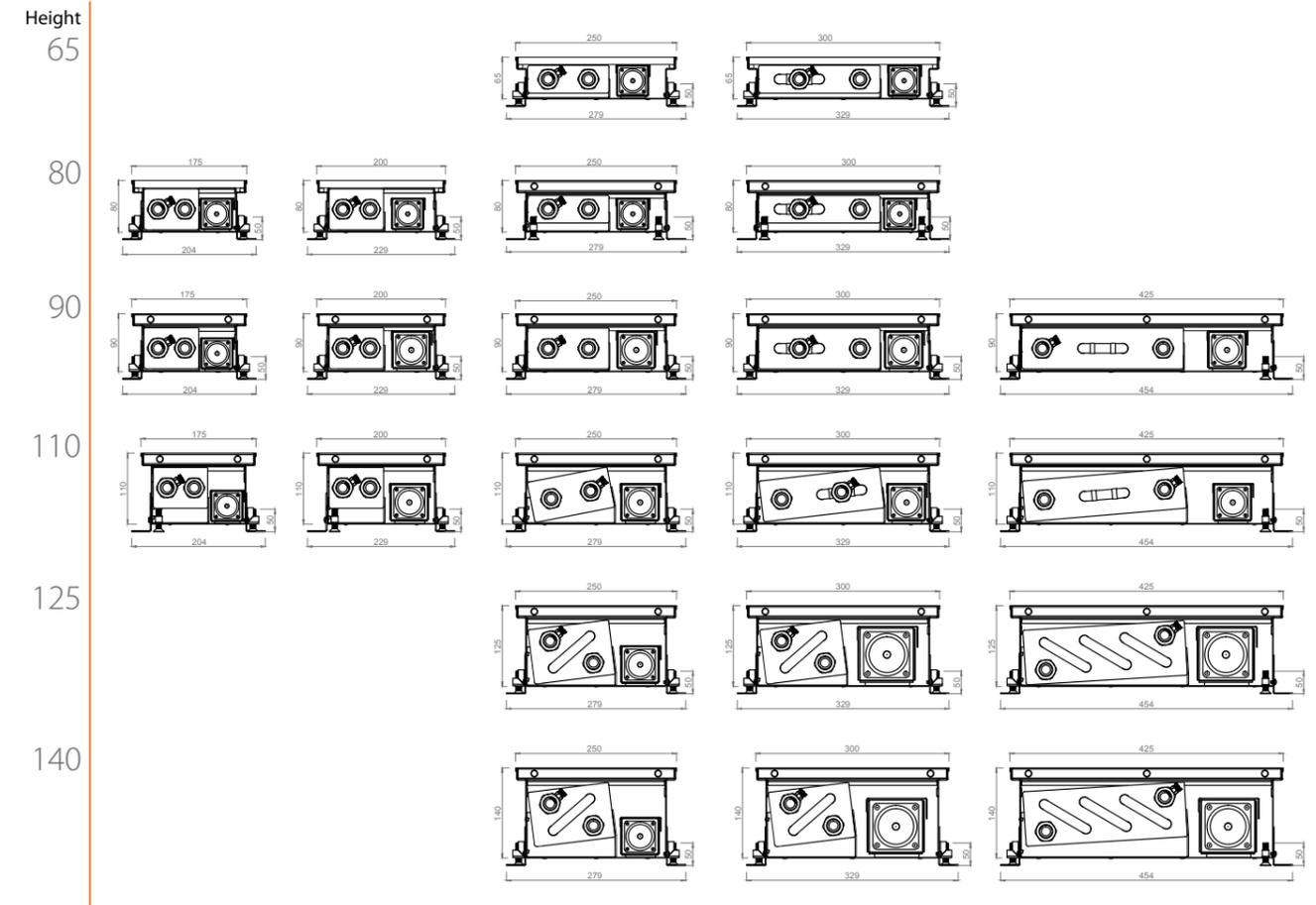
GERMAN QUALITY

The LINE FAN series were designed by HEATMANN Laboratory specialists in collaboration with German scientists. Following a series of tests a unique convector design was devel-

oped, which offers maximum energy efficiency. Highly qualified engineers selected the best materials and parts, aiming to create a durable, efficient and reliable series of convectors.

TECHNOLOGIES

The image displays five logos representing different technologies used in the LINE FAN series: 'eco HEAT' (with a leaf icon), 'ECO CARE' (with a leaf icon), 'MAX FLOW' (with wavy lines icon), 'CLIMATE BALANCE' (with a sun and cloud icon), and 'energy saving' (with a green sunburst icon).



CONVECTOR

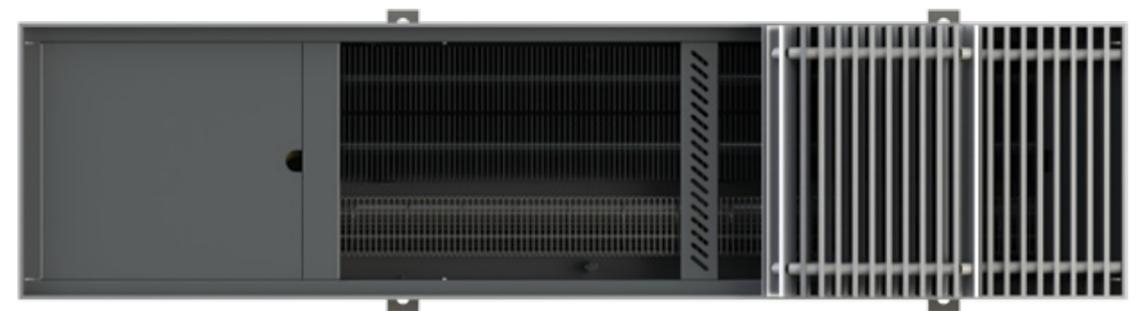
Width	175, 200, 250, 300, 425 mm
Height	65, 80, 90, 110, 125, 140 mm
Length	800–4800 mm in step 100 mm
Height adjustment	0–35 mm
Stainless trough	galvanized steel covered with durable spray painting. Color: black matt or dark grey matt. Also stainless steel DIN 1,4301 (17 240)
Grill type	cross / linear
Grill material	anodized aluminium, wood, stainless steel
Heat medium connection	2 × G1/2" inner

FAN

Operating voltage	safe voltage 24V DC
Protection Class	IP20
Control	control voltage 0-10V ("CB CONTROLLER®")

OPERATING CONDITIONS

Max. working temperature	110 °C
Working overpressure	1,6 MPa (16 Bar)
Max. working overpressure	2,5 MPa (25 Bar)
Ambient temperature	+2°C – +40 °C
Relative humidity	20–70 %



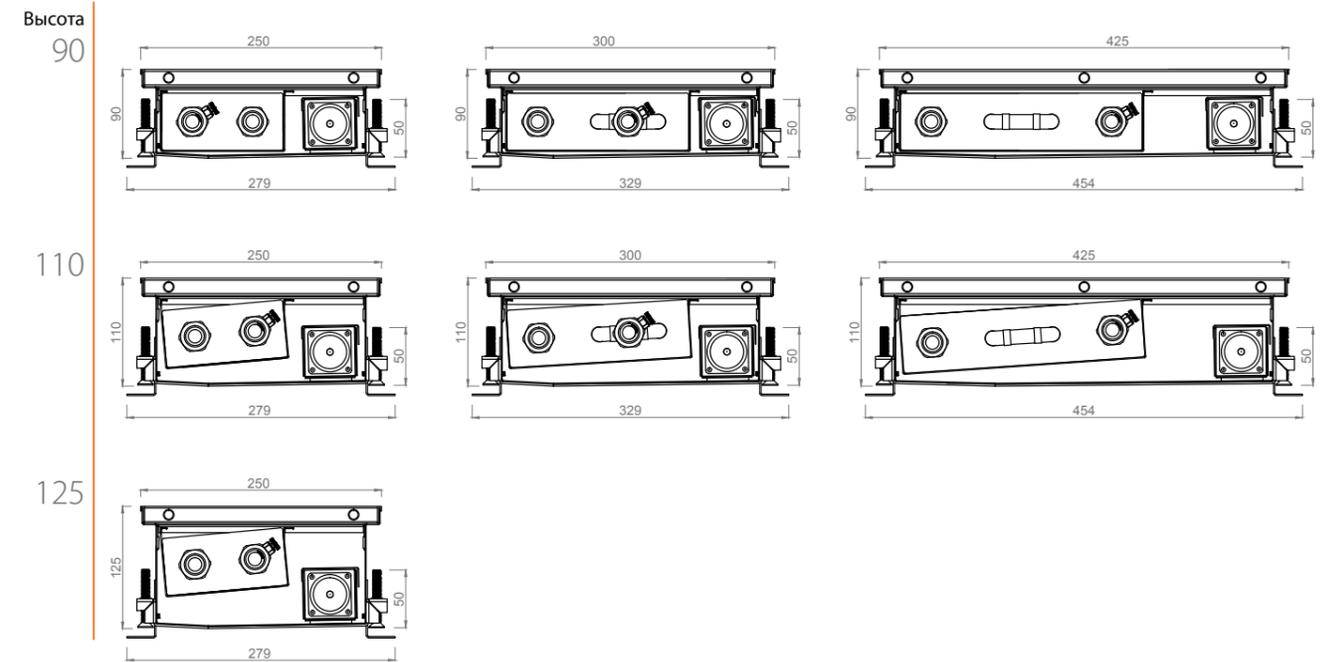
LINE FAN POOL



CONVECTOR	Width Height Length Height adjustment Stainless trough Heat exchanger Heat medium connection	250, 300, 425 mm 90, 110, 125 mm 800–4800 mm in step 100 mm 0–35 mm A4 stainless steel for wet environments copper-aluminum 2 x 1/2" BP
FAN	Operating voltage Protection Class Control	safe voltage 24V DC IP54 control voltage 0-10V ("CB CONTROLLER®")
OPERATING CONDITIONS	Max. working temperature Working overpressure Max. working overpressure Ambient temperature Relative humidity	110 °C 1,6 MPa (16 Bar) 2,5 MPa (16 Bar) +2°C – +40 °C 20–70 %

AMOUNT OF DELIVERY Stainless steel for wet environments trough, copper-aluminum heat exchanger, fan 24V, aluminum frame, air valve installed on the heat exchanger, adjustment screws, decorative lid, installation manual.

The following items are not included in the delivery package: thermostat "CB CONTROLLER®", 24V AC converter, remote sensor for wet environment, decorative grill, valves for installation, wall mounting thermostatic head with remote control, thermoelectric head.



It is forbidden to install convectors in environments with salt water or water, containing aggressive components. These features in combination with an improved regulation increases efficiency of convector and reduces heating costs.



HEATING OUTPUT

H	W	Sp.	Q [W]	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200		
65	250	20%	90/70/20°C	242	291	412	412	484	533	594	654	716	716	824	897	958	1007	1007		
			75/65/20°C	198	238	337	337	396	436	486	535	586	586	674	734	784	824	824		
		40%	90/70/20°C	508	610	864	864	1017	1118	1245	1372	1502	1502	1728	1883	2010	2112	2112		
			75/65/20°C	416	499	707	707	832	915	1019	1123	1229	1229	1414	1541	1645	1728	1728		
		65%	90/70/20°C	654	785	1111	1111	1306	1437	1601	1765	1931	1931	2222	2421	2585	2715	2715		
			75/65/20°C	535	642	909	909	1069	1176	1310	1444	1580	1580	1818	1981	2115	2222	2222		
	100%	90/70/20°C	764	917	1298	1298	1526	1679	1871	2062	2256	2256	2596	2829	3020	3173	3173			
		75/65/20°C	625	750	1062	1062	1249	1374	1531	1687	1846	1846	2124	2315	2471	2596	2596			
	Max energy consumption [W]				2	2	3	3	4	4	5	5	5	5	6	7	7	7		
	65	300	20%	90/70/20°C	292	351	496	496	584	642	715	788	863	863	992	1082	1155	1212	1212	
				75/65/20°C	239	287	406	406	478	525	585	645	706	706	812	885	945	992	992	
			40%	90/70/20°C	632	759	1075	1075	1265	1391	1550	1707	1869	1869	2150	2343	2500	2627	2627	
75/65/20°C				517	621	880	880	1035	1138	1268	1397	1529	1529	1759	1917	2046	2150	2150		
65%			90/70/20°C	807	968	1371	1371	1613	1774	1976	2178	2383	2383	2742	2988	3190	3351	3351		
			75/65/20°C	660	792	1122	1122	1320	1452	1617	1782	1950	1950	2244	2445	2610	2742	2742		
100%		90/70/20°C	910	1093	1548	1548	1822	2004	2232	2459	2691	2691	3097	3374	3603	3785	3785			
		75/65/20°C	745	894	1267	1267	1491	1640	1826	2012	2202	2202	2534	2761	2948	3097	3097			
Max energy consumption [W]				2	2	3	3	4	4	5	5	5	5	6	7	7	7			
80		175	20%	90/70/20°C	154	185	260	260	307	337	376	414	453	453	522	568	607	638	638	
				75/65/20°C	126	151	213	213	251	276	308	339	371	371	427	465	497	522	522	
			40%	90/70/20°C	383	458	650	650	764	841	936	1031	1129	1129	1299	1416	1512	1587	1587	
	75/65/20°C			313	375	532	532	625	688	766	844	924	924	1063	1159	1237	1299	1299		
	65%		90/70/20°C	474	569	807	807	948	1044	1162	1281	1402	1402	1613	1757	1876	1971	1971		
			75/65/20°C	388	466	660	660	776	854	951	1048	1147	1147	1320	1438	1535	1613	1613		
	100%	90/70/20°C	566	679	963	963	1133	1245	1387	1529	1673	1673	1925	2097	2239	2353	2353			
		75/65/20°C	463	556	788	788	927	1019	1135	1251	1369	1369	1575	1716	1832	1925	1925			
	Max energy consumption [W]				2	2	3	3	4	4	5	5	5	5	6	7	7	7		
	80	200	20%	90/70/20°C	251	301	427	427	501	551	613	677	741	741	852	929	991	1041	1041	
				75/65/20°C	205	246	349	349	410	451	502	554	606	606	697	760	811	852	852	
			40%	90/70/20°C	408	489	693	693	815	897	998	1101	1205	1205	1386	1510	1613	1694	1694	
75/65/20°C				334	400	567	567	667	734	817	901	986	986	1134	1236	1320	1386	1386		
65%			90/70/20°C	506	606	859	859	1011	1112	1238	1365	1493	1493	1718	1872	1999	2100	2100		
			75/65/20°C	414	496	703	703	827	910	1013	1117	1222	1222	1406	1532	1636	1718	1718		
100%		90/70/20°C	604	725	1027	1027	1207	1328	1479	1630	1784	1784	2053	2238	2388	2509	2509			
		75/65/20°C	494	593	840	840	988	1087	1210	1334	1460	1460	1680	1831	1954	2053	2053			
Max energy consumption [W]				2	2	3	3	4	4	5	5	5	5	6	7	7	7			
80		250	20%	90/70/20°C	266	320	453	453	533	585	653	719	787	787	906	987	1053	1107	1107	
				75/65/20°C	218	262	371	371	436	479	534	588	644	644	741	808	862	906	906	
			40%	90/70/20°C	590	709	1005	1005	1182	1300	1447	1595	1746	1746	2009	2189	2337	2455	2455	
	75/65/20°C			483	580	822	822	967	1064	1184	1305	1429	1429	1644	1791	1912	2009	2009		
	65%		90/70/20°C	781	936	1327	1327	1561	1717	1913	2107	2306	2306	2654	2891	3087	3243	3243		
			75/65/20°C	639	766	1086	1086	1277	1405	1565	1724	1887	1887	2172	2366	2526	2654	2654		
	100%	90/70/20°C	873	1047	1482	1482	1745	1919	2137	2355	2577	2577	2966	3232	3450	3625	3625			
		75/65/20°C	714	857	1213	1213	1428	1570	1749	1927	2109	2109	2427	2645	2823	2966	2966			
	Max energy consumption [W]				2	2	3	3	4	4	5	5	5	5	6	7	7	7		
	80	300	20%	90/70/20°C	309	372	525	525	618	679	758	835	913	913	1051	1145	1222	1284	1284	
				75/65/20°C	253	304	430	430	506	556	620	683	747	747	860	937	1000	1051	1051	
			40%	90/70/20°C	678	814	1152	1152	1357	1492	1662	1831	2004	2004	2306	2513	2682	2818	2818	
75/65/20°C				555	666	943	943	1110	1221	1360	1498	1640	1640	1887	2056	2195	2306	2306		
65%			90/70/20°C	866	1040	1474	1474	1734	1908	2124	2340	2561	2561	2948	3212	3429	3603	3603		
			75/65/20°C	709	851	1206	1206	1419	1561	1738	1915	2096	2096	2412	2628	2806	2948	2948		
100%		90/70/20°C	997	1196	1695	1695	1994	2194	2443	2692	2946	2946	3390	3694	3944	4143	4143			
		75/65/20°C	816	979	1387	1387	1632	1795	1999	2203	2411	2411	2774	3023	3227	3390	3390			
Max energy consumption [W]				4	5	6	6	8	9	9	10	10	11	12	13	14	14			
90		175	20%	90/70/20°C	175	210	297	297	350	385	429	472	517	517	595	648	692	727	727	
				75/65/20°C	143	172	243	243	286	315	351	386	423	423	487	530	566	595	595	
			40%	90/70/20°C	408	490	694	694	816	898	1000	1102	1206	1206	1388	1513	1614	1696	1696	
	75/65/20°C			334	401	568	568	668	735	818	902	987	987	1136	1238	1321	1388	1388		
	65%		90/70/20°C	495	594	842	842	991	1090	1214	1338	1464	1464	1684	1836	1959	2058	2058		
			75/65/20°C	405	486	689	689	811	892	993	1095	1198	1198	1378	1502	1603	1684	1684		
	100%	90/70/20°C	635	763	1080	1080	1271	1398	1557	1715	1877	1877	2159	2354	2513	2640	2640			
		75/65/20°C	520	624	884	884	1040	1144	1274	1403	1536	1536	1767	1926	2056	2160	2160			
	Max energy consumption [W]				4	5	6	6	8	9	9	10	10	11	12	13	14	14		

HEATING OUTPUT

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HEATING OUTPUT

H	W	Sp.	Q [W]	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200						
90	200	20%	90/70/20°C	273	328	464	464	546	601	670	737	803	803	929	1008	1075	1130	1130						
			75/65/20°C	223	268	380	380	447	492	548	603	657	657	760	825	880	925	925						
			40%	530	635	901	901	1060	1166	1299	1431	1558	1558	1801	1955	2089	2194	2194						
		40%	75/65/20°C	90/70/20°C	434	520	737	737	867	954	1063	1171	1275	1275	1474	1600	1709	1795	1795					
				65%	704	844	1195	1195	1407	1547	1723	1899	2068	2068	2392	2596	2772	2912	2912					
				75/65/20°C	576	691	978	978	1151	1266	1410	1554	1692	1692	1957	2124	2268	2383	2383					
		100%	90/70/20°C	75/65/20°C	749	899	1275	1275	1499	1649	1837	2024	2203	2203	2548	2766	2953	3103	3103					
				75/65/20°C	613	736	1043	1043	1227	1349	1503	1656	1803	1803	2085	2263	2416	2539	2539					
				Max energy consumption [W]	4	5	6	6	8	9	9	10	10	11	12	12	13	14	14					
		90	250	20%	90/70/20°C	412	494	700	700	824	907	1009	1112	1211	1211	1401	1520	1623	1705	1705				
					75/65/20°C	337	404	573	573	674	742	826	910	2564	991	1146	1244	1328	1395	1395				
					40%	873	1046	1482	1482	1744	1919	2136	2355	2564	2564	2965	3218	3435	3610	3610				
40%	75/65/20°C			90/70/20°C	714	856	1213	1213	1427	1570	1748	1927	2098	2098	2426	2633	2811	2954	2954					
				65%	1148	1377	1952	1952	2296	2526	2813	3099	3375	3375	3903	4236	4523	4753	4753					
				75/65/20°C	939	1127	1597	1597	1879	2067	2302	2536	2762	2762	3194	3466	3701	3889	3889					
100%	90/70/20°C			75/65/20°C	1226	1471	2084	2084	2451	2696	3003	3309	3604	3604	4167	4523	4830	5074	5074					
				75/65/20°C	1003	1204	1705	1705	2006	2206	2457	2708	2949	2949	3410	3701	3952	4152	4152					
				Max energy consumption [W]	4	5	6	6	8	9	9	10	10	11	12	12	13	14	14					
90	300			20%	90/70/20°C	441	529	749	749	881	969	1079	1190	1295	1295	1498	1627	1737	1825	1825				
					75/65/20°C	361	433	613	613	721	793	883	974	1060	1060	1226	1331	1421	1493	1493				
					40%	931	1118	1584	1584	1864	2049	2283	2515	2739	2739	3168	3438	3671	3857	3857				
		40%	75/65/20°C	90/70/20°C	762	915	1296	1296	1525	1677	1868	2058	2241	2241	2592	2813	3004	3156	3156					
				65%	1221	1465	2075	2075	2442	2685	2990	3296	3589	3589	4150	4505	4809	5053	5053					
				75/65/20°C	999	1199	1698	1698	1998	2197	2447	2697	2937	2937	3396	3686	3935	4135	4135					
		100%	90/70/20°C	75/65/20°C	1309	1570	2224	2224	2616	2878	3206	3533	3847	3847	4448	4827	5155	5416	5416					
				75/65/20°C	1071	1285	1820	1820	2141	2355	2623	2891	3148	3148	3640	3950	4218	4432	4432					
				Max energy consumption [W]	4	5	6	6	8	9	9	10	10	11	12	12	13	14	14					
		90	425	20%	90/70/20°C	472	566	802	802	943	1038	1155	1273	1386	1386	1603	1740	1858	1952	1952				
					75/65/20°C	386	463	656	656	772	849	945	1042	1134	1134	1312	1424	1520	1597	1597				
					40%	1020	1225	1735	1735	2041	2245	2500	2756	3000	3000	3469	3765	4021	4225	4225				
40%	75/65/20°C			90/70/20°C	835	1002	1420	1420	1670	1837	2046	2255	2455	2455	2839	3081	3290	3457	3457					
				65%	1368	1641	2326	2326	2735	3009	3351	3693	4021	4021	4650	5047	5389	5662	5662					
				75/65/20°C	1119	1343	1903	1903	2238	2462	2742	3022	3290	3290	3805	4130	4410	4633	4633					
100%	90/70/20°C			75/65/20°C	1420	1704	2414	2414	2839	3124	3478	3834	4173	4173	4827	5239	5593	5877	5877					
				75/65/20°C	1162	1394	1975	1975	2323	2556	2846	3137	3415	3415	3950	4287	4577	4809	4809					
				Max energy consumption [W]	10	15	17	17	20	24	24	27	29	32	34	36	39	44	44					
110	175			20%	90/70/20°C	144	174	246	246	288	318	353	390	427	427	491	535	571	600	600				
					75/65/20°C	118	142	201	201	236	260	289	319	349	349	402	438	467	491	491				
					40%	320	385	545	545	642	705	786	865	947	947	1090	1188	1267	1332	1332				
		40%	75/65/20°C	90/70/20°C	262	315	446	446	525	577	643	708	775	775	892	972	1037	1090	1090					
				65%	416	500	708	708	832	915	1019	1123	1229	1229	1414	1541	1645	1729	1729					
				75/65/20°C	340	409	579	579	681	749	834	919	1006	1006	1157	1261	1346	1415	1415					
		100%	90/70/20°C	75/65/20°C	499	599	848	848	998	1099	1223	1348	1475	1475	1697	1849	1974	2074	2074					
				75/65/20°C	408	490	694	694	817	899	1001	1103	1207	1207	1389	1513	1615	1697	1697					
				Max energy consumption [W]	2	2	3	3	4	4	5	5	5	5	5	6	7	7	7					
		110	200	20%	90/70/20°C	279	334	473	473	557	612	682	752	819	819	947	1028	1097	1152	1152				
					75/65/20°C	228	273	387	387	456	501	558	615	670	670	775	841	898	943	943				
					40%	613	736	1042	1042	1226	1349	1502	1656	1803	1803	2085	2262	2416	2538	2538				
40%	75/65/20°C			90/70/20°C	502	602	853	853	1003	1104	1229	1355	1475	1475	1706	1851	1977	2077	2077					
				65%	814	978	1385	1385	1629	1792	1996	2199	2394	2394	2769	3005	3208	3372	3372					
				75/65/20°C	666	800	1133	1133	1333	1466	1633	1799	1959	1959	2266	2459	2625	2759	2759					
100%	90/70/20°C			75/65/20°C	875	1051	1488	1488	1751	1926	2145	2364	2574	2574	2977	3230	3449	3625	3625					
				75/65/20°C	716	860	1218	1218	1433	1576	1755	1934	2106	2106	2436	2643	2822	2966	2966					
				Max energy consumption [W]	4	5	6	6	8	9	9	10	10	11	12	12	13	14	14					
110	250			20%	90/70/20°C	469	563	798	798	939	1033	1150	1267	1380	1380	1596	1732	1849	1943	1943				
					75/65/20°C	384	461	653	653	768	845	941	1037	1129	1129	1306	1417	1513	1590	1590				
					40%	968	1161	1645	1645	1936	2129	2371	2613	2845	2845	3290	3571	3813	4006	4006				
		40%	75/65/20°C	90/70/20°C	792	950	1346	1346	1584	1742	1940	2138	2328	2328	2692	2922	3120	3278	3278					
				65%	1287	1545	2188	2188	2574	2832	3153	3476	3784	3784	4376	4749	5072	5328	5328					
				75/65/20°C	1053	1264	1790	1790	2106	2317	2580	2844	3096	3096	3581	3886	4150	4360	4360					
		100%	90/70/20°C	75/65/20°C	1387	1664	2359	2359	2775	3053	3399	3746	4079	4079	4717	5119	5072	5744	5744					
				75/65/20°C	1135	1362	1930	1930	2271	2498	2781	3065	3338	3338	3860	4189	4473	4700	4700					
				Max energy consumption [W]	4	5	6	6	8	9	9	10	10	11	12	12	13	14						

HEATING OUTPUT

H	W	Sp.	Q [W]	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200					
110	300	20%	90/70/20°C	500	600	849	849	1000	1099	1225	1349	1469	1469	1699	1844	1969	2069	2069					
			75/65/20°C	409	491	695	695	818	899	1002	1104	1202	1202	1390	1509	1611	1693	1693					
			40%	1038	1254	1763	1763	2075	2282	2542	2801	3005	3005	3527	3828	4087	4294	4294					
		65%	90/70/20°C	849	1019	1443	1443	1698	1867	2080	2292	2496	2496	2886	3132	3344	3514	3514					
			75/65/20°C	1408	1689	2393	2393	2816	3097	3449	3801	4139	4139	4786	5195	5547	5828	5828					
			40%	1152	1382	1958	1958	2304	2534	2822	3110	3387	3387	3916	4251	4539	4769	4769					
		100%	90/70/20°C	1520	1825	2585	2585	3041	3345	3725	4105	4470	4470	5169	5611	5991	6295	6295					
			75/65/20°C	1244	1493	2115	2115	2488	2737	3048	3359	3658	3658	4230	4591	4902	5151	5151					
			Max energy consumption [W]	4	5	6	6	8	9	9	10	10	10	11	12	12	13	14	14				
		110	425	20%	90/70/20°C	667	800	1134	1134	1335	1468	1634	1801	1961	1961	2268	2461	2629	2762	2762			
					75/65/20°C	546	655	928	928	1092	1201	1337	1474	1605	1605	1856	2014	2151	2260	2260			
					40%	1264	1517	2148	2148	2527	2780	3097	3412	3715	3715	4297	4663	4980	5232	5232			
65%	90/70/20°C			1034	1241	1758	1758	2068	2275	2534	2792	3040	3040	3516	3816	4075	4281	4281					
	75/65/20°C			1673	2008	2845	2845	3346	3681	4099	4518	4919	4919	5689	6174	6592	6927	6927					
	40%			1369	1643	2328	2328	2738	3012	3354	3697	4025	4025	4655	5052	5394	5668	5668					
100%	90/70/20°C			1801	2162	3063	3063	3603	3963	4414	4864	5296	5296	6125	6648	7098	7458	7458					
	75/65/20°C			1474	1769	2506	2506	2948	3243	3612	3980	4334	4334	5012	5440	5808	6103	6103					
	Max energy consumption [W]			4	5	6	6	8	9	9	10	10	10	11	12	12	13	14	14				
125	250			20%	90/70/20°C	485	582	825	825	970	1068	1189	1310	1426	1426	1650	1790	1911	2009	2009			
					75/65/20°C	397	476	675	675	794	874	973	1072	1167	1167	1350	1465	1564	1644	1644			
					40%	1008	1210	1715	1715	2018	2219	2471	2723	2965	2965	3429	3721	3974	4176	4176			
		65%	90/70/20°C	825	990	1403	1403	1651	1816	2022	2228	2426	2426	2806	3045	3252	3417	3417					
			75/65/20°C	1339	1607	2278	2278	2679	2948	3283	3617	3939	3939	4555	4943	5278	5546	5546					
			40%	1096	1315	1864	1864	2192	2412	2686	2960	3223	3223	3727	4045	4319	4538	4538					
		100%	90/70/20°C	1443	1732	2454	2454	2887	3176	3537	3897	4244	4244	4908	5327	5688	5976	5976					
			75/65/20°C	1181	1417	2008	2008	2362	2599	2894	3189	3473	3473	4016	4359	4654	4890	4890					
			Max energy consumption [W]	4	5	6	6	8	9	9	10	10	10	11	12	12	13	14	14				
		125	300	20%	90/70/20°C	561	701	918	918	1121	1262	1337	1479	1629	1629	1836	2048	2190	2332	2332			
					75/65/20°C	459	574	751	751	917	1033	1094	1210	1333	1333	1502	1676	1792	1908	1908			
					40%	1084	1358	1776	1776	2169	2442	2587	2860	3153	3153	3551	3964	4237	4511	4511			
65%	90/70/20°C			887	1111	1453	1453	1775	1998	2117	2340	2580	2580	2906	3244	3467	3691	3691					
	75/65/20°C			1444	1809	2365	2365	2889	3252	3445	3809	4198	4198	4729	5279	5642	6007	6007					
	40%			1182	1480	1935	1935	2364	2661	2819	3117	3435	3435	3870	4320	4617	4915	4915					
100%	90/70/20°C			1820	2278	2979	2979	3639	4098	4341	4799	5289	5289	5959	6651	7109	7568	7568					
	75/65/20°C			1489	1864	2438	2438	2978	3353	3552	3927	4328	4328	4876	5442	5817	6193	6193					
	Max energy consumption [W]			10	15	17	17	20	24	24	27	29	29	32	34	36	39	44	44				
125	425			20%	90/70/20°C	1157	1449	1895	1895	2316	2607	2762	3053	3366	3366	3791	4232	4523	4815	4815			
					75/65/20°C	947	1186	1551	1551	1895	2133	2260	2498	2754	2754	3102	3463	3701	3940	3940			
					40%	1644	2058	2691	2691	3287	3702	3922	4336	4778	4778	5383	6008	6422	6836	6836			
		65%	90/70/20°C	1345	1684	2202	2202	2690	3029	3209	3548	3910	3910	4405	4916	5255	5594	5594					
			75/65/20°C	2140	2679	3504	3504	4280	4819	5105	5644	6220	6220	7007	7821	8360	8899	8899					
			40%	1751	2192	2867	2867	3502	3943	4177	4618	5090	5090	5734	6400	6841	7282	7282					
		100%	90/70/20°C	2640	3305	4321	4321	5279	5944	6296	6961	7673	7673	8644	9647	10312	10978	10978					
			75/65/20°C	2160	2704	3536	3536	4320	4864	5152	5696	6279	6279	7073	7894	8438	8983	8983					
			Max energy consumption [W]	10	15	17	17	20	24	24	27	29	29	32	34	36	39	44	44				
		140	250	20%	90/70/20°C	506	607	860	860	1012	1113	1240	1366	1488	1488	1721	1867	1994	2095	2095			
					75/65/20°C	414	497	704	704	828	911	1015	1118	1218	1218	1408	1528	1632	1714	1714			
					40%	1050	1260	1785	1785	2101	2311	2574	2835	3088	3088	3571	3875	4138	4348	4348			
65%	90/70/20°C			859	1031	1461	1461	1719	1891	2106	2320	2527	2527	2922	3171	3386	3558	3558					
	75/65/20°C			1457	1748	2476	2476	2913	3204	3568	3933	4282	4282	4953	5375	5739	6031	6031					
	40%			1192	1430	2026	2026	2384	2622	2920	3218	3504	3504	4053	4398	4696	4935	4935					
100%	90/70/20°C			1512	1814	2570	2570	3023	3326	3704	4082	4445	4445	5140	5579	5956	6258	6258					
	75/65/20°C			1237	1484	2103	2103	2474	2722	3031	3340	3637	3637	4206	4565	4874	5121	5121					
	Max energy consumption [W]			4	5	6	6	8	9	9	10	10	10	11	12	12	13	14	14				
140	300			20%	90/70/20°C	730	913	1194	1194	1458	1642	1739	1924	2120	2120	2388	2665	2849	3033	3033			
					75/65/20°C	597	747	977	977	1193	1344	1423	1574	1735	1735	1954	2181	2331	2482	2482			
					40%	1154	1444	1889	1889	2307	2598	2752	3043	3355	3355	3779	4217	4508	4799	4799			
		65%	90/70/20°C	944	1182	1546	1546	1888	2126	2252	2490	2745	2745	3092	3451	3689	3927	3927					
			75/65/20°C	1520	1903	2488	2488	3039	3422	3625	4008	4418	4418	4976	5554	5937	6319	6319					
			40%	1244	1557	2036	2036	2487	2800	2966	3280	3615	3615	4072	4545	4858	5171	5171					
		100%	90/70/20°C	1961	2455	3212	3212	3923	4418	4679	5173	5702	5702	6423	7170	7664	8157	8157					
			75/65/20°C	1605	2009	2628	2628	3210	3615	3829	4233	4666	4666	5256	5867	6271	6675	6675					
			Max energy consumption [W]	10	15	17	17	20	24	24	27	29	29	32	34	36	39	44	44				

HEATING OUTPUT

H	W	Sp.	Q [W]	2300	2400	2500	2600	2700	2800	2900	3000	3300	3500	3700	4000	4400	4500	4800</
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HEATING OUTPUT

H	W	Sp.	Q [W]	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200
140	425	20%	90/70/20°C	1237	1548	2025	2025	2473	2785	2950	3262	3595	3595	4050	4520	4832	5144	5144
			75/65/20°C	1012	1267	1657	1657	2024	2279	2414	2669	2942	2942	3314	3699	3954	4209	4209
		40%	90/70/20°C	1710	2140	2799	2799	3418	3850	4077	4508	4969	4969	5597	6247	6677	7109	7109
			75/65/20°C	1399	1751	2290	2290	2797	3150	3336	3689	4066	4066	4580	5112	5464	5817	5817
		65%	90/70/20°C	2243	2807	3671	3671	4485	5050	5349	5914	6517	6517	7342	8195	8760	9324	9324
			75/65/20°C	1835	2297	3004	3004	3670	4132	4377	4839	5333	5333	6008	6706	7168	7630	7630
		100%	90/70/20°C	2819	3529	4616	4616	5639	6349	6725	7435	8195	8195	9232	10305	11015	11725	11725
			75/65/20°C	2307	2888	3777	3777	4614	5195	5503	6084	6706	6706	7554	8432	9013	9594	9594
			Max energy consumption [W]	10	15	17	17	20	24	24	27	29	32	34	36	39	44	44

HEATING OUTPUT

H	W	Sp.	Q [W]	2300	2400	2500	2600	2700	2800	2900	3000	3300	3500	3700	4000	4400	4500	4800
140	425	20%	90/70/20°C	5620	5620	6069	6380	6692	6857	7191	7191	8116	8739	9216	10287	11241	11711	12334
			75/65/20°C	4599	4599	4966	5221	5476	5611	5884	5884	6641	7151	7541	8418	9198	9583	10093
		40%	90/70/20°C	7768	7768	8387	8817	9249	9476	9937	9937	11216	12077	12735	14216	15534	16184	17046
			75/65/20°C	6356	6356	6863	7215	7568	7754	8131	8131	9178	9882	10421	11633	12711	13243	13948
		65%	90/70/20°C	10190	10190	11002	11567	12133	12431	13036	13036	14714	15843	16707	18650	20378	21231	22360
			75/65/20°C	8338	8338	9003	9465	9927	10172	10667	10667	12040	12964	13671	15261	16675	17373	18297
		100%	90/70/20°C	12811	12811	13834	14544	15254	15630	16389	16389	18499	19919	21006	23448	25622	26694	28114
			75/65/20°C	10483	10483	11320	11901	12482	12790	13411	13411	15137	16299	17189	19187	20966	21843	23005
			Max energy consumption [W]	46	46	48	53	58	56	58	60	65	72	75	87	92	94	101



CB CONTROLLER®



“CB CONTROLLER®” is ideal for use in a wide range of applications. Changeable temporary programs allow heating or cooling specific premises at the specified time and to a specified temperature. Thus, energy consumption in idle premises is decreased. A thermostat is easy to install and configure. Customers can enjoy a comfortable indoor climate, while at the same time saving energy, decreasing heating/cooling costs, while reducing CO2 emissions.

Distinctive Features:

- Energy-efficient climate control
- High control precision for optimal comfort and ease of use
- Easy and fast installation and start-up
- Protection of your investment due to high quality of production and compliance with norms and specifications
- Energy saving and cost reduction due to integrated temporary programs, idle function and sensors
- User-friendly configuration of functions
- Low costs and fast installation and start-up
- Easy integration with current systems through KNX protocol
- User-friendly interface and intuitive menu
- Suitable for use in residential buildings, hotels, business centers or public buildings
- Stable temperature amplifies comfort



Model				
Input voltage, V	230			
Output voltage, V	24			
Rated current, A	0.63	1.5	2.5	4.2
Rated power, W	15.2	36	60	100.8
Width, mm	25	78	78	100
Length, mm	93			
Height, mm	56			

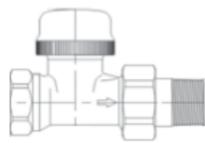
	PC 230V/ 24V-DC-15W	PC 230V/ 24V-DC-30W	PC 230V/ 24V-DC-60W	PC 230V/ 24V-DC-100W
Input voltage, V	230			
Output voltage, V	24			
Rated current, A	0.63	1.5	2.5	4.2
Rated power, W	15.2	36	60	100.8
Width, mm	25	78	78	100
Length, mm	93			
Height, mm	56			



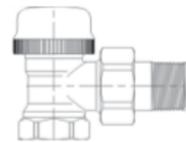
Thermostat M 30 x 1,5 wall mounting, with remote control. Art. No. 501179 with 2 m. capillary tube, Art. No. 501180 with 5 m. capillary tube. For mounting on thermostatic valve Art. No. 500440 or No. 500501.



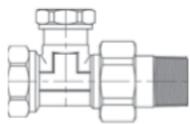
Thermoelectric drive 24 V, M 30 x 1,5. Art. No. 180040012. or mounting on thermostatic valve Art. No. 500440 or No. 500501. Remains on-state without receiving a signal.



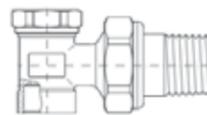
Thermostatic valve M 30 x 1,5, straight 1/2". Art. No. 500440. Control lid and plug-type connection included in set. Compatible with thermoelectric drive 24 V M 30 x 1,5 Art. No. 180040012 or thermostat M 30 x 1,5 wall mounting, with remote control Art. No. 501179 (501180). For mounting on Heatmann convectors.



Thermostatic valve M 30 x 1,5, angular 1/2". Art. No. 500501. Control lid and plug-type connection included in set. Compatible with thermoelectric drive 24 V M 30 x 1,5 Art. No. 180040012 or thermostat M 30 x 1,5 wall mounting, with remote control Art. No. 501179 (501180). For mounting on Heatmann convectors.



Inverse feed valve, straight 1/2". Art. No. 500642. Plug-type connection included in set. For mounting on Heatmann convectors.



Inverse feed valve, angular 1/2". Art. No. 500652. Plug-type connection included in set. For mounting on Heatmann convectors.



2 tubular heat exchanger

Length [mm]	
Pressure loss, Pa/m	
Mass rate of flow	

4 tubular heat exchanger

Length [mm]	
Pressure loss, Pa/m	
Mass rate of flow	

6 tubular heat exchanger

Length [mm]	
Pressure loss, Pa/m	
Mass rate of flow	

8 tubular heat exchanger

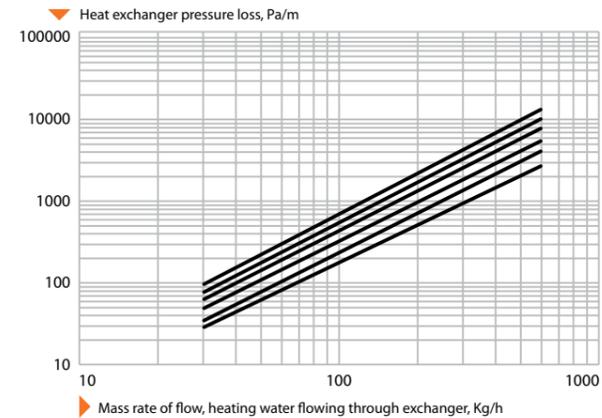
Length [mm]	
Pressure loss, Pa/m	
Mass rate of flow	

12 tubular heat exchanger

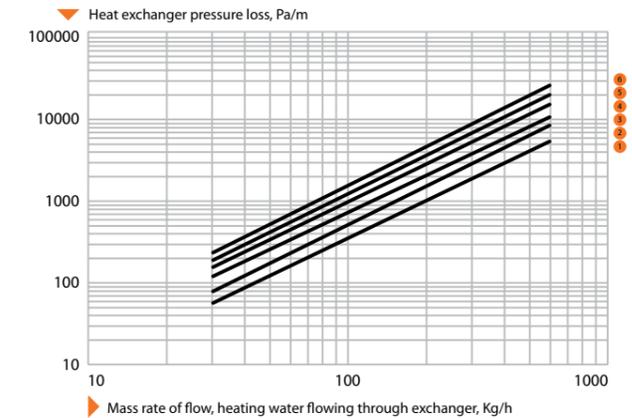
Length [mm]	
Pressure loss, Pa/m	
Mass rate of flow	

	800	1600	2400	3200	4000	4800					
28	2700	34	4100	48	5500	62	7850	76	10200	95	13500
30	600	30	600	30	600	30	600	30	600	30	600
800	1600	2400	3200	4000	4800						
56	5500	78	8800	120	11000	155	15700	190	20400	238	27000
30	600	30	600	30	600	30	600	30	600	30	600
800	1600	2400	3200	4000	4800						
85	8100	130	15500	180	19500	233	27832	285	36164	356	47864
30	600	30	600	30	600	30	600	30	600	30	600
800	1600	2400	3200	4000	4800						
95	11000	180	21000	240	29000	310	41391	380	53782	475	71182
30	600	30	600	30	600	30	600	30	600	30	600
800	1600	2400	3200	4000	4800						
137	16200	270	32200	360	43900	465	62657	570	81415	713	107755
30	600	30	600	30	600	30	600	30	600	30	600

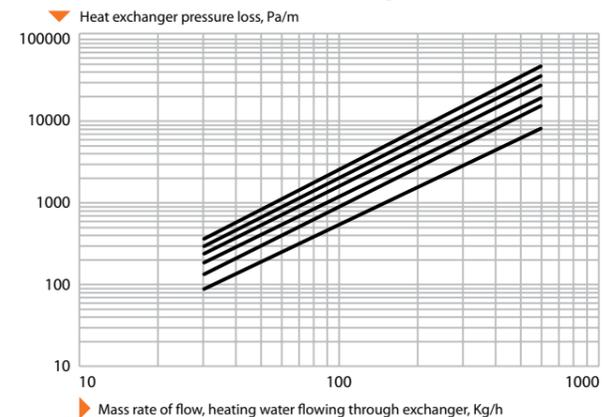
Pressure loss 2 tubular heat exchanger



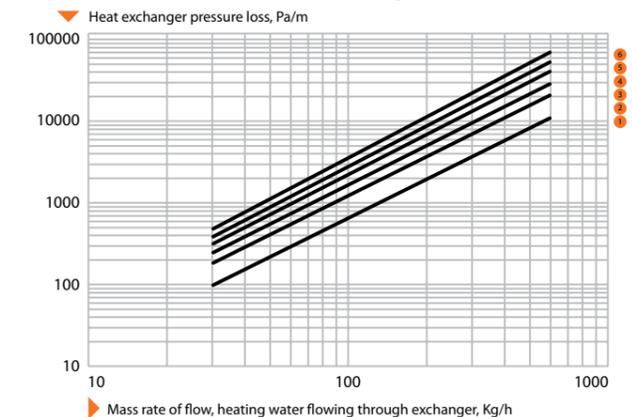
Pressure loss 4 tubular heat exchanger



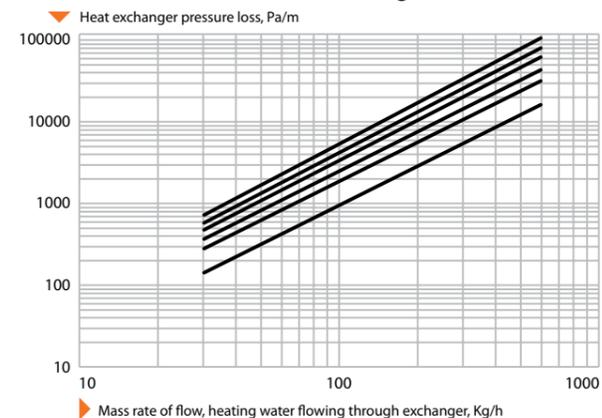
Pressure loss 6 tubular heat exchanger



Pressure loss 8 tubular heat exchanger

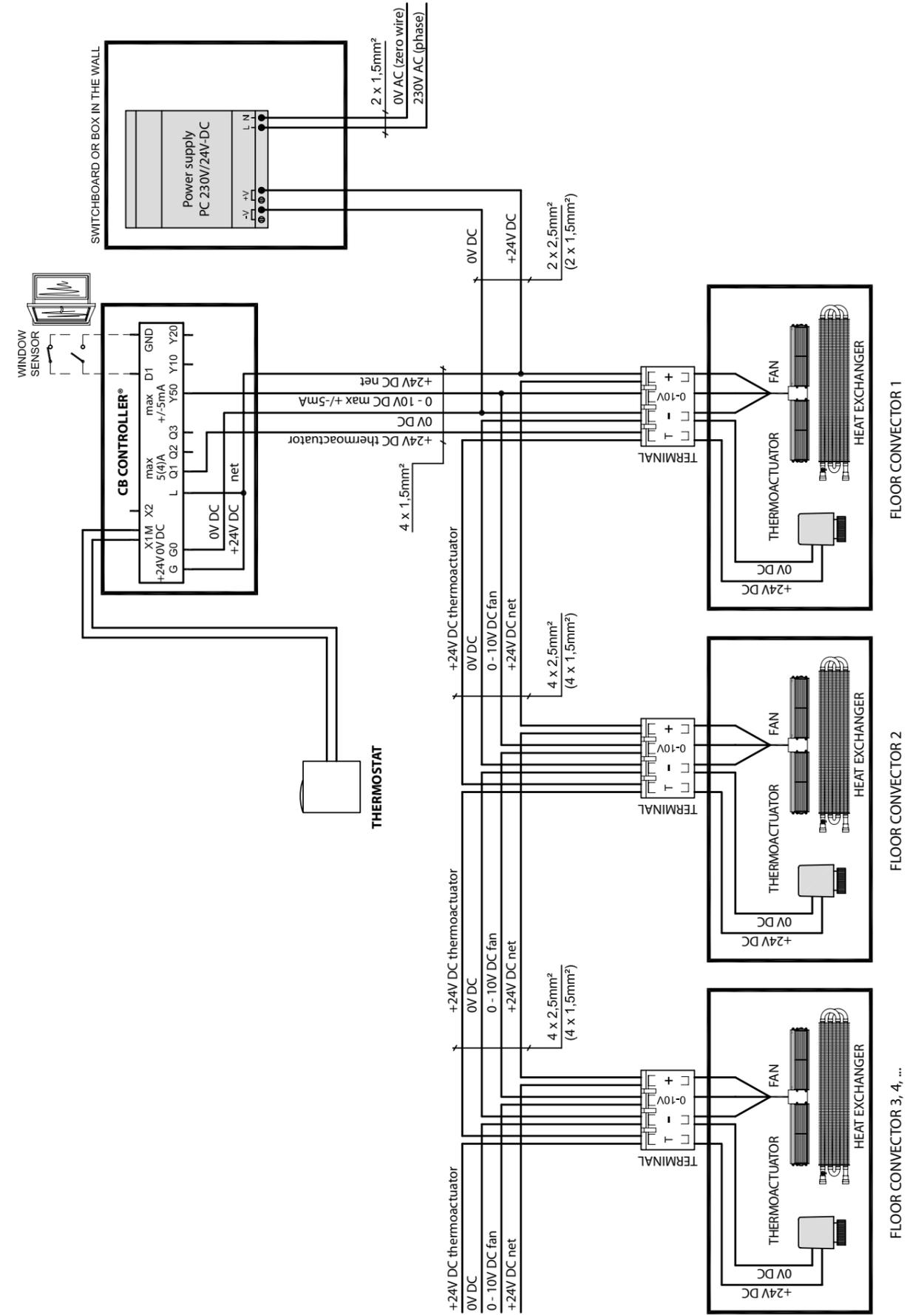


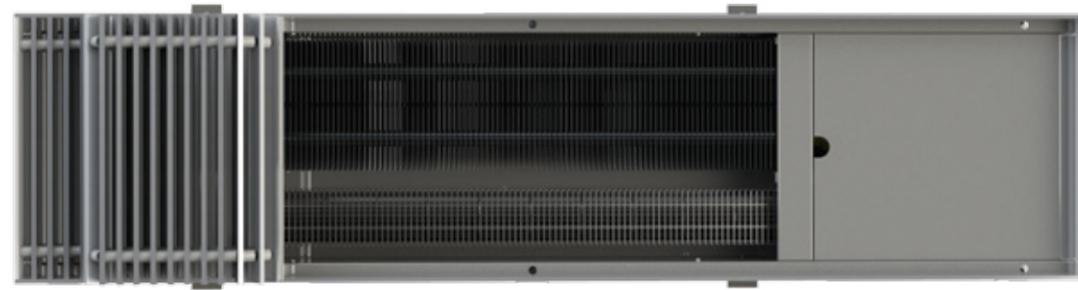
Pressure loss 10 tubular heat exchanger



Convector length [mm]

- 1 800
- 2 1600
- 3 2400
- 4 3200
- 5 4000
- 6 4800





ROLL-UP GRILLS

lamellas positioned perpendicular to the length of the convector, grille can be rolled-up



Grill: aluminium, anodized
Frame: aluminium, anodized



Grill: aluminium bronze, anodized
Frame: aluminium bronze, anodized



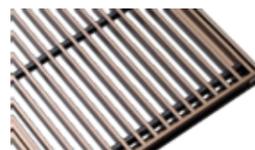
Grill: aluminium, black
Frame: aluminium, black

LINEAR GRILLS

lamellas are arranged parallel to the length of the convector



Grill: aluminium, anodized
Frame: aluminium, anodized



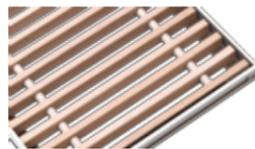
Grill: aluminium bronze, anodized
Frame: aluminium bronze, anodized



Grill: aluminium, black
Frame: aluminium, black

WOODEN ROLL-UP GRILLS

lamellas positioned perpendicular to the length of the convector, grille can be rolled-up



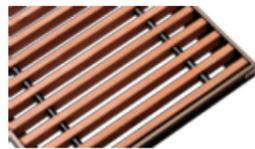
Grill: natural beech, wooden
Frame: aluminium, anodized



Grill: stained beech, wooden
Frame: aluminium bronze, anodized



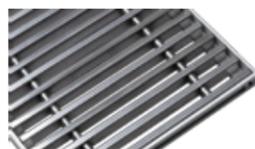
Grill: natural oak, wooden
Frame: aluminium, anodized



Grill: stained oak, wooden
Frame: aluminium bronze, anodized

STAINLESS STEEL GRILLS

lamellas positioned perpendicular to the length of the convector, a fix non-rolling grill



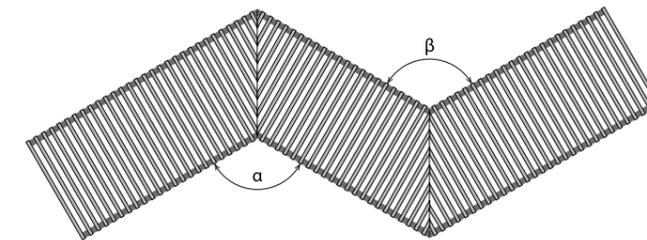
Grill: stainless steel, stainless steel
Frame: aluminium, anodized

We deliver arched, broken-line and curved convectors to fit the architectural design of buildings and customer requirements. A large variety of shapes and arrangements of floor convectors can be delivered. It is important to specify in the customer order the dimensions and a detailed and accurate measurement of the actual shape.

The measurement of the convector, performed by the customer or by an Heatmann specialist, must be carried out on site on the actual structure (not based on the design). The level of completeness of the structure required for the measurement is as follows: final shape of the wall along which the convector heater is to be installed, windows

mounted, access to the measuring area (scaffolding dismantled, etc.). The technical documentation developed for the convection heaters previously measured is discussed and approved by the customer and technical details are agreed (water connection side, power connection). Following that, the manufacturing of the floor convector starts.

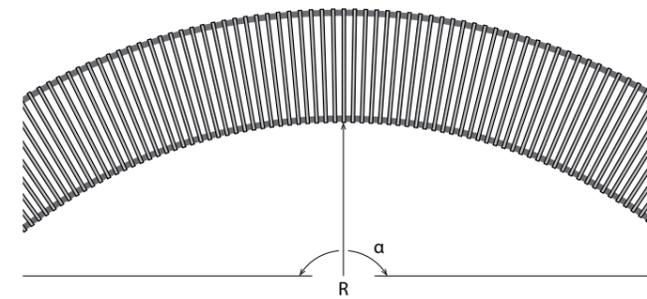
BROKEN-LINE SHAPE CONVECTORS



To allow for the design of the convector, the following measured values are necessary:

- lengths of the heater edges (window-side edges) and the angle formed by the edges (calculated using the length of the third leg of the triangle formed by the two edges), the angles α and β are used for verification only
- width (type) of the convection heater
- a sketch of the convection heater

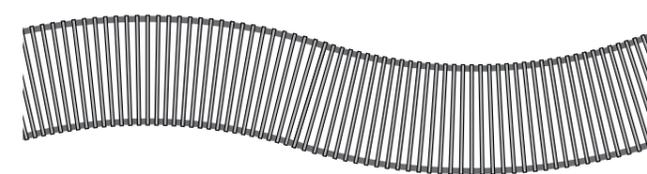
ARCHED CONVECTORS



To allow for the design of an arched convector, the following measured values are necessary:

- outer (inner) diameter of the arc and a total angle formed by the arc sector calculated using the distance of the end points and the diameter (for gentle curved arcs) or the angle α (for arcs forming an angle larger than 120°)
 - width (type) of the convection heater
 - a sketch of the convection heater or
 - outer (inner) diameter of the arc and the perimeter length of the outer (inner) edge of the arc
 - width (type) of the convection heater
 - a sketch of the convection heater
- Remember that regular shapes occur rarely in real structures.

CURVED CONVECTORS



In case of more complicated shapes, it is necessary to use the reference points to determine the shape. It is recommended that the measurements are performed by Heatmann specialists.

WARRANTY TERMS

Company "Heatmann" GmbH gives warranty only under the following conditions.

Seller warranty includes all the manufacturing defects (design defects and material defects) in cases when:
 - the device is assembled, connected and installed according to the applicable standards and operates on the basis of operating conditions and manufacturer technical data sheet
 - the customer follows all the rules

contained in assembly instruction and general rules and norms during the assembly and the whole operating period of the product

- device condition and its working capacity were examined by the customer during the product transfer from the seller to the customer
 - the warranty is valid during days from the moment of defect detection by the customer
 - in the installation area of the convector the applicable standards of the

corrosive impact of the surrounding surface in respect of the device surface should not be exceeded

Main warranty periods:

- a) for the heat-exchange unit - 10 years from the date of sale
- b) for the stainless steel convector duct - 10 years from the date of sale
- c) for the galvanized steel convector duct - 5 years from the date of sale
- d) other convector parts - 2 years
- e) the warranty period starts from the product date of sale

TERMS OF DELIVERY

Rights and responsibilities of the contracting parties in accordance with the delivery contract:

1. The Customer estimates the terms of the delivery and means of transportation and if necessary promptly informs of any transportation changes.
2. The customer makes available free of charge and secure room for the transport delivering the goods.

3. In the place of delivery there must be a person responsible for the acceptance of the supplied goods.

4. The Seller has the right to know or control the identity of the driver or forwarder delivering the goods.
5. Each delivery of the goods is accompanied by a packing list or other documentation necessary for transportation of goods and is obligatory

by the terms of the contract between the Seller and the Customer.

6. The Customer undertakes to provide and send signed and stamped confirmed packing list to the Seller.
7. In case of any differences the written notification must be attached to the accompanying documents.

AMOUNT OF DELIVERY

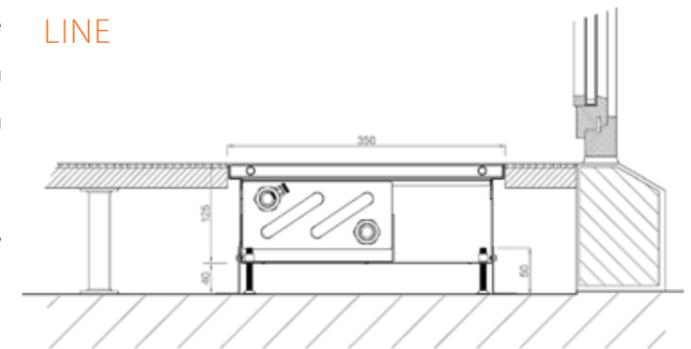
Stainless steel or galvanized steel duct, copper-aluminium heat-exchange unit, aluminium frame, air valve installed on the heat-exchange unit, adjusting screws, decorative lid installation manual.

The following items are not included in the delivery package:
 Decorative grate, connection faucets, thermostatic head.

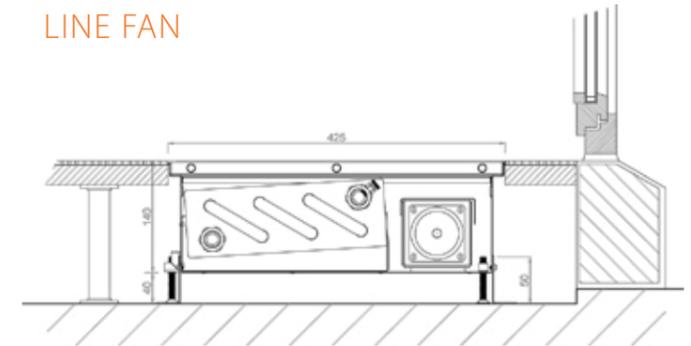
RECOMMENDED STANDARD INSTALLING IN FLOOR

- Ideal position 100-200 mm distance from window
- The air is warmed up by flowing through exchanger
- Hot air is mixed with cold air flowing off the window surface
- Air circulation:
 - warms up the room air
 - screens the window surface
 - secondary demisters the window surface

LINE



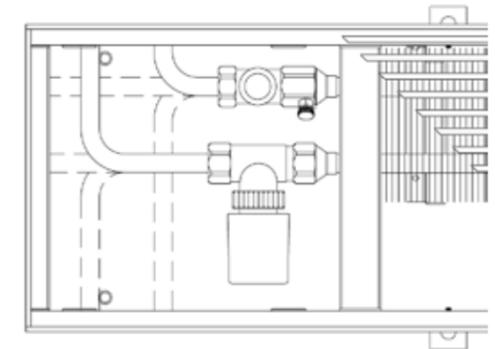
LINE FAN



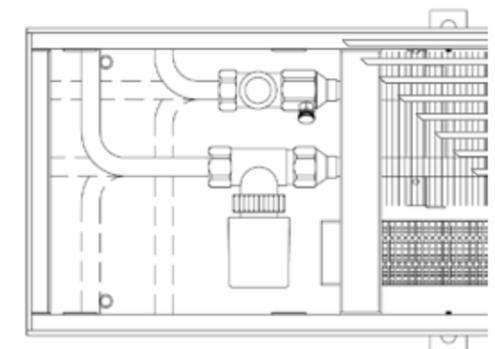
CONVECTOR CONNECTION TO THE HEATING SYSTEM

Floor convector is fitted with openings for connection to the heating system. There are three connection possibilities, from the room, side or window wall.

LINE



LINE FAN



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
L	F	-	0	6	5	2	5	0	2	5	0	0	-	X	T	R	0
Model			Height (mm)			Width (mm)			Length (mm)			Surface finish of trough, frame, connection, note					

Position	Symbol	Transcript	
1, 2, 3 Model	LN-	Floor convector without fan	
	LNP	Floor convector without fan for wet areas	
	LNA	Floor convector without fan with a supply of ventilation	
	LNW	Floor convector without fan for wet areas with a supply of ventilation	
	LF-	Floor convector with fan	
	LFP	Floor convector with fan for wet areas	
	LFA	Floor convector with fan with a supply of ventilation	
	LFW	Floor convector with fan for wet areas with a supply of ventilation	
	LFC	Floor convector with heating/cooling fan	
	4, 5, 6 Height (mm)	065	convector height 65 mm
		080	convector height 80 mm
		090	convector height 90 mm
		110	convector height 110 mm
		125	convector height 125 mm
140		convector height 140 mm	
165		convector height 165 mm	
7, 8, 9 Width (mm)	175	convector width 175 mm	
	200	convector width 200 mm	
	250	convector width 250 mm	
	300	convector width 300 mm	
	350	convector width 350 mm	
	425	convector width 425 mm	
10, 11, 12, 13 Length (mm)	0900	convector length 900 mm	
	2500	convector length 2500 mm	
	convector length is possible from 800 to 4800 mm. More details on pages 6-7		
14	Free position		
15 Surface finish of trough	N	standard (galvanized steel trough painted in black)	
	H	galvanized steel covered with durable dark grey matt spray painting	
	X	stainless steel	
	W	stainless steel (trough painted in black)	
16 Frame and grill	P - frame profile P, color: aluminium	S - frame profile T, color: aluminium	
	T - frame profile P, color: light bronze	E - frame profile T, color: light bronze	
	K - frame profile P, color: dark bronze	F - frame profile T, color: dark bronze	
	M - frame profile P, color: order by RAL	D - frame profile T, color: order by RAL	
17 Connection	R	right	
	L	left	
	B	non standard	
18 Note	1	standard model	
	0	non standard model (should be a description of deviations from the standard model)	

Example: floor convector with fan, height 65 mm, width 250 mm, length 2500 mm (non standard), trough from stainless steel, frame profile P, color: light bronze, right connection, non standard model (length is not consistent with the standard).

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
G	R	L	-	2	5	0	1	2	0	0	-	A	L	R	G	D	0
Model			Width (mm)			Length (mm)			Grill material			Color, appearance, grill type					

Position	Symbol	Transcript	
1, 2, 3, 4 5, 6, 7 Model	GRL-	floor convector grill	
	5, 6, 7 Width (mm)	175	convector width 175 mm
		200	convector width 200 mm
		250	convector width 250 mm
		300	convector width 300 mm
		350	convector width 350 mm
		425	convector width 425 mm
	8, 9, 10, 11 Length (mm)	0900	convector length 900 mm
		2500	convector length 2500 mm
	12	Free position	
13, 14 Grill material	AL	aluminium	
	OK	oak, wooden	
	BE	bleech, wood	
	IN	stainless steel	
	15 Color	P	aluminium
		T	light bronze
K		dark bronze	
16 Appearance	R	order by RAL	
	H	stain varnish	
	G	horizontal	
	V	transverse	
	17 Type	D	roll-up
C		sectional	
Z		sectional for convector height 65 mm	
S		non standard	
18 Note	1	standard model	
	0	non standard model (should be a description of deviations from the standard model)	

Example: floor convector grill, width 250 mm, length 1200 mm, aluminium grill material, color by RAL, transverse appearance, roll-up type, non standard model (RAL 9001 colored).

HEATMANN

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