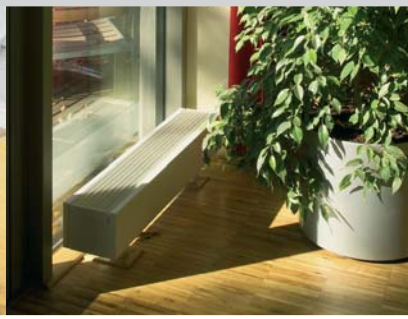
LICON®
RADIATORS FOR LIFE

RADIATORS FOR LIFE



Catalogue 2009

Content

LICON®
RADIATORS FOR LIFE

Dear business friends,

Company LICON has been almost 5 years active on the market. We succeeded in following the 40-year tradition of manufacture of Likov convector bodies. Our production portfolio has been growing constantly, and the existing products are permanently innovated as you can learn from this catalogue.

We would like to introduce you three brand new products from the new catalogue. First group consists of floor convectors with aftercooling effect. Again, In designing these products we cooperated with experts in the specific area, including specialists from abroad. The result is a very effective fan-coil with a brand new type of Al/Cu at the exchanger, which was ideally designed both for heating and aftercooling. The plating (tub) of the convector is manufactured by a unique system of "tub-in-tub" when a second tub is built in the bottom of the convector which serves for trapping and drainage of the condensate, pool water, etc. Fan-coils are produced in two designs: - a double-tube (heats or cools), and a four-tube (both heats and cools). Heating and cooling outputs were measured in a prominent test laboratory HLK Stuttgart. See the catalogue for more detailed information.

Another novelty in the LICON CERAMIC production programme is an intelligent heating element, mantle of which is made of ceramic tiles. This is an absolute novelty in the world of heating elements. The radiator is equipped with its own integrated control electronics, fans with very low noise level of only 21.4 dB and, first of all, it is a very original radiator that can be installed where above-standard and original design is required. See the catalogue for more detailed information.

This year we have also improved our web presentation on www.licon.cz. Now we are much more flexible in handing over current information. The sites will provide you with much more interesting information that cannot be squeezed in the printed catalogue.

We believe that you will certainly appreciate also the shortened delivery time of products which we usually delivery within 3 or 12 working days. Contact our commercial department for more detailed information about the delivery terms of individual products.

We treasure our interest in the products of our company and we do our best to satisfy you.

Martin Kniha
Executive

RADIATORS FOR LIFE **www.licon.cz**




Manufacture of Licon heating elements proceeds using most sophisticated technologies. Majority of production operations is executed on CNC machines. Surface treatment of elements is executed using powder epoxy-polyester pains on an ecologically-saving line.

OQS

OQS-CERTIFICATE

qualityaustria

Accredited in accordance with the Austrian accreditation law BGBl. Nr. 182/2006 by the BMWA

Quality Austria Training, Certification and Evaluation Ltd. awards this Quality Austria Certificate to the following organisations:

This Quality Austria Certificate confirms the application and further development of an effective

LICON RADIATORS FOR LIFE

LICON HEAT s.r.o.
CZ-140 00 Praha 4, Krajánkova 2390/11

QUALITY MANAGEMENT SYSTEM
complying with the requirements of standard
ISO 9001:2000

Scope of application: Production of radiators
NACE: 28.0.0 EAC: 17

Registration No.: 05269/0
Date of initial issue: 18. July 2006
Valid until: 18. July 2009

The validity of the Quality Austria Certificate will be maintained via annual surveillance audits and three yearly renewal audits.

Vienna, 17. August 2006

Quality Austria Training, Certification and Evaluation Ltd.

TR Ing. Viktor Seitschek
President

Konrad Scheiber
General Manager

OQS is accredited according to the Austrian Accreditation Act, Federal Law Gazette No. 468/1992, by the BMWA (Federal Ministry of Economic Affairs and Labour).

OQS is accredited as an organization for environmental verification by the BMLFUW (Federal Ministry of Agriculture, Forestry, Environment and Water Management).

OQS is authorized by the VDA (Association of the Automotive Industry).

For accreditation and registration details please refer to the applicable regulations and decisions published in the Federal Law Gazette or recognition documents.

OQS is the Austrian member of IQNet (International Certification Network).

OQS Certification and Evaluation Ltd is a member of Quality Austria Training, Certification and Evaluation Ltd.

Doc. No. 75/R01

IQNet®

THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

IQNet and OQS

hereby certify that the organization

LICON HEAT s.r.o.
CZ-140 00 Praha 4, Krajánkova 2390/11

Scope of application: Production of radiators
NACE: 28.0.0 EAC: 17

has implemented and maintains a

Quality Management System

which fulfills the requirements of the following standard

ISO 9001:2000

Issued on:	**2006-08-17**
Validity date:	**2009-07-18**
OQS certified since:	**2006-07-18**
Registration Number:	**AT-05269/0**

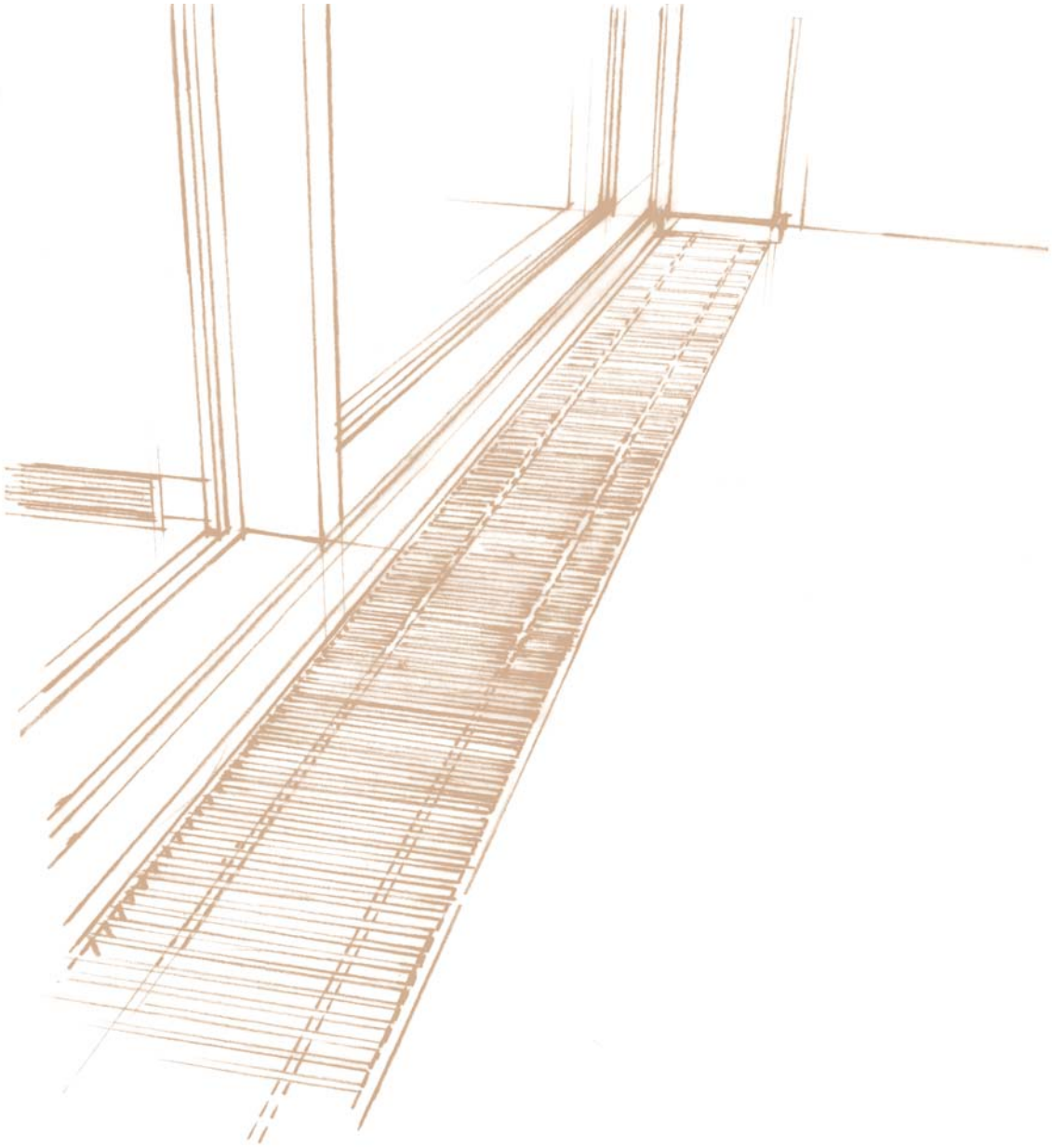
Dr. Fabio Roversi
President of IQNet

Viktor Seitschek
President of OQS

qualityaustria

OQS

IQNet Partners*:
AENOR *Spain* AFAQ AFNOR *France* AIB-Vincotte International *Belgium* ANCE *Mexico* APCER *Portugal* CISQ *Italy* CQC *China* CQM *China* CQS *Czech Republic* Cro Cert *Croatia* DQS *Germany* DS *Denmark* ELOT *Greece* FCAV *Brazil* FONDONORMA *Venezuela* HKQAA *China* ICONTEC *Colombia* IMNC *Mexico* IRAM *Argentina* JQA *Japan* KFQ *Korea* MSZT *Hungary* Nemko AS *Norway* NSAI *Ireland* PCBC *Poland* PSB Certification *Singapore* QMI *Canada* Quality Austria *Austria* RR *Russia* SAI Global *Australia* Inspecta Certification *Finland* SII *Israel* SIQ *Slovenia* SQS *Switzerland* SRAC *Romania* TEST St Petersburg *Russia* YUQS *Serbia and Montenegro*
IQNet is represented in the USA by: AFAQ AFNOR, AIB-Vincotte International, CISQ, DQS, NSAI, QMI and SAI Global
* The list of IQNet partners is valid at the time of issue of this certificate. Updated information is available under www.iqnet-certification.com



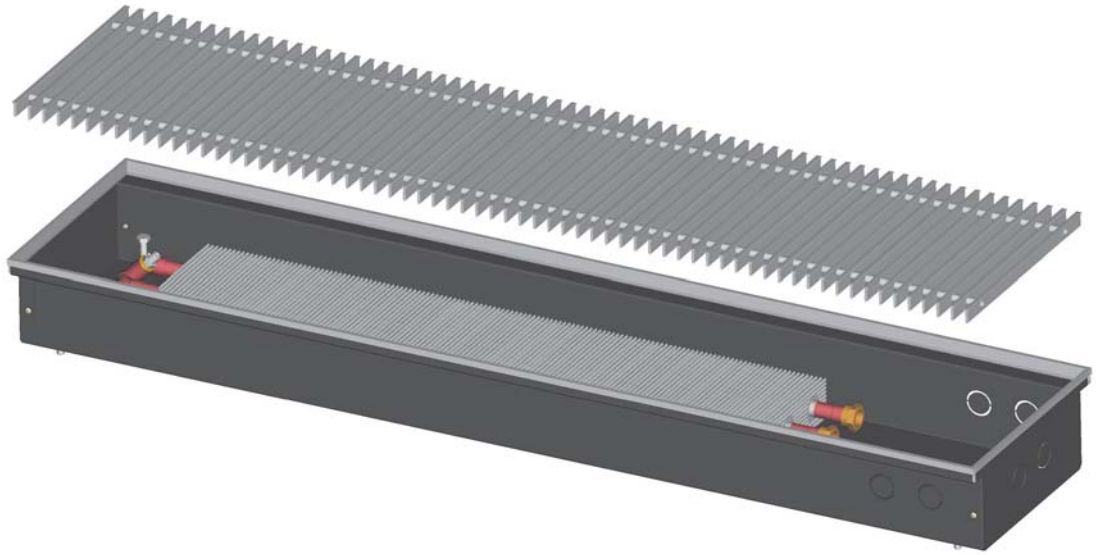
FLOOR MOUNTED
R A D I A T O R S

RADIATORS FOR LIFE




Floor-mounted convectors

Licon PK



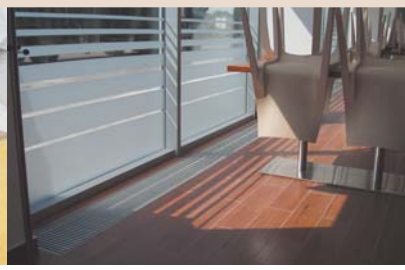
Specification

depths	9, 11, 15, 19, 30, 45 cm
widths	16, 20, 28, 42 cm
lengths	80 to 300 cm
outputs	from 97 to 4095 W
maximum working pressure	1,2 MPa
maximum working temperature	110°C
connecting threat	internal G 1/2“
case design	steel, stainless steel 1.4400

The Licon PK convector is designed for embedding in the floor, mainly at places where no higher elements can be located, e.g. near French windows, near passages to winter gardens, entries to halls, exits, etc., in public buildings (shops, administration buildings, etc.) and also in family houses. Various colour combinations of cover grids then ensure suitability of these convectors for any type of interior.

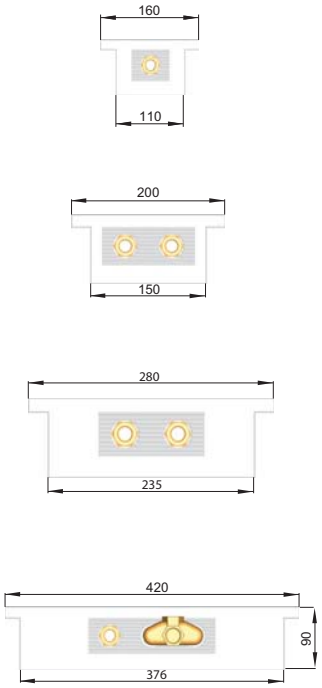
Use in interiors



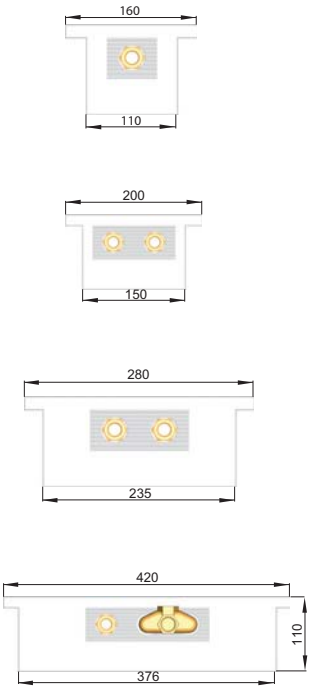



Element sections

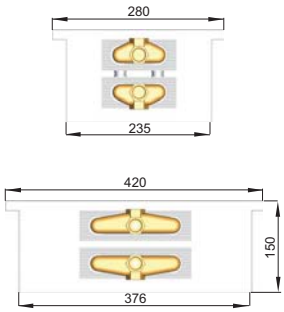
Depth 9 cm



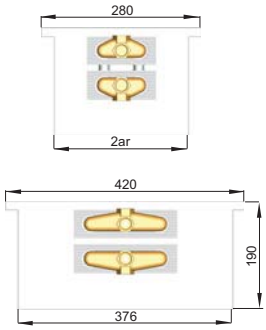
Depth 11 cm



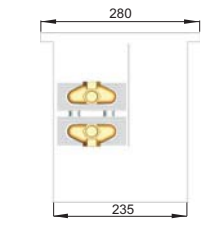
Depth 15 cm

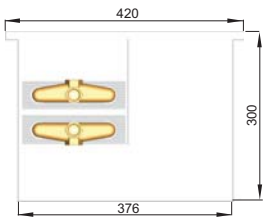


Depth 19 cm

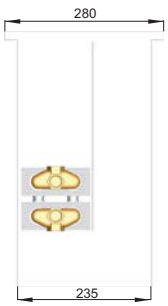


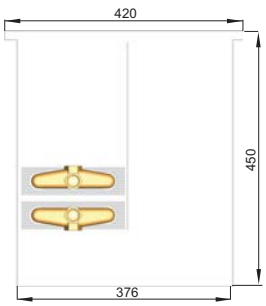
Depth 30 cm



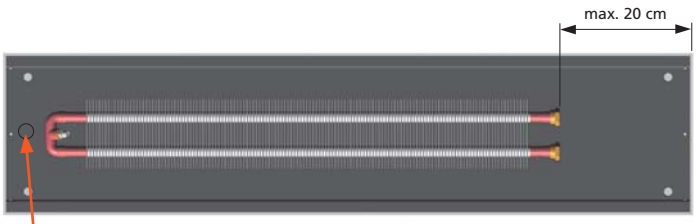


Depth 45 cm





Location of heat exchanger



∅ 15 mm weep hole
(for stainless stell case design only)

The dimensions in the schemes are in mm.
The stated dimensions do not include decorative frame.

Table of heat outputs

■ **Heat outputs (W) at tw1/tw2/ti = at 85/75/20°C (Δt=60) and at 75/65/20°C (Δt=50) according to CSN EN 442**

Depth (cm)		Δt	Length L (cm)											
			80	100	120	140	160	180	200	220	240	260	280	300
Width 16	9	Δt 60	129	180	231	282	333	384	436	487	538	589	640	691
		Δt 50	97	135	173	212	250	289	327	365	404	442	481	519
	11	Δt 60	157	219	282	344	407	469	531	594	656	719	781	843
		Δt 50	118	165	212	258	305	352	399	446	493	540	586	633
Width 20	9	Δt 60	155	216	278	339	401	463	524	586	647	709	770	832
		Δt 50	116	162	209	255	301	347	393	440	486	532	578	624
	11	Δt 60	189	264	339	414	489	564	639	714	790	865	940	1015
		Δt 50	142	198	255	311	367	424	480	536	593	649	705	762
Width 28	9	Δt 60	201	281	361	441	521	601	681	761	840	920	1000	1080
		Δt 50	151	211	271	331	391	451	511	571	631	691	751	811
	11	Δt 60	233	326	418	511	604	696	789	882	974	1067	1159	1252
		Δt 50	175	245	314	384	453	523	592	662	731	801	870	940
	15	Δt 60	283	395	507	620	732	844	957	1069	1181	1293	1406	1518
		Δt 50	212	297	381	465	549	634	718	802	887	971	1055	1140
	19	Δt 60	312	436	560	684	808	932	1056	1180	1304	1427	1551	1675
		Δt 50	234	327	420	513	606	699	793	886	979	1072	1165	1258
	30	Δt 60	419	586	753	919	1086	1253	1419	1586	1753	1919	2086	2252
		Δt 50	315	440	565	690	815	940	1066	1191	1316	1441	1566	1691
	45	Δt 60	646	902	1159	1416	1672	1929	2186	2442	2699	2956	3212	3469
		Δt 50	485	678	870	1063	1256	1448	1641	1834	2026	2219	2412	2604
Width 42	9	Δt 60	362	506	650	794	937	1081	1225	1369	1513	1657	1801	1944
		Δt 50	272	380	488	596	704	812	920	1028	1136	1244	1352	1460
	11	Δt 60	416	582	747	912	1078	1243	1408	1574	1739	1904	2070	2235
		Δt 50	312	437	561	685	809	933	1057	1181	1306	1430	1554	1678
	15	Δt 60	497	694	891	1088	1286	1483	1680	1878	2075	2272	2469	2667
		Δt 50	373	521	669	817	965	1113	1261	1410	1558	1706	1854	2002
	19	Δt 60	548	766	983	1201	1419	1637	1854	2072	2290	2508	2725	2943
		Δt 50	411	575	738	902	1065	1229	1392	1556	1719	1883	2046	2210
	30	Δt 60	731	1021	1311	1602	1892	2182	2473	2763	3053	3344	3634	3924
		Δt 50	549	766	984	1202	1420	1638	1856	2074	2292	2510	2728	2946
	45	Δt 60	1016	1419	1823	2226	2630	3033	3437	3840	4244	4648	5051	5455
		Δt 50	762	1065	1368	1671	1974	2277	2580	2883	3186	3489	3792	4095

CATALOGUE No.
PK length/depth/width (in cm) profile of frame [U, F see the sketch on Page 20] frame shade [S-silver, Z-gol, B-bronze] stainless case design
Example: *PK 100/11/28 UZ =PK convector with steel tub, of 100 cm length, 11 cm depth and 28 cm width, provided with a U-profile frame in gold.*
If specification of decorative frame and the cese material design will be missing in the order, it will be made of steel plate and fitted with silver frame of U-shape.

Standard order contains

- steel case, varnished in RAL 9005 shade - black
- heat exchanger with low water content and uniquely shaped lamellas for higher heat output, fitted with air-relief valve G 1/4" or G 1/2"
- anodised Al frame, U profile, colour of natural aluminium
- fixation anchors to fasten the canal to the floor
- a pair of flexible rustless hoses for easy attachment
- a soloit cover plate, protecting the exchanger from dust and impurities at the construction site
- set screws to level floor unevenness
- mounting instructions of element

The assembly is wrapped in a solid PVC foil with edge protectors.

Cover grids – see Page 20

Optional specification

- stainless case design
- anodised Al frame, F profile (see the sketch on Page 20)
- colour of frame – natural aluminium, shining gold (suitable for combination with wooden grid), bronze
- black paint coating of heat exchanger

For technological reasons wooden frame cannot be supplied.

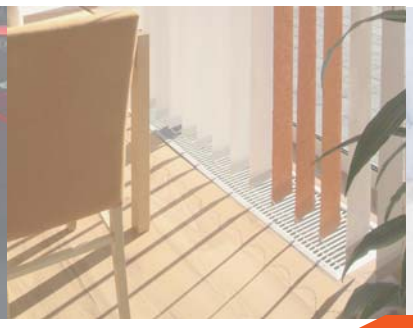
Δt Correction factor for variant temperature difference of Licon PK elements

Δt (K)	20	22	24	26	28	30	32
kt	0,237	0,275	0,315	0,358	0,402	0,448	0,496
Δt (K)	34	36	38	40	42	44	46
kt	0,545	0,596	0,65	0,704	0,76	0,818	0,877
Δt (K)	48	50	52	54	56	58	60
kt	0,938	1,000	1,064	1,129	1,195	1,263	1,332

Temperature index m =1.572

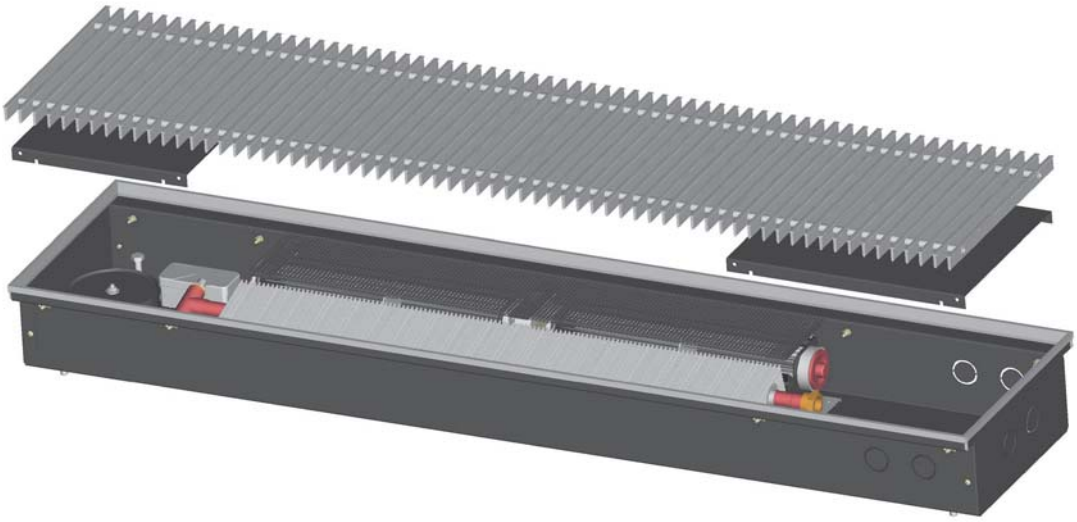
Pressure losses – see Page 60

RADIATORS FOR LIFE

Floor-mounted convectors

Licon PKVT, PKVTi, PKVTi-TWIN



Specification

depths	7.5, 9, 11 cm
widths	28, 42 cm
lengths	90, 120, 160, 200, 240, 280 cm
outputs	from 123 to 6582 W
maximum working pressure	1,2 MPa
maximum working temperature	110°C
connecting threat	internal G 1/2“
case design	steel, stainless steel 1.4400
ventilator operating voltage	max.12V AC

Where the Licon PK floor-mounted convector is not sufficient in terms of its output, more productive heat source must be selected. To satisfy this demand, a floor-mounted Licon PKVT convector was designed with tangential fan. The Licon PKVT convector extends usefulness of Licon PK convectors even to areas with higher thermal losses. The speed of fan rotation can be changed fluently in dependence on instant room temperature, which allows the PKVT convector to react flexibly to the temperature demand. The convectors are equipped with 230/12V transformer, installed inside the case under the cover grid. Maximum service voltage of fans is 12V AC. The stainless design of the convector case anticipates its location in damp environment, therefore the transformer is, for safety reasons, supplied separately in a mounting box for wall mounting. The turns of the fan can be changed alternately or continuously, depending on the electric control type used – basic (alternately), automatic (continuously). The PKVT model serves for heating only.

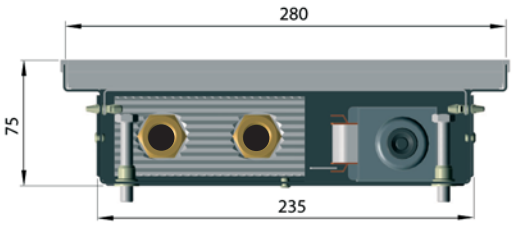
Use in interiors



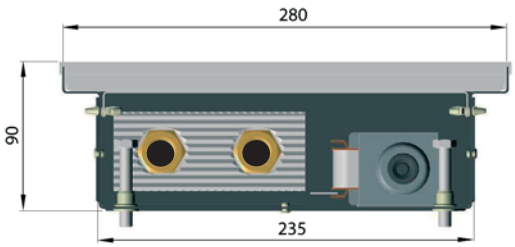

Element sections

The dimensions in the schemes are in mm. The stated dimensions do not include decorative frame

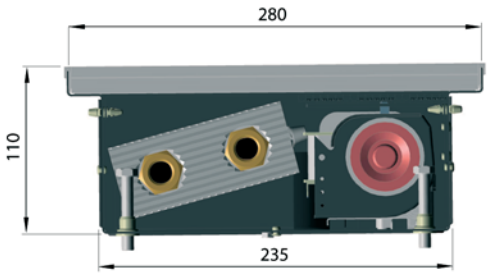
Depth 7.5 cm

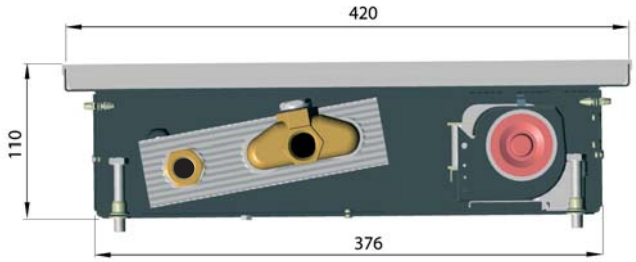


Depth 9 cm



Depth 11 cm





Noise level of floor-mounted convectors with fan (acoustic pressure 1m from convector)

Depth 11 cm (applies for both 28 and 42 cm widths)

1 st level	27 dbA
2 nd level	34 dbA
3 rd level	41 dbA

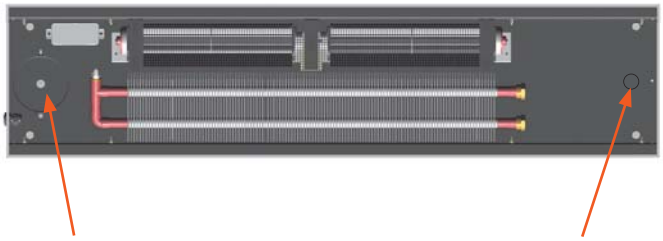
Depth 9 cm

1 st level	25 dbA
2 nd level	30 dbA
3 rd level	37 dbA

Depth 7,5 cm

1 st level	25 dbA
2 nd level	31 dbA
3 rd level	38 dbA

Steel design



**230/12 transformer (fitted inside the case for steel design only)*

weep hole Ø 15 mm (for stainless case design only)

** If the convector case is all made of steel, the transformed is not installed inside the case but supplied separately in a mounting box – see Mounting Instructions.*

Table of heat outputs

Heat outputs (W) at tw1/tw2/ti = at 85/75/20 C (Δt=60) and at 75/65/20 C (Δt=50) according to CSN EN 442

PKVT type (length/ depth/width)	Δt	Fan switched off	1. st level	2. nd level	3. rd level	Maximum fan input (VA)
90/7/28	Δt 60	155	853	907	913	34
	Δt 50	123	703	748	753	
120/7/28	Δt 60	208	1321	1405	1426	50
	Δt 50	165	1089	1158	1176	
160/7/28	Δt 60	277	1804	1926	1903	84
	Δt 50	220	1487	1588	1569	
200/7/28	Δt 60	346	2282	2428	2467	100
	Δt 50	275	1881	2002	2034	
240/7/28	Δt 60	416	2760	2935	2980	134
	Δt 50	330	2275	2420	2457	
280/7/28	Δt 60	485	3258	3467	3519	150
	Δt 50	385	2686	2858	2901	

PKVT type (length/ depth/width)	Δt	Fan switched off	1. st level	2. nd level	3. rd level	Maximum fan input (VA)
90/9/28	Δt 60	162	878	935	995	34
	Δt 50	129	724	771	820	
120/9/28	Δt 60	218	1360	1447	1539	50
	Δt 50	173	1121	1193	1269	
160/9/28	Δt 60	291	1857	1984	2077	84
	Δt 50	231	1531	1636	1712	
200/9/28	Δt 60	364	2350	2501	2661	100
	Δt 50	289	1937	2062	2194	
240/9/28	Δt 60	437	2842	3023	3216	134
	Δt 50	347	2343	2492	2651	
280/9/28	Δt 60	590	3356	3571	3798	150
	Δt 50	404	2767	2944	3131	

PKVT type (length/ depth/width)	Δt	Fan switched off	1. st level	2. nd level	3. rd level	Maximum fan input (VA)
90/11/28	Δt 60	253	975	1120	1255	51
	Δt 50	207	799	918	1029	
120/11/28	Δt 60	429	1541	1771	1984	69
	Δt 50	352	1263	1452	1626	
160/11/28	Δt 60	599	2050	2463	2758	120
	Δt 50	491	1680	2019	2261	
200/11/28	Δt 60	726	2763	3177	3559	170
	Δt 50	595	2265	2604	2917	
240/11/28	Δt 60	895	3510	4035	4519	190
	Δt 50	734	2877	3307	3704	
280/11/28	Δt 60	1081	4423	5084	5695	204
	Δt 50	886	3625	4167	4668	

PKVT type (length/ depth/width)	Δt	Fan switched off	1. st level	2. nd level	3. rd level	Maximum fan input (VA)
90/11/42	Δt 60	371	1433	1646	1845	51
	Δt 50	304	1175	1349	1513	
120/11/42	Δt 60	636	2280	2622	2936	69
	Δt 50	521	1869	2149	2406	
160/11/42	Δt 60	884	3023	3633	4069	120
	Δt 50	724	2478	2978	3335	
200/11/42	Δt 60	1074	4090	4702	5267	170
	Δt 50	881	3352	3854	4317	
240/11/42	Δt 60	1312	5142	5911	6620	190
	Δt 50	1075	4215	4845	5426	
280/11/42	Δt 60	1524	6236	7168	8030	204
	Δt 50	1249	5111	5875	6582	

CATALOGUE No.
PKVT length/depth/width (in cm) profile of frame [U, F see the sketch on Page 20] frame shade [S-silver, Z-gold, B-bronze] stainless case design
Example: *PKVT 120/11/28 UZ = convector with PKVT fan with steel case, of 120 cm length, 11 cm depth and 28 cm width, provided with a U-profile frame in gold.*
If specification of decorative frame and the case material design will be missing in the order, it will be made of steel plate and fitted with silver frame of U-shape.

Standard order contains

- steel case, varnished in RAL 9005 shade - black
- heat exchanger with low water content and uniquely shaped lamellas for higher heat output, fitted with air-relief valve G 1/4" or G 1/2"
- tangential fans along the entire length of the heating area of th heat exchanger, top fan filter
- 230/12 V transformer, coverage IP 54, including 5 m connecting cable
- covers of transformer and connecting hoses – in the colour of the case
- anodised Al frame, U profile, colour of natural aluminium
- if a stainless case is ordered, the transformed is supplied separately in a mounting box, its size must be calculated according to the number of fan-coils, see the Mounting section for precise mounting description
- fixation anchors to fasten the canal to the floor
- a pair of flexible rustless hoses for easy attachment
- a sololit cover plate, protecting the exchanger from dust and impurities at the construction site
- set screws to level floor unevenness
- mounting instructions of element

The assembly is wrapped in a solid PVC foil with edge protectors

Optional specification

- stainless case design
  warning: Does not contain trans-former!
- anodised Al frame, F profile (see the sketch on Page 20)
- colour of the frame – natural aluminium, gold, bronze
- black paint coating of heat exchanger

For technological reasons wooden frame cannot be supplied.

Electric control of Licon PKVT elements – see Page 52.

Δt Correction factor for variant temperature difference of elements

Δt (K)	20	22	24	26	28	30	32
kt	0,368	0,410	0,450	0,490	0,532	0,570	0,615
Δt (K)	34	36	38	40	42	44	46
kt	0,657	0,700	0,740	0,784	0,827	0,870	0,913
Δt (K)	48	50	52	54	56	58	60
kt	0,956	1,000	1,045	1,090	1,130	1,180	1,220

Temperature index m =1.09

Cover grids – see Page 20

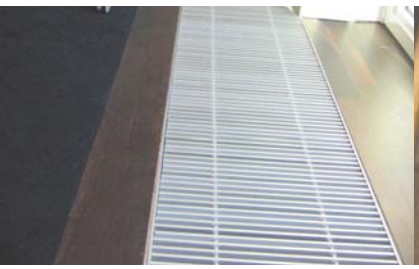
Pressure losses – see Page 60

Specification

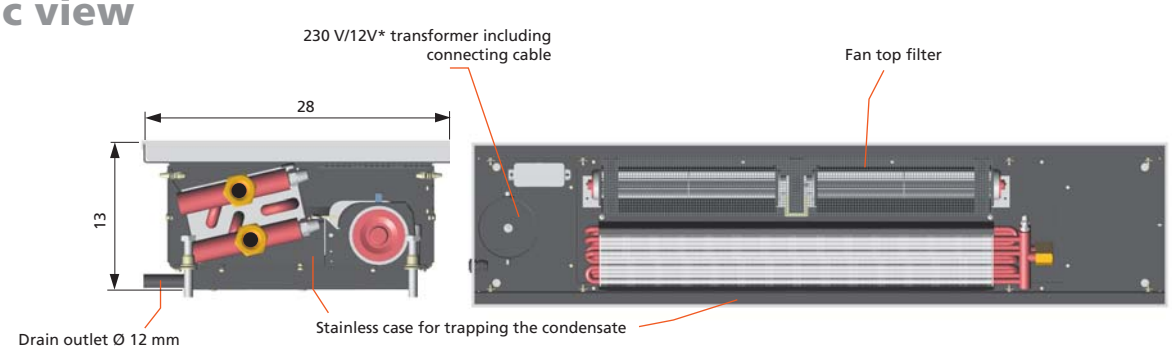
depth	13 cm
width	28 cm
lengths	120, 200, 300 cm
heat outputs	max. 6905 W
cooling outputs	max. 2356 W
maximum working pressure	1,2 MPa
maximum working temperature	110°C
connecting threat	internal G ½“
case design	steel, stainless steel 1.4400
ventilator operating voltage	max.12V AC

PKVTi- floor-mounted convector serving for heating or cooling of room. For this purpose a brand new design of Al/Cu of exchanger is used, which was ideally designed both for heating and aftercooling. In case of low construction depth the convector has therefore excellent thermal and cooling outputs, measured in HLK Stuttgart. The case of the convector is equipped with a unique system of „case-in-case“ when a stainless piece is built in the existing steel case which serves for trapping and drainage of potential condensate.
The fans used are tangential fans with max. 12 V voltage, the regulating system is identical with that of the PKVT fan-coils already produced.

Use in interiors




Schematic view



** If the convector case is all made of steel, the transformer is not installed inside the case but supplied separately in a mounting box – see Mounting Instructions.*

Table of cooling and heat outputs

Width	cm	28								
Depth	cm	13								
Lengths	cm	120			200			300		
Noise level (acoustic pressure in 1-m distance from the source)	dB (A)	24	33	37	30	37	40	32	39	42

Cooling output	t1 °C	Speed of rotation	1	2	3	1	2	3	1	2	3
		Humidity %	Cooling outputs are stated in Watts. Cooling outputs were measured in accordance with the EN 145187 standard.								
6/12°C	28	50	406	610	715	627	964	1507	865	1344	2356
	26	50	369	545	633	579	889	1352	804	1258	2124
	24	50	331	482	550	529	811	1191	741	1164	1880
8/14°C	28	50	369	545	633	579	889	1352	804	1258	2124
	26	50	331	482	550	529	811	1191	741	1164	1880
	24	50	293	411	468	478	729	1030	676	1070	1633
10/15°C	28	50	349	503	585	554	839	1248	775	1199	1960
	26	50	310	436	502	502	758	1087	708	1104	1714
	24	50	270	367	418	448	674	922	638	1003	1463
12/16°C	28	50	328	462	540	529	789	1148	744	1139	1801
	26	50	288	394	455	473	706	984	672	1040	1552
	24	50	246	324	369	416	618	816	598	933	1296
Heat output	t1 °C		Heat outputs are stated in Watts. Heat outputs were measured in accordance with the 442/ DIN 470 standard.								
75/65°C	15		1879	2314	2644	4143	5102	5830	5209	6624	7568
	20		**1709**	**2105**	**2406**	**3768**	**4642**	**5305**	**4753**	**6044**	**6905**
70/55°C	15		1623	1999	2286	3579	4408	5041	4523	5754	6574
	20		1453	1791	2048	3204	3949	4516	4061	5165	5900
55/45°C	15		1198	1476	1687	2642	3255	3720	3366	4280	4890
	20		1029	1267	1448	2269	2794	3193	2899	3687	4212
50/40°C	15		1029	1267	1448	2269	2794	3193	2899	3687	4212
	20		857	1056	1209	1890	2328	2666	2431	3088	3528

Heat output without fan is 231W/bm at 75/65/20C. Cooling output at other cooling drift than the above stated – contact the manufacturer for information.
***CATALOGUE code:** PKVTi length (in cm), frame profile (U,F), shade of frame [S-silver, Z-gold, B-bronze]; stainless case design.*
***Example:** PKVTi 120 UZ = convector with PKVTi fan with steel case, of 120 cm length, provided with a U-profile frame in gold.*
If specification of decorative frame and the case material design will be missing in the order, it will be made of steel plate and fitted with silver frame of U-shape.

Standard supply and optional specification

are identical with those of PKVT - see Page 14.

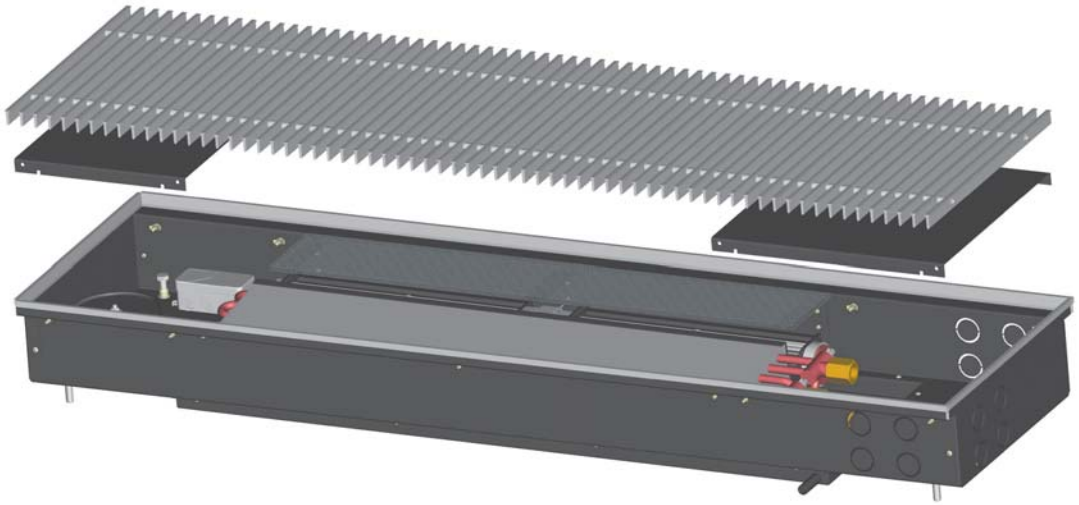
Cover grids – see Page 20

Δt Correction factor for variant temperature difference of elements

Δt (K)	20	22	24	26	28	30	32
kt	0,41	0,442	0,482	0,523	0,562	0,602	0,641
Δt (K)	34	36	38	40	42	44	46
kt	0,681	0,721	0,761	0,8	0,841	0,881	0,92
Δt (K)	48	50	52	54	56	58	60
kt	0,96	1,000	1,039	1,078	1,119	1,159	1,199

Temperature index m = 0.94

Pressure losses – see Page 60



Specification

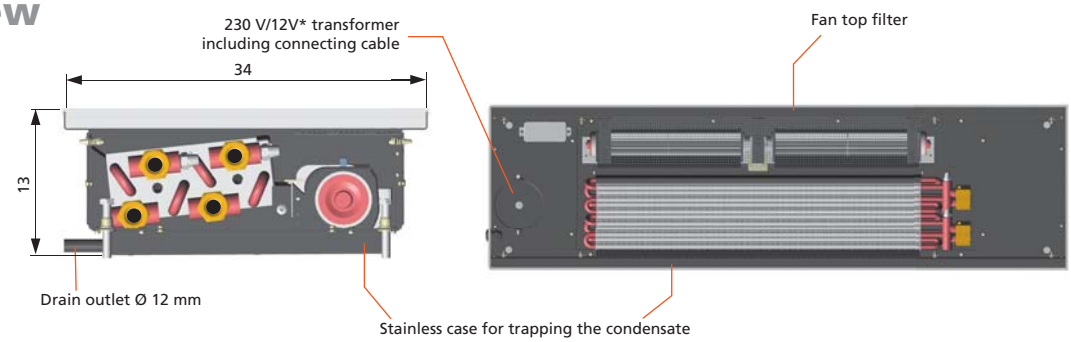
depth	13 cm
width	34 cm
lengths	120, 200, 300 cm
heat outputs	max. 6742 W
cooling outputs	max. 1186 W
maximum working pressure	1,2 MPa
maximum working temperature	110°C
connecting threat	internal G ½“
case design	steel, stainless steel 1.4400
ventilator operating voltage	max.12V AC

PKVTi / TWIN – another variant of floor-mounted convector with aftercooling effect. Four-tube exchanger serves both for heating and cooling of room. The convector is also suitable for attachment in a four-tube system with heating and cooling circuit, and therefore change of heating medium to cooling medium need not be solved. For this purpose a brand new design of Al/Cu of exchanger is used, which was ideally designed both for heating and aftercooling. In case of low construction depth the convector has therefore excellent thermal and cooling outputs, measured in HLK Stuttgart.
The case of the convector is equipped with a unique system of „case-in-case“ when a stainless piece is built in the existing steel case which serves for trapping and drainage of potential condensate.
The fans used are tangential fans with max. 12 V voltage, the regulating system is identical with that of the PKVT fan-coils already produced.

Use in interiors




Schematic view



** If the convector case is all made of steel, the transformer is not installed inside the case but supplied separately in a mounting box – see Mounting Instructions.*

Table of cooling and heat outputs

Width	cm	34								
Depth	cm	13								
Lengths	cm	120			200			300		
Noise level (acoustic pressure in 1-m distance from the source)	dB (A)	24	34	41	27	37	41	27	39	41

Cooling output	t1 °C	Speed of rotation	1	2	3	1	2	3	1	2	3
		Humidity%	Cooling outputs are stated in Watts. Cooling outputs were measured in accordance with the EN 145187 standard.								
6/12°C	28	50	215	241	248	498	598	666	811	1016	1186
	26	50	190	214	226	441	530	597	722	901	1051
	24	50	164	187	204	384	463	529	632	787	924
8/14°C	28	50	190	214	226	441	530	597	722	901	1051
	26	50	164	187	204	384	463	529	632	787	924
	24	50	139	160	182	328	397	464	542	674	802
10/15°C	28	50	173	199	173	404	493	567	663	837	993
	26	50	148	171	148	348	424	497	573	721	862
	24	50	122	144	122	291	357	430	483	606	738
12/16°C	28	50	157	184	209	369	456	538	607	774	935
	26	50	131	156	183	312	386	465	517	656	799
	24	50	106	128	158	255	317	394	427	538	671
Heat output	t1 °C		Heat outputs are stated in Watts. Heat outputs were measured in accordance with the 442/ DIN 470 standard.								
75/65°C	15		1506	1777	1866	3642	4305	4507	6105	7215	7555
	20		**1325**	**1568**	**1665**	**3204**	**3799**	**4022**	**5370**	**6368**	**6742**
70/55°C	15		1179	1397	1492	2850	3385	3605	4776	5674	6043
	20		1015	1208	1307	2454	2926	3157	4112	4904	5292
55/45°C	15		820	982	1087	1983	2380	2627	3323	3990	4403
	20		666	803	905	1611	1945	2185	2701	3260	3663
50/40°C	15		666	803	905	1611	1945	2185	2701	3260	3663
	20		521	632	728	1261	1531	1758	2113	2567	2946

Heat output without fan is 231W/bm at 75/65/20C. Cooling output at other cooling drift than the above stated – contact the manufacturer for information.
CATALOGUE code: *PKVTi length (in cm), frame profile (U,F), shade of frame [S-silver, Z-gold, B-bronze]; stainless case design.*
Example: *PKVTi 120 UZ = convector with PKVTi fan with steel case, of 120 cm length, provided with a U-profile frame in gold.*
If specification of decorative frame and the case material design will be missing in the order, it will be made of steel plate and fitted with silver frame of U-shape.

Standard supply and optional specification

are identical with those of PKVT - see Page 14.

Cover grids – see Page 20

Δt Correction factor for variant temperature difference of elements

Δt (K)	20	22	24	26	28	30	32
kt	0,35	0,39	0,431	0,472	0,514	0,556	0,599
Δt (K)	34	36	38	40	42	44	46
kt	0,642	0,686	0,729	0,774	0,818	0,863	0,908
Δt (K)	48	50	52	54	56	58	60
kt	0,954	1,000	1,046	1,093	1,138	1,185	1,232

Temperature index m = 1.147

Pressure losses – see Page 60

RADIATORS FOR LIFE




Floor-mounted convector cover grids

Licon PK, PKVT, PKVTi a PKVTi TWIN

The Licon PM floor-mounted cover grids are supplemental to the Licon PK, PKVT, PKVTi and PKVTi TWIN floor-mounted convectors or may be, if reasonable, used for covering a shaft with an integrated Licon OR exchanger. Your interior can be nicely complemented by selection of various types of materials or suitable colour shades of lamellas. The design of the grids enable their easy uncover (they are scrollable), for instance due to cleaning the convector exchanger and, at the same time, guarantees firmness when the device is transported.

Grid design variants

■ Wooden grids

Beech, natural

Oak, natural

Hornbeam, natural

Mahogany, natural

■ Aluminium grids

Silver

Bronze

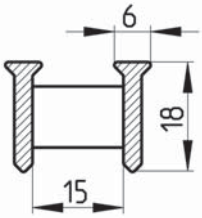
■ Stainless grid

Gold

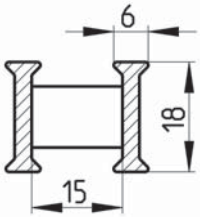
Stainless

Grid profiles

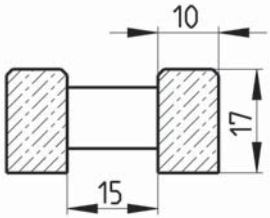
Aluminium profile	Stainless profile	Wooden profile



Permeability 66%



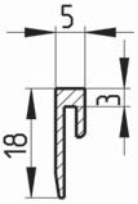
Permeability 66%

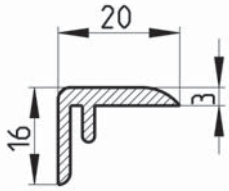


Permeability 60%

AL frame profiles

U frame	F frame





Note:
Standard design PK, PKVT and PKVTi contains silver U profile. If different type of frame is ordered, the new one will be attached to the delivery. The shades of the frames are identical as those of aluminium grids. Wooden grids are supplied in natural design, without surface treatment.

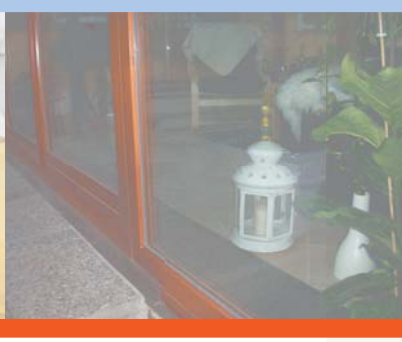
Correction factor of flow grid area

% of flow area	> 0,75	0,60	0,50	0,40	0,30
Correction factor	1,00	0,95	0,90	0,85	0,60

% of flow surface (area) means flow area of exchanger (width x length of heating element) minus flow area of expiratory grid in percents.

RADIATORS FOR LIFE



Design shapes and accessories

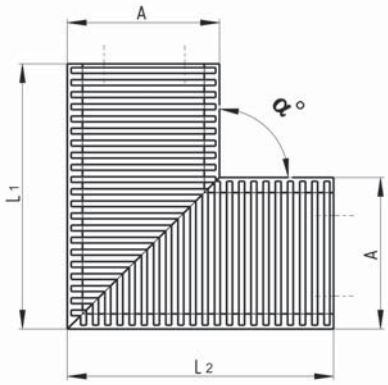
Licon design

Specification

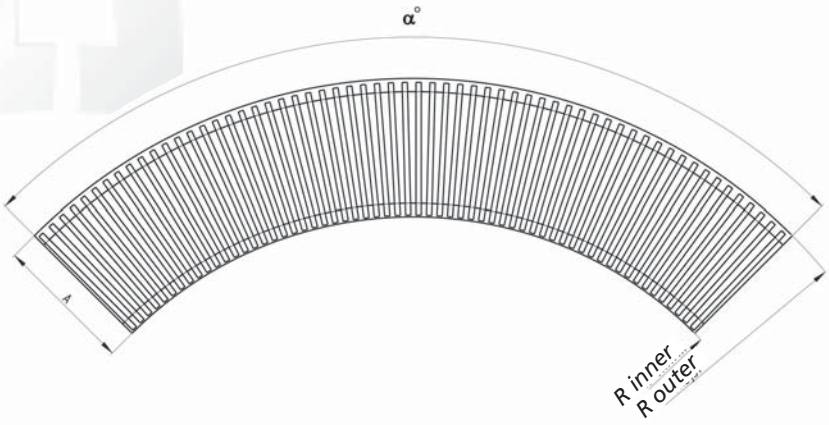
Depths for corner (angular)	max. 19 cm
Arc design for PK and PKVT	all types with depth to 19 cm, individual evaluation of capacity has to be elaborated, for PK and PKVTi
Design of case	stainless steel 1.4400
Grid design	aluminium, wood

Note:
We reserve the right to evaluate the possibility of execution before acceptance of the order. Corner pieces must be ordered simultaneously with following convectors. Arcs and corner parts are supplied including the cover grid ordered. Heat outputs of the arc design cannot be guaranteed anyhow, the manufacturer will execute an expert estimation of the heat output upon request. Heat exchanger cannot be installed in a corner part, therefore it does not heat.

Corner design

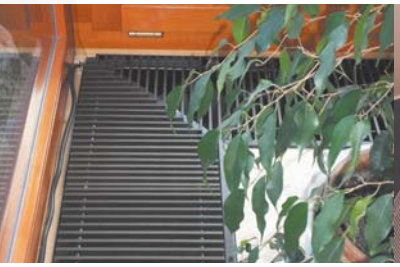
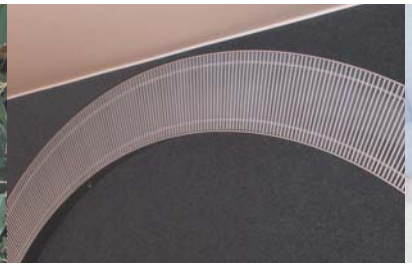


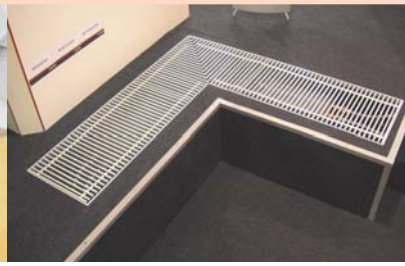
Arc design



Note:
To order the corner design, the angle (a), lengths (L1 and L2) and the entire width (A) have to be specified, which must conform to the floor-mounted convector case widths produced. As concerns the arc design, the angle (a) and the inner or outer radius (R - inner, R - outer) must be specified, as well as the entire width (A) which must conform to the floor-mounted convector case widths produced.

Use in interiors

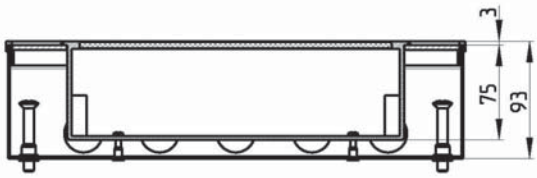



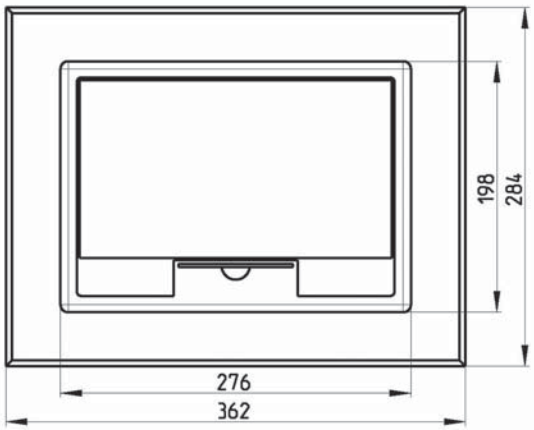


Special accessories

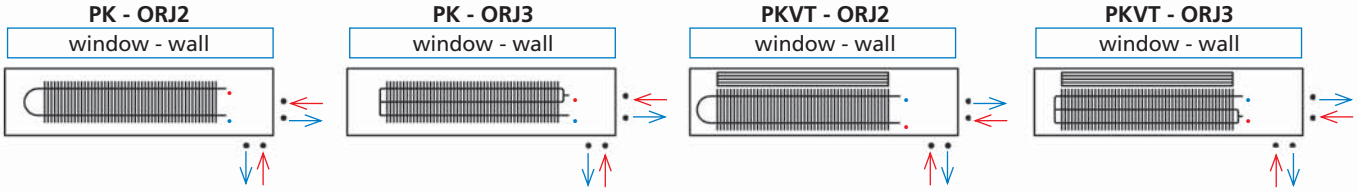
ELECTROBOX

Electrobox serves as a plug&socket box for installation of instruments in all types of administration buildings, hotels, schools, shops, etc. Electrobox solves distribution from the floor directly to the service points. It is designed to be built in between convectors e.g. in a long glazed wall. It looks discreet and very purposeful at the same time. It is universal for mounting in any type of floor (concrete, double, etc.). It can be used for PK and PKVT convectors in 11 cm depth and 28 cm width.
Electrobox is fitted with a plaster eight-module electric distribution box with a lid. The inner equipment of the electrobox (sockets, networks, etc.) is not supplied by the LICON manufacturer. Please contact directly the website of the socket box manufacturer: *http://www.schneider-electric.cz/produkty-a-sluzby/rozvody/nizke-napeti/instalacni-system-optiline.html , type Altira.*



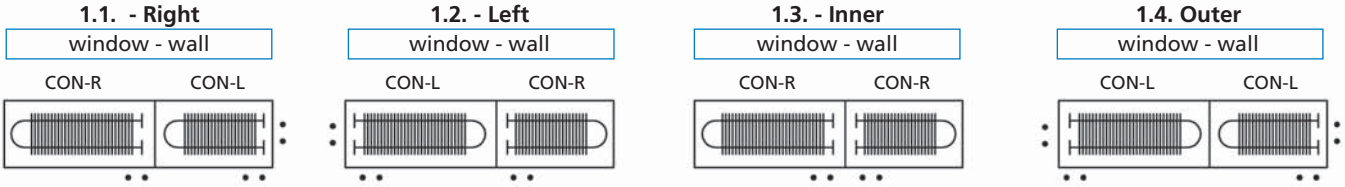


Connection of heat-carrying medium

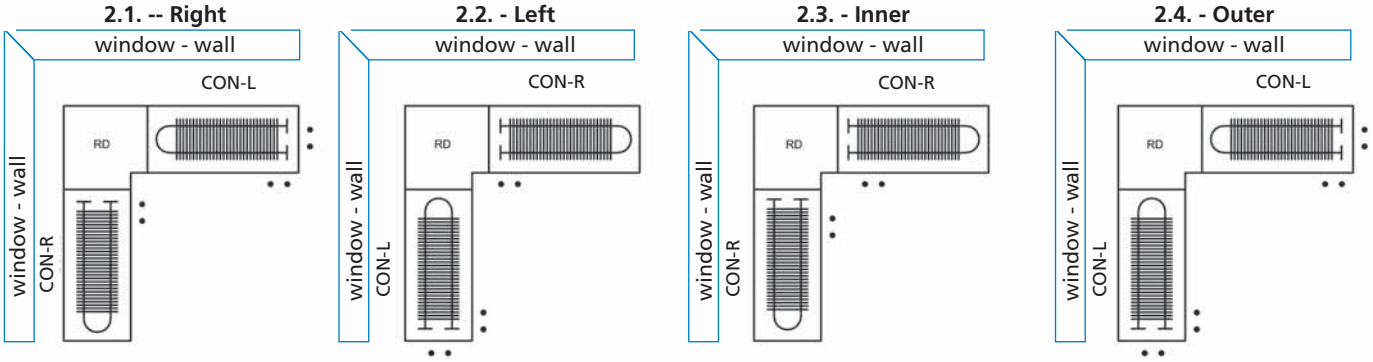


Connection of tubs

1. Series connection of PK / PKVT case (2 cases)

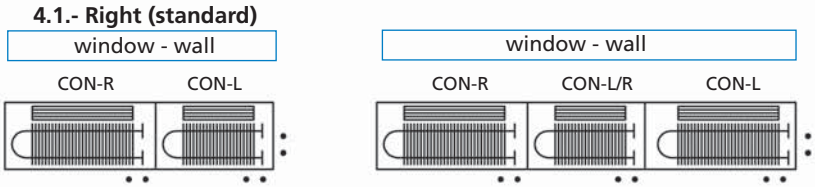


2. Connection of PK / PKVT to corner piece or arc



3. Series connection of PK / PKVT (3 and more cases)

4. Series connection of PKTi / PKVTi TWIN (2 and 3 cases)



• • - supply of heat-carrying medium
CON L - lowering of face on the opposite side of the supply
CON R - lowering of face on the side of the supply
CON L/R - lowering of both faces (fronts)

Floor - mounted
R A D I A T O R S

RADIATORS FOR LIFE




Bench convectors

Licon OL

Specification

height of bench element	9, 15, 30, 45, 60 cm
widths	18, 24 cm
lengths	80, 100, 120, 140, 160, 180, 200, 220, 240, 260, 280, 300 cm
outputs	from 473 to 4733 W
maximum working pressure	1,2 MPa
maximum working temperature	110 °C
maximum working temperature	40 °C
connecting threat	internal G ½“
connection method	bottom recommended, side

Heating benches Licon OL will find their use at places with lowered parapet, at glazed areas, et. A rich spectrum of designs and outputs allow their installation in any type of areas without disturbing the compactness of the interior. Another variant of Licon OL is a Licon OL/D heating bench which bears static load and therefore is suitable for instance for sitting, for instance at pools or on corridors.

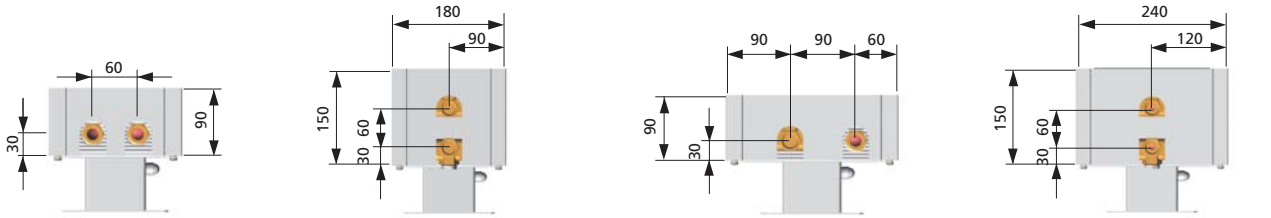
Use in interiors




Element sections

Width 18 cm Height 9 cm	Width 18 cm Height 15 cm	Width 24 cm Height 9 cm	Width 25 cm Height 15 cm

Side connection

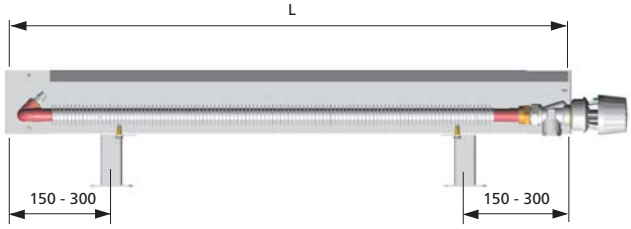


Bottom connection

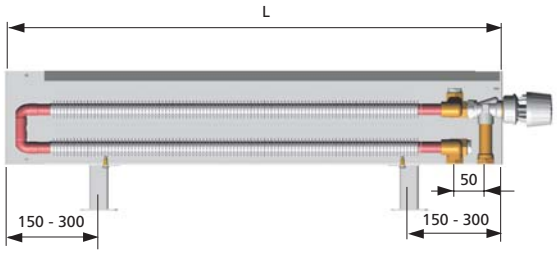
Note:
Height without stands. Bench convectors OL are produced for universal side/bottom connection. The connection can be executed directly in mounting on site. For bottom connection the manufacturer recommends to use a set which contains thermostatic valve and thermostatic head LICON/Danfoss with an extension adaptor. If another type of valve is used, connecting spacing of 50 mm between the input and output will not be achieved - it applies if the height is 15 cm and more, and if the height is 9 cm, the spacing corresponds with the above sketch (the dimensions are stated in mm).

Sketches of OL with stands on clean floor (dimensions in mm)

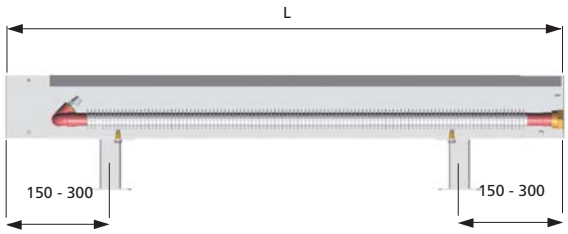
Sketch of bottom connection
of 18 and 24 cm widths and 9 cm height



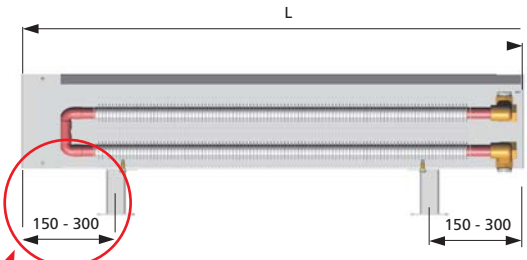
Sketch of bottom connection
of 18 and 24 cm widths and 60 cm height



Sketch of bottom connection
of 18 and 24 cm widths and 9 cm height



Sketch of bottom connection of 18 and 24 cm widths
and 15, 30, 45 and 60 cm eights



Note:
Bench convectors OL are as standard supplied with stands on clean floor. Another possibility of fastening to the structure of a building is use of stands on rough surface or by brackets on wall (see illustration on Page 57).

Note:
Detailed dimension sketches including calculation of distances between the stands - see Page 57.

Table of heat outputs

■ **Heat outputs (W) at tw1/tw2/ti = at 85/75/20·C (Δt=60) and at 75/65/20·C (Δt=50) according to CSN EN 442**

Width (cm		Δt	Length L (cm)											
			80	100	120	140	160	180	200	220	240	260	280	300
Height 9	18	Δt 60	606	764	923	1083	1242	1401	1561	1720	1879	2038	2197	2356
		Δt 50	473	596	720	845	969	1093	1217	1342	1466	1590	1714	1838
	24	Δt 60	1084	1405	1726	2049	2371	2692	3014	3336	3658	3980	4302	4624
		Δt 50	845	1096	1347	1598	1849	2100	2351	2603	2853	3104	3356	3607
Height 15	18	Δt 60	755	952	1150	1349	1547	1746	1944	2143	2341	2538	2737	2935
		Δt 50	589	743	897	1052	1207	1362	1517	1671	1826	1980	2135	2290
	24	Δt 60	1417	1837	2257	2678	3099	3519	3940	4361	4781	5202	5624	6045
		Δt 50	1105	1433	1760	2089	2417	2745	3074	3402	3730	4058	4387	4715
Height 30	18	Δt 60	1001	1263	1526	1790	2053	2316	2580					
		Δt 50	781	985	1191	1396	1601	1807	2012					
	24	Δt 60	1757	2278	2798	3321	3843	4364	4886					
		Δt 50	1370	1777	2183	2590	2998	3404	3811					
Height 45	18	Δt 60	1056	1333	1610	1888	2166	2444	2722					
		Δt 50	824	1040	1256	1473	1690	1906	2123					
	24	Δt 60	1984	2572	3160	3749	4339	4927	5516					
		Δt 50	1547	2006	2465	2924	3384	3843	4303					
Height 60	18	Δt 60	1207	1523	1841	2158	2476	2793	3111					
		Δt 50	942	1188	1436	1683	1931	2179	2426					
	24	Δt 60	2182	2829	3476	4124	4773	5419	6068					
		Δt 50	1702	2207	2711	3217	3723	4227	4733					

CATALOGUE CODE:
OL length/height/width (in cm) / design PLAN [PLAN]
Example: *OL 160/30/26 = convector bench OL, length 160 cm, height 30 cm, width 26 cm*
The standard design contains a stand on clean floor, connection to heating system (side – bottom), need not be specified. If mounted on wall or rough floor.

Standard order contains

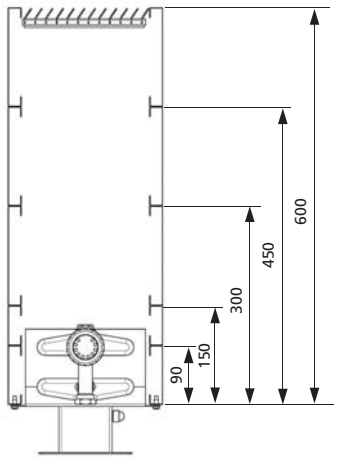
- steel plating, varnished in RAL 9010 shade - white
- heat exchanger for universal connection (side or bottom) with low water content and uniquely shaped lamellas for higher heat output, exchanger fitted with air-relief valve G 1/4" or G 1/2"
- stand on clean floor, see sketch on Page 57
- mounting instructions of element

The set is wrapped in a cardboard cover.

Optional accessories

- a set which contains thermostatic valve and thermostatic head LICON/Danfoss with an extension adaptor, see Page 61
- stands on rough floor or wall suspension, see sketch on Page 57
- if more than 20 pieces is ordered, another colour shade of design can be selected (the change has to be consulted with the manufacturer).

Heights of Licon OL benches



Licon OL PLAN

The PLAN design variant with an absolutely straight front board – see the Licon OK elements.

TIPE:

The LICON OL/D heating elements can be equipped with a calorimeter for measuring heat consumption, see Page 62 for more information.

Δt Correction factor for variant temperature difference of elements Licon OL

Δt (K)	20	22	24	26	28	30	32
kt	0,287	0,326	0,367	0,410	0,453	0,498	0,544
Δt (K)	34	36	38	40	42	44	46
kt	0,591	0,639	0,688	0,737	0,788	0,839	0,892
Δt (K)	48	50	52	54	56	58	60
kt	0,946	1,000	1,055	1,111	1,167	1,224	1,282

Teplotní exponent m = 1,364

Pressure losses and valve Kv values – see Page 60

RADIATORS FOR LIFE




Bench convectors
Licon OL/D

Specification

height of bench element	29 cm
widths	26 cm
lengths	100, 120, 140, 160, 180, 200 cm
outputs	from 1369 to 2902 W
maximum working pressure	1,2 MPa
maximum working temperature	110 °C
maximum working temperature	40 °C
connecting threat	internal G ½“
connection method	bottom recommended, side
cover plate design	Stone imitation (Teraco) Timber – beech, oak
plating design	Stainless steel, mate, standard 1.4404

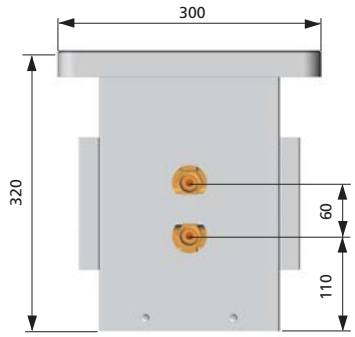
The Licon OL/D convector was designed for areas intended for relax and rest. Te bench is provided with a cover plate (attention – the plate must be ordered separately) which can bear static load and is suitable even for sitting. After seating on convector the plates are fixed to the structure of the convector. The Licon OL/D convector can be placed e.g. in halls or winter gardens.
For installation at pools we recommend to order an all-steel design, the so-called pool design, painted with standard white paint, according to RAL 9010.

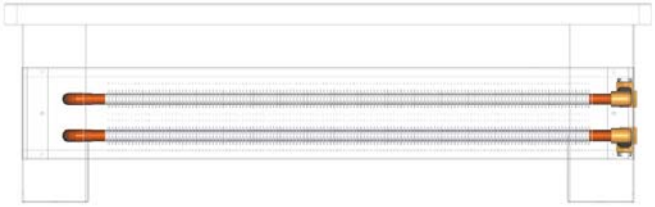
Use in interiors



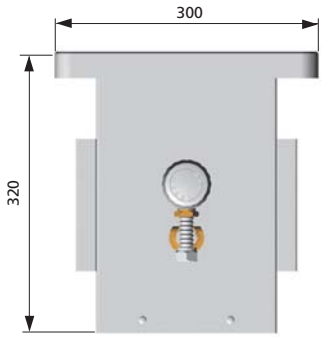

Element sections

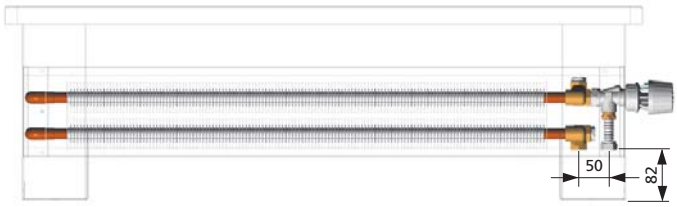
Side connection





Bottom connection





The dimensions in the schemes are in mm.

Table of heat outputs

■ **Heat outputs (W) at tw1/tw2/ti = at 85/75/20°C (Δt=60) and at 75/65/20°C (Δt=50) according to CSN EN 442**

Height (v cm)	Width (v cm)	Δt	Length L (cm)					
			100	120	140	160	180	200
32	26	**Δt 60**	1754	2148	2541	2935	3328	3720
		Δt 50	1369	1675	1982	2289	2596	2902

CATALOGUE CODE:
OL/D length in cm, or Plate for OL/D length (in cm) [Teraco, Beech, Oak]
Example: *OL/D 160 = convector bench Licon OL/D , length 160 cm. Attention: The plate must be ordered separately!*
The standard design allows connection to heating system (side – bottom), need not be specified in the order.

Standard supply contains

- steel plating, varnished in RAL 9010 shade - white
- heat exchanger for universal connection (side or bottom) with low water content and uniquely shaped lamellas for higher heat output, exchanger is fitted with air-relief valve G 1/4" or G 1/2"
- mounting instructions of element

The set is wrapped in a cardboard cover.

Δt Correction factor for variant temperature difference of elements Licon OL

Δt (K)	**20**	**22**	**24**	**26**	**28**	**30**	**32**
kt	0,287	0,326	0,367	0,410	0,453	0,498	0,544
Δt (K)	**34**	**36**	**38**	**40**	**42**	**44**	**46**
kt	0,591	0,639	0,688	0,737	0,788	0,839	0,892
Δt (K)	**48**	**50**	**52**	**54**	**56**	**58**	**60**
kt	0,946	1,000	1,055	1,111	1,167	1,224	1,282

Temperature index m = 1.364

Optional accessories

- a set which contains thermostatic valve and thermostatic head LICON/Danfoss with an extension adaptor, see Page 61
- cover plates - imitation of Terace stone, timber – beech, oak
- stainless-steel design, suitable in moist environment, e.g. pools
- if more than 20 pieces is ordered, another colour shade of design can be selected (the change has to be consulted with the manufacturer).

TIPE:
The LICON OL/D heating elements can be equipped with a calorimeter for measuring heat consumption, see Page 62 for more information.

Pressure losses and valve Kv values – see Page 60

Cover plate design variants

TERACO *OAK* *BEECH*

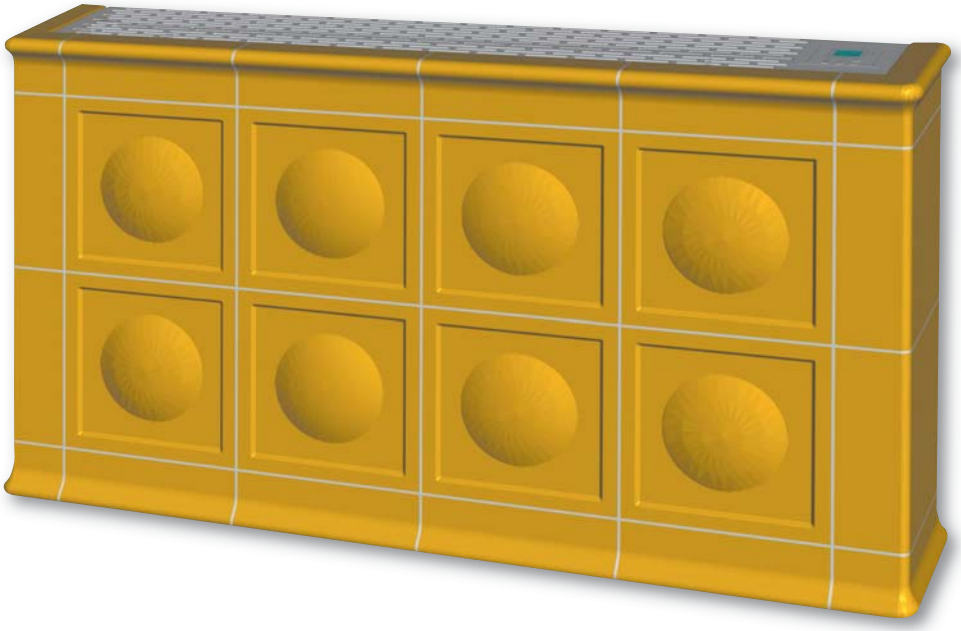
Note:
The plates are made of natural materials, and therefore small deviations in colour design cannot be eliminated. The plates are blocked against movement.

Wall - mounted
R A D I A T O R S

RADIATORS FOR LIFE




Wall convectors
Licon Ceramic



Specification

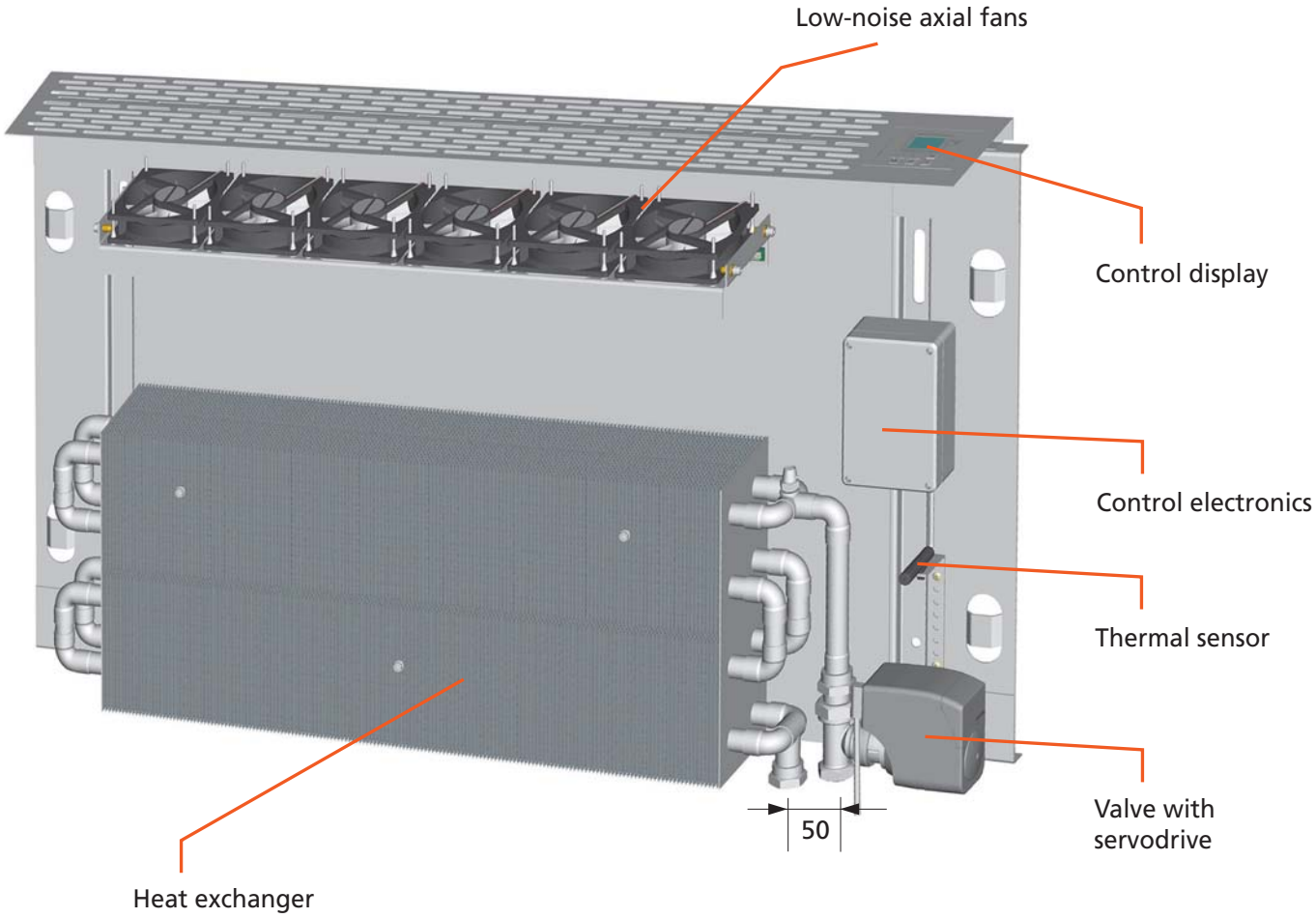
depth	16 cm
width	54 cm
lengths	77, 97, 117 cm
heat outputs	max. 3055 W
maximum working pressure	1,2 MPa
maximum working temperature	110°C
connecting threat	internal G 1/2“
service voltage of fans	max. 14V DC/has to be reachable for connection 230V
noise level – acoustic pressure in 1-m distance from the ourc	max. common operation 21dB, Turbo max. 31dB

LICON OK/C CERAMIC - is an intelligent heating convectors, an absolute novelty in the world of heating convectors. First radiator with jacketing manufactured of ceramic tiles. It is a very original heating convectors, designed for areas where original, unconventional design is demanded. CERAMIC is not an absolute novelty from outside only, but inside there is a sophisticated system of heat transfer to the room. Beginning with new arrangement of Al/C of the exchanger and, first of all, the Low-noise regulating systém of axial fans – in permanent run 21.4 dB.
The desired temperature in the room is set by the user directly on the heating convectors. If multiple convectors are controlled in one room, one is designated as master which controls the others, or the entire system can be connected to a programmable thermostat Siemens REA 23M. For short-term power increase, CERAMIC is equipped with Turbo function – when for about 10 minutes the fan rotation speed increases by which the output increases by approx. 20%. The system evaluates temperature of heating water in the room, and according to that an ideal output curve is selected.

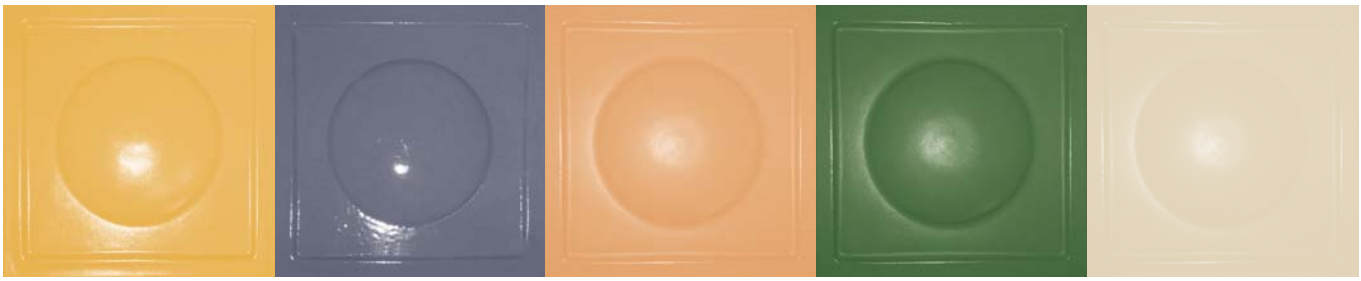
Use in interiors




Schematic view



OK/C Enamels



ENAMEL No.1 (ochre)	ENAMEL No.2 (blue)	ENAMEL No.3 (beige)	ENAMEL No.4 (green)	ENAMEL No.5 (ivory)

Specification Licon OK/C Ceramic

Height	cm	54		
Depth	cm	16		
Length	cm	77	97	117
Noise level – acoustic pressure	dB (A)	21,4 / 31,2	21,4 / 31,2	21,4 / 31,2
Heat output	t1 °C	W	W	W
75/65/20°C	Fan switched off	332	498	666
	Permanent run	996	1494	1992
	TURBO	1260	1890	2521
85/75/20°C	Fan switched off	402	604	807
	Permanent run	1207	1811	2414
	TURBO	1527	2291	3055

Noise level – first value applies for permanent run, second is measured in turbo mode.
The acoustic pressure level is measured in 1-m distance from the source.

Temperature index m = 1.056

CATALOGUE CODE:
OK/D length in cm and enamel no.
Example: *OK/C 97/1 = heating element of 97 cm length, type of enamel 1.*

Pressure losses and Kv values of valve – see Page 60

Δt Correction factor for variant temperature difference of Licon OK/C convectors

Δt (K)	20	22	24	26	28	30	32
kt	0,380	0,420	0,461	0,501	0,541	0,583	0,624
Δt (K)	34	36	38	40	42	44	46
kt	0,665	0,707	0,748	0,790	0,832	0,874	0,916
Δt (K)	48	50	52	54	56	58	60
kt	0,958	1,000	1,042	1,085	1,127	1,170	1,212

Temperature index m = 1,056

Standard supply contains

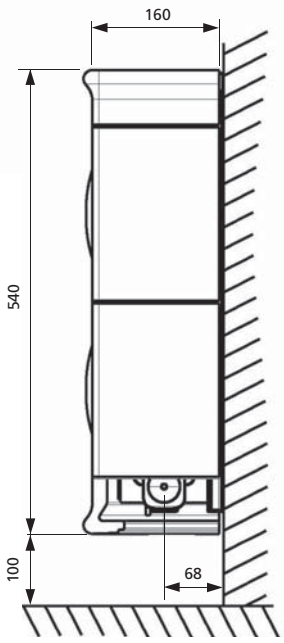
- jacketing of ceramic tiles, low noise axial fans, complete control electronics including thermostatic valve with servodrive, thermal sensors
- heat exchanger with low water content and uniquely shaped lamellas for higher heat output. The exchanger is fitted with an air-outlet valve G 1/4" or G 1/2"
- accessories for suspension of the element on the wall
- mounting instructions of convectors

The set is wrapped in a cardboard cover.

Optional accessories

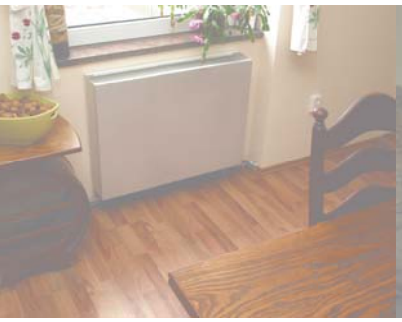
- the colour of ceramic jacketing enamel

OK/C side-view



The dimensions in the schemes are in mm.

RADIATORS FOR LIFE




Wall elements
Licon OK

Specification

depths	9, 15 cm
widths	45, 60 cm
lengths	40, 60, 80, 100, 120, 140, 160, 180, 200 cm
outputs	from 266 to 2735 W
maximum working pressure	1,2 MPa
maximum working temperature	110 °C
maximum working temperature	40 °C
connecting threat	internal G ½“
connection method	side, bottom

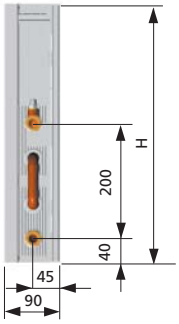
Wall convectors Licon OK are common wall radiators with a long history used in households and also in commercial premises. Their modern design, easy mounting and economic operation are the reasons for their popularity with our customers. Considering the unique design of the heat exchanger used, they achieve higher outputs even at small dimensions of the element. The big advantage of wall OK convectors is very low surface temperature of 40 °C max, and non-existing heat radiation in the wall.

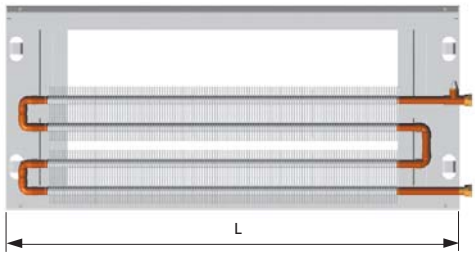
Use in interiors



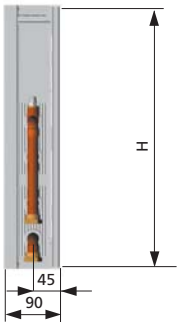

Element sections

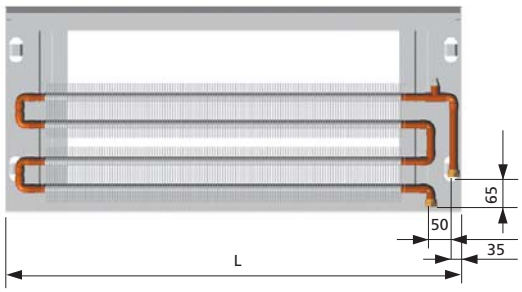
Side connection, depth 9 cm



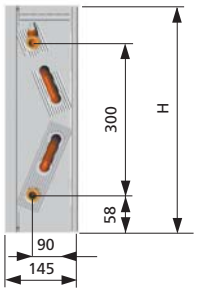


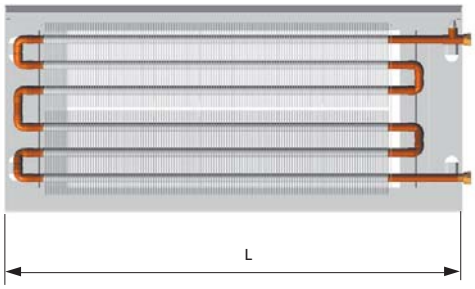
Bottom connection, depth 9 cm



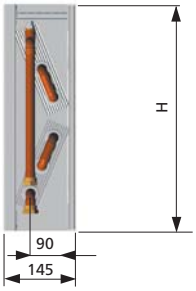


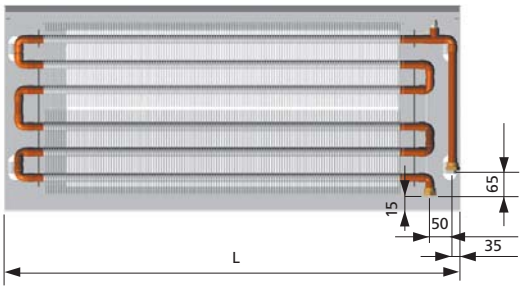
Side connection, depth 15 cm





Bottom connection, depth 15 cm





The dimensions in the schemes are in mm.

Table of heat outputs

Heat outputs (W) at tw1/tw2/ti = at 85/75/20°C (Δt=60) and at 75/65/20°C (Δt=50) according to ČSN EN 442

Depth (cm)		Δt	Length L (cm)								
			40	60	80	100	120	140	160	180	200
Height 45	9	Δt 60	345	518	690	861	1035	1208	1380	1553	1725
		Δt 50	266	400	533	665	799	933	1065	1199	1332
	15	Δt 60	600	901	1204	1504	1807	2107	2409	2710	3015
		Δt 50	463	696	930	1162	1396	1627	1860	2093	2328
Height 60	9	Δt 60	397	595	793	991	1190	1388	1579	1778	1976
		Δt 50	306	459	612	766	919	1072	1220	1373	1526
	15	Δt 60	707	1061	1416	1768	2124	2479	2833	3187	3542
		Δt 50	546	820	1093	1367	1640	1914	2188	2461	2735

CATALOGUE CODE:
OK length/height/depth (in cm) of connection [B-side, S-bottom], connection side [L-left, P-right] in PLAN [PLAN] design
Example: *OK 140/60/9 SP = convector body OK, length 140 cm, height 60 cm, depth 9 cm, bottom connection on the right side.*

Correction factor for variant temperature difference Δt of Licon OK convectors

Δt (K)	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50
kt	0,272	0,311	0,352	0,395	0,438	0,484	0,530	0,578	0,628	0,677	0,728	0,780	0,834	0,888	0,944	1,000
Δt (K)	52	54	56	58	60											
kt	1,057	1,116	1,175	1,235	1,295											

Temperature index m = 1.422

See Page 62 for formula and example of conversion to variant temperature difference.

Standard supply contains

- plating of steel plat, painteed in RAL 9010 shade - white
- heat Exchange with low water content and uniquely shaped lamellas for higher heat output with bottom or side connection variant (according to the catalogue code stated in the order), the exchanger is fitted with an air-outlet valve 1/4" or G 1/2"
- back of convector
- set for mounting the convectors on the wall, containing wall plugs, screws and suspension brackets
- mounting instructions of convectors

The set is wrapped in a cardboard cover.

Optional accessories

If more Licon OK convectors is ordered (20 pieces and more), another RAL colour shade can be selected (the change has to be consulted with the trade department of company Licon Heat, s. r. o.).

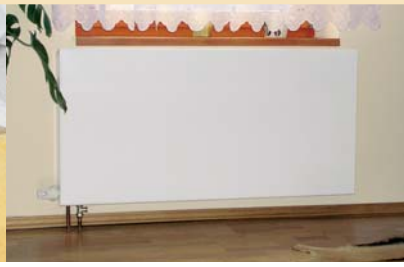
Design variant Licon OK PLAN

PLAN with absolutely straight front plate. It is supplied for convectors Licon OK and Licon OL.

TIPE:
The LICON OK heating convectors can be equipped with a calorimeter for measuring the heat consumption - see more information on Page 62.

Use in interiors



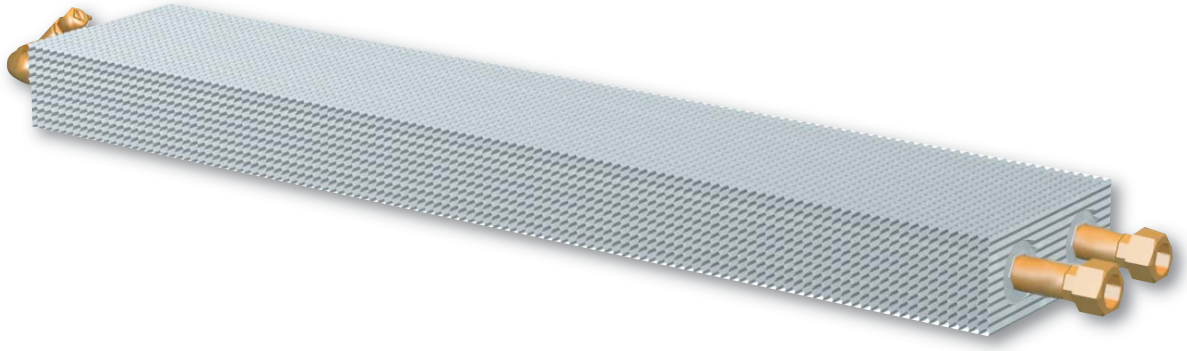



RADIATORS FOR LIFE




Heating registers

Licon OR



Specification

widths	6, 12, 18 cm
widths	5, 11 cm
lengths	80 to 300 cm
maximum working pressure	1,2 MPa
maximum working temperature	110 °C
connecting threat	internal G ½“
outputs	according to the exchange shielding height, see Table of outputs and correction factors for different height of the cases

The heart of all Licon convectors is right the heating register Licon OR. However, its use is much wider. It is suitable for individual installation, mainly at places where compactness of interior is required in terms of materials used. If certain conditions are kept, the Licon OR heating registers can be used to cover almost any material for their smooth composition in the space.

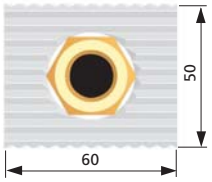
Use in interiors



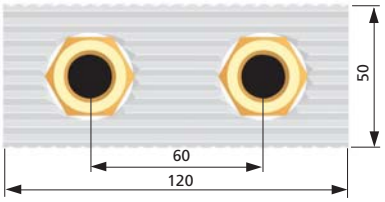

Element sections

OR-J1

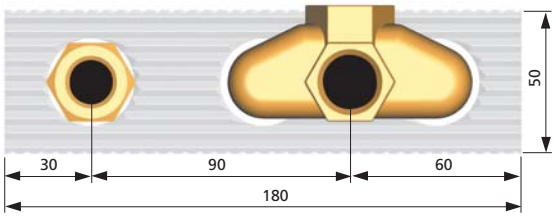
The dimensions in the schemes are in mm.



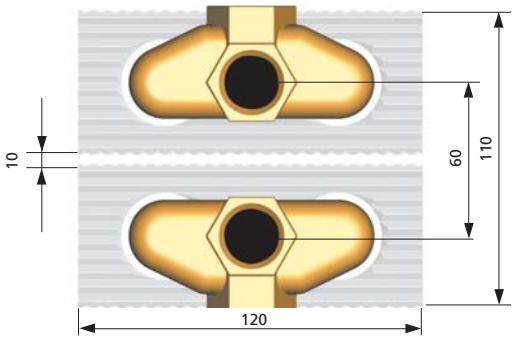
OR-J2



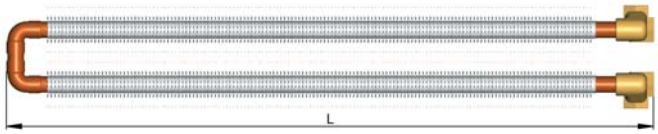
OR-J3

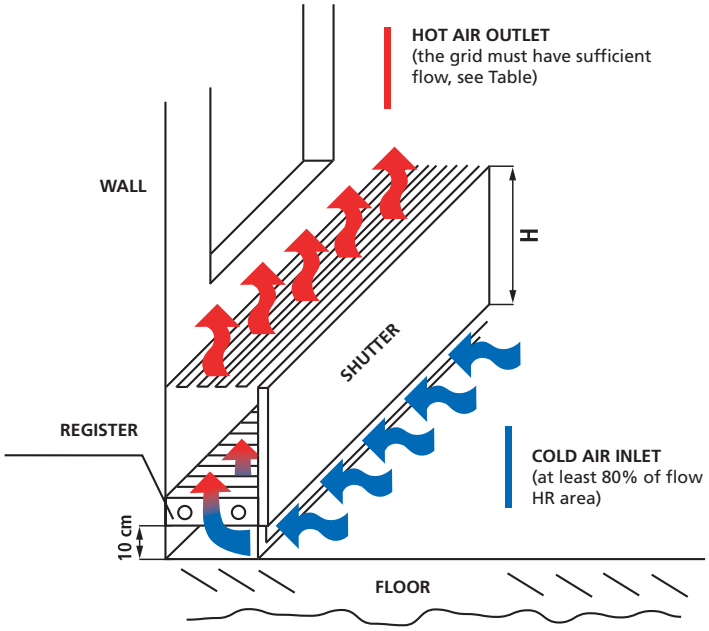


OR-D2

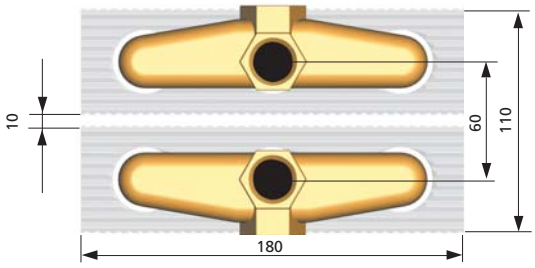


Total length of register





OR-D3



Correct installation

The heat output of the register depends on several main conditions: Effective height of the shutter, tightness of design of this shutter (case), inlet of heated air and flow area of expiratory grid (see Fig.). Generally applies that the higher the shutter is, the higher is the heat output. The convector case and adjacent building structure must be resistant to calculation temperatures of heat-carrying substance.

- See next page for correction height factor of the shutter;
- See the cover grid section on Page 21 for correction factor per flow area of expiratory grid.

Table of heat outputs

Heat outputs (W) at tw1/tw2/ti = at 85/75/20 C (Δt=60) and at 75/65/20 C (Δt=50) according to CSN EN 442

The heat outputs stated apply at the height of 10 cm above the floor level, the height of the shutter is 12 cm from the bottom edge of lamellas.

Type of HR	Δt	Length L (cm)											
		80	100	120	140	160	180	200	220	240	260	280	300
OR-J1	Δt 60	373	466	559	652	746	838	931	1025	1118	1211	1304	1397
	Δt 50	286	357	428	499	571	642	713	785	856	928	999	1070
OR-J2	Δt 60	678	847	1017	1186	1356	1524	1693	1864	2033	2202	2372	2540
	Δt 50	519	649	778	908	1038	1167	1296	1427	1557	1686	1816	1945
OR-J3	Δt 60	1060	1326	1591	1856	2121	2386	2650	2916	3181	3446	3711	3975
	Δt 50	813	1017	1220	1423	1626	1830	2032	2236	2439	2642	2846	3048
OR-D2	Δt 60	848	1059	1271	1482	1695	1905	2116	2330	2541	2753	2965	3175
	Δt 50	649	811	973	1135	1298	1459	1620	1784	1946	2108	2270	2431
OR-D3	Δt 60	1325	1657	1989	2320	2651	2982	3312	3645	3976	4307	4638	4968
	Δt 50	1016	1271	1525	1779	2033	2287	2540	2795	3049	3303	3557	3810

CATALOGUE CODE:
OR - type of exchanger (Jx, Dx) - length (in cm), for example OR-J3-200 = single-line, three-tube heating register Licon OR-J3, length 200 cm

Correction factor for variant temperature difference Δt of Licon OR convectors

Δt (K)	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50
kt	0,262	0,302	0,342	0,385	0,429	0,474	0,521	0,567	0,619	0,670	0,722	0,775	0,830	0,886	0,942	1,000
Δt (K)	52	54	56	58	60											
kt	1,060	1,119	1,180	1,242	1,305											

Temperature index m =1.46

See Page 62 for the formula and example of conversion to variant temperature difference.

Correction factor for different height of case H

H (m)	0,125	0,150	0,200	0,250	0,300	0,350	0,400	0,450	0,500	0,550	0,600
kh	1,000	1,051	1,136	1,207	1,268	1,322	1,371	1,416	1,457	1,495	1,531

The height of the case H (m) is considered from the bottom lamellas of the exchanger.

Example:
Conversion of the OR-J3/180 heat exchanger output to the output in the case of 0.45 m height.
Q = 1830 x 1.416 = 2591 W

Standard supply contains

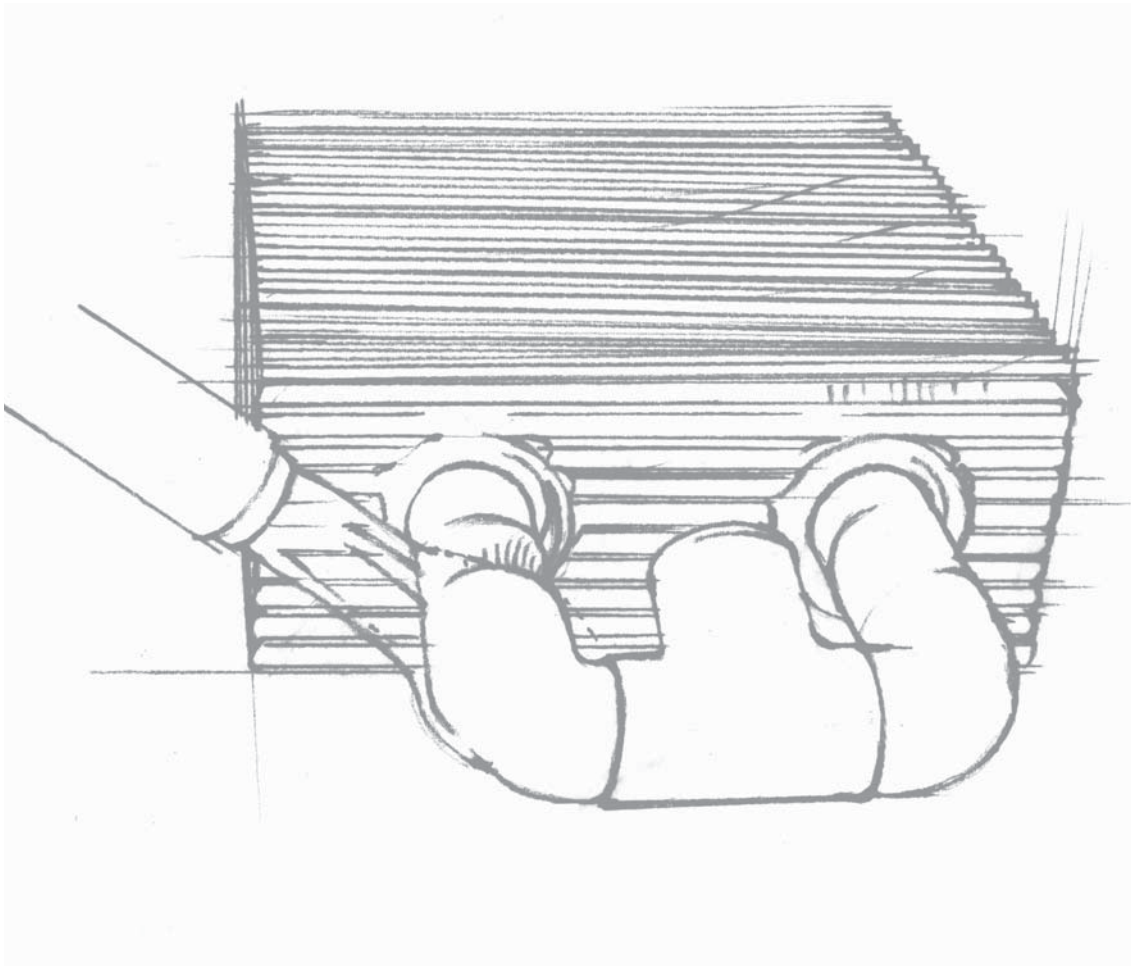
- heat exchanger with low water content and uniquely shaped lamellas for higher heat output. The exchanger is fitted with an air-outlet valve G 1/4" or G 1/2".
- mounting instructions of element

The assembly is wrapped in a solid PVC foil with edge protectors.

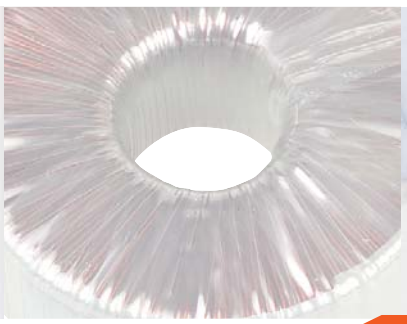
Optional accessories

- black paint of the exchanger
- little stands for fitting the register, see Page 58

Pressure losses – see Page 60



RADIATORS FOR LIFE



Technical information for mounting **Licon** convectors

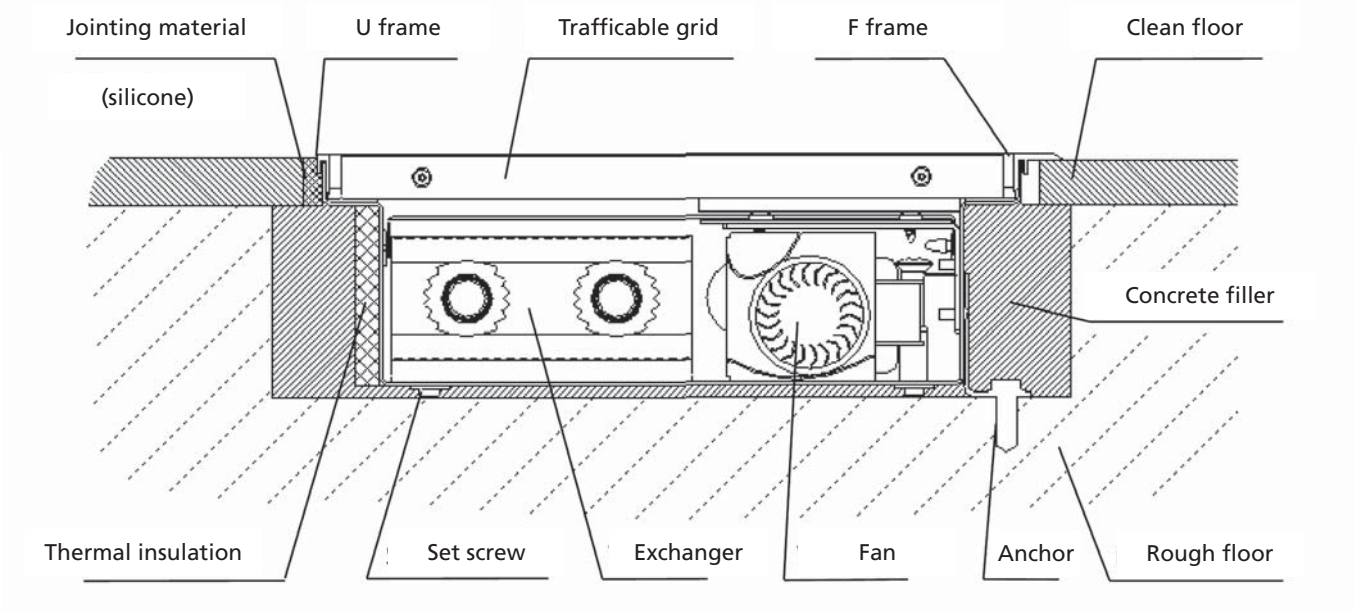
Mounting of convector Licon PK, PKVT, PKVTi and PKVTi TWIN

■ Mounting of building part convector

Several general principles have to be fulfilled to ensure correct function of convector:

- Correctly installed convector has the exchanger located further from the window.
- To interconnect the exchanger and the distributing main, standardly supplied stainless hoses with stainless coating have to be used (of not recommended otherwise) which always form a part of the delivery. They enable better access under the heating register, without the necessity of dismantle it from the heating system, e.g. during cleaning.
- We recommend to execute the supply of the heat-carrying medium into the heating register always in a tube which is further from the fan. In case of 42 cm the OR-J3 heating register is used where the heat-carrying medium passes two tubes there and one back.
- The PKVTi – TWIN exchanger is a double-tube exchanger where one circuit serves for connecting the heating circuit and the other for connecting on the cooling circuit. Selection of the heating circuit in relation to the distance from the fan is not important – both parts of the exchanger are blown same.
- Correctly installed convector lies horizontally, and the bottom margins of the convector tub are not demolished or bent in order to ensure correct function of the working grid, as well as the possibility of replacing the exchanger.
- Correctly installed convector has decorative frame at the level of floor covering within the tolerance of +2mm.
- To prevent contamination from inside the convector, we recommend to leave the cover plate during concrete pouring. Warning: The plate is not trafficable!!
- Floor - mounted convector must be firmly embedded in concrete. Set screws serve only for horizontal levelling of the convector tub. The convector must not stand on these screws without being embedded in concrete. In terms of its design, the convector is not suitable for transfer a load by the bottom.
- During the concrete pouring, the convector must be fixed to the floor using anchoring bolts which prevent the convector from vertical shifting in subsequent concrete pouring. During concrete pouring, the convector can be loaded vertically. During concrete pouring, the convector must be strutted to prevent the tub from deformation.
- In case of convector with fan, we recommend to execute fixation and acoustic insulation by pouring the convector along its side and also under its bottom with concrete, or at least fill the free space with a suitable material. Ideal sound absorption is achieved by direct embedding the convector in concrete.
- Increased noise level might occur when installing the convector with fan in a free space of the convector.
- All convectors with stainless tub and all types of PKVTi and PKVTi Twin have, as standard, an in-built drain of condensate or water. During mounting do not forget to attach the tube on the bottom of the convector with secured drift for waste water or condensate drain. We recommend the waste pipe to be provided with a seal-pipe to prevent odour.

■ Section of correct convector installation

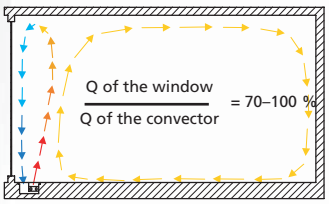


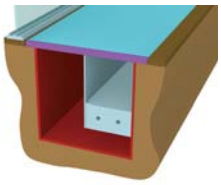
Note: *Thermal insulationnot included in the delivery.*

■ Recommended location of heat exchanger for Licon PK models - 30 a 45 cm depths

LOCATION OF EXCHANGER ON THE SIDE OF THE ROOM

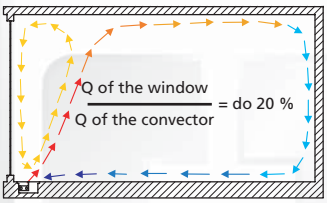
Down current of cool air enters the convector case. Upward flow of heated air then supports natural air circulation in the room and thus creates a shutter in front of the window area. This arrangement is suitable where there is a sole source of heating and where the share of heat losses of window in the total heat loss of the room is approximately 70 - 100 %

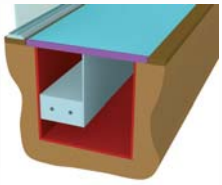




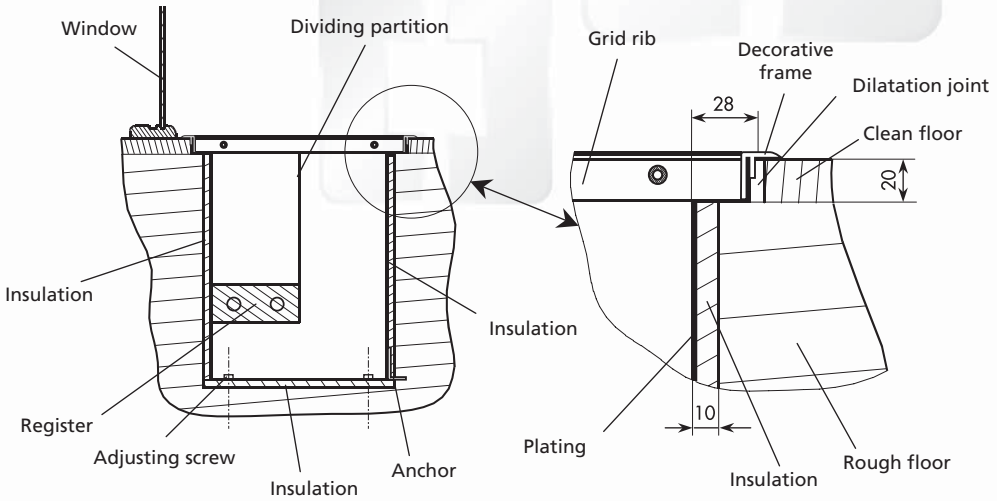
LOCATION OF EXCHANGER ON THE SIDE OF THE WINDOW

This location is suitable where heat losses on the side of the room prevail, only with small share of window (most 20%). The distance between the convector and the window must be selected as short as possible.





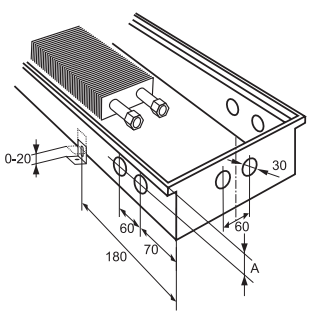
■ Mounting location

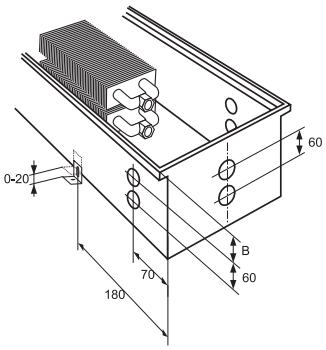


■ Connecting dimensions

	Depth 7.5, 9 and 11 cm	Depth 15, 19, 30 and 45 cm

for case of depth 7.5 cm A = 40 mm
for case of depth 9 cm A = 50 mm
for case of depth 11 cm A = 60 mm
for case of depth 15 a 19 cm B = 50 mm
for case of depth 30 cm B = 120 mm
for case of depth 45 cm B = 290 mm





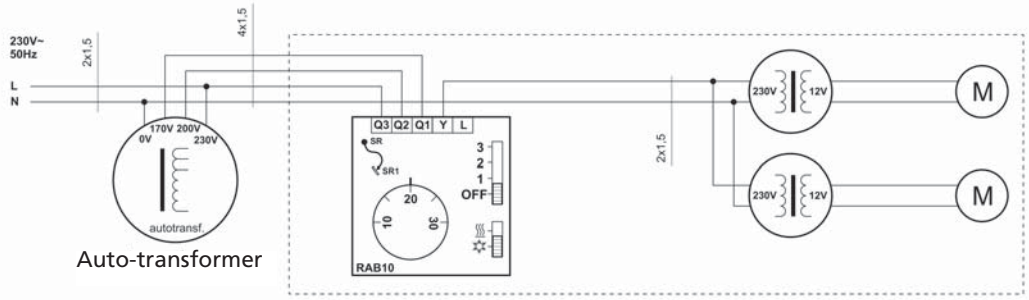
Mounting of electric regulation for convectors PKVT, PKVTi and PKVTi TWIN (further identified as fan-coils)

Regulation is executed by means of changing the rotation speed of the fan (different amount of air passes the heat exchanger = change of heat output). The system controls as follows: if the air temperature in the room drops below the level set on the thermostat, the thermostat switches on the fans and thus multiplies the heat power of the convectors. We supply two variants of regulation (control) – basic and automatic (continuous).

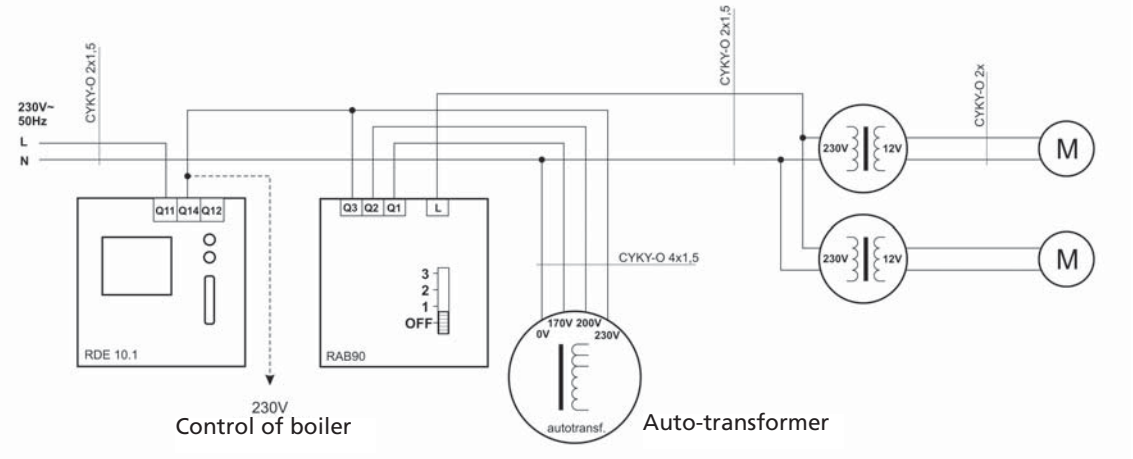
Description of basic regulation

This regulation can serve both for heating and for cooling. It is a convenient compromise between the price and the utility value. The revolutions of the fan and required room temperature must be set manually. The easiest variant is use of associated controller Siemens RAB 10 which integrates all these functions, including a switch between heating and cooling. To increase the comfort of heating and operation, digital weekly programmable thermostat Siemens RDE 10.1 can be used instead of manual thermostat. Thermostat of this type can control operation of the boiler and thus the entire heating system. If the room is heated, the thermostat switches off the boiler and, at the same time, the fans switch off, too. in case of variants with simple thermostat, switching the fans off is linked to the other heating system. In addition, auto-transformer AT (max. load 600 VA) and transformer 230/12 V must be integrated in the electric circuit of this regulation which is mounted in the cese of the standard PKVT design (in case of stainless design of the convector tub, the transformer is not a part of the cese, and its size must be specified according to the procedure specified on Page 56). Maximum voltage of the fans is 12 V.
The AT auto-transformer (AT transformer 230/12 V for stainless cese design) is mounted in its own mounting box which is designed for installation in the wall. The dimension of the mounting box is 205 x 255 x 70 mm (W x H x D).

Electric wiring diagram of manual thermostat and Siemens RAB 10 with rev-speed switch



Electric wiring diagram of weekly programmable thermostat Siemens RDE 10.1 and rev-speed switch Siemens RAB 90

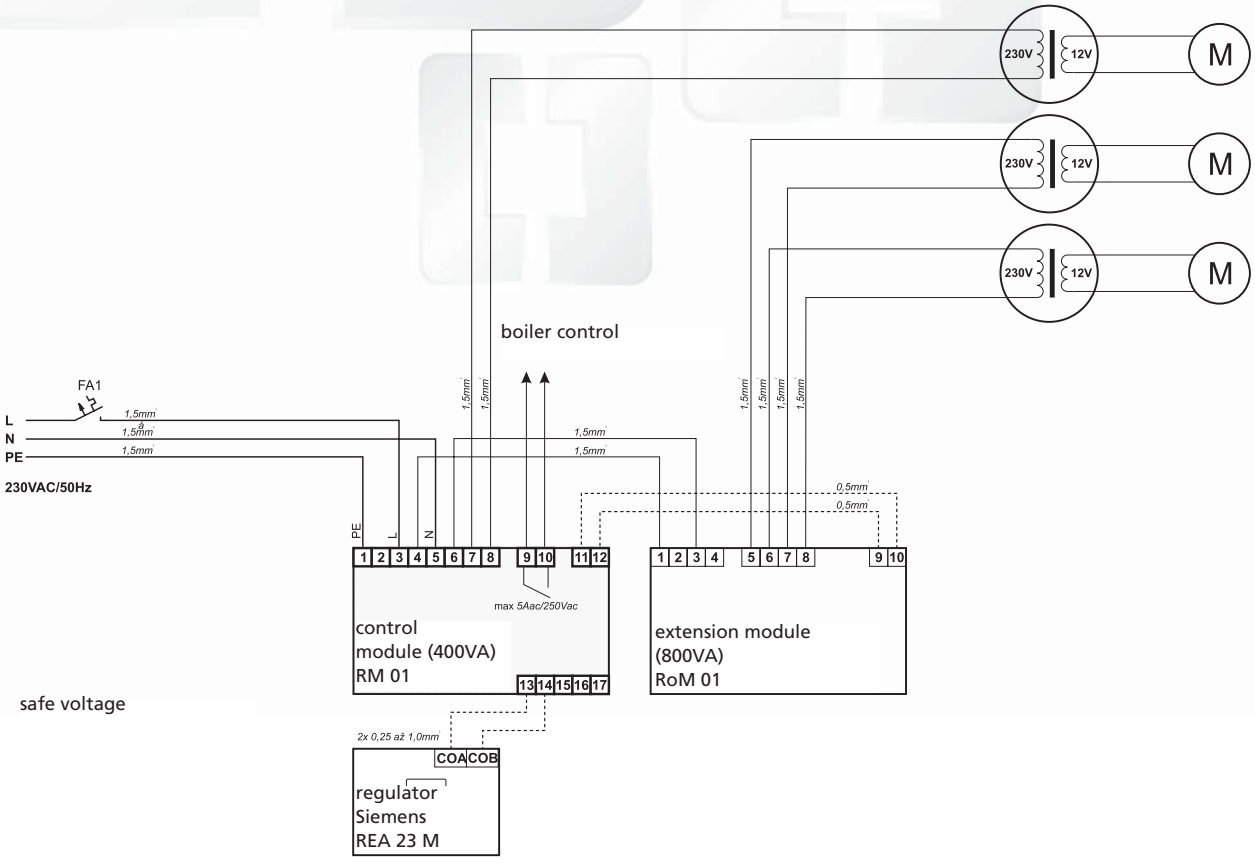


■ Description of automatic regulation

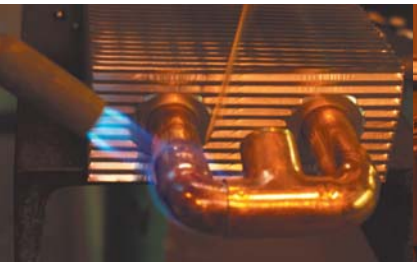
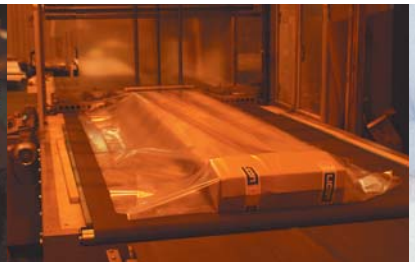
This regulation only works as automatic with continuous control of fan rev-speed, depending on the room temperature and temperature requirement by setting on the thermostat. Depending on the temperature deviation (between the set and actual temperature), the RM 01 control module changes automatically and fluently the input voltage in the transformers and thus, at the same time, changes the rev-speed of the fans. Automatic regulation can be only used for heating.

The entire system consists of RM 01 control module (and according to the need of the RoM 01 extension module) and programmable thermostat Siemens REV23M (automatic temperature setting for longer time interval - 1 week max.). The thermostat communicates with the control module by means of the OpenTherm protocol. For instance, this communication allows more continuous regulation of boiler output.
The RM 01 module is capable to regulate Licon PKVT elements to maximum input of 400 VA, if there is a demand for control of higher number of heating elements, an extension module RoM 01 800 VA must be added in the system but not higher than 5 pieces of RoM 01 (= 4000 VA max).

Electric wiring scheme of automatic regulation connection



Modern production

■ Control elements of basic regulation

SIEMENS RAB 10

- room thermostat with rev-speed switch
- geating and cooling switch
- manual switch of fan rev-speed
- voltage 24 to 250 V AC
- current 0.2 to 6 (2) A
- temperature setting range 8 to 30°C
- coverage IP 30
- dimensions W x H x D - 96.4 x 113.1 x 42.8

SIEMENS RDE 10.1

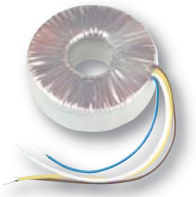
- room thermostat with weekly programme
- heating and cooling switch
- voltage 3V DC (2 x 1.5 V - AAA alkaline batteries)
- temperature setting range 5 to 30°C
- possibility of connecting a separated sensor, e.g. for applications in humid environment of IP 30 coverage
- for switching the fan the RAB 90 rev-speed switch must be used
- dimensions W x H x D - 96 x 119 x 23

SIEMENS RAB 90

- simple fan rev-speed switch switch with three degrees (0-I-II-III)
- voltage 24 to 250 V AC
- current 6 (2) A at 250V
- coverage IP 30
- dimensions W x H x D - 96.4 x 99.6 x 42.8

MOUNTING BOX

- mounting box designed for installation in the wall
- contains auto-transformer
- or 230/12 V transformer
- (it is used for installation in humid areas)
- coverage IP 20
- dimensions W x H x D - 205 x 255 x 70



AUTO-TRANSFORMER / TRANSFORMER

TOROID AUTO-TRANSFORMER

- max load 600 VA
- thermal fuse 130°C
- dimensions - 0 150 x 48 mm
- coverage IP 00
- length of supply cables, max. 20 cm
- must be ordered separately,
- is not included in the delivery.

TOROID AUTO-TRANSFORMER (120, 225 VA, 300 VA)

- thermal fuse 130°C
- dimensions from 93 to 150 mm height from 45 to 50 mm
- length of supply cables, max. 20 cm
- must be ordered separately, is not included in the delivery.

TRANSFORMER

TOROID TRANSFORMER 230/12 V

- mounted directly in PKVT/PKVTi
- thermal fuse 130°C
- coverage IP 54
- length of supply cables, ca 5 m

Automatic regulation elements

CONTROL MODULE RM 01

- supply voltage: 230V AC, 50Hz
- output rating for fan: 1.7A (400VA)
- relay contact rating: 5A/250VAC or 5A/30VDC, resistive load, galvanic separated 4kVAC
- electric coverage: IP00
- fuse: Tube fuse 5x20mm, T4A/1500A (recommended: Omega GT520240)
- protection: circuit-breaker max. 13 A (char. B)
- mounting: on DIN bar into distribution box or case, vertical position
- dimensions (W x H x D): 107 x 91 x 60mm
- weight: 360g
- service temperature 0 až 40°C

EXTENSION MODUL ROM 01

- supply voltage: 230V AC, 50Hz
- output rating for fan: 3.5A (800VA)
- electric coverage: IP00
- fuse: Tube fuse 5x20mm, T5A/1500 (recommended: Omega GT520250)
- protection: circuit-breaker max. 13A (char. B)
- mounting: on DIN bar into distribution box or case, vertical position
- dimensions (W x H x D): 107 x 91 x 60mm
- weight: 320g
- service temperature: 0 to 40°C

SIEMENS REA 23 M

- room thermostat with weekly programme
- communication with OpenTherm protocol
- easy control
- voltage 3V DC (2 x 1.5 V - AAA alkaline batteries)
- temperature setting range 5 to 29°C
- possibility of remote control connection
- coverage IP 20
- dimensions W x H x D - 140 x 104.5 x 30

TRANSFORMER

TOROID TRANSFORMER 230/12 V

- mounted directly in PKVT/PKVTi
- thermal fuse 130°C
- coverage IP 54
- length of supply cables, ca 5 m

■ Example of input calculation for correct electric wiring

The electric input of Licon PKVT, PKVTi, and PKVTiTwin elements must be calculated correctly both for the basic and automatic regulation. This total input must be known for correct selection of number of AT auto-transformers or extension RoM 01 modules.

The total input of elements is calculated as follows: by counting up inputs of all floor-mounted fan-coil convectors which will be controlled through a single thermostat or RM 01 control module. The sum of their inputs will give the intensity of the input.

According to the project we have designed the following types of fan-coils:
2 ks PKVT 160/9/28 - find the input in the table 84 VA
2 ks PKVT280/9/28 - find the input in the table 150 VA

Total input:
84 + 84 + 150 + 150 = 468 VA

...ст.	Макс. потребляе--мая мощность вентилятора (ВА)
995	34
820	
1539	50
1269	
2077	84
1712	
2661	100
2194	
3216	134
2651	
...98	150

MODEL CALCULATION

We know the number of designed Licon PKVT convectors. In the table of heat fan-coil outputs, in the Maximum Input column, we can find input (VA) for relevant Licon PKVT convectors. By counting up we will get total quantity of the input (VA).

EXAMPLE OF SIMPLE REGULATION

We will compare the total calculated input (in our case it is 468 VA) to the maximum rating of the AT auto-transformer which is 600 VA. If the total calculated input of fan-coil elements is below 600 VA, only one auto-transformer will be sufficient, otherwise an additional AT auto-transformer needs to be added to the electric circuit.
Caution: Allowed rating of thermostat and rev-speed switch must not be exceeded = **max 3 A of induction load!**

EXAMPLE OF AUTOMATIC REGULATION

We will compare the total calculated input (in our case it is 468 VA) to the maximum rating of the RM 01 control module which is 400 VA. Due to the input, higher than 400 VA, we will select the RM 01 control module (400 VA) and one extension RoM 01 module (800 VA) by which we will obtain rating of 1200 VA.
Caution: Allowed rating of control module and rev-speed switch must not be exceeded = **max 13 A of induction load (3.5 A for extension module)!**

STAIN LESS DESIGN OF CONVECTORS

Since we anticipate that those convectors are designed, first of all, for installation at pools or other humid areas, the 230/12 V transformer is not mounted directly in the convectors, neither forms a part of the standard supply, but is placed in its own mounting box to ensure operation on safety voltage. In this case it is necessary, besides the calculation of total input of convectors for correct selection of auto-transformer or automatic regulation control and extension modules, to select also a suitable 230/12 V transformer. Transformers are produced in three sizes: T1 = 120 VA, T2 = 225 VA, T3 = 300 VA.

Multiple fan-coil convectors can be connected to a single transformer if its input is sufficient. According to the example, we would connect two PKVT 280/9/28 convectors with 2 x 150 VA input to a single T3 (300 VA) transformer, and remaining two PKVT 160/9/28 convectors with total input of 168 VA we would connect to a single T2 (225 VA) transformer. The entire regulation will be connected to a single AT autotransformer, since its input of 600 VA is sufficient.

The installation must follow valid standards and safety regulations!
The manufacturer is not liable for any defects and damages caused by an unauthorised mounting.

Mounting of Licon OL benches

■ Instructions for Installation

OL-stand models

a) Wall – fixed to the wall Recommended installation is 10 cm above clean floor. The consoles supplied (2 pieces) allow both height and length tolerance of ca 5 cm. Attaching spacing is specified on Figure.

b) Stand – fixed to the floor. Customer can select between stands for rough or clean floor. Both variants allow height tolerance of ca 5 cm. The spacings for attaching to the floor are shown on Figure.

Mounting procedure (applies for all models)

First step is proper measuring and drilling in the consoles. Then the heat exchanger is seated and connected to the heating system. Last step is putting on the cover with the expiratory grid, its fastening to the console pins and bolting.

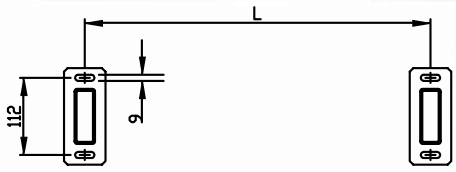
OL/D with plate

We recommend to fasten the element to the floor using a fastening anchor which is inside the side plate (leg).
After seating on the convector, the plates are fixed to prevent undesired motion.

See the Mounting Instructions for detail information. The elements are supplied assembled.

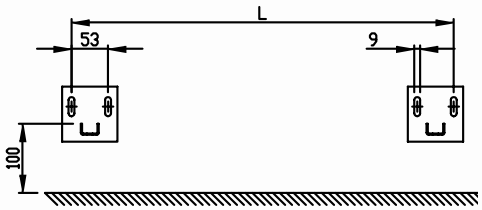
■ Mounting location

Scheme of anchoring to the floor



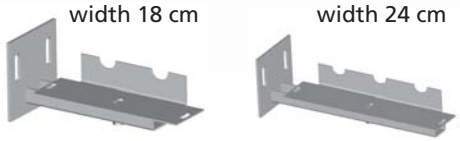
L = convector length minus 300 mm (to the 1400 mm convector length)
minus 400 mm (to the 1400 mm 2000 mm convector length)
minus 600 mm (above the 2000 mm convector length)
L = 300 = spacing of central leg holes

Scheme of anchoring on the wall

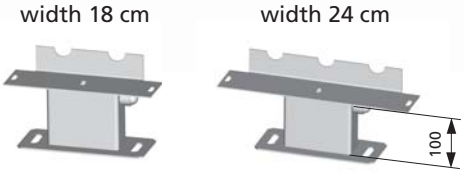


L = convector length minus 247 mm (to the 1400 mm convector length)
minus 347 mm (to the 1400 mm 2000 mm convector length)
minus 547 mm (above the 2000 mm convector length)
L = 300 = spacing of central leg holes

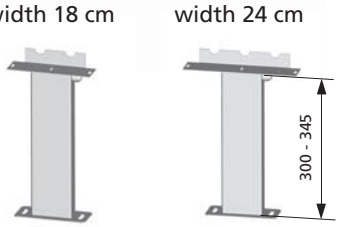
■ List of stands for OL fastening



On the wall



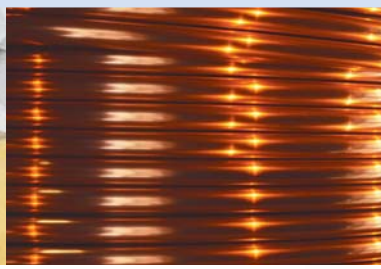
On clean floor



On rough floor

Modern production



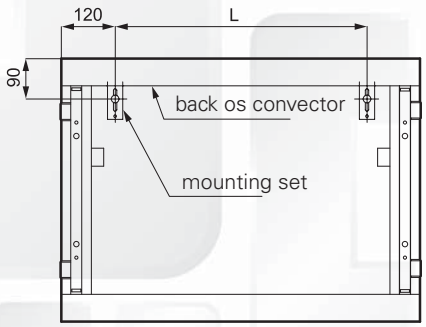



Mounting of Licon OK & OK/C convectors

■ Instructions for Installation

We recommend installation of wall convectors always on an external wall, 10 cm above the floor. Elements are suspended on the wall using wall plugs, screws of special consoles which are included in the delivery. See the sketch of element anchorage for the method of suspension on the wall. The consoles allow height tolerance of 5 cm. The convectors are supplied assembled. Mounting the OK/C convector is identical with the above described procedure. A 230 V voltage source must be near installation of any element.

Anchorage scheme



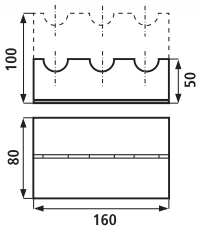
Mounting of Licon OL convectors

■ Instructions for Installation

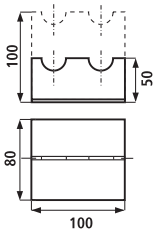
Sufficient supply of heated air must be ensured for correct function, have sufficiently tight convector case and sufficiently permeable expiratory grid (see Fig. on Page 47). Recommended installation of registers is 10 cm above clean floor. For this purpose, we deliver 2 types of consoles. These can be in a floor-mounted design (stand-type) in 5 and 10 cm heights, or in a wall-suspension design. The number of register tubes determined the width of the console. The consoles are not included in the delivery.

■ Mounting location

Consoles for floor installation

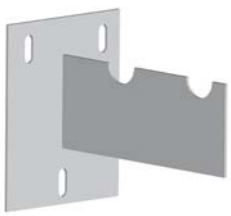


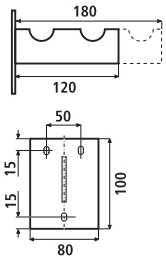
OR-J3
OR-D3



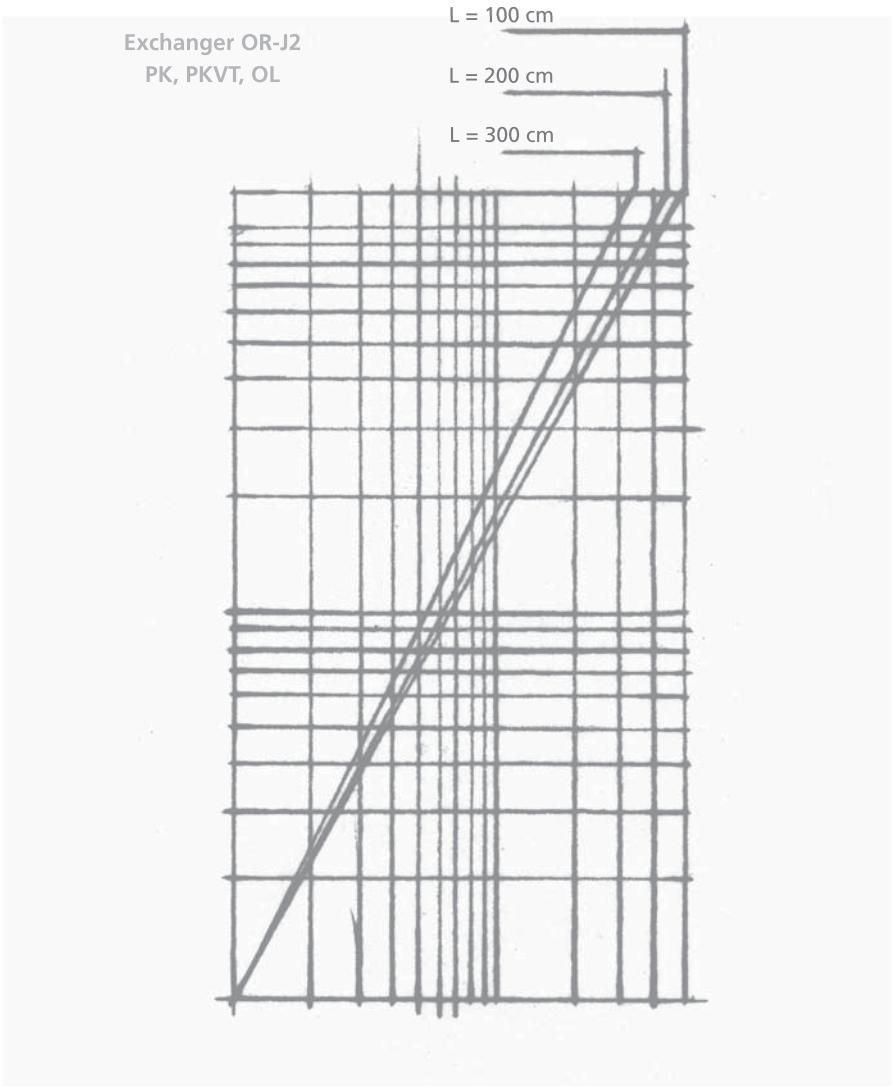
OR-J2
OR-D2

Consoles for wall installation

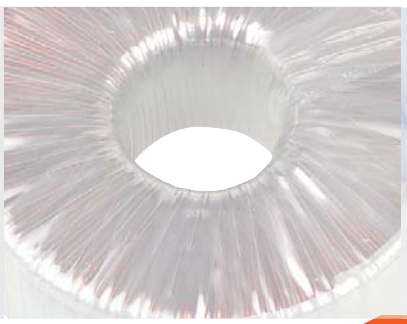
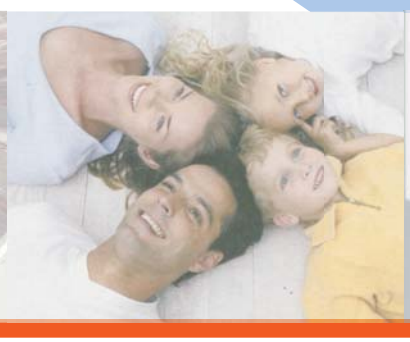




OR-J2
OR-D2
OR-J3
OR-D3



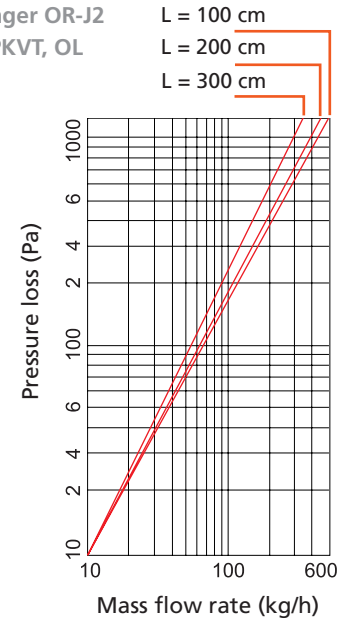
RADIATORS FOR LIFE

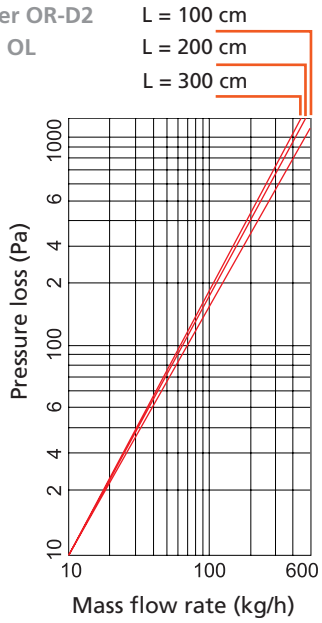

Pressure losses of convectors and valves, weights and volumes of convectors

Licon

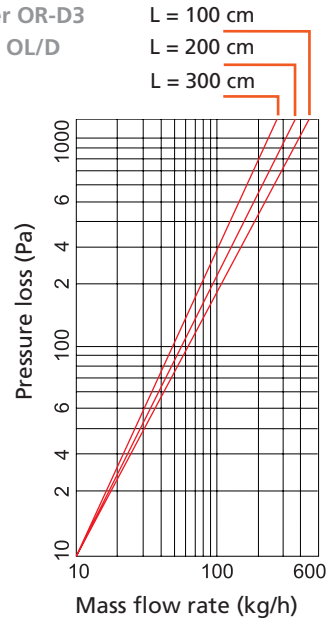
Exchanger OR-J2
PK, PKVT, OL



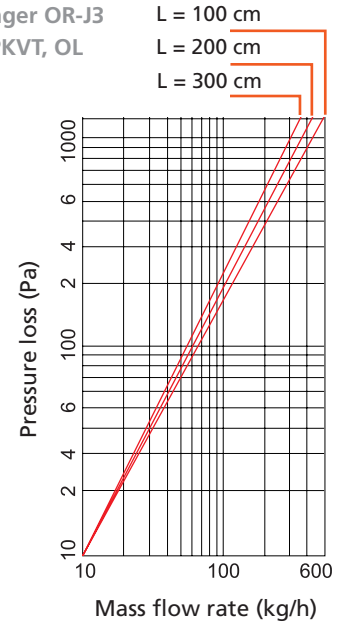
Exchanger OR-D2
PK, OL



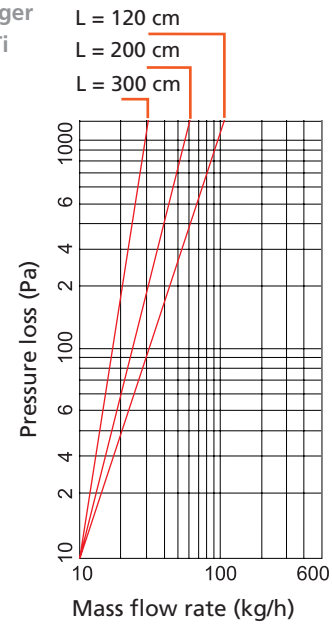
Exchanger OR-D3
PK, OL, OL/D



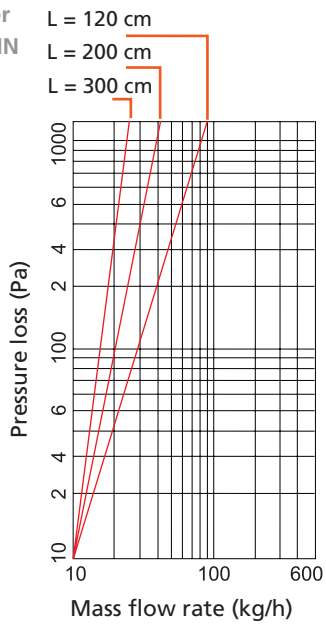
Exchanger OR-J3
PK, PKVT, OL



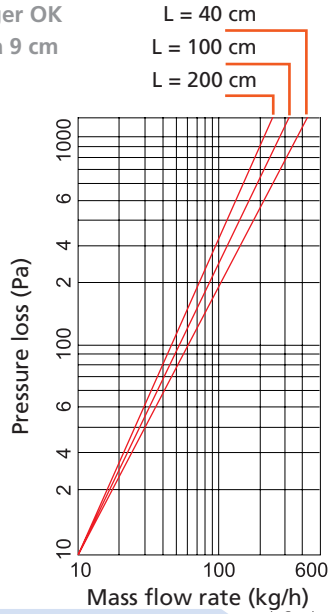
Exchanger
PKVTi



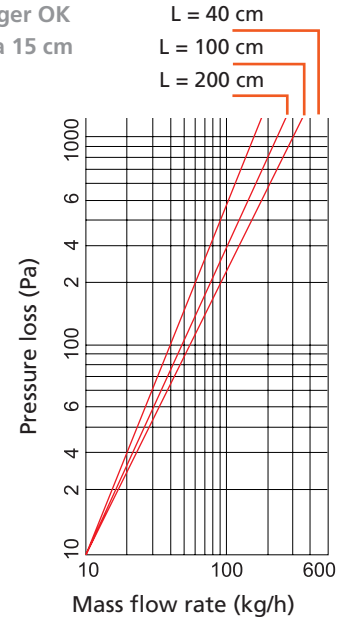
Exchanger
PKVTi/TWIN



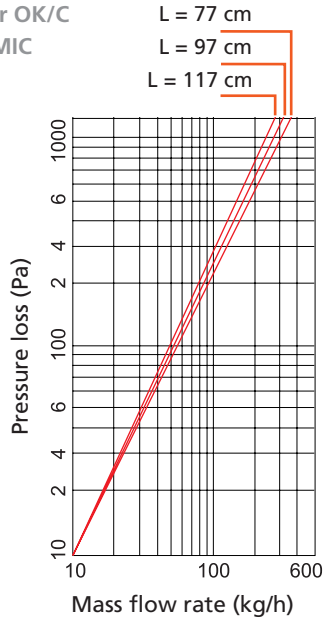
Exchanger OK
hloubka 9 cm



Exchanger OK
hloubka 15 cm



Exchanger OK/C
CERAMIC



Kv values of used valves

Kv values for valve Siemens VDN 215 1/2“, direct

Pre-setting degree	1	2	3	4	5	N
Kv	0,10	0,20	0,31	0,45	0,69	0,89

Note: *This type of valve is only used in OK/C.*

Kv values for valve Licon/Danfoss RA-N 15 UK 1/2“

Pre-setting degree	1	2	3	4	5	6	7	N
Kv	0,16	0,20	0,25	0,36	0,47	0,59	0,74	0,81

Note: *This type of valve is used for optional accessories supplier for OL and OL/D.*

Contents of set for connection of OL and OL/D benches

VALVE RA-N 15

- thermostatic valves Licon/Danfoss RA-N 15 1/2“
- valve element with an option of flow presetting
- flow can be set without using tools
- basic setting can be selected in 7 grades
- maximum working overpressure 10 Bar
- maximum working temperature 120°C
- threadless connection with thermostatic hose

THERMOSTATIC HEAD

- thermostatic gas-steam head Licon/Danfoss RA 2000
- fastest reaction time
- alienation fuse
- limiting / blocking pins of temperature setting

A

B

EXTENSION PIECE

- serves for evening up the height between the inlet and outlet of exchanger screwing
- stainless design
- connecting thread G 1/2“, inner
- A-straight piece for double-row exchangers (height OL and OL/D 15 cm and more)
- B – bent piece for single-row exchangers (height OL 9 cm)

WEIGHTS AND WATER VOLUMES OF LICON CONVECTORS

Floor-mounted PK convectors

Type	9/16	9/20	9/28	9/42	11/16	11/20	11/28	11/42	15/28	15/42	19/28	19/42	30/28	30/42	45/28	45/42
kg/1bm	5	6	7	9	6	7	8	10	10	12	11	13	16	18	21	23
l/1bm	0,23	0,47	0,47	0,72	0,23	0,47	0,47	0,72	0,96	1,5	0,96	1,5	0,96	1,5	0,96	1,5

Floor-mounted PKVT convectors

Type	7/28	9/28	11/28	11/42
kg/1bm	11	12	14	16
l/1bm	0,47	0,47	0,47	0,70

Floor-mounted PKVTi convectors

Type	13/28
kg/1bm	18
l/1bm	1

Floor-mounted PKVTi Twin convectors

Type	13/34
kg/1bm	22
l/1bm	1,46

Floor grids PM

	STAINLESS					WOOD					ALUMINIUM				
Width	16	20	28	34	42	Width	16	20	28	34	42	Width	12	20	28	34	42
kg/1bm	4	5	7,5	8,5	11	kg/1bm	1,5	1,8	2	2,5	3	kg/1bm	2	2,5	3	3,5	4

OL heating benches

Type	9/18	9/24	15/18	15/24	30/18	30/24	45/18	45/24	60/18	60/24
kg/1bm	10	11	14	15	19	20	23	24	28	29
l/1bm	0,5	0,8	1	1,6	1	1,6	1	1,6	1	1,6

OL/D heating benches, plates

Type	100
kg/1bm	10
l/1bm	1,6

Type	teraco	dřevo
kg/1bm	27	8

Wall-mounted convectors OK

Type	45/9	45/15	60/9	60/15
kg/1bm	15	16	18	19
l/1bm	1	1,5	1	1,5

Wall-mounted convectors OK/C

Type	97
kg/1bm	50
l/1bm	1,4

Heating registers OR

Type	J1	J2	J3	D2	D3
kg/1bm	1,2	2,4	3,6	4,8	7,2
l/1bm	0,25	0,52	0,8	1	1,6

Note: *Stated weights do not include the packaging*

Examples of conversion to variant temperature difference

Δt = (tw1 + tw2) / 2 - ti

Where: **tw1** is water inlet temperature (°C)
tw2 is water outlet temperature (°C)
ti is air temperature (°C)
Δt is water cooling (K)

Coefficient of resistance is valid for both 1/2“

Examples of conversion to variant temperature difference:

Entered: heating convector Licon OR-D2/140
Arithmetic working condition: 75/65/20 °C
We shall convert Qn = 1135 W
to temperature difference Δt = 40 K
Q = Qn x coefficient kt = 1135 x 0.722 = **819 W**

Calorimeter

If needed, heating convectors Licon can be equipped with heat consumption meter. We recommend to use products of company VIPA, see www.vipa.cz for more information.

Entered: heating convector Licon OK 140/60/9
Arithmetic working condition: 75/65/20 °C
We shall convert Qn = 1072 W
to temperature difference Δt = 30 K
Q = Qn x coefficient kt = 1072 x 0.484 = **519 W**

The kt coefficient can be found in the table of correction factors for specific convector.

RADIATORS FOR LIFE




General information

Licon

Instructions for Transport & Storage

When transported, the elements must be handled with extreme care, and locked against motion and damage. The transport and storage area must be dry and covered against weather conditions.

Maintenance

To prevent drop of heat output, the transition area of the exchanger should be clear off dust before the heating season, which is performed best by vacuum cleaning using a brush damped in a detergent solution.

Quality

Since August 17, 2006, company Licon is a holder of the ISO 9001:2000 Quality Management Certificate issued by Austrian company QS. The products are further manufactured and tested accordingly with ČSN EN 442, and CE certificate is issued for the products.

CE C.1390-CPD-0026/05/P

EN EURONORM 442

quality austria SYSTEM CERTIFIED ISO 9001:2000 NR.05269/0

Warranties

10-year warranty is provided for tightness of exchanger. Other warranties are provided in accordance with Commercial Code, as amended. Warranty certificates can be downloaded at: www.licon.cz, including detail warranty conditions.

Company Licon Heat, s. r. o. shall not be held liable for any damages caused by improper mounting, or for any damages caused due to wrong electric or heat-technical installation (e.g. variable voltage or hydraulic pressure which deviates substantially from standard value).

Company Licon Heat, s. r. o. reserves the right to modify technical specifications without previous notice.


OQS-CERTIFICATE

quality austria

LICON HEAT s.r.o.

QUALITY MANAGEMENT SYSTEM

ISO 9001:2000


IQNet

THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

LICON HEAT s.r.o.

CZ-140 00 Praha 4, Krajánkova 2390/11

Scope of application: Production of radiators

NACE: 28.0.0 EAC: 17

Quality Management System

ISO 9001:2000

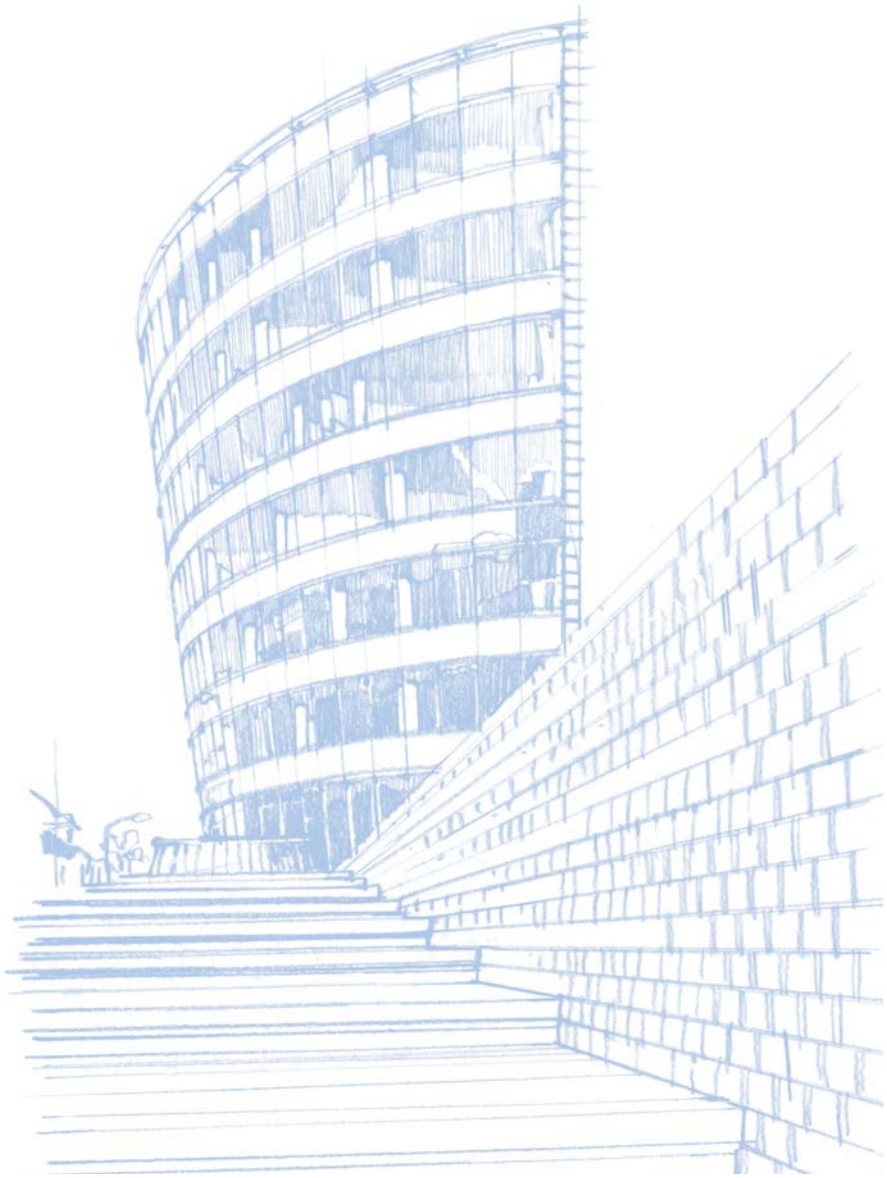
Issued on: 2006-08-17

Validity date: 2009-07-18

OQS certified since: 2006-07-18

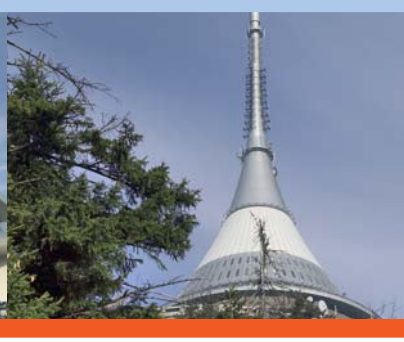
Registration Number: AT-05269/0

Production



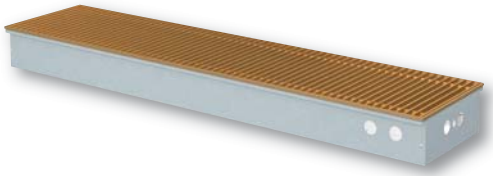
RADIATORS FOR LIFE



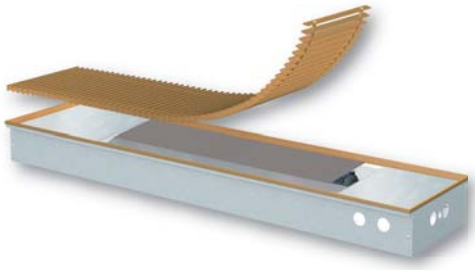


Survey of produced models
References
Licon

Licon PK



Licon PKVT



Licon PKVTi

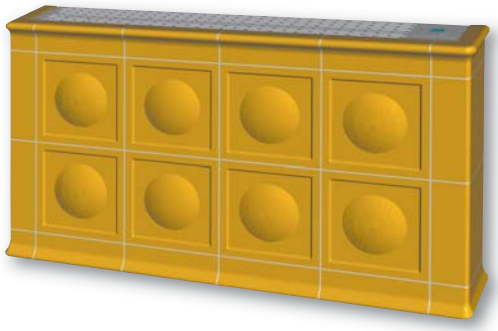
Licon PKVTi TWIN

Licon OL/D

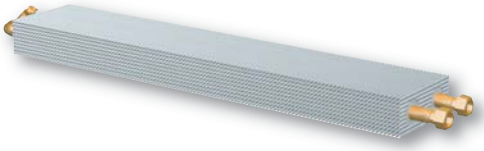
Licon OL

Licon OK

Licon OK/C



Licon OR



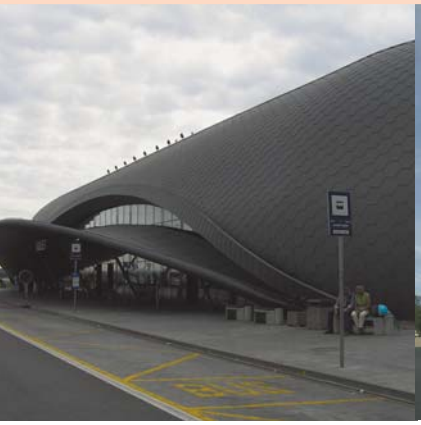
REFERENCES

Musical Theatre Karlín,
Prague 8, Czech republic

SAS Radisson Hotel
Prague 1, Czech republic

Technical University,
Liberec, Czech republic

University,
Brno, Czech republic



Airport,
Brno, Czech republic

Jaguar & Land Rover Motor Show
Prague, Czech republic

Company Celsis Headquarters,
Lithuania

The "Ještěd" Hotel,
Liberec, Czech republic

Tipsport Arena,
Liberec, Czech republic

Residential Complex Karlslunde,
Denmark

Administration building,
Denmark

Copenhagen Island Hotel
Denmark

Address:

Licon Heat s.r.o.

Registered office:

Krajánkova 2390/11
141 00 Praha 4
Czech republic

Phone: +420 485 131 157
Fax: +420 485 130 331
Email: info@licon.cz
www.licon.cz

LICON®
RADIATORS FOR LIFE

Should you request more detail information visit our web site:
www.licon.cz

CE

EN EURONORM 442

Your professional partner:

01/2009 EN