



ECOLITE

Lamellar Heat-Exchanger Convective Heaters



About the Company

The ISAN trademark represents a traditional Czech manufacturer of heating units with a history that goes back more than 60 years. ISAN Radiátory s.r.o. has been involved in the development and manufacture of convectors for over 20 years. First-rate technological procedures and the progressive thinking of our designers and developers invariably guarantee that ISAN products continue to achieve high-level technical and aesthetic parameters, which have allowed them to become the products of choice among both domestic and foreign customers. We export 90 % of our production primarily into EU countries.

Our primary objective is customer satisfaction. Product processing consistent with ecological best practice and utmost consideration for the environment goes without saying.

The manufacture conforms to ISO 9001:2015. Moreover, all heating units comply with certification requirements applicable to current statutory regulations of individual countries in order to conform to the most stringent standards. The certification process for the Czech Republic was completed at the Testing Institute for Mechanical Engineering in Brno, notified entity ES1015.

The complete ISAN portfolio consists of a wide range of radiant convectors and lamella-fitted radiators ISAN EXACT, convectors with a lamella heat exchanger ISAN ECOLITE, trench heaters ISAN TERMO, column radiators ISAN ATOL, ribbed-tube radiators ISAN SPIRAL, ceiling panels SOFITO and, last but not least, bathroom radiators ISAN MELODY.

ISAN Radiátory s.r.o. specialises in the manufacture of custom-made radiators according to customer requirements and specifications.

Explanatory notes

ECO&SAFE

marking of an environmentally friendly product with low consumption and economical operation, control electronics with display and powerful 12 V DC axial fans



Fan-operated convector heater, increased output with forced convection



Suitable for heat pumps and low-temperature gradient systems



Standard designer convector heater



Heating, a convector heater for hot water heating systems with forced circulation



Fan-operated convector heater power input



Heaters with rounded corners, increased injury prevention



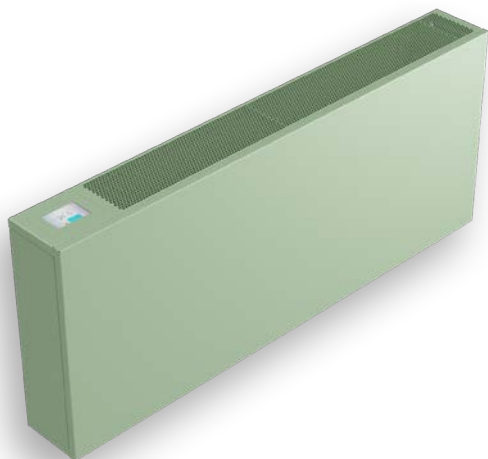
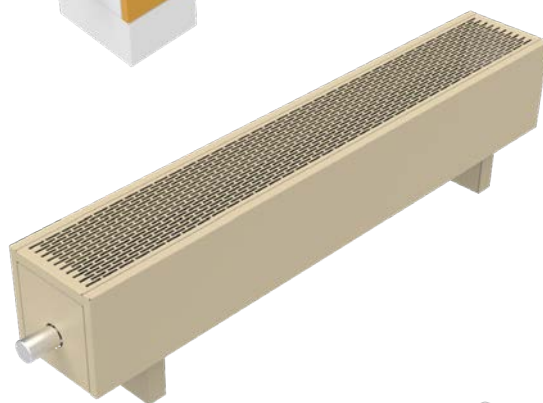
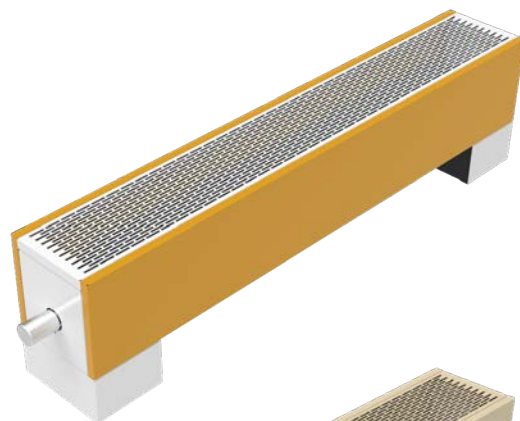
Suitable for non-condensing cooling



Acoustic power parameters of convectors with fan

Contents

ECOLITE – Basic Information	2
Heater Type Overview	4
Design Options	5
Ecolite Convector Accessories	6
LZK Self-standing convector with natural convection.....	8
TZK Self-standing convector with natural convection.....	10
LZA Fan-operated self-standing convector heaters	14
TZA Fan-operated self-standing convector heaters	16
Acoustic power [dB(A)].....	18
Electrical power input	18
LZA, TZA - Fan-operated self-standing convector heaters heating output.....	18
LZA, TZA - Fan-operated self-standing convector heaters cooling output	18
LZA, TZA - Heating output for another temperature gradient.....	19
Regulation.....	19
LSK Wall-mounted convectors with natural convection.....	20
TSK Wall-mounted convectors with natural convection.....	22
LSK, TSK - Wall-mounted convectors heating output.....	24
LSK, TSK - Wall-mounted convectors heating output.....	25
LSK, TSK - Heating output for another temperature gradient.....	25
LSA Fan-operated wall-mounted convector heaters	26
TSA Fan-operated wall-mounted convector heaters	28
Acoustic power [dB(A)].....	30
Electrical power input	30
LSA, TSA - Fan-operated wall-mounted convectors heating output	30
LSA, TSA - Fan-operated wall-mounted convectors cooling output.....	30
LSA, TSA - Heating output for another temperature gradient.....	31
Regulation.....	31
LBK Convector Bench.....	32
Atypical convector heaters	34
Pressure loss for self-standing models	36
Pressure loss for wall-mounted models	38
Acoustics of Ecolite Fan-Operated Convectors	40
Orientation colour card.....	41
ECOLITE – coding for convector heaters with lamellar heat exchangers.....	42



ECOLITE – Basic Information

Application

Convactor heaters are generally installed in residential and administrative buildings, office settings and entrance halls, as well as storage facilities, changing rooms and other workplace areas. Individual models allow for installation in front of large glass walls or free-standing or wall mounted installation. Forced circulation models (fan-operated) are suitable for integration with low-temperature systems.

Important features of lamellar heat-exchanger heaters include their low surface temperature and the option to select rounded-corner models that are ideal for children's rooms and other settings where increased safety is a concern.

Function

A “thermal screen” is created in front of a glass surface, which effectively separates the cold surface from the indoor environment. At the same time, air flow prevents condensation of air humidity on the surface. The vertical and horizontal distribution of temperatures within the heated space is even and favourable conditions are created to secure thermal comfort.

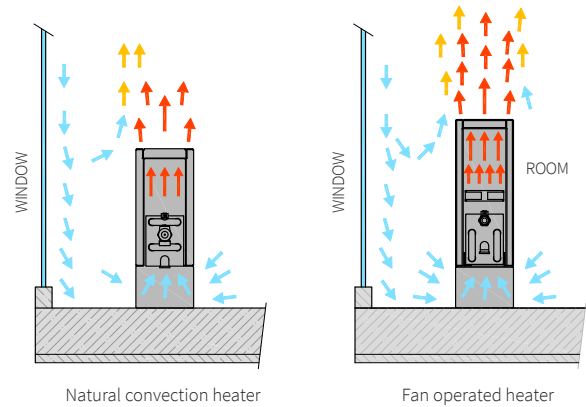
The air flow is comparable to heat transmission provided by traditional heating units mounted on walls under windows. As the temperature of the heater cover remains moderate during operation, it can never cause burn injuries. The entire heat output is transferred to the air streaming through the lamellar heat-exchanger inside the heating body.

Operation

The heating output of convectors **with natural convection** is controlled by a thermostatic head fitted onto the thermostatic valve of each heater. It responds to ambient temperature fluctuations and smoothly controls the flow of the heating fluid through the heat-exchanger.

Another advantage of the heaters lies in their ability to promptly respond to heating requirements, while the low volume of water in the heat-exchanger secures fast warming up to operating temperature.

Fan-assisted convector heaters are operated via an LCD display. The integrated control system continuously regulates fan speed and adjusts the flow rate of the heating medium. Sensors monitoring both ambient temperature and heating water temperature ensure optimal and energy-efficient operation. Forced convection enables a multiple increase in heat output, which can be advantageously utilised during periods of extreme cold or in low-temperature heating systems.

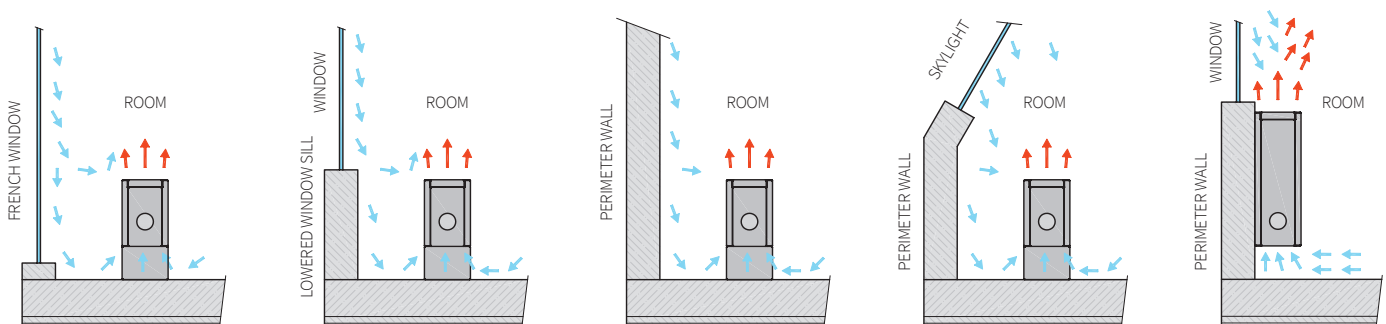


Low-temperature heating systems

High-performance models equipped with modern 12 V DC axial fans allow for integration into low-temperature heating systems that utilise heat pumps and other environmentally friendly heating sources.

Placement

Convactor heaters are normally installed in front of windows to ensure optimum air circulation in front of the glass surface. Ideally, it is best if the unit occupies as much of the width of the window as practically possible. In addition, the height of each unit should be sized with regard to the character of the room as well as the height of the windowsill. Wall-mounted models can be anchored under the windowsill or to one of the inner walls.



Connecting in the heating system

Lamellar Al-Cu heat exchangers have aluminium lamellas pressed onto a copper pipe through which the heating medium flows. The pipe's outlet and inlet are equipped with a connecting end with internal thread G1/2".

We install a thermostatic valve fitted with an electrothermal actuator on the inlet of the lamellar heat exchanger. The actuator works in the opened/closed mode and controls the flow of the heating medium. It is not necessary to use a thermostatic valve if the temperature of the heating medium is controlled by the heating system (e.g. equithermal system). The way of regulation is to be determined by the designer of the heating and this shall be specified in the project documentation.

A return regulating screw connection shall be used for the outlet. This enables the incorporation of the convector into the heating system from the viewpoint of the hydraulic balancing. Based on the parameters of the screw connection used the designer determines the setting (corresponding to pressure loss at the fitting) and this value shall be specified in the project documentation.

Each exchanger is fitted with an air vent valve. When the heating system is connected and filled air bubbles remain caught in the upper part of the exchanger. These shall be let out through the air vent valve.

How to size the fan-operated convector heater

What room the convector is to be placed in

We always consider output and acoustic parameters of the convector taking into account the room's nature – residential rooms, bedrooms, corridors, offices, theatres, hospital rooms, halls, presentation rooms and others. The convector shall comply with the requirement for thermal output at a selected temperature gradient, however at the same time the operation shall not disturb the user with excessive noise. The noise issue is regulated by the applicable standard, which defined permitted limits for individual types of rooms.



Convector Output

The output data for convectors is divided according to natural and forced convection.

Natural Convection Convectors

Natural convection convectors require sufficiently hot heating water to operate effectively. Warm air rises through the heat exchanger, and as it flows through the narrow space above the exchanger, it accelerates and increases the volume of circulating air (chimney effect). This naturally enhances the convector's output. Performance values are provided for thermal gradients of 75/65/20 °C and 55/45/20 °C.

Forced Convection Convectors

Convectors with forced convection (fan-assisted) are primarily designed for low-temperature heating and non-condensing cooling. The fans replace natural air circulation and allow for smooth regulation of the convector's output. This provides the necessary flexibility and responsiveness for efficient and economical operation.

The maximum operating temperature for fan-assisted convectors is 55 °C. Standard data is provided for a gradient of 45/40/20 °C for heating and 16/19/28 °C for cooling. These convectors are ideal for use in new buildings (low-energy, nZEB, and passive houses) or in renovated properties (insulation upgrades, thermal improvements, etc.). They are intended to be used with heat pumps, solar panels, and other renewable energy sources.

- Convert the output to the required thermal gradient, check acoustic parameters.
- It is not a problem if the calculated output is higher than the required one – the automatic regulation functions from the lowest revs per the output that is equal to the current thermal loss in the room, the convector will not overheat, on the contrary it will function with less noise (it will achieve the required output at lower revs), the comfort temperature in the room will be achieved faster.

Warranty Conditions

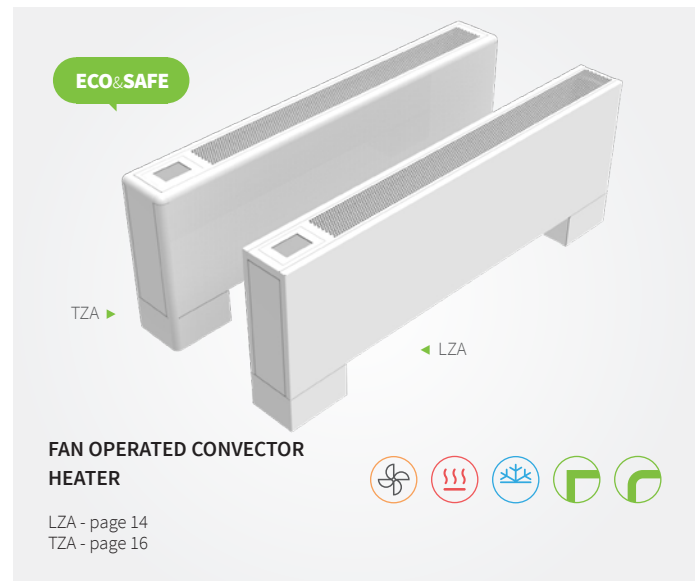
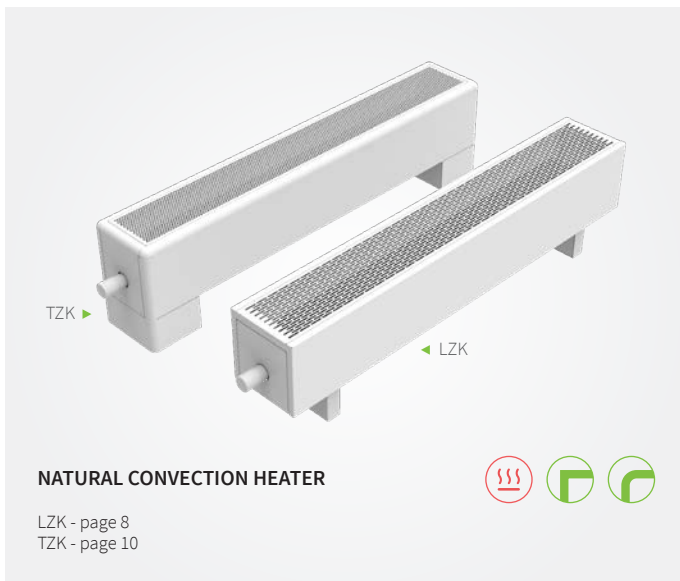
The warranty provided by seller applies to tightness, surface finish, declared thermal output values and pressure losses of heating units professionally installed in a closed hot water system in accordance with applicable standards and regulations, including the corrosive properties of the heating medium, which must be used exclusively for heating purposes and never as utility water. The units must be professionally installed in a closed system carried out in accordance with VDI 2035, with regard to protection against damage caused by corrosion and limescale. Units with electrical connections must be installed professionally in compliance with applicable standards and regulations concerning the placement of appliances. ECOLITE convectors with fans are rated IP20 – for dry environments only.

Warranty Periods

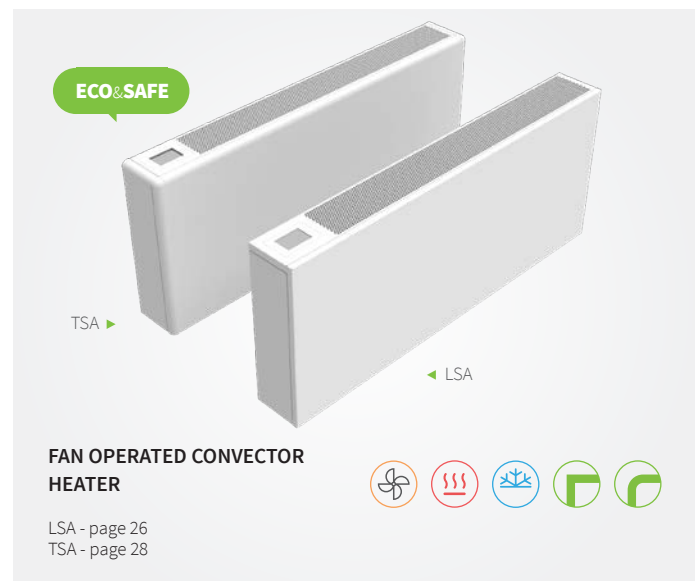
The warranty period for ECOLITE convectors is 5 years, and 2 years for electrical components.

Heater Type Overview

Self-standing convector heaters



Wall-mounted convector heaters



Convector heater modifications

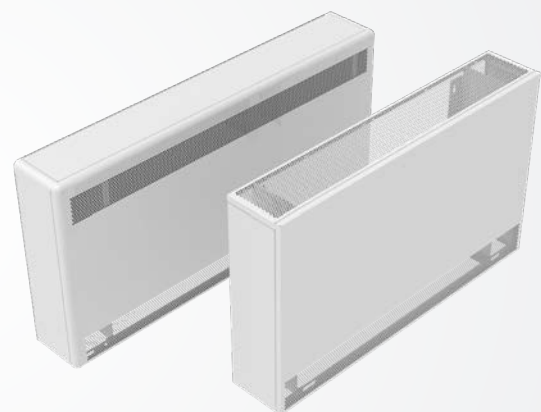
In addition to the classification of designer ECOLITE heaters into round and square models, other convector heater parameters can also be customised to meet your needs.

- Heater grille selection
- Stands and anchoring
- Colour variations of heaters or individual components
- Customer-specified front side print design
- Connection type (e.g. set in the wall)

Structural heater modifications with adapted suction positioning are also available.

- Bottom suction - top exhaust (standard)
- Bottom suction - forward exhaust (standard)
- Forward suction - top exhaust
- Forward suction and exhaust

▶ For more structural modifications, see page 34.



Design Options

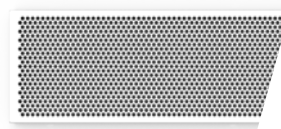
Grilles

The design of the grille is specified when placing the order. The grille is a fixed and inseparable part of the convector; it cannot be removed, nor can the internal components be accessed or manipulated. The choice of grille depends on the nature of the interior as well as its intended purpose in different environments.



RECTANGULAR HOLES - TYPE R

- steel grille with a surface finish
- narrow slots prevent objects from falling inside the heater
- 30 x 5 mm rectangular holes
- **available for all models**



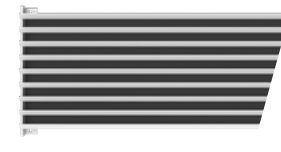
ROUND HOLES - TYPE C

- steel grille with a surface finish
- closely spaced round holes prevent objects from falling or being inserted inside the heater
- designer top grille with $\varnothing 6$ mm holes
- safe installation
- **available for all models**



ALUMINIUM LINEAR - TYPE L

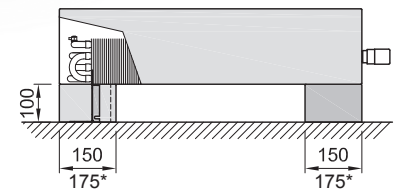
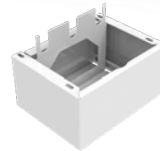
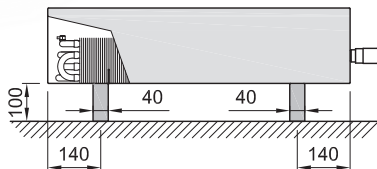
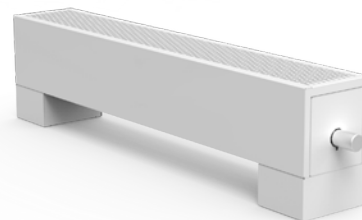
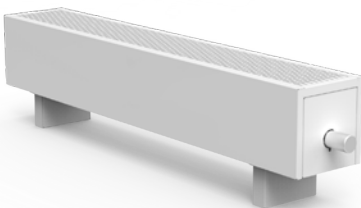
- aluminium longitudinal slats with a surface finish
- designer model, will accentuate the linear form of the convector heater
- aluminium 18 x 5 (2.5) mm T-section
- spray-painted or provided with anodised aluminium finish in nature, black or bronze colours
- **available for LZK and LSK models**



LINEAR STEEL - TYPE P

- steel angled longitudinal lamellas with surface treatment
- high permeability of the grille
- the angled lamella restricts the view inside the convector
- **available for LZK and LSK models**

Convectors stands, installation on ground



* LZA and TZA fan convectors

BLOCK STANDS - TYPE K

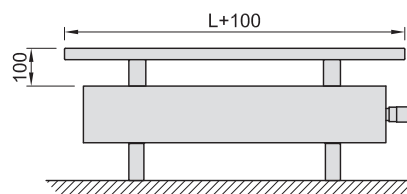
- subtle design
- inconspicuous floor mounting
- steel stand with a surface finish
- **available for LZK, TZK and LBK models**

COVER STANDS - TYPE S

- robust design
- neatly covered water piping
- steel stand with a surface finish
- **available for all models**

Convector with bench

Some self-standing models LZK can be equipped with a wooden board, more on page 32.



Ecolite Convector Accessories

Thermostatic heads

They regulate the flow of heating medium in convectors with natural convection. They proportionally maintain the desired room temperature. It is possible to use alternative thermostat heads with the connection thread M30x1,5.



WHITE
Code: 484111350



STAINLESS STEEL
Code: 484111370



CHROME
Code: 484111360



BLACK GLOSS
Code: 484000920



BLACK MATT
Code: 484000936

Z-TF001 THERMOSTATIC HEAD WITH CAPILLARY FOR CONTROLLING THE OUTPUT OF CONVECTORS WITHOUT FAN

The thermostatic head Z-TF001 with remote control with a liquid sensor is meant for the control of thermostatic valves of convectors. The temperature is regulated in dependence on the user's requirements without the need for other energy sources. Each convector must have its own Z-TF001, more convectors cannot be controlled!

Parameters

- Thermostatic radiator valve head with remote liquid-filled sensing element
- Temperature range: 9 to 26 °C, antifreeze temperature 9 °C
- Mode: proportional control
- Operating temperature: without additional energy, liquid-filled sensing
- Capillara tube length: 5 m
- Body-head connection: M30×1,5 mm
- Dimension: 75×75 mm, sensor ø 50×68 mm
- Colour: white RAL 9010



Thermostats

Z-RT001

ROOM THERMOSTAT FOR CONTROLLING THE OUTPUT OF CONVECTORS WITHOUT FAN



The mechanical room thermostat Z-RT001. In dependence on required temperature it controls the flow of heating medium in the heat exchanger in convectors with natural convection. It controls electrothermal actuators Z-TS24 with a switched power supply 24 V DC (DR). Without the power supply it directly controls the electrothermal actuator Z-TS230 working with the voltage of 230 V AC. Function opened/closed.

Parameters

- Temperature range: 10 to 30 °C
- Operating voltage: 24 V DC or 230 V AC
- The number of controlled electrothermal actuators:
- Protection: IP30
- Colour: white
- Dimension: 83×83×40 mm

RTD301

PROGRAMMABLE ROOM THERMOSTAT FOR CONTROLLING THE OUTPUT OF CONVECTORS WITHOUT FAN



The thermostat controls heat-transfer fluid flow through natural convection trench heaters. It works in combination with Z-TS230 electrothermal actuators activated based on a time schedule adjustable to 15-minute intervals.

Parameters

- Temperature range: 5-35 °C
- Supply voltage: 3 V DC (2x 1.5 V batteries)
- Switching voltage: 230 V AC
- Connectable to up to 15 pcs Z-TS24 electrothermal actuators
- Degree of protection IP30
- Ambient temperature 0-50 °C
- Relative humidity <95%
- Dimensions: 127×85×22 mm

Description

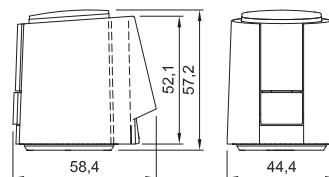
- 2 position ON/OFF heating control
- Weekly time schedule
- Operating modes: Comfort, Standby, Automatic and Protection
- Front cover color - RAL9003 White

Electrothermal actuator

Z-TS230 ELECTROTHERMAL ACTUATOR 230 V AC / opened/closed function (without voltage closed)

Parameters

- Operating voltage: 230 V AC, +10 ... -10 %, 50/60 Hz
- Max. inrush current <550 mA during max. 100 ms
- Operating power: 1 W
- Opening/closing time: 210 s
- Stroke: 4 mm
- Protection class: II
- Type of protection: IP54, in all installation positions
- Connection to valve: M30×1,5 mm (adapter)
- Colour of actuator and cable: black
- Adapter is a part of actuator



Z-TS230 Cable length 3 m

The accessory is essential for the proper operation of fan-assisted convectors. One electrothermal actuator must be ordered for each convector.

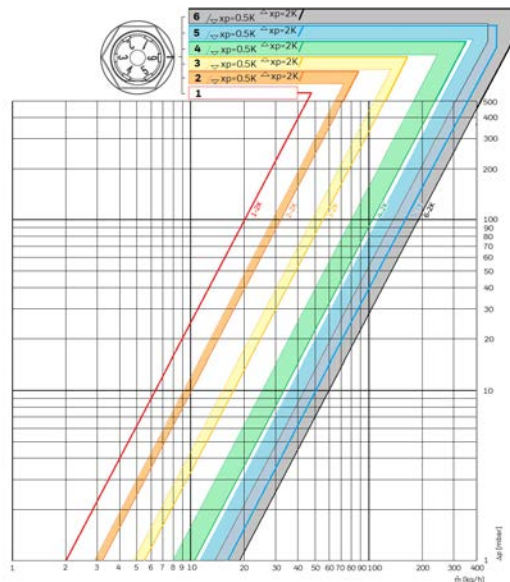
Thermostatic valve

Z-LE001 AXIAL THERMOSTATIC VALVE

Horizontal axial valve, heating medium flow regulation in the system, installation on the heat exchanger's inlet pipe

Parameters

- Heating water, water quality to VDI2035
- Operating temperature max. 130 °C (262°F)
- Operating pressure PN10
- Differential pressure max. 2 bar (29 psi) - max. 0.2 bar (2.9 psi) recommended for quiet operation
- kv(cv)-value 0.72
- Nominal flow 130 kg/h
- Thermostat connection M30 x 1.5
- Closing dimension 11.5 mm
- Stroke 2.5 mm



Pre-setting	1	2	3	4	5	6
xP = 0,5K (m3/h)	0,0063	0,091	0,15	0,25	0,36	0,43
xP = 1K (m3/h)	0,0063	0,095	0,16	0,27	0,40	0,46
xP = 2K (m3/h)	0,0063	0,101	0,17	0,33	0,51	0,60
kvs-value (m3/h)	0,0063	0,104	0,18	0,34	0,52	0,62



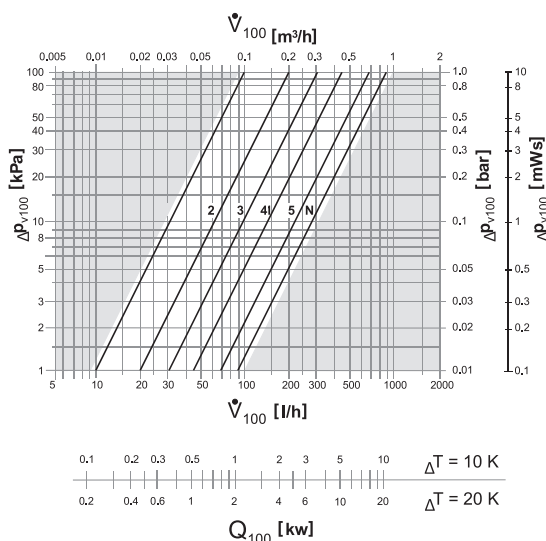
Z-LE001
horizontal axial valve

Z-TD001 / Z-TE001 THERMOSTATIC VALVE DIRECT AND CORNER

Direct and corner thermostatic valve, heating medium flow regulation in the system, installation on the heat exchanger's inlet pipe direct/corner.

Parameters

- Size: DN15, NF standard
- Connecting thread: M30x1,5 mm
- Max. operating temperature 120 °C
- Max. operating pressure PN10
- Option to change pre-setting of kv-value
- kv value (m³/h) range 0.10-0.89
- kv value (m³/h) for zone 2K 0.52



Z-TD001
direct thermostatic valve



Z-TE001
corner thermostatic valve

Lockshield valve direct and corner

Z-RD001 / Z-RE001 LOCKSHIELD VALVE DIRECT AND CORNER

Direct and corner closing and regulation screw connection, flow setting, installation on the exchanger's outlet pipe.

Parameters

- Size: DN15
- Value kvs direct 0.30-1.80
- corner 0.30-3.00
- Max. operating temperature: 110 °C
- Max. operating overpressure: 10 bar

Kv (°) T – Speed	0,5	0,75	1	1,5	2	2,5	3	3,5	4	5	6	Max.
Kv (m³/h) – direct type	0,3	0,4	0,55	0,75	0,91	1,05	1,25	1,33	1,4	1,6	1,7	1,8
Kv (m³/h) – corner type	0,2	0,25	0,29	0,4	0,5	0,69	0,8	1	1,2	1,55	1,9	2,2



Z-RD001
direct screw connection



Z-RE001
corner screw connection

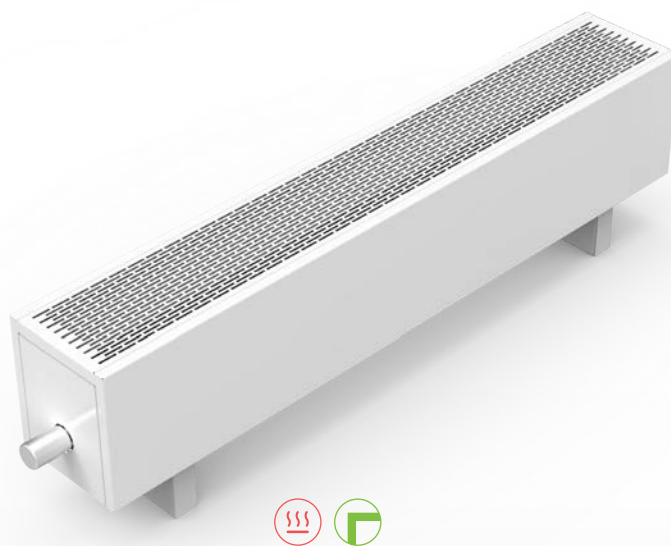
LZK Self-standing convector with natural convection

Convector heaters with lamellar heat-exchangers are popular for their simple design. They find their application especially at locations where larger glass surfaces, such as French windows, shop windows or walls exposed to cold air, need to be thermally screened. However, they also provide an elegant substitute for standard panel radiators.

A range of grille options and stands for floor mounting allows the designer to perfectly match the heater to the interior.

The casing, which forms a chimney shaft, helps optimise the heater function.

- Shopping malls, car showrooms, airport lounges
- Offices, administrative buildings
- Hotels
- Entrance areas, hallways, lobbies



Standard Equipment

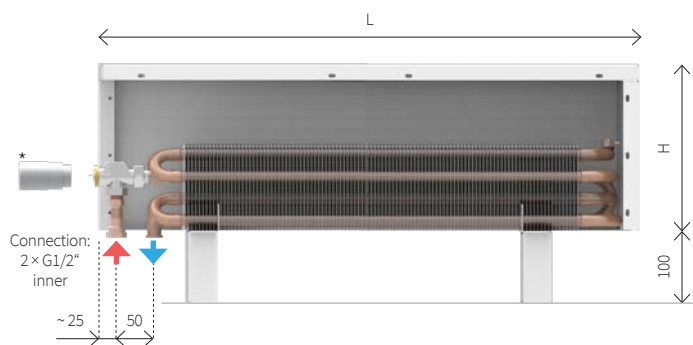
Cover	surface-treated steel sheet metal with an epoxy polyester powder coating
Grille	round or rectangular holes as per order specifications; the linear grille is securely attached to the cover
Heat-exchanger	Al-Cu lamellar heat-exchanger with an air vent valve, 2 × G1/2" inner connection threads
Valve	axial thermostatic valve, M30 × 1.5 thread with a 2.5 mm pitch (not supplied with side connection configuration)
Mounting	floor anchor stands as per order specifications

Operating Conditions

Max. operating temp.	110 °C
Max. operating excess pressure	1 MPa (10 bar)
Protection	IP20
Ambient conditions	temperature T = +2 to +40 °C humidity Rh = 20 to 70 %

Convector Heater Options and Size Variations

Standard valve connection V

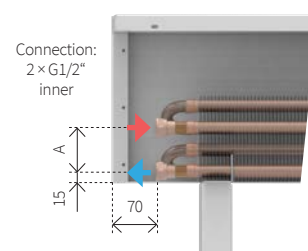


* thermostatic head not supplied with the heater

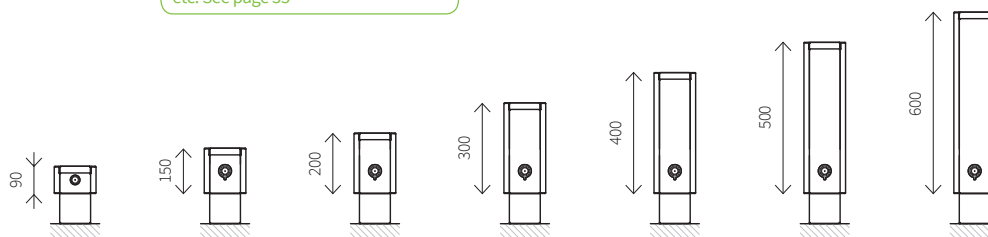
Convector heater size variations

Tip: Convectors with a height of H ≥ 150 mm can also be manufactured with a hidden connection. Elegant, clean design, use in SMART homes, etc. See page 35

Side connection B



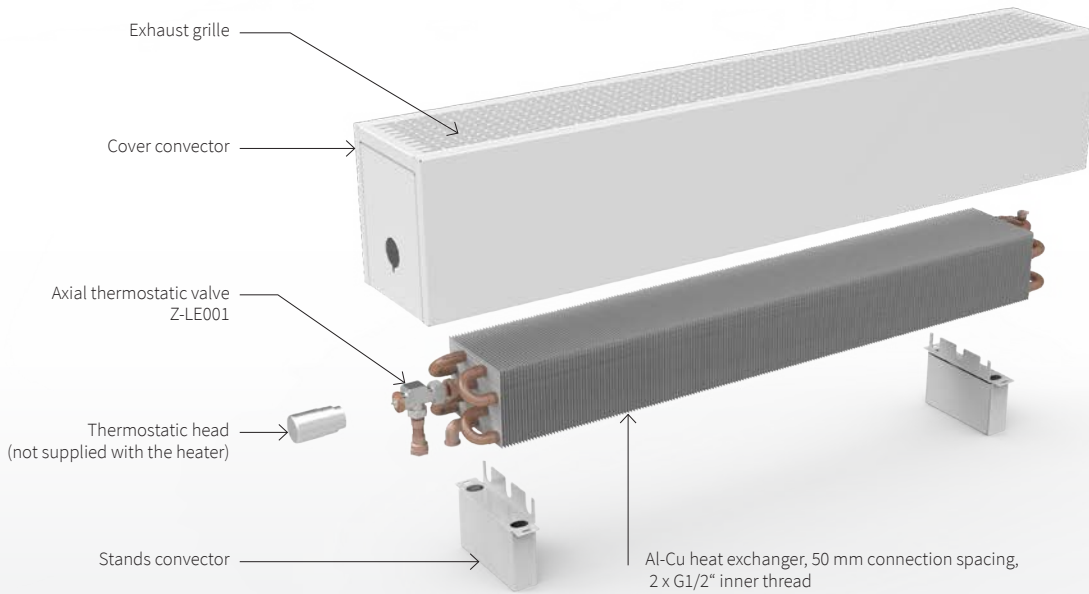
H [mm]	A [mm]
90	30
150-600	60



Height H [mm]	90	150	200	300	400	500	600
Width W [mm]	138	138	138	138	138	138	138
Length L [mm]	198	198	198	198	198	198	198
Length L [mm]	258	258	258	258	258	258	258
Length L [mm]	400-2800	400-2800	400-2800	400-2800	400-2000	400-1600	400-1600

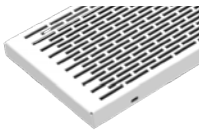
Component parts of the convector heater

Accessories

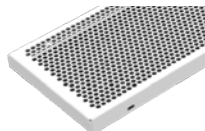


► Details of accessories on the page 6

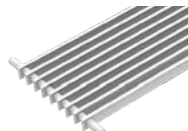
Grilles



Grille R
- rectangular holes



Grille C
- round holes



Grille L
- linear grille

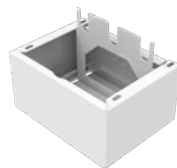


Grille P
- linear steel grille

Stands

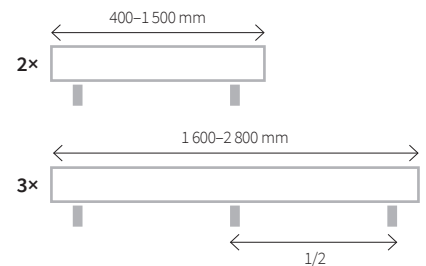


Stand K
- floor mounting
- inconspicuous
- height 100 mm



Stand S
- self-standing model
- cover water piping
- height 100 mm
(cannot be used for B connection)

Number of stands as per the body length



Coding

LZK	0150	0138	0400	C	01	R	1	V	L	K	Atypical
Model	Height H [mm]	Width W [mm]	Length L [mm]	Material	Colour	Grille	Grille colour	Connection type	Connection side	Stands	Atypical
LZK	0090 0150 0200 0300 0400 0500 0600	0138 0198 0258	0400 0500 ... 1200 1400 ... 2800	C Sheet steel with surface finish and an epoxy polyester powder coating	As per RAL colour chart Structured colours Metallic paint colours See colour chart, page 41	R rectangular holes C round holes L linear aluminium P linear steel	1 Same as cover colour 9 Grille in different colour	V With axial thermostatic valve, bottom connection, 50 mm spacing B Side connection, 60 mm spacing, valve not included in the delivery	L Left side R Right side	K Inconspicuous, subtle S Water piping cover	Empty position for standard A In non-standard heater configurations

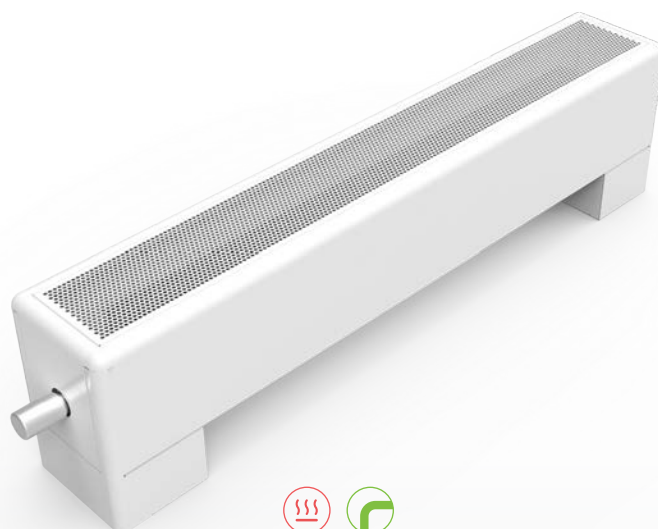
► Other options, see page 43

TZK Self-standing convector with natural convection

Convector heaters with lamellar heat-exchangers are popular for their simple design. The rounding not only enhances the aesthetic appearance of the units, but it also improves safety in exposed areas. They are often installed in schools, preschools, and health and social facilities where injury prevention and hygiene requirements are more stringent.

A range of grille options and stands for floor mounting allows the designer to perfectly match the heater to the interior.

- Schools, preschools
- Hospitals, retirement homes
- Institutions for people with reduced mobility
- Family houses
- Shopping malls, airport lounges
- Hotels
- Entrance areas, lobbies



Standard Equipment

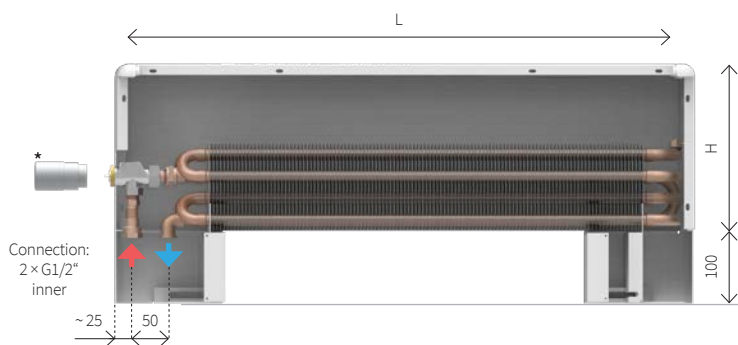
Cover	surface-treated steel sheet metal with an epoxy polyester powder coating
Grille	round or rectangular holes as per order specifications; grille is securely attached to the cover
Heat-exchanger	Al-Cu lamellar heat-exchanger with an air vent valve, 2 × G1/2" inner connection threads
Valve	axial thermostatic valve, M30 x 1.5 thread with a 2.5 mm pitch (not supplied with side connection configuration)
Mounting	floor anchor stands as per order specifications

Operating Conditions

Max. operating temp.	110 °C
Max. operating excess pressure	1 MPa (10 bar)
Protection	IP20
Ambient conditions	temperature T = +2 to +40 °C humidity Rh = 20 to 70 %

Convector Heater Options and Size Variations

Standard valve connection V

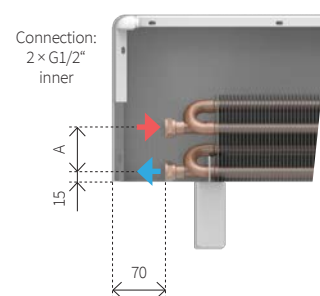


* thermostatic head not supplied with the heater

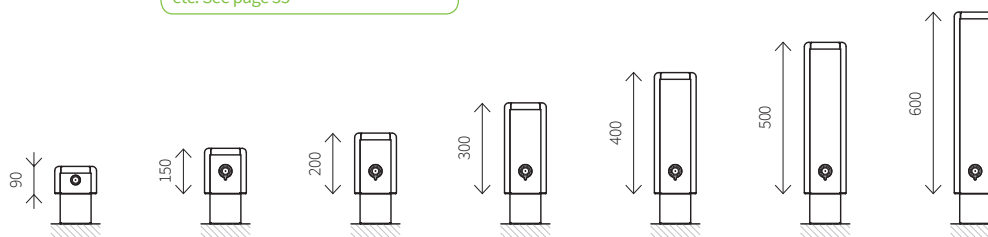
Convector heater size variations

Tip: Convectors with a height of $H \geq 150$ mm can also be manufactured with a hidden connection. Elegant, clean design, use in SMART homes, etc. See page 35

Side connection B

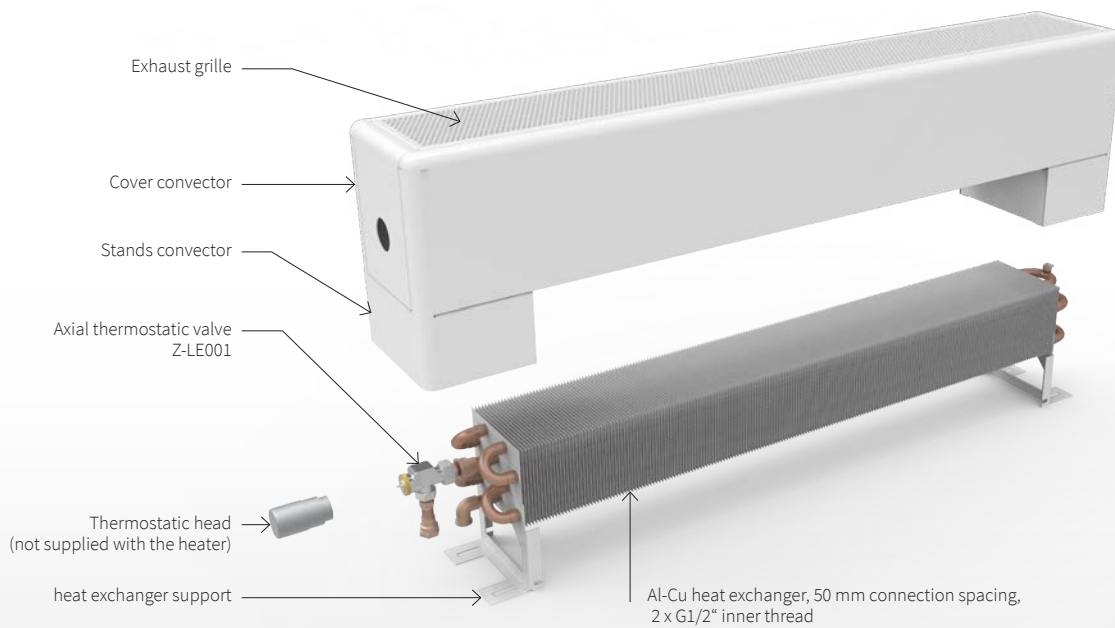


H [mm]	A [mm]
90	30
150-600	60



Height H [mm]	90	150	200	300	400	500	600
Width W [mm]	138	138	138	138	138	138	138
Length L [mm]	198	198	198	198	198	198	198
	258	258	258	258	258	258	258
Length L [mm]	400-2800	400-2800	400-2800	400-2800	400-2800	400-2800	400-2800

Component parts of the convector heater

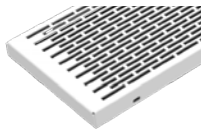


Accessories

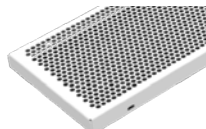


► Details of accessories on the page 6

Grilles



Grille R
- rectangular holes



Grille C
- round holes

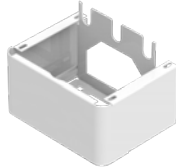
tip Order grilles and stands in colours that vary from the cover to brighten up your interior

► Colour design options and grille details, page 5

Stands

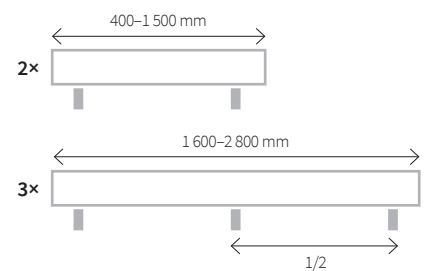


Stand K
- floor mounting
- inconspicuous
- height 100 mm



Stand S
- self-standing model
- cover water piping
- height 100 mm
(cannot be used for B connection)

Number of stands as per the body length



Coding

TZK	0150	0138	0400	C	01	R	1	V	L	K	
Model	Height H [mm]	Width W [mm]	Length L [mm]	Material	Colour	Grille	Grille colour	Connection type	Connection side	Stands	Atypical
TZK	0090 0150 0200 0300 0400 0500 0600	0138 0198 0258	0400 0500 ... 1200 1400 ... 2800	C Sheet steel with surface finish and an epoxy polyester powder coating	As per RAL colour chart Structured colours Metallic paint colours See colour chart, page 41	R rectangular holes C round holes	1 Same as cover colour 9 Grille in different colour	V With axial thermostatic valve, bottom connection, 50 mm spacing B Side connection, 60 mm spacing, valve not included in the delivery	L Left side R Right side	K Inconspicuous, subtle S Water piping cover	Empty position for standard A In non-standard heater configurations

► Other options, see page 43

LZK, TZK - Self-standing convectors heating output

Width 138 mm

75/65/20 °C	Height [mm] / Heating output [W]						
Length [mm]	90	150	200	300	400	500	600
400	113	179	196	221	241	258	272
500	161	235	256	290	316	338	357
600	209	314	342	386	421	450	476
700	256	381	415	469	511	547	578
800	304	448	488	552	601	643	679
900	352	515	561	634	692	740	781
1000	400	582	635	717	782	836	883
1100	447	649	708	799	872	932	985
1200	495	716	781	882	962	1029	1087
1400	590	850	927	1047	1142	1221	1290
1600	702	1007	1098	1240	1353	1446	1528
1800	797	1141	1244	1406	1533	1639*	1732*
2000	893	1275	1391	1571	1713	1832*	1935*
2200	988	1409	1537	1736	1893*	2025*	2139*
2400	1083	1544	1683	1901	2073*	2217*	2342*
2600	1179	1678	1829	2067	2254*	2410*	2546*
2800	1274	1812	1976	2232	2434*	2603*	2749*
Exponent n [-]	1,42	1,42	1,42	1,42	1,42	1,42	1,42

55/45/20 °C	Height [mm] / Heating output [W]						
Length [mm]	90	150	200	300	400	500	600
400	55	87	95	107	117	125	132
500	78	114	124	140	153	164	173
600	101	152	166	187	204	218	230
700	124	184	201	227	248	265	280
800	147	217	236	267	291	311	329
900	170	249	272	307	335	358	378
1000	193	282	307	347	378	405	427
1100	217	314	343	387	422	451	477
1200	240	347	378	427	466	498	526
1400	286	412	449	507	553	591	624
1600	340	487	531	600	655	700	740
1800	386	552	602	680	742	793*	838*
2000	432	617	673	760	829	887*	937*
2200	478	682	744	840	916*	980*	1035*
2400	525	747	815	920	1004*	1073*	1134*
2600	571	812	885	1000	1091*	1166*	1232*
2800	617	877	956	1080	1178*	1260*	1331*
Exponent n [-]	1,42	1,42	1,42	1,42	1,42*	1,42	1,42

* applies only to TZK models

Width 198 mm

75/65/20 °C	Height [mm] / Heating output [W]						
Length [mm]	90	150	200	300	400	500	600
400	191	293	320	363	397	426	450
500	271	384	419	476	520	558	590
600	352	511	559	634	694	744	787
700	432	621	679	770	842	903	955
800	513	730	799	906	991	1062	1124
900	593	840	918	1042	1139	1221	1292
1000	673	949	1038	1177	1287	1380	1461
1100	754	1058	1157	1313	1436	1539	1629
1200	834	1168	1277	1449	1584	1698	1797
1400	995	1386	1516	1720	1881	2016	2134
1600	1183	1642	1796	2037	2228	2388	2527
1800	1344	1861	2035	2309	2525	2706*	2864*
2000	1504	2080	2274	2580	2822	3024*	3201*
2200	1665	2298	2514	2852	3118*	3343*	3538*
2400	1826	2517	2753	3123	3415*	3661*	3874*
2600	1987	2736	2992	3394	3712*	3979*	4211*
2800	2148	2955	3231	3666	4009*	4297*	4548*
Exponent n [-]	1,42	1,43	1,43	1,43	1,43	1,43	1,43

55/45/20 °C	Height [mm] / Heating output [W]						
Length [mm]	90	150	200	300	400	500	600
400	93	141	154	175	191	205	217
500	132	185	202	229	251	269	285
600	170	247	270	306	335	359	380
700	209	299	327	371	406	435	461
800	248	352	385	437	478	512	542
900	287	405	443	502	549	589	623
1000	326	458	500	568	621	665	704
1100	365	510	558	633	692	742	785
1200	404	563	616	698	764	819	867
1400	482	668	731	829	907	972	1029
1600	573	792	866	982	1074	1151	1219
1800	651	897	981	1113	1217	1305*	1381*
2000	729	1003	1097	1244	1360	1458*	1543*
2200	807	1108	1212	1375	1504*	1612*	1706*
2400	885	1214	1327	1506	1647*	1765*	1868*
2600	963	1319	1443	1637	1790*	1918*	2030*
2800	1041	1424	1557	1767	1933*	2072*	2193*
Exponent n [-]	1,42	1,43	1,43	1,43	1,43	1,43	1,43

* applies only to TZK models

Width 258 mm

75/65/20 °C	Height [mm] / Heating output [W]						
Length [mm]	90	150	200	300	400	500	600
400	266	414	448	501	543	577	607
500	377	543	587	657	711	757	796
600	489	723	783	876	949	1009	1061
700	601	878	951	1063	1151	1225	1288
800	713	1033	1118	1251	1354	1440	1515
900	825	1188	1286	1438	1557	1656	1742
1000	937	1342	1453	1626	1760	1872	1969
1100	1048	1497	1621	1813	1963	2088	2196
1200	1160	1652	1788	2000	2166	2303	2422
1400	1384	1961	2124	2375	2572	2735	2876
1600	1645	2323	2515	2813	3046	3239	3407
1800	1869	2632	2850	3188	3452	3671*	3861*
2000	2093	2942	3185	3563	3857	4103*	4314*
2200	2316	3251	3520	3937	4263*	4534*	4768*
2400	2540	3561	3855	4312	4669*	4966*	5222*
2600	2764	3870	4190	4687	5075*	5397*	5676*
2800	2987	4180	4526	5062	5480*	5829*	6130*
Exponent n [-]	1,42	1,45	1,45	1,45	1,45	1,45	1,45

55/45/20 °C	Height [mm] / Heating output [W]						
Length [mm]	90	150	200	300	400	500	600
400	129	197	214	239	259	275	289
500	183	259	280	313	339	361	379
600	237	345	373	418	452	481	506
700	291	419	453	507	549	584	614
800	345	492	533	596	646	687	722
900	399	566	613	686	742	790	830
1000	453	640	693	775	839	892	939
1100	507	714	773	864	936	995	1047
1200	561	788	853	954	1033	1098	1155
1400	670	935	1012	1132	1226	1304	1371
1600	796	1108	1199	1341	1452	1544	1624
1800	904	1255	1359	1520	1646	1750*	1841*
2000	1013	1403	1519	1699	1839	1956*	2057*
2200	1121	1550	1678	1877	2033*	2162*	2273*
2400	1229	1698	1838	2056	2226*	2367*	2490*
2600	1337	1845	1998	2235	2419*	2573*	2706*
2800	1446	1993	2158	2413	2613*	2779*	2922*
Exponent n [-]	1,42	1,45	1,45	1,45	1,45	1,45	1,45

* applies only to TZK models

LZK, TZK - Heating output for another temperature gradient

To obtain the heating output for a different temperature gradient multiply heating output value at 75/65/20 °C by the below mentioned factor **f**.

Example

Heating output of the convector LZK 0200 0138 2000 for temperature gradient 70/55 °C

1. Output 75/65/20 °C = 1 391 W
2. Factor from the table for 70/55/20 °C at 138 width: $f = 0.794$
3. Output 70/55/20 °C = $f \times 1391 = 1\,104$ W

Width 138 mm					
Height [mm]	90/70 °C	82/71 °C	70/55 °C	70/50 °C	50/40 °C
90	1,295	1,190	0,794	0,707	0,367
150	1,295	1,190	0,794	0,707	0,367
200	1,295	1,190	0,794	0,707	0,367
300	1,295	1,190	0,794	0,707	0,367
400	1,295	1,190	0,794	0,707	0,367
500	1,295	1,190	0,794	0,707	0,367
600	1,295	1,190	0,794	0,707	0,367

Room temperature 20 °C

Width 198 mm					
Height [mm]	90/70 °C	82/71 °C	70/55 °C	70/50 °C	50/40 °C
90	1,295	1,190	0,794	0,707	0,367
150	1,303	1,194	0,790	0,701	0,359
200	1,303	1,194	0,790	0,701	0,359
300	1,303	1,194	0,790	0,701	0,359
400	1,303	1,194	0,790	0,701	0,359
500	1,303	1,194	0,790	0,701	0,359
600	1,303	1,194	0,790	0,701	0,359

Room temperature 20 °C

Width 258 mm					
Height [mm]	90/70 °C	82/71 °C	70/55 °C	70/50 °C	50/40 °C
90	1,295	1,190	0,794	0,707	0,367
150	1,298	1,191	0,793	0,705	0,364
200	1,298	1,191	0,793	0,705	0,364
300	1,298	1,191	0,793	0,705	0,364
400	1,298	1,191	0,793	0,705	0,364
500	1,298	1,191	0,793	0,705	0,364
600	1,298	1,191	0,793	0,705	0,364

Room temperature 20 °C

Recalculation to other temperature gradients

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

$$Q = Q_n \cdot \Psi^n \cdot (\Delta T / 50)^n \text{ [W]; where } \Delta T = ((T_1 + T_2) / 2) - T_i \text{ [}^\circ\text{C]}$$

- Q_n [W] heating output for temperature gradient
- Ψ [-] mass rate of flow coefficient (for current flow rate $\Psi = 1$)
- T_1 [°C] input water temperature
- T_2 [°C] output water temperature
- T_i [°C] temperature in the room
- n [-] temperature exponent

Heating water flow rate through exchanger

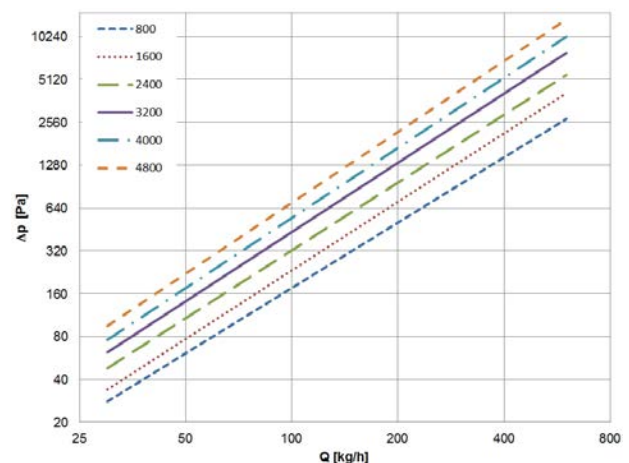
To reach the required heating output we determine the desired flow of heating water through the convector exchanger. We calculate it from heating output of the convector for the selected input and output temperatures of heating water.

$$M = 0,86 \cdot Q / (T_1 - T_2) \text{ [kg / h]}$$

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

Table of hydraulic parameters of exchangers

For hydraulic parameters of exchangers see the page 48.



LZA Fan-operated self-standing convector heaters

Fan-operated self-standing convector is designed to be unobtrusive while reliably fulfilling its function. Thanks to its compact design, it blends perfectly with the interior, while inside a powerful heating unit with automatic control is at work.

The unit responds smoothly to changes in room temperature and in the heating/cooling system. Intelligent fan speed control ensures quiet operation and rapid achievement of the desired comfort. Operation is intuitive – just a few touches on the colour touch screen, conveniently positioned for easy access.

The convector is available in a wide range of RAL colours as well as metallic finishes. Individual cover components can be colour-combined according to your preferences.

- Low-temperature heating
- Non-condensing cooling
- Compatible with heat-pump systems



Standard Equipment

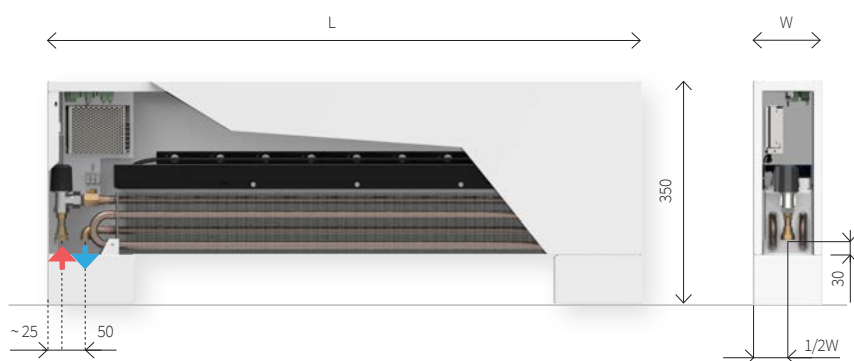
Cover	surface-treated steel sheet metal with an epoxy polyester powder coating
Grille	round or rectangular holes as per order specifications
Heat-exchanger	Al-Cu lamellar heat-exchanger with an air vent valve, 2 × G1/2" inner threads
Fan	modern high-efficiency 12 V DC fan
Control	integrated regulation
Mounting	cover stands for floor anchoring

Operating Conditions

Max. operating temp.	55 °C
Max. operating excess pressure	1 MPa (10 bar)
Protection	IP20
Ambient conditions	temperature T = +2 to +40 °C humidity Rh = 20 to 70%
Fan operating voltage	12 V DC

Convector Heater Options and Size Variations

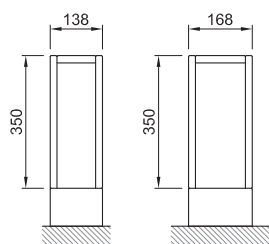
Standard valve connection V



* thermostatic head not supplied with the heater

Convector heater size variations

Height H [mm]	350
Width W [mm]	138 168
Length L [mm]	800-2000

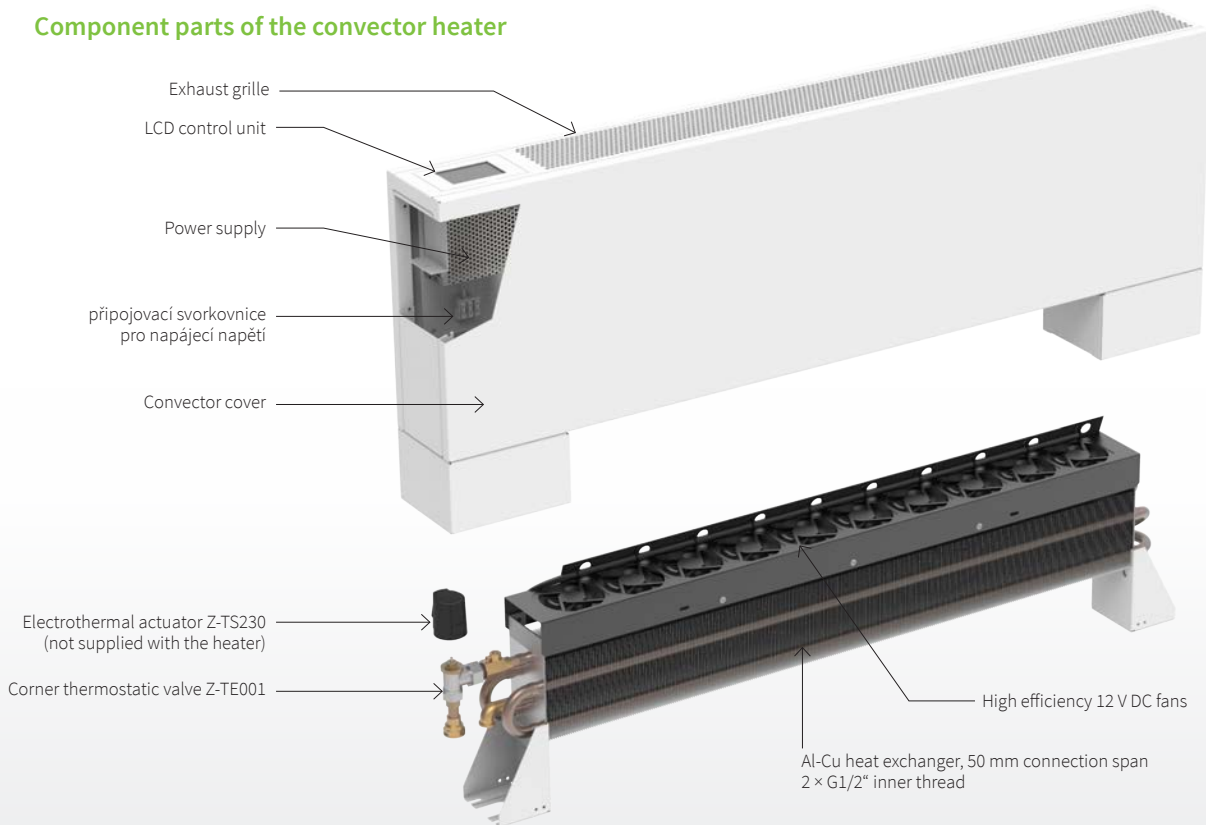


ECO&SAFE

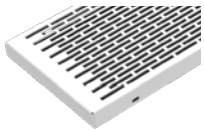
Energy saving

Fan convectors operate on safe voltage of 12 V DC. The fan motors have very low consumption of electric power. The speed is controlled continuously via a PWM control signal.

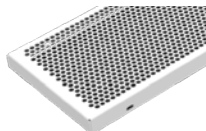
Component parts of the convector heater



Grilles



Grille R
- rectangular holes

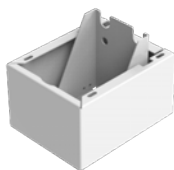


Grille C
- round holes

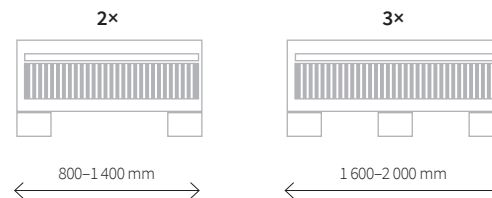
Stands

Stand S

- self-standing model
- cover water piping
- height 100 mm



Number of brackets as per the body length



Coding

LZA	0350	0138	1200	C	01	R	1	V	L	S	
Model	Height H [mm]	Width W [mm]	Length L [mm]	Material	Colour	Grille	Grille colour	Connection type	Connection side	Brackets	Atypical
LZA	0350	0138 0168	0800 1000 1200 1400 1600 1800 2000	C Sheet steel with surface finish and an epoxy polyester powder coating	As per RAL colour chart Structured colours Metallic paint colours See colour chart, page 41	R Rectangular holes C Round holes	1 Same as cover colour 9 Grille in different colour	V With corner thermostatic valve, bottom connection	L Left side R Right side	S Water piping cover	Empty position for standard A In non-standard heater configurations

► Other options, see page 43.

TZA Fan-operated self-standing convector heaters

Fan-operated self-standing convector with rounded edges is the ideal choice for spaces where safety is a priority – whether in homes with children, nurseries, schools or healthcare facilities. The smooth lines of the cover minimise the risk of injury on contact without compromising design or performance. Inside, a powerful heating unit with automatic control responds smoothly to changes in room temperature and in the heating/cooling system. Intelligent fan speed control ensures quiet operation and rapid achievement of the desired comfort.

Operation is simple and intuitive – via the colour touch screen ergonomically positioned on the top of the housing for easy access. The convector is available in a wide range of RAL colours as well as metallic finishes. Colour combinations of individual components – grille, side panels and front panel – can be customised to your requirements.

- Low-temperature heating
- Non-condensing cooling
- Compatible with heat-pump systems



Standard Equipment

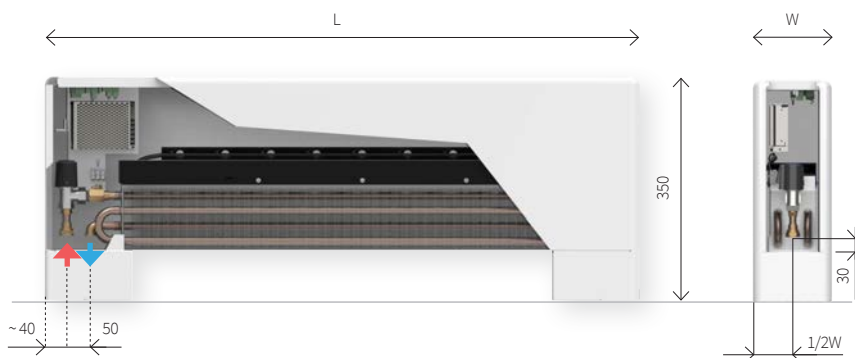
Cover	surface-treated steel sheet metal with an epoxy polyester powder coating
Grille	round or rectangular holes as per order specifications
Heat-exchanger	Al-Cu lamellar heat-exchanger with an air vent valve, 2 × G1/2" inner threads
Fan	modern high-efficiency 12 V DC fan
Control	integrated regulation
Mounting	cover stands for floor anchoring

Operating Conditions

Max. operating temp.	55 °C
Max. operating excess pressure	1 MPa (10 bar)
Protection	IP20
Ambient conditions	temperature T = +2 to +40 °C humidity Rh = 20 to 70%
Fan operating voltage	12 V DC

Convactor Heater Options and Size Variations

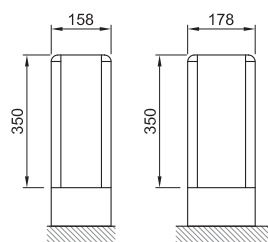
Standard valve connection V



* thermostatic head not supplied with the heater

Convactor heater size variations

Height H [mm]	350
Width W [mm]	158 178
Length L [mm]	800-2000

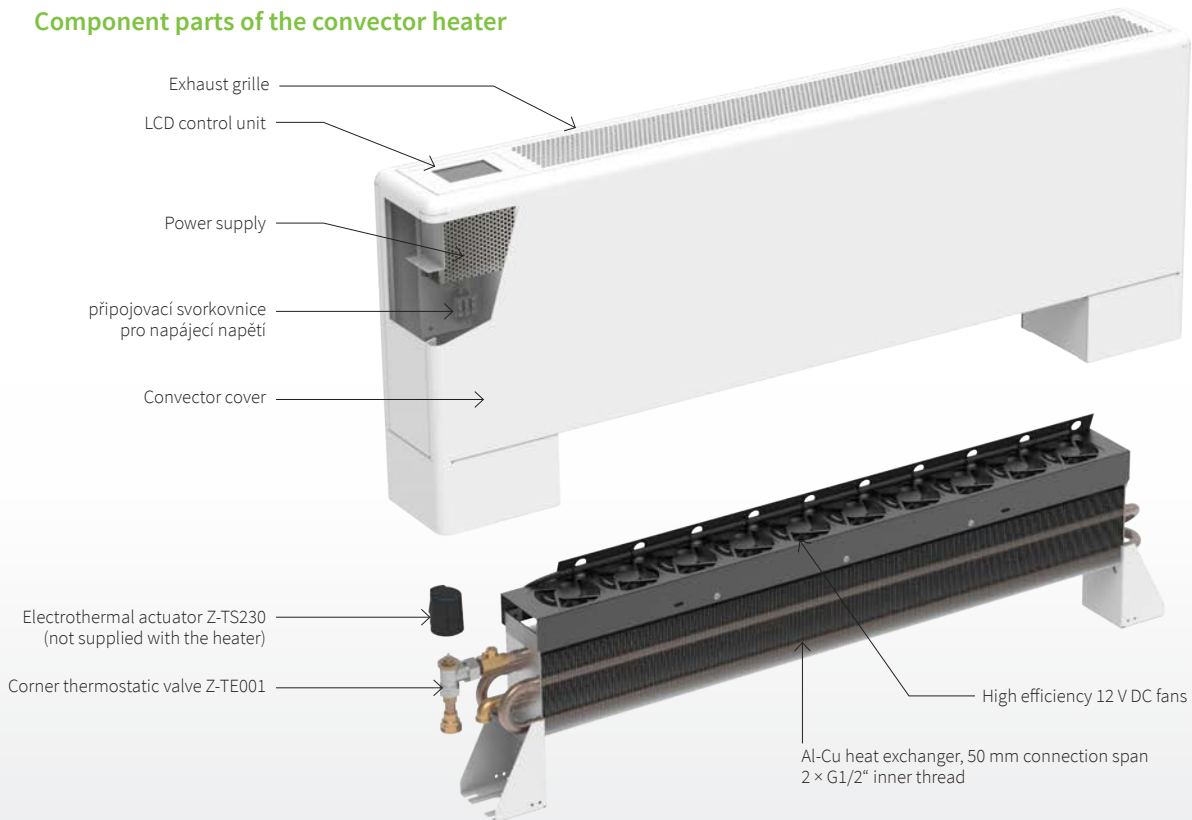


ECO&SAFE

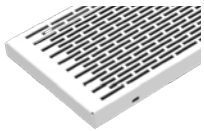
Energy saving

Fan convectors operate on safe voltage of 12 V DC. The fan motors have very low consumption of electric power. The speed is controlled continuously via a PWM control signal.

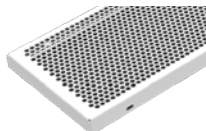
Component parts of the convector heater



Grilles



Grille R
- rectangular holes



Grille C
- round holes

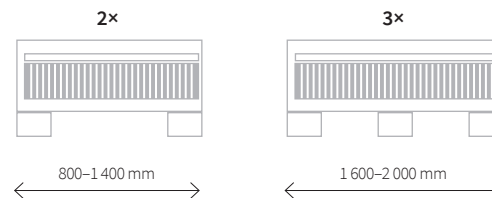
Stands

Stand S

- self-standing model
- cover water piping
- height 100 mm



Number of brackets as per the body length



Coding

TZA	0350	0158	1200	C	01	R	1	V	L	S	
Model	Height H [mm]	Width W [mm]	Length L [mm]	Material	Colour	Grille	Grille colour	Connection type	Connection side	Brackets	Atypical
TZA	0350	0158 0178	0800 1000 1200 1400 1600 1800 2000	C Sheet steel with surface finish and an epoxy polyester powder coating	As per RAL colour chart Structured colours Metallic paint colours See colour chart, page 41	R Rectangular holes C Round holes	1 Same as cover colour 9 Grille in different colour	V With corner thermostatic valve, bottom connection	L Left side R Right side	S Water piping cover	Empty position for standard A In non-standard heater configurations

► Other options, see page 43.

LZA, TZA - Fan-operated self-standing convector heaters heating output

LZA 0350 0138, TZA 0350 0158

45/40/20°C	Speed [-] / Heating output [W]				
Length [mm]	1	2	3	4	5
800	152	449	748	962	1116
1000	203	599	998	1282	1488
1200	254	749	1247	1603	1860
1400	304	898	1497	1923	2232
1600	355	1048	1746	2244	2604
1800	431	1272	2121	2725	3162
2000	482	1422	2370	3045	3534

Exponent n = 1,0168

LZA 0350 0168, TZA 0350 0178

45/40/20°C	Speed [-] / Heating output [W]				
Length [mm]	1	2	3	4	5
800	290	658	941	1185	1394
1000	436	987	1411	1777	2090
1200	581	1316	1881	2369	2787
1400	654	1480	2117	2665	3136
1600	799	1809	2587	3258	3833
1800	944	2138	3057	3850	4529
2000	1017	2302	3292	4146	4878

Exponent n = 1,0332

LZA, TZA - Fan-operated self-standing convector heaters cooling output

LZA 0350 0138, TZA 0350 0158

16/19/28°C	Speed [-] / Cooling output [W]				
Length [mm]	1	2	3	4	5
800	57	157	268	375	456
1000	76	210	357	500	608
1200	95	262	446	625	760
1400	114	314	536	750	912
1600	133	367	625	874	1064
1800	162	445	759	1062	1293
2000	181	498	848	1187	1445

LZA 0350 0168, TZA 0350 0178

16/19/28°C	Speed [-] / Cooling output [W]				
Length [mm]	1	2	3	4	5
800	116	264	377	475	559
1000	175	396	566	712	838
1200	233	528	754	950	1118
1400	262	593	849	1069	1257
1600	320	725	1037	1306	1537
1800	378	857	1226	1544	1816
2000	408	923	1320	1662	1956

Acoustic power [dB(A)]

LZA 0350 0138, TZA 0350 0158

Length [mm]	Speed [-] / Acoustic power [dB(A)]				
	1	2	3	4	5
800	20	29	37	43	48
1000	20	30	38	44	49
1200	21	30	39	45	50
1400	21	31	39	46	51
1600	21	31	40	47	52
1800	22	32	40	47	53
2000	22	32	41	48	53

LZA 0350 0168, TZA 0350 0178

Length [mm]	Speed [-] / Acoustic power [dB(A)]				
	1	2	3	4	5
800	28	35	45	52	56
1000	28	36	47	54	58
1200	29	37	48	55	59
1400	30	38	48	56	61
1600	30	38	49	57	61
1800	30	39	50	58	62
2000	31	39	50	58	63

Electrical power input

LZA 0350 0138, TZA 0350 0158

Length [mm]	Speed [-] / Power input [W]				
	1	2	3	4	5
800	4	5	7	9	13
1000	4	6	8	11	16
1200	4	6	8	12	18
1400	5	6	9	14	21
1600	5	7	10	16	24
1800	5	7	11	18	27
2000	5	8	12	19	30

LZA 0350 0168, TZA 0350 0178

Length [mm]	Speed [-] / Power input [W]				
	1	2	3	4	5
800	4	6	9	13	20
1000	5	8	11	16	24
1200	11	16	22	34	52
1400	13	19	27	42	63
1600	16	24	34	52	79
1800	18	27	39	60	91
2000	21	31	44	68	103

LZA, TZA - Heating output for another temperature gradient

To obtain the heating output for a different temperature gradient multiply heating output value at 45/40/20 °C by the below mentioned factor **f**.

Example

Heating output TZA 0350 0178 1400 for temp. gradient 35/30 °C, speed 3

1. Output 45/40/20 °C = 2117 W
2. Factor from the table for 35/30/20 °C at 178 width: f=0,540
3. Output 35/30/20 °C = f x 2117 = 1143 W

Height [mm]	50/40 °C	45/35 °C	35/30 °C
0350 0138	1,102	0,872	0,545
0350 0158			
0350 0168	1,104	0,870	0,540
0350 0178			

Room temperature 20 °C

Heating water flow rate through exchanger

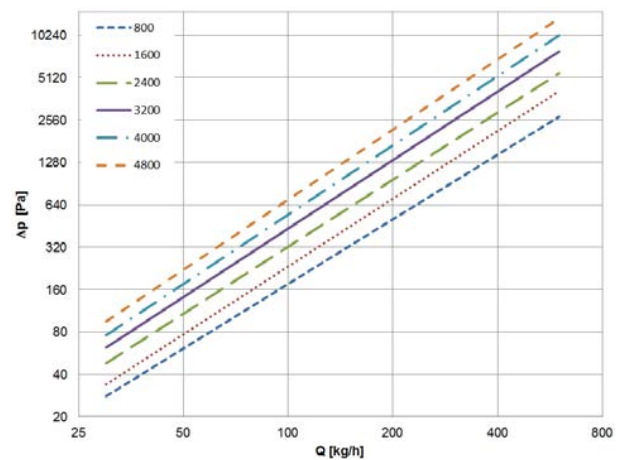
To reach the required heating output we determine the desired flow of heating water through the convector exchanger. We calculate it from heating output of the convector for the selected input and output temperatures of heating water.

$$M = 0,86 * Q / (T1-T2) \text{ [kg / h]}$$

- M [kg/h] mass rate of flow, heating water flowing through exchanger
- Q [W] convector heating output
- T1-T2 [°C] difference between input and output temperature
- 0,86 invariable for recalculation of units

Table of hydraulic parameters of exchangers

For hydraulic parameters of exchangers see the page 36.



Regulation

The display shows both the current and the set room temperature. The convector unit operates according to the selected mode: PROGRAM, MANUAL, BOOST 10 MIN, BOOST 20 MIN or STANDBY.

PROGRAM

The convector heater operates in automatic mode. Up to four time segments can be set to repeat daily. Each segment is defined by its time and temperature values. When the system switches from one segment to another, the room temperature requirement changes, with the fans automatically controlled to achieve the optimum comfort temperature as quickly as possible.

MANUAL

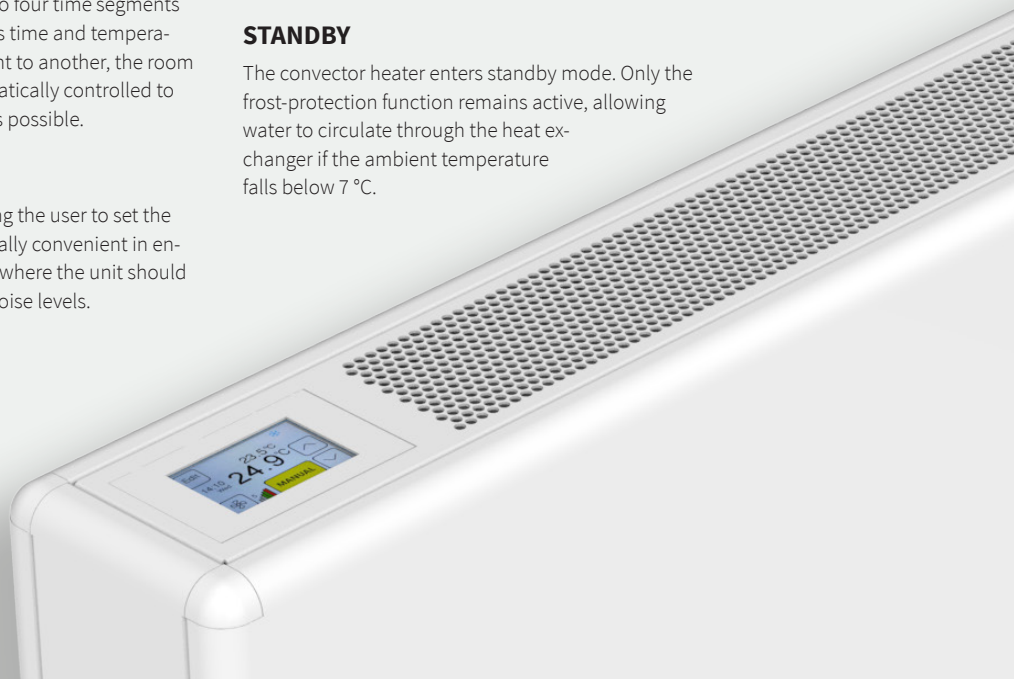
The convector heater operates in manual mode, allowing the user to set the desired room temperature and fan speed. This is especially convenient in environments such as schools, theatres or reading rooms, where the unit should run continuously to ensure consistent output and low noise levels.

BOOST 10 MIN, BOOST 20 MIN

The BOOST function is designed for a quick warm-up or cool-down of the interior after returning from holiday, for example. In this mode, the water flow is fully open and the fans run at maximum speed. After the time period has elapsed, the unit resumes its previous mode of operation.

STANDBY

The convector heater enters standby mode. Only the frost-protection function remains active, allowing water to circulate through the heat exchanger if the ambient temperature falls below 7 °C.



LSK Wall-mounted convectors with natural convection

Wall-mounted convector heaters with smooth front covers will provide an aesthetic complement to your interior. Convection heating is especially suitable for settings where prompt response to temperature fluctuations and low surface temperature are required.

Each heater can be fitted with a variety of exhaust grilles and you can select different colour combinations for individual components of the cover.

For a clean look, select a heater-to-wall connection option.

- Shopping malls, car showrooms, airport lounges
- Offices, administrative buildings
- Hotels
- Entrance areas, lobbies



Standard Equipment

Cover	surface-treated steel sheet metal with an epoxy polyester powder coating
Grille	round or rectangular holes as per order specifications; the linear grille* is securely attached to the cover
Heat-exchanger	Al-Cu lamellar heat-exchanger with a air vent valve, 2 × G1/2" inner connection threads
Valve	axial thermostatic valve, M30 x 1.5 thread with a 2.5 mm pitch (not supplied with side connection configuration)
Mounting	wall brackets with connecting elements

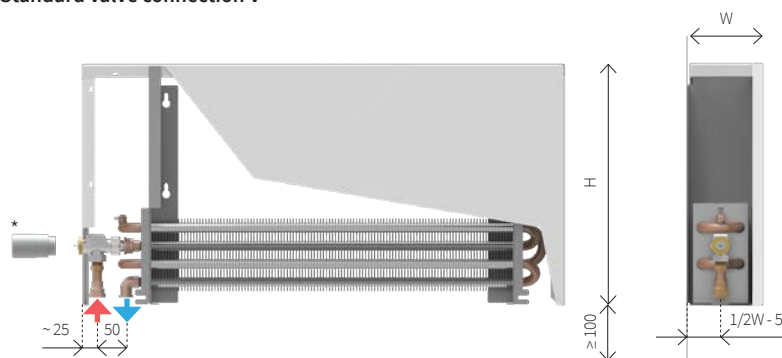
* not available for height 165 mm

Operating Conditions

Max. operating temp.	110 °C
Max. operating excess pressure	1 MPa (10 bar)
Protection	IP20
Ambient conditions	temperature T = +2 to +40 °C humidity Rh = 20 to 70 %

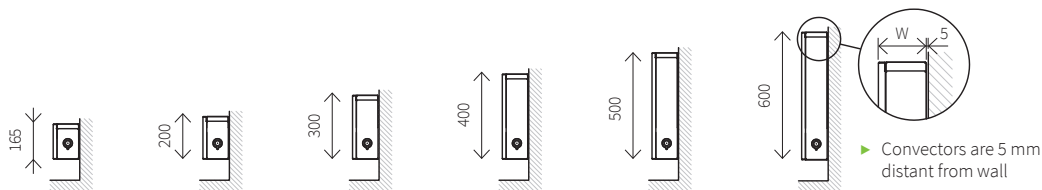
Convector Heater Options and Size Variations

Standard valve connection V



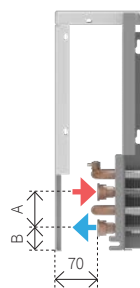
* thermostatic head not supplied with the heater
** not available for W = 82 mm

Convector heater size variations



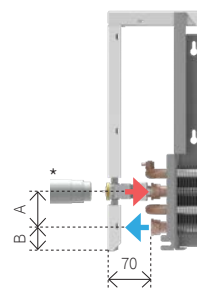
Height H [mm]	165	200	300	400	500	600
Width W [mm]	122	122	122	122	122	122
	182	182	182	182	182	182
	242	242	242	242	242	242
Length L [mm]	400-2800	400-2800	400-2800	400-2000	400-1600	400-1600

Side connection B

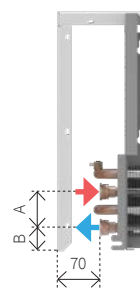


Valve connection to the wall Y**

Connection: 2 × G1/2" inner

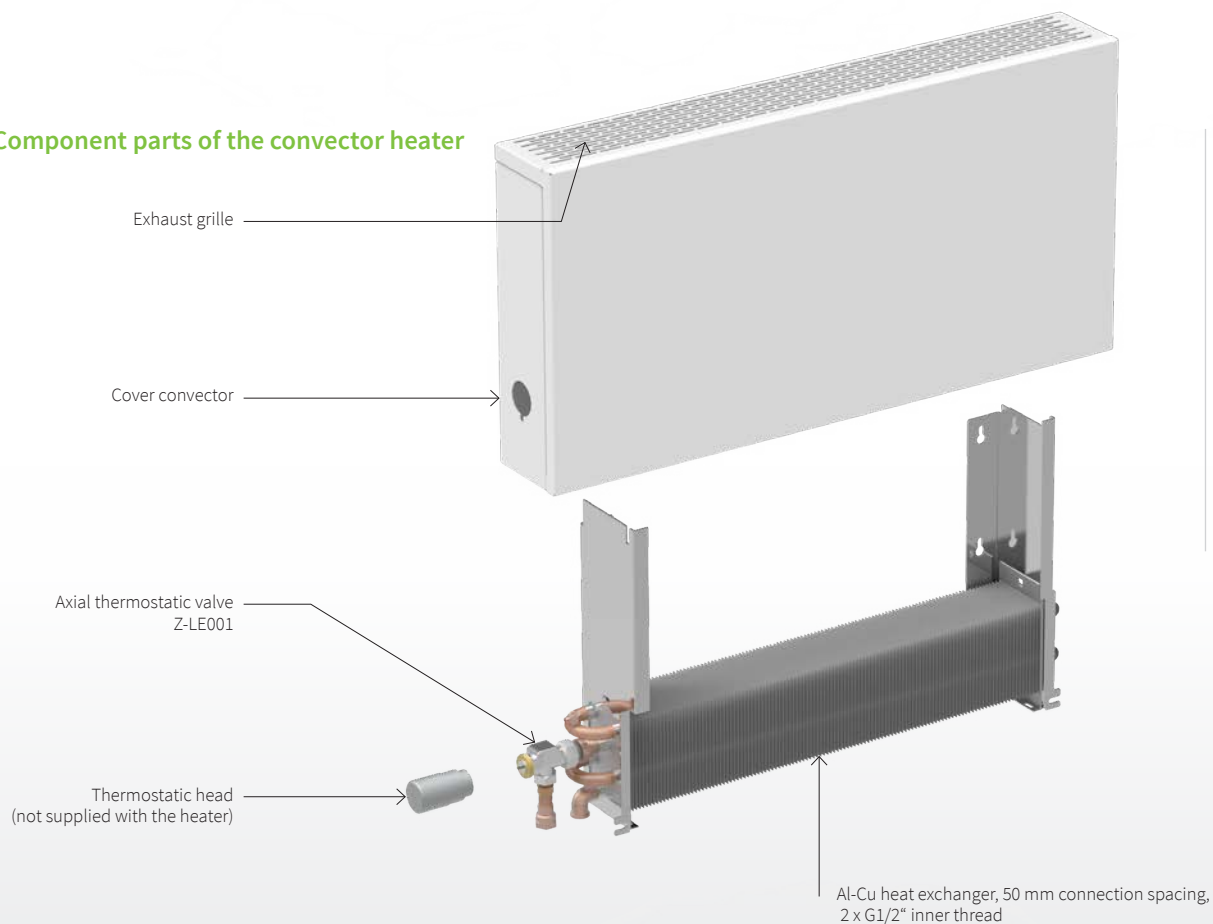


Hidden connection to the wall Z**



H [mm]	W = 82 mm		W ≥ 122 mm	
	A [mm]	B [mm]	A [mm]	B [mm]
165	-	-	60	40
200, 300	60	80	60	40
400, 500, 600	180	80	60	40

Component parts of the convector heater



Accessories

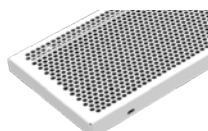


► Details of accessories on the page 6

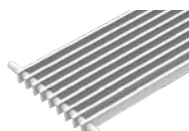
Grilles



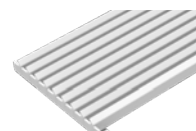
Grille R
- rectangular holes



Grille C
- round holes



Grille L
- linear grille
(Not available for height 165 mm.)

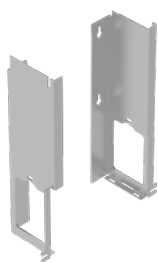


Grille P
- linear steel grille

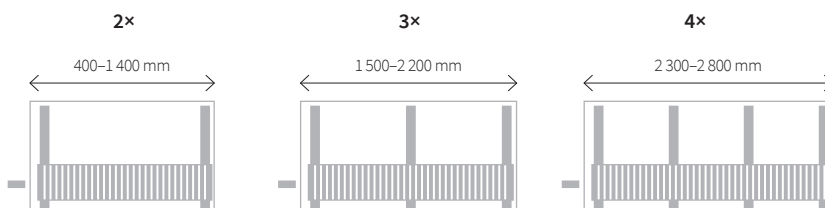
Brackets

W brackets

Wall brackets for attaching heat exchanger and convector cover are parts of the convector.



Number of brackets as per the body length



Coding

LSK	0300	0182	1200	C	01	R	1	V	L	W	
Model	Height H [mm]	Width W [mm]	Length L [mm]	Material	Colour	Grille	Grille colour	Connection type	Connection side	Brackets	Atypical
LSK	0165 0200 0300 0400 0500 0600	0082 0122 0182 0242	0400 0500 ... 1200 1400 ... 2800	C Sheet steel with surface finish and an epoxy polyester powder coating	As per RAL colour chart Structured colours Metallic paint colours See colour chart, page 41	R rectangular holes C round holes L linear aluminium P linear steel	1 Same as cover colour 9 Grille in different colour	V With valve, bottom connection B Side connection Y With valve, connection to the wall (n/a for W = 82 mm) Z connection to the wall without a hole in the cover (n/a for W = 82 mm)	L Left side R Right side	W brackets for wall mounting	Empty position for standard A In non-standard heater configurations

► Other options, see page 43.

TSK Wall-mounted convectors with natural convection

Wall-mounted convector heaters with smooth front panelling and rounded edges will prove an excellent addition to both modern and historic interiors as well as to environments with increased safety requirements.

Convection heating is especially suitable for settings where prompt response to temperature fluctuations and low surface temperature are required. For a clean look, select a heater-to-wall connection option.

- Schools, preschools
- Hospitals, retirement homes
- Institutions for people with reduced mobility
- Family houses
- Entrance areas, lobbies
- Shopping malls, airport lounges
- Hotels



Standard Equipment

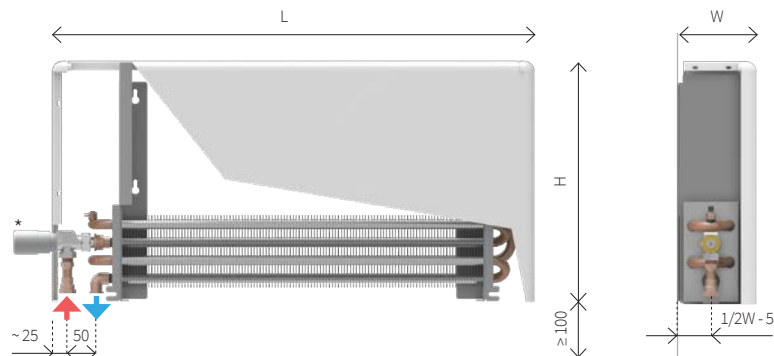
Cover	surface-treated steel sheet metal with an epoxy polyester powder coating
Grille	round or rectangular holes as per order specifications; grille is securely attached to the cover
Heat-exchanger	Al-Cu lamellar heat-exchanger with a air vent valve, 2 × G1/2" inner connection threads
Valve	axial thermostatic valve, M30 x 1.5 thread with a 2.5 mm pitch (not supplied with side connection configuration)
Mounting	wall brackets with connecting elements

Operating Conditions

Max. operating temp.	110 °C
Max. operating excess pressure	1 MPa (10 bar)
Protection	IP20
Ambient conditions	temperature T = +2 to +40 °C humidity Rh = 20 to 70 %

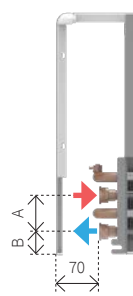
Convector Heater Options and Size Variations

Standard valve connection V



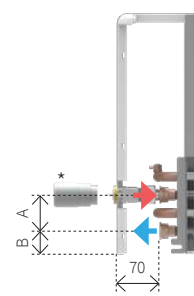
* thermostatic head not supplied with the heater
** not available for W = 82 mm

Side connection B

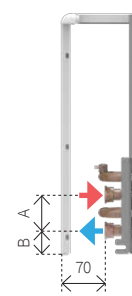


Valve connection to the wall Y**

Connection: 2 × G1/2" inner

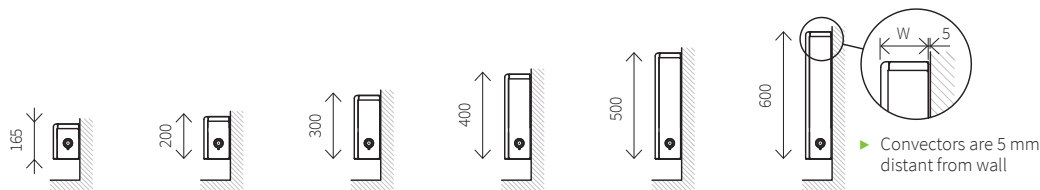


Hidden connection to the wall Z**



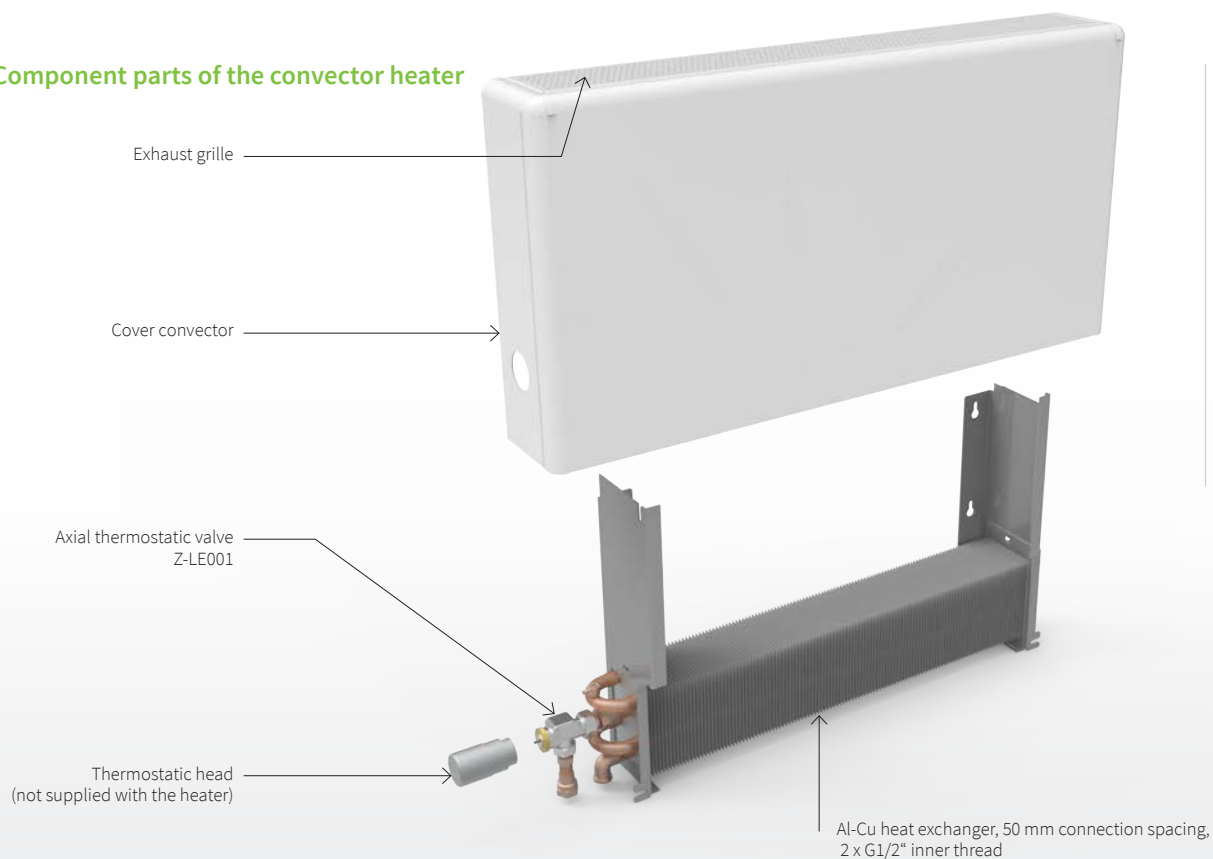
H [mm]	W = 82 mm		W ≥ 122 mm	
	A [mm]	B [mm]	A [mm]	B [mm]
165	-	-	-	-
200, 300	60	80	60	40
400, 500, 600	180	80	-	-

Convector heater size variations



Height H [mm]	165	200	300	400	500	600
Width W [mm]	122	122	122	122	122	122
	182	182	182	182	182	182
	242	242	242	242	242	242
Length L [mm]	400-2800	400-2800	400-2800	400-2800	400-2800	400-2800

Component parts of the convector heater



Accessories

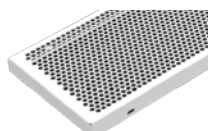


► Details of accessories on the page 6

Grilles



Grille R
- rectangular holes



Grille C
- round holes

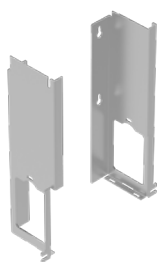
tip Order grilles and stands in colours that vary from the cover to brighten up your interior

► Options and grille details, page 5

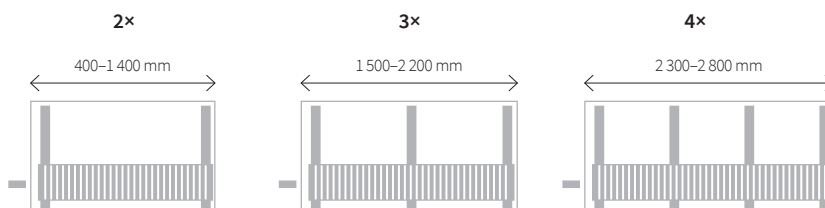
Brackets

W brackets

Wall brackets for attaching heat exchanger and convector cover are parts of the convector.



Number of brackets as per the body length



Coding

TSK	0300	0182	1200	C	01	R	1	V	L	W	
Model	Height H [mm]	Width W [mm]	Length L [mm]	Material	Colour	Grille	Grille colour	Connection type	Connection side	Brackets	Atypical
TSK	0165 0200 0300 0400 0500 0600	0082 0182 0242	0400 0500 ... 1200 1400 ... 2800	C Sheet steel with surface finish and an epoxy polyester powder coating	As per RAL colour chart Structured colours Metallic paint colours See colour chart, page 41	R rectangular holes C round holes	1 Same as cover colour 9 Grille in different colour	V With valve, bottom connection B Side connection Y With valve, connection to the wall (n/a for W = 82 mm) Z connection to the wall without a hole in the cover (n/a for W = 82 mm)	L Left side R Right side	W brackets for wall mounting	Empty position for standard A In non-standard heater configurations

► Other options, see page 43

LSK, TSK - Wall-mounted convectors heating output

Width 82 mm

75/65/20 °C	Height [mm] / Heating output [W]				
Length [mm]	200	300	400	500	600
400	87	105	125	139	150
500	130	158	188	208	225
600	174	210	251	277	300
700	217	262	313	346	375
800	261	315	376	415	450
900	304	367	439	485	525
1000	348	420	501	554	600
1100	391	472	564	623	675
1200	434	525	627	692	750
1400	521	630	752	831	899
1600	608	735	877	969	1 049
1800	695	840	1 003	1 108*	1 199*
2000	782	945	1 128	1 246*	1 349*
2200	869	1 050	1 253*	1 385*	1 499*
2400	956	1 155	1 379*	1 523*	1 649*
2600	1 043	1 260	1 504*	1 662*	1 799*
2800	1 129	1 365	1 629*	1 800*	1 949*
Exponent n [-]	1,45	1,43	1,41	1,41	1,40

55/45/20 °C	Height [mm] / Heating output [W]				
Length [mm]	200	300	400	500	600
400	41	51	61	68	73
500	62	76	92	101	110
600	83	101	122	135	146
700	104	127	153	169	183
800	124	152	183	203	220
900	145	177	214	236	256
1000	166	202	244	270	293
1100	187	228	274	304	329
1200	207	253	305	337	366
1400	249	304	366	405	439
1600	290	354	427	472	512
1800	332	405	488	540*	585*
2000	373	456	549	607*	659*
2200	414	506	610*	675*	732*
2400	456	557	671*	742*	805*
2600	497	607	732*	810*	878*
2800	539	658	793*	877*	951*
Exponent n [-]	1,45	1,43	1,41	1,41	1,40

* applies only to TZK models

Width 122 mm

75/65/20 °C	Height [mm] / Heating output [W]					
Length [mm]	165	200	300	400	500	600
400	127	137	163	186	207	228
500	190	206	244	279	311	342
600	254	274	326	372	415	456
700	317	343	407	465	518	570
800	381	411	489	558	622	684
900	444	480	570	650	726	798
1000	507	548	652	743	829	912
1100	571	617	733	836	933	1026
1200	634	686	815	929	1 036	1140
1400	761	823	977	1 115	1 244	1368
1600	888	960	1 140	1 301	1 451	1596
1800	1 015	1 097	1 303	1 487	1 658*	1824*
2000	1 141	1 234	1 466	1 672	1 866*	2052*
2200	1 268	1 371	1 629	1 858*	2 073*	2280*
2400	1 395	1 508	1 792	2 044*	2 280*	2508*
2600	1 522	1 645	1 955	2 230*	2 487*	2736*
2800	1 649	1 782	2 118	2 416*	2 695*	2963*
Exponent n [-]	1,4	1,4	1,41	1,42	1,43	1,43

55/45/20 °C	Height [mm] / Heating output [W]					
Length [mm]	165	200	300	400	500	600
400	62	67	79	90	100	110
500	93	101	119	135	150	164
600	124	134	159	180	200	219
700	155	168	198	225	250	274
800	186	201	238	270	300	329
900	217	235	278	315	350	384
1000	248	268	317	360	400	438
1100	279	302	357	405	450	493
1200	310	335	397	450	500	548
1400	373	402	476	541	600	658
1600	435	469	555	631	700	767
1800	497	536	634	721	801*	877*
2000	559	603	714	811	901*	986*
2200	621	670	793	901*	1 001*	1096*
2400	683	737	872	991*	1 101*	1206*
2600	745	804	952	1 081*	1 201*	1315*
2800	807	871	1 031	1 171*	1 301*	1425*
Exponent n [-]	1,4	1,4	1,41	1,42	1,43	1,43

* applies only to TZK models

Width 182 mm

75/65/20 °C	Height [mm] / Heating output [W]					
Length [mm]	165	200	300	400	500	600
400	215	232	276	318	359	401
500	322	348	415	477	539	601
600	429	464	553	636	718	801
700	537	580	691	795	898	1002
800	644	695	829	954	1 078	1202
900	752	811	967	1 113	1 257	1402
1000	859	927	1 105	1 272	1 437	1603
1100	966	1 043	1 244	1 432	1 616	1803
1200	1 074	1 159	1 382	1 591	1 796	2003
1400	1 288	1 391	1 658	1 909	2 155	2404
1600	1 503	1 623	1 935	2 227	2 514	2805
1800	1 718	1 854	2 211	2 545	2 874*	3 205*
2000	1 932	2 086	2 487	2 863	3 233*	3 606*
2200	2 147	2 318	2 764	3 181*	3 592*	4 007*
2400	2 362	2 550	3 040	3 499*	3 951*	4 407*
2600	2 577	2 782	3 316	3 817*	4 310*	4 808*
2800	2 791	3 013	3 593	4 135*	4 669*	5 209*
Exponent n [-]	1,4	1,4	1,41	1,43	1,44	1,46

55/45/20 °C	Height [mm] / Heating output [W]					
Length [mm]	165	200	300	400	500	600
400	105	113	134	153	172	190
500	158	170	201	230	258	286
600	211	227	268	307	344	381
700	263	283	335	383	430	476
800	316	340	403	460	516	571
900	368	397	470	537	602	666
1000	421	453	537	613	688	761
1100	474	510	604	690	774	857
1200	526	567	671	767	859	952
1400	632	680	805	920	1 031	1 142
1600	737	793	939	1 073	1 203	1 333
1800	842	907	1 073	1 227	1 375*	1 523*
2000	947	1 020	1 207	1 380	1 547*	1 713*
2200	1 052	1 133	1 342	1 533*	1 719*	1 904
2400	1 158	1 247	1 476	1 687*	1 891*	2 094*
2600	1 263	1 360	1 610	1 840*	2 063*	2 284*
2800	1 368	1 473	1 744	1 993*	2 234*	2 475*
Exponent n [-]	1,4	1,4	1,41	1,43	1,44	1,46

* applies only to TZK models

LSK, TSK - Wall-mounted convectors heating output

Width 242 mm

75/65/20 °C		Height [mm] / Heating output [W]				
Length [mm]	165	200	300	400	500	600
400	316	333	384	444	512	590
500	474	499	577	666	767	884
600	632	665	769	887	1 023	1 179
700	790	831	961	1 109	1 279	1 474
800	947	998	1 153	1 331	1 535	1 769
900	1 105	1 164	1 346	1 553	1 791	2 064
1000	1 263	1 330	1 538	1 775	2 047	2 358
1100	1 421	1 496	1 730	1 997	2 302	2 653
1200	1 579	1 663	1 922	2 218	2 558	2 948
1400	1 895	1 995	2 307	2 662	3 070	3 538
1600	2 211	2 328	2 691	3 106	3 581	4 127
1800	2 526	2 660	3 075	3 550	4 093*	4 717*
2000	2 842	2 992	3 460	3 993	4 605*	5 306*
2200	3 158	3 325	3 844	4 437*	5 116*	5 896*
2400	3 474	3 657	4 229	4 881*	5 628*	6 486*
2600	3 790	3 990	4 613	5 324*	6 139*	7 075*
2800	4 105	4 322	4 997	5 768*	6 651*	7 665*
Exponent n [-]	1,39	1,4	1,43	1,47	1,5	1,54

55/45/20 °C		Height [mm] / Heating output [W]				
Length [mm]	165	200	300	400	500	600
400	156	163	185	210	237	269
500	233	244	277	314	356	403
600	311	326	370	419	475	537
700	389	407	462	524	593	671
800	467	489	555	629	712	805
900	545	570	647	733	830	940
1000	623	651	739	838	949	1 074
1100	700	733	832	943	1 068	1 208
1200	778	814	924	1 048	1 186	1 342
1400	934	977	1 109	1 257	1 423	1 611
1600	1 089	1 140	1 294	1 467	1 661	1 879
1800	1 245	1 303	1 479	1 676	1 898*	2 148*
2000	1 401	1 465	1 664	1 886	2 135*	2 416*
2200	1 556	1 628	1 849	2 095*	2 372*	2 685*
2400	1 712	1 791	2 033	2 305*	2 610*	2 953*
2600	1 868	1 954	2 218	2 514*	2 847*	3 222*
2800	2 023	2 117	2 403	2 724*	3 084*	3 490*
Exponent n [-]	1,39	1,4	1,43	1,47	1,5	1,54

* applies only to TSK models

LSK, TSK - Heating output for another temperature gradient

To obtain the heating output for a different temperature gradient multiply heating output value at 75/65/20 °C by the below mentioned factor **f**.

Width 82 mm					
Height [mm]	90/70 °C	82/71 °C	70/55 °C	70/50 °C	50/40 °C
200	1,303	1,194	0,790	0,701	0,359
300	1,298	1,191	0,793	0,705	0,364
400	1,293	1,188	0,795	0,708	0,369
500	1,293	1,188	0,795	0,708	0,369
600	1,291	1,187	0,797	0,710	0,372

Room temperature 20 °C

Width 122 mm					
Height [mm]	90/70 °C	82/71 °C	70/55 °C	70/50 °C	50/40 °C
165	1,291	1,187	0,797	0,710	0,372
200	1,291	1,187	0,797	0,710	0,372
300	1,293	1,188	0,795	0,708	0,369
400	1,295	1,190	0,794	0,707	0,367
500	1,298	1,191	0,793	0,705	0,364
600	1,298	1,191	0,793	0,705	0,364

Room temperature 20 °C

Width 182 mm					
Height [mm]	90/70 °C	82/71 °C	70/55 °C	70/50 °C	50/40 °C
165	1,291	1,187	0,797	0,710	0,372
200	1,291	1,187	0,797	0,710	0,372
300	1,293	1,188	0,795	0,708	0,369
400	1,298	1,191	0,793	0,705	0,364
500	1,300	1,192	0,791	0,703	0,361
600	1,305	1,195	0,789	0,700	0,356

Room temperature 20 °C

Width 242 mm					
Height [mm]	90/70 °C	82/71 °C	70/55 °C	70/50 °C	50/40 °C
165	1,288	1,171	0,798	0,712	0,374
200	1,291	1,172	0,797	0,710	0,372
300	1,298	1,176	0,793	0,705	0,364
400	1,307	1,181	0,787	0,698	0,354
500	1,315	1,185	0,784	0,693	0,346
600	1,324	1,191	0,779	0,686	0,337

Room temperature 20 °C

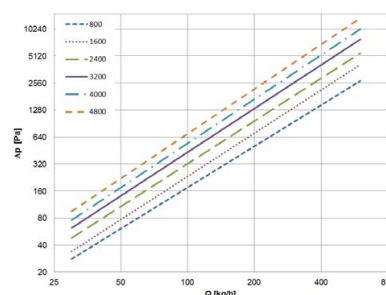
Example

Heating output of the convector LSK 0200 0122 2000 for temperature gradient 70/55 °C

1. Output 75/65/20 °C = 1234 W
2. Factor from the table for 70/55/20 °C at 122 width: f = 0.797
3. Output 70/55/20 °C = f x 1234 = 983 W

Table of hydraulic parameters of exchangers

For hydraulic parameters of exchangers see the page 50.



LSA Fan-operated wall-mounted convector heaters

Fan-operated wall-mounted heaters are distinctive for their compact appearance. They operate as separate independent units, constantly monitoring the ambient temperature and the temperature of the heating/cooling medium in the lamellar heat exchanger. All input data are analysed by the control module, adjusting the convector function accordingly. It opens/closes the water flow and regulates the fan speed until the desired room temperature is reached. The mode and required parameters are set using a colour touch screen, located on the top of the housing, next to the exhaust grille.

The cover is available in a range of RAL colours, but also in metallic options. Individual component colours can be combined (grille, side panel, front panel).

- Low-temperature heating
- Non-condensing cooling
- Compatible with heat-pump systems



Standard Equipment

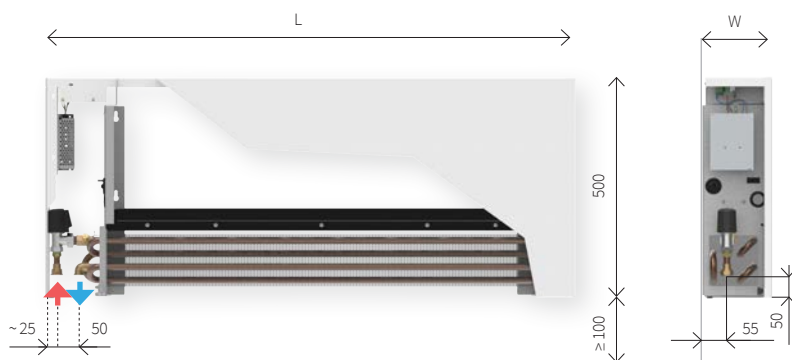
Cover	surface-treated steel sheet metal with an epoxy polyester powder coating
Grille	round or rectangular holes as per order specifications
Heat-exchanger	Al-Cu lamellar heat-exchanger with an air vent valve, 2 × G1/2" inner threads
Fan	modern high-efficiency 12 V DC fan
Control	integrated regulation
Mounting	wall brackets with connecting elements

Operating Conditions

Max. operating temp.	55 °C
Max. operating excess pressure	1 MPa (10 bar)
Protection	IP20
Ambient conditions	temperature T = +2 to +40 °C humidity Rh = 20 to 70%
Fan operating voltage	12 V DC

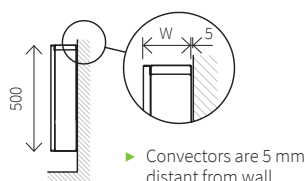
Convactor Heater Options and Size Variations

Standard valve connection V



Convactor heater size variations

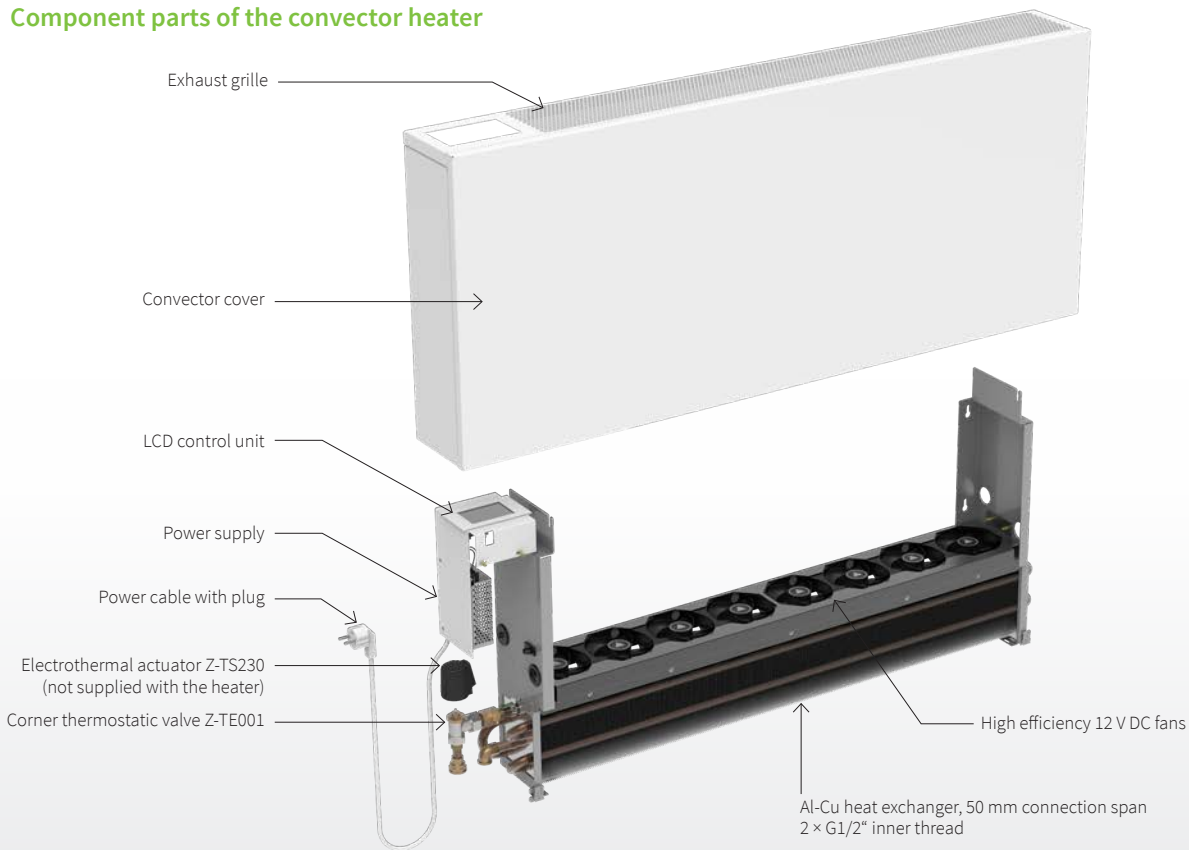
Height H [mm]	500
Width W [mm]	122 152
Length L [mm]	800-2000



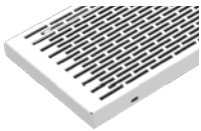
Energy saving

Fan convectors operate on safe voltage of 12 V DC. The fan motors have very low consumption of electric power. The speed is controlled continuously via a PWM control signal.

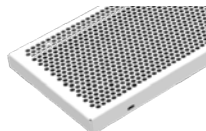
Component parts of the convector heater



Grilles



Grille R
- rectangular holes

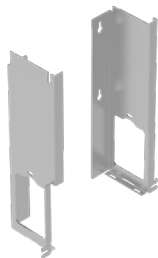


Grille C
- round holes

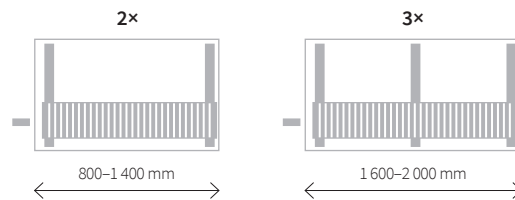
Brackets

W brackets

Wall brackets for attaching heat exchanger and convector cover are parts of the convector.



Number of brackets as per the body length



Coding

LSA	0500	0152	1200	C	01	R	1	V	L	W	
Model	Height H [mm]	Width W [mm]	Length L [mm]	Material	Colour	Grille	Grille colour	Connection type	Connection side	Stands	Atypical
LSA	0500	0122 0152	0800 1000 1200 1400 1600 1800 2000	C Sheet steel with surface finish and an epoxy polyester powder coating	As per RAL colour chart Structured colours Metallic paint colours See colour chart, page 41	R Rectangular holes C Round holes	1 Same as cover colour 9 Grille in different colour	V With corner thermostatic valve, bottom connection, 50 mm spacing	L Left side R Right side	W Brackets for wall mounting	Empty position for standard A In non-standard heater configurations

► Other options, see page 43

TSA Fan-operated wall-mounted convector heaters

Fan-operated wall-mounted heaters are distinctive for their compact appearance and rounded edges. The rounding not only enhances the aesthetic appearance of the units, but it also improves safety in exposed areas. They are often installed in schools, preschools, and health and social facilities where injury prevention and hygiene requirements are more stringent. They operate as separate independent units, constantly monitoring the ambient temperature and the temperature of the heating/cooling medium in the lamellar heat exchanger. All input data are analysed by the control module, adjusting the convector function accordingly. It opens/closes the water flow and regulates the fan speed until the desired room temperature is reached. The mode and required parameters are set using a colour touch screen, located on the top of the housing, next to the exhaust grille.

The cover is available in a range of RAL colours, but also in metallic options. Individual component colours can be combined (grille, side panel, front panel).

- Low-temperature heating
- Non-condensing cooling
- Compatible with heat-pump systems

Standard Equipment

Cover	surface-treated steel sheet metal with an epoxy polyester powder coating
Grille	round or rectangular holes as per order specifications
Heat-exchanger	Al-Cu lamellar heat-exchanger with an air vent valve, 2 × G1/2" inner threads
Fan	modern high-efficiency 12 V DC fan
Control	integrated regulation
Mounting	wall brackets with connecting elements



ECO&SAFE | **12 VOLTAGE**

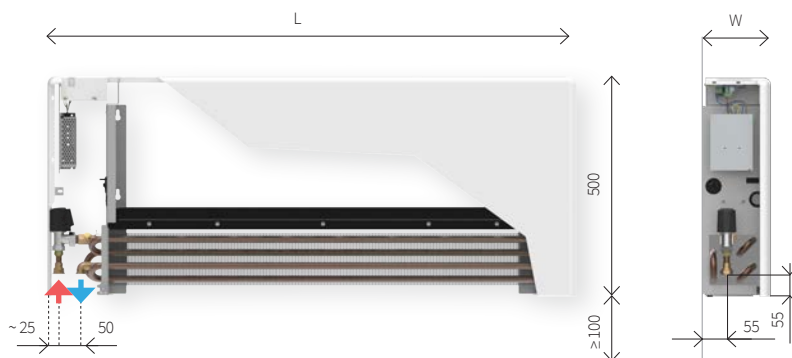


Operating Conditions

Max. operating temp.	55 °C
Max. operating excess pressure	1 MPa (10 bar)
Protection	IP20
Ambient conditions	temperature T = +2 to +40 °C humidity Rh = 20 to 70%
Fan operating voltage	12 V DC

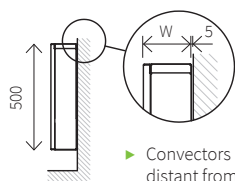
Convactor Heater Options and Size Variations

Standard valve connection V



Convactor heater size variations

Height H [mm]	500
Width W [mm]	132 152
Length L [mm]	800-2000



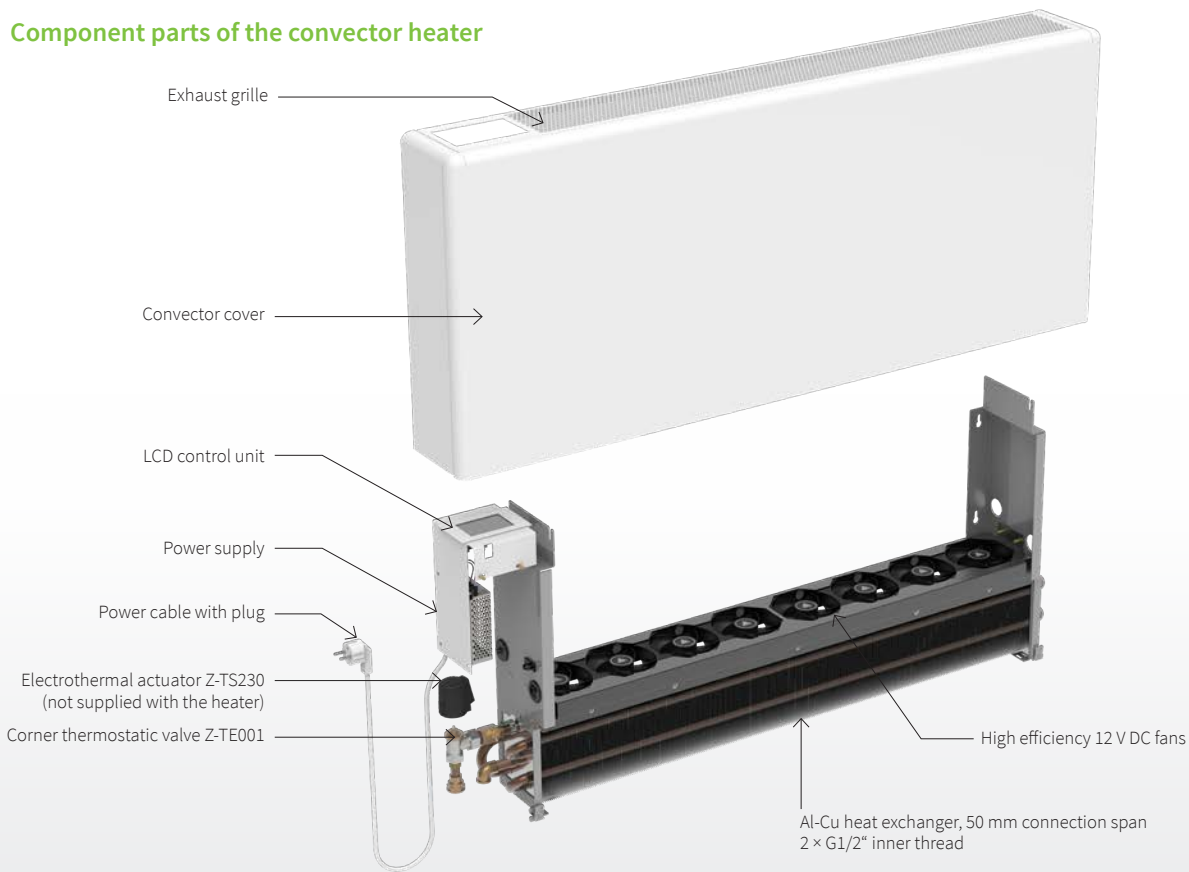
► Convectors are 5 mm distant from wall

ECO&SAFE

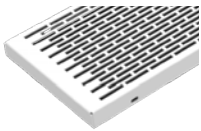
Energy saving

Fan convectors operate on safe voltage of 12 V DC. The fan motors have very low consumption of electric power. The speed is controlled continuously via a PWM control signal.

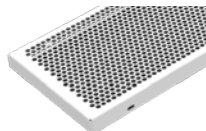
Component parts of the convector heater



Grilles



Grille R
- rectangular holes

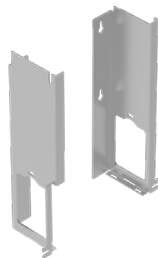


Grille C
- round holes

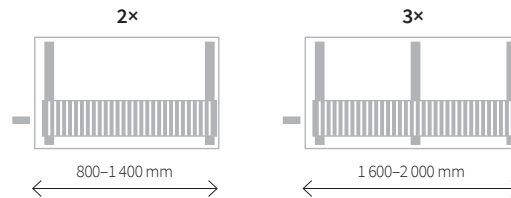
Brackets

W brackets

Wall brackets for attaching heat exchanger and convector cover are parts of the convector.



Number of brackets as per the body length



Coding

TSA	0500	0152	1200	C	01	R	1	V	L	W	
Model	Height H [mm]	Width W [mm]	Length L [mm]	Material	Colour	Grille	Grille colour	Connection type	Connection side	Stands	Atypical
TSA	0500	0132 0152	0800 1000 1200 1400 1600 1800 2000	C Sheet steel with surface finish and an epoxy polyester powder coating	As per RAL colour chart Structured colours Metallic paint colours See colour chart, page 41	R Rectangular holes C Round holes	1 Same as cover colour 9 Grille in different colour	V With corner thermostatic valve, bottom connection, 50 mm spacing	L Left side R Right side	W Brackets for wall mounting	Empty position for standard A In non-standard heater configurations

► Other options, see page 43

LSA, TSA - Fan-operated wall-mounted convectors heating output

LSA 0500 0122, TSA 0500 0132

45/40/20°C	Speed [-] / Heating output [W]				
Length [mm]	1	2	3	4	5
800	154	431	737	956	1109
1000	206	575	983	1274	1479
1200	257	719	1228	1593	1848
1400	308	863	1474	1911	2218
1600	360	1007	1720	2230	2588
1800	437	1222	2088	2708	3142
2000	488	1366	2334	3026	3512

Exponent n = 1,0168

LSA 0500 0152, TSA 0500 0152

45/40/20°C	Speed [-] / Heating output [W]				
Length [mm]	1	2	3	4	5
800	294	632	926	1177	1385
1000	442	948	1389	1766	2078
1200	589	1264	1852	2355	2770
1400	662	1422	2084	2649	3117
1600	809	1738	2547	3238	3809
1800	957	2054	3010	3826	4502
2000	1030	2212	3242	4121	4848

Exponent n = 1,0332

LSA, TSA - Fan-operated wall-mounted convectors cooling output

LSA 0500 0122, TSA 0500 0132

16/19/28°C	Speed [-] / Cooling output [W]				
Length [mm]	1	2	3	4	5
800	58	151	264	372	453
1000	77	201	352	497	605
1200	97	252	440	621	756
1400	116	302	527	745	907
1600	135	352	615	869	1058
1800	164	428	747	1055	1285
2000	183	478	835	1180	1436

LSA 0500 0152, TSA 0500 0152

16/19/28°C	Speed [-] / Cooling output [W]				
Length [mm]	1	2	3	4	5
800	118	253	371	472	555
1000	177	380	557	708	833
1200	236	507	743	944	1111
1400	265	570	836	1062	1250
1600	324	697	1021	1298	1527
1800	383	823	1207	1534	1805
2000	413	887	1300	1652	1944

Acoustic power [dB(A)]

LSA 0500 0122, TSA 0500 0132

Length [mm]	Speed [-] / Acoustic power [dB(A)]				
	1	2	3	4	5
800	20	29	37	43	48
1000	20	30	38	44	49
1200	21	30	39	45	50
1400	21	31	39	46	51
1600	21	31	40	47	52
1800	22	32	40	47	53
2000	22	32	41	48	53

LSA 0500 0152, TSA 0500 0152

Length [mm]	Speed [-] / Acoustic power [dB(A)]				
	1	2	3	4	5
800	28	35	45	52	56
1000	28	36	47	54	58
1200	29	37	48	55	59
1400	30	38	48	56	61
1600	30	38	49	57	61
1800	30	39	50	58	62
2000	31	39	50	58	63

Electrical power input

LSA 0500 0122, TSA 0500 0132

Length [mm]	Speed [-] / Power input [W]				
	1	2	3	4	5
800	4	5	7	9	13
1000	4	6	8	11	16
1200	4	6	8	12	18
1400	5	6	9	14	21
1600	5	7	10	16	24
1800	5	7	11	18	27
2000	5	8	12	19	30

LSA 0500 0152, TSA 0500 0152

Length [mm]	Speed [-] / Power input [W]				
	1	2	3	4	5
800	4	6	9	13	20
1000	5	8	11	16	24
1200	11	16	22	34	52
1400	13	19	27	42	63
1600	16	24	34	52	79
1800	18	27	39	60	91
2000	21	31	44	68	103

LSA, TSA - Heating output for another temperature gradient

To obtain the heating output for a different temperature gradient multiply heating output value at 45/40/20 °C by the below mentioned factor **f**.

Example

Heating output TSA 0500 0152 1400 for temp. gradient 35/30 °C, speed 3

1. Output 45/40/20 °C = 2084 W
2. Factor from the table for 35/30/20 °C at 152 width: f = 0,540
3. Output 35/30/20 °C = f x 2084 = 1125

Height [mm]	50/40 °C	45/35 °C	35/30 °C
0500 0122	1,102	0,872	0,545
0500 0132	1,102	0,872	0,545
0500 0152	1,104	0,870	0,540

Room temperature 20 °C

Heating water flow rate through exchanger

To reach the required heating output we determine the desired flow of heating water through the convector exchanger. We calculate it from heating output of the convector for the selected input and output temperatures of heating water.

$$M = 0,86 * Q / (T1-T2) \text{ [kg / h]}$$

M [kg/h] mass rate of flow, heating water flowing through exchanger

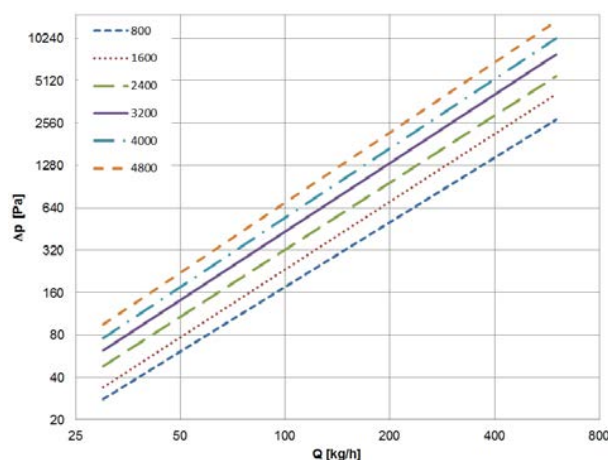
Q [W] convector heating output

T1-T2 [°C] difference between input and output temperature

0,86 invariable for recalculation of units

Table of hydraulic parameters of exchangers

For hydraulic parameters of exchangers see the page 36.



Regulation

The display shows both the current and the set room temperature.

The convector unit operates according to the selected mode: PROGRAM, MANUAL, BOOST 10 min, BOOST 20 min or STANDBY.

PROGRAM

The convector heater operates in automatic mode. Up to four time segments can be set to repeat daily. Each segment is defined by its time and temperature values. When the system switches from one segment to another, the room temperature requirement changes, with the fans automatically controlled to achieve the optimum comfort temperature as quickly as possible.

MANUAL

The convector heater operates in manual mode, allowing the user to set the desired room temperature and fan speed. This is especially convenient in environments such as schools, theatres or reading rooms, where the unit should run continuously to ensure consistent output and low noise levels.

BOOST 10 MIN, BOOST 20 MIN

The BOOST function is designed for a quick warm-up or cool-down of the interior after returning from holiday, for example. In this mode, the water flow is fully open and the fans run at maximum speed. After the time period has elapsed, the unit resumes its previous mode of operation.

STANDBY

The convector heater enters standby mode. Only the frost-protection function remains active, allowing water to circulate through the heat exchanger if the ambient temperature falls below 7 °C.



LBK Convector Bench

Self-standing convector with wooden bench. This unit allows you to sit down comfortably or put your belongings down.

It is ideal solution for public areas where the space in front of window is used both for heating and for people to rest i.e. waiting rooms, airports etc. Convactor bench is also perfectly suitable for the hallway in a family house.

This unit is a modified version of the LZK model. Solid beech board comes as standard, other type of wood like oak, maple or birch is available at request.

- public buildings, shopping malls
- hallways, gyms, dressing rooms
- lobbies, vestibules



Standard Equipment

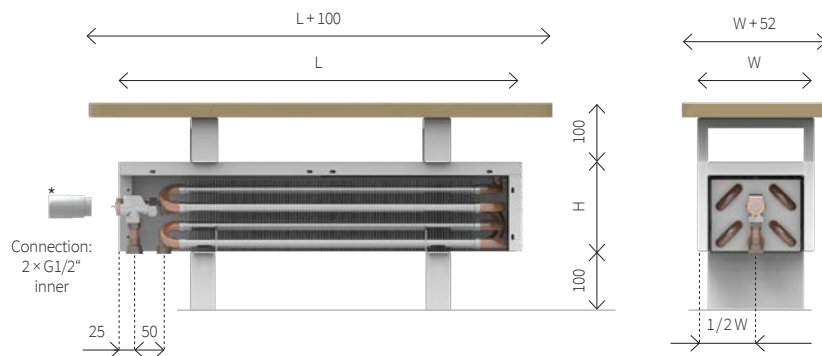
Cover	surface-treated steel sheet metal with an epoxy polyester powder coating
Grille	round or rectangular holes as per order specifications; grille is securely attached to the cover
Heat-exchanger	Al-Cu lamellar heat-exchanger with a air vent valve, 2 × G1/2" inner connection threads
Valve	axial thermostatic valve, M30 x 1.5 thread with a 2.5 mm pitch (not supplied with side connection configuration)
Mounting	floor anchor stands as per order specifications
Board	wooden board, beech massive, varnished, with supports

Operating Conditions

Max. operating temp.	110 °C
Max. operating excess pressure	1 MPa (10 bar)
Protection	IP20
Ambient conditions	temperature T = +2 to +40 °C humidity Rh = 20 to 70 %

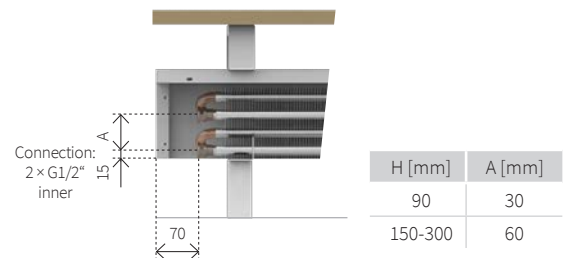
Convactor Heater Options and Size Variations

Standard valve connection V

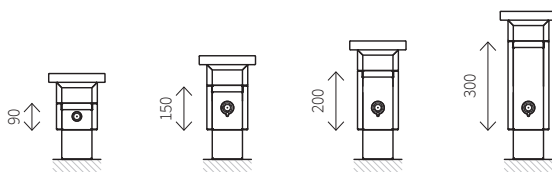


* Thermostatic head (not supplied with the heater)

Side connection B



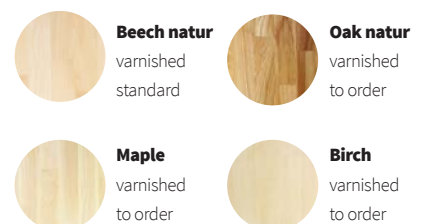
Convactor heater size variations



Height H [mm]	90	150	200	300
	138	138	138	138
Width W [mm]	198	198	198	198
	258	258	258	258
Length L [mm]	400-2800	400-2800	400-2800	400-2800

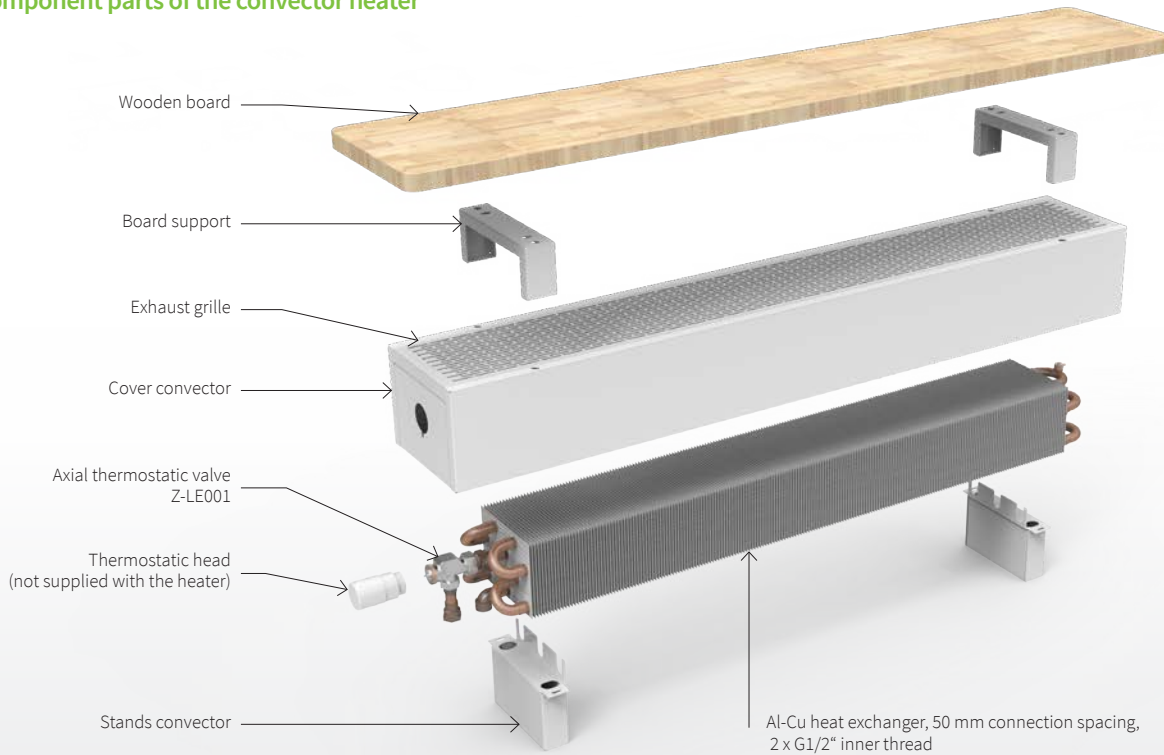
Available wooden top designs

The top boards come in four versions made of solid wood. All boards are coated with a clear varnish. For other options, including the use of different wood or your own board, contact the ISAN Technical Department.



Note: Please specify any wood finish other than Beech natur in a note following the order code.

Component parts of the convector heater

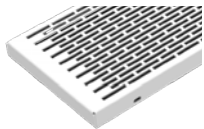


Accessories

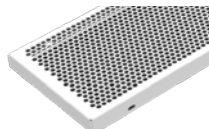


► Details of accessories on the page 6

Grilles



Grille R
- rectangular holes



Grille C
- round holes

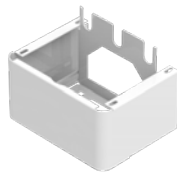
tip Order grilles and stands in colours that vary from the cover to brighten up your interior

► Colour design options and grille details, page 5

Stands

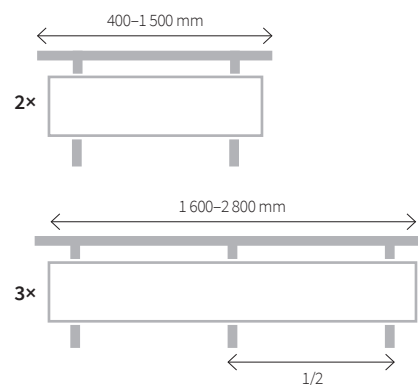


Stand K
- floor mounting
- inconspicuous
- height 100 mm



Stand S
- self-standing model
- cover water piping
- height 100 mm

Number of stands as per the body length



Coding

LBK	0150	0138	0400	C	01	R	1	V	L	K	
Model	Height H [mm]	Width W [mm]	Length L [mm]	Material	Colour	Grille	Grille colour	Connection type	Connection side	Stands	Atypical
LBK	0090 0150 0200 0300	0138 0198 0258	0400 0500 ... 1200 1400 ... 2800	C Sheet steel with surface finish and an epoxy polyester powder coating	As per RAL colour chart Structured colours Metallic paint colours See colour chart, page 41	R rectangular holes C round holes	1 Same as cover colour 9 Grille in different colour	V With axial thermostatic valve, bottom connection, 50 mm spacing B Side connection, 60 mm spacing, valve not included in the delivery	L Left side R Right side	K Inconspicuous, subtle S Water piping cover	Empty position for standard, wooden board: beech natur A In non-standard heater configurations or other wooden board (or both)

► Other options, see page 43

Atypical convector heaters

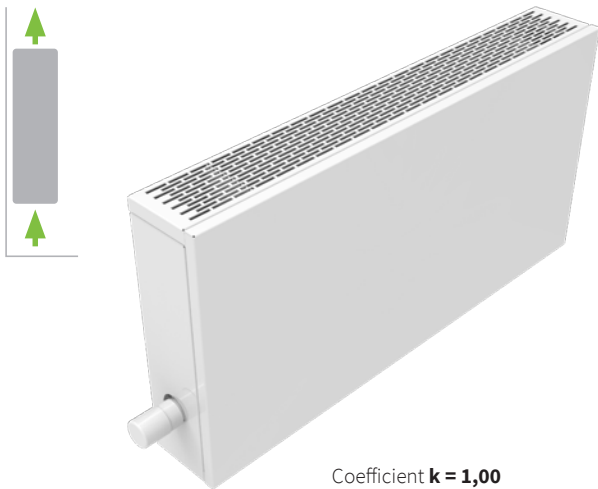
Design modifications of wall-mounted convector heaters

The design of convector heaters can be modified to meet your requirements. You can select from different grille setting options in the cover or models with the casing extended to the floor. Below are presented some basic modifications; for more options contact our Sales Department.

Standard design

LSK, TSK

The most common variation of a wall-mounted heat convector. The heaters look identical to panel radiators on the outside. A bottom protective grille is available to prevent tampering with convector heater components.

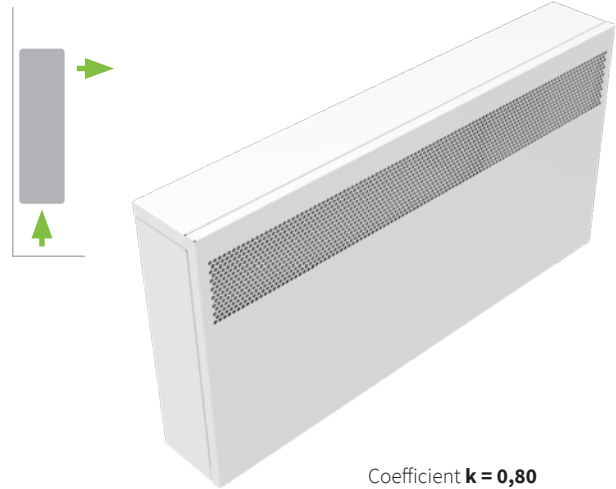


Coefficient **k = 1,00**

Forward exhaust

LDK, TDK

Convactor heaters with a forward facing exhaust are often placed in environments with stricter hygiene requirements. It effectively prevents dust from entering the heater and accumulating on the heat-exchanger. The flat upper cover can be easily cleaned with a dust cloth. A bottom protective grille is available to prevent tampering with convector heater components.



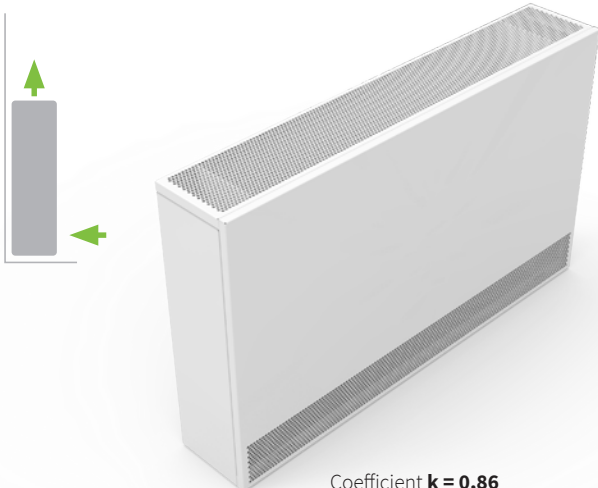
Coefficient **k = 0,80**

Coefficient **k** for recalculating heating output of modified convector versions. Multiply heating output by the mentioned coefficient.

Casing extended to the floor

LGK, TGK

A compact-looking unit with its casing extended to the floor. The heater seems to be standing directly on the floor. All internal components and connection piping are safely covered. The casing can be removed for cleaning purposes.



Coefficient **k = 0,86**

Casing extended to the floor and a forward exhaust

LFK, TFK

This model combines the advantages of a full-height casing, with all internal components safely covered, and a forward-facing outlet which prevents accumulation of falling dust. Select the model with rounded corners for added safety.



Coefficient **k = 0,63**

Atypical convector heaters

Additional design variations

Front panel print design

The front panel can be adorned with a print design, giving free reign to imagination. Potential applications include photographs, logos, art work reproductions, various structures and geometric patterns, etc. There are no limits to creativity. The designer convector heater is ideal for both residential and public settings.

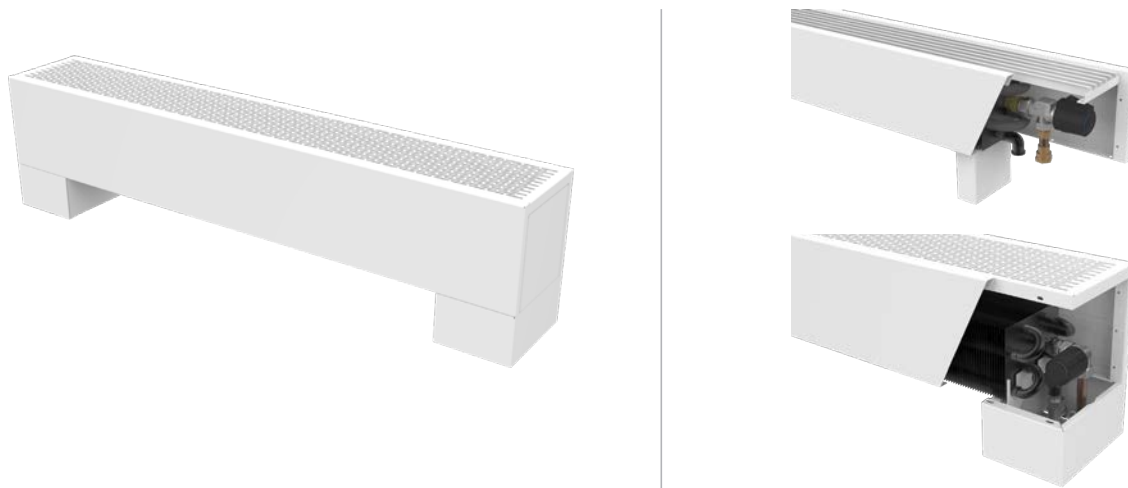


Ordering a decorative cover radiator:

E-mail us your graphic design, in the highest resolution possible. You will then be contacted for confirmation of the resolution, appearance, size and date of delivery. After this, manufacture of the heater will proceed and you will receive updated delivery information.

Hidden connection of convectors

For convectors controlled by a room thermostat or by a central smart home system (SMART Home), we offer a hidden connection. All control components can be elegantly integrated into the convector casing, preserving a clean and modern design.



Low Surface Temperature (LST)

Wall-mounted convectors are designed with an emphasis on safety - thanks to their construction with a low surface temperature (LST), the casing temperature does not exceed **43 °C**. This minimises the risk of burns upon contact, which is essential for use in environments where user safety is a priority, such as schools, hospitals or care homes.

Pressure loss for self-standing models

LZK, TZK width 138 mm / height 90 mm

Length [mm]	Volume [l]	M – mass rate of flow in piping (kg/h) / R – hydraulic loss in exchanger (kPa)									
		M = 40	60	80	100	150	200	250	300	350	400
600	0,2	0,003	0,008	0,017	0,029	0,075	0,146	0,243	0,367	0,519	0,700
800	0,4	0,005	0,012	0,023	0,038	0,094	0,177	0,289	0,430	0,600	0,802
1000	0,5	0,007	0,016	0,030	0,048	0,113	0,209	0,335	0,492	0,681	0,903
1200	0,6	0,009	0,020	0,036	0,057	0,133	0,240	0,381	0,554	0,762	1,004
1400	0,6	0,011	0,024	0,043	0,067	0,152	0,271	0,426	0,617	0,843	1,106
1600	0,7	0,012	0,028	0,049	0,076	0,171	0,303	0,472	0,679	0,924	1,207
1800	0,8	0,014	0,032	0,056	0,086	0,190	0,334	0,518	0,742	1,005	1,309
2000	0,9	0,016	0,036	0,062	0,095	0,209	0,365	0,564	0,804	1,086	1,410
2200	1,1	0,018	0,040	0,068	0,105	0,228	0,397	0,610	0,867	1,167	1,512
2400	1,2	0,020	0,043	0,075	0,114	0,247	0,428	0,656	0,929	1,249	1,613
2600	1,3	0,022	0,047	0,081	0,124	0,266	0,459	0,701	0,992	1,330	1,714
2800	1,4	0,024	0,051	0,088	0,133	0,286	0,491	0,747	1,054	1,411	1,816

LZK, TZK width 138 mm / height 150, 200, 300, 400, 500, 600 mm

Length [mm]	Volume [l]	M – mass rate of flow in piping (kg/h) / R – hydraulic loss in exchanger (kPa)									
		M = 40	60	80	100	150	200	250	300	350	400
600	0,5	0,026	0,055	0,096	0,147	0,316	0,545	0,831	1,172	1,568	2,016
800	0,7	0,033	0,071	0,121	0,183	0,390	0,664	1,005	1,408	1,874	2,399
1000	0,9	0,041	0,086	0,146	0,220	0,463	0,783	1,178	1,644	2,180	2,782
1200	1,2	0,049	0,102	0,172	0,257	0,536	0,902	1,352	1,880	2,486	3,165
1400	1,2	0,057	0,118	0,197	0,294	0,609	1,021	1,525	2,116	2,791	3,549
1600	1,4	0,065	0,133	0,222	0,331	0,682	1,140	1,698	2,352	3,097	3,932
1800	1,6	0,072	0,149	0,248	0,368	0,756	1,259	1,872	2,588	3,403	4,315
2000	1,9	0,080	0,164	0,273	0,405	0,829	1,378	2,045	2,824	3,709	4,698
2200	2,1	0,088	0,180	0,298	0,442	0,902	1,497	2,219	3,060	4,015	5,081
2400	2,3	0,096	0,195	0,323	0,478	0,975	1,616	2,392	3,296	4,321	5,464
2600	2,6	0,104	0,211	0,349	0,515	1,048	1,735	2,566	3,532	4,627	5,848
2800	2,8	0,111	0,226	0,374	0,552	1,122	1,854	2,739	3,767	4,933	6,231

LZK, TZK width 198 mm / height 90 mm

Length [mm]	Volume [l]	M – mass rate of flow in piping (kg/h) / R – hydraulic loss in exchanger (kPa)									
		M = 40	60	80	100	150	200	250	300	350	400
600	0,5	0,001	0,004	0,008	0,013	0,032	0,059	0,096	0,143	0,198	0,263
800	0,7	0,003	0,007	0,012	0,020	0,046	0,082	0,130	0,189	0,258	0,338
1000	0,9	0,004	0,010	0,017	0,027	0,059	0,105	0,164	0,235	0,318	0,414
1200	1,2	0,006	0,012	0,022	0,033	0,073	0,128	0,197	0,281	0,379	0,490
1400	1,2	0,007	0,015	0,026	0,040	0,087	0,150	0,231	0,327	0,439	0,566
1600	1,4	0,008	0,018	0,031	0,047	0,101	0,173	0,265	0,373	0,499	0,641
1800	1,6	0,010	0,021	0,036	0,054	0,115	0,196	0,298	0,419	0,559	0,717
2000	1,8	0,011	0,024	0,040	0,061	0,129	0,219	0,332	0,465	0,619	0,793
2200	2,1	0,013	0,027	0,045	0,068	0,143	0,242	0,365	0,511	0,679	0,869
2400	2,3	0,014	0,029	0,050	0,075	0,157	0,265	0,399	0,557	0,739	0,944
2600	2,5	0,015	0,032	0,054	0,082	0,171	0,288	0,433	0,603	0,799	1,020
2800	2,8	0,017	0,035	0,059	0,088	0,184	0,311	0,466	0,649	0,860	1,096

LZK, TZK width 198 mm / height 150, 200, 300, 400, 500, 600 mm

Length [mm]	Volume [l]	M – mass rate of flow in piping (kg/h) / R – hydraulic loss in exchanger (kPa)									
		M = 40	60	80	100	150	200	250	300	350	400
600	0,8	0,050	0,104	0,174	0,259	0,537	0,898	1,341	1,859	2,452	3,115
800	1,2	0,063	0,130	0,216	0,321	0,659	1,096	1,628	2,250	2,956	3,746
1000	1,6	0,077	0,157	0,259	0,383	0,781	1,295	1,916	2,639	3,461	4,377
1200	2,0	0,090	0,183	0,302	0,446	0,904	1,493	2,204	3,030	3,966	5,008
1400	2,3	0,104	0,210	0,345	0,508	1,026	1,691	2,491	3,420	4,471	5,639
1600	2,7	0,117	0,236	0,388	0,570	1,149	1,889	2,779	3,810	4,976	6,270
1800	3,1	0,131	0,263	0,430	0,632	1,271	2,087	3,067	4,200	5,481	6,901
2000	3,5	0,144	0,289	0,473	0,694	1,394	2,285	3,354	4,590	5,985	7,533
2200	3,9	0,158	0,315	0,516	0,757	1,516	2,483	3,642	4,980	6,490	8,164
2400	4,3	0,171	0,342	0,559	0,818	1,638	2,681	3,929	5,371	6,995	8,795
2600	4,7	0,184	0,368	0,602	0,881	1,761	2,879	4,217	5,760	7,500	9,426
2800	5,1	0,198	0,395	0,645	0,943	1,883	3,077	4,505	6,151	8,004	10,057

LZK, TZK width 258 mm / height 90 mm

Length [mm]	Volume [l]	M – mass rate of flow in piping (kg/h) / R – hydraulic loss in exchanger (kPa)									
		M = 40	60	80	100	150	200	250	300	350	400
600	0,6	0,010	0,022	0,038	0,058	0,128	0,225	0,346	0,493	0,664	0,859
800	0,8	0,013	0,029	0,050	0,077	0,167	0,289	0,441	0,623	0,835	1,076
1000	1,1	0,017	0,037	0,063	0,096	0,205	0,353	0,535	0,754	1,007	1,293
1200	1,4	0,021	0,044	0,076	0,115	0,244	0,416	0,630	0,884	1,178	1,510
1400	1,4	0,025	0,052	0,088	0,133	0,282	0,480	0,725	1,015	1,349	1,727
1600	1,7	0,028	0,060	0,101	0,152	0,320	0,544	0,819	1,146	1,521	1,944
1800	1,9	0,032	0,067	0,114	0,171	0,359	0,608	0,914	1,276	1,692	2,161
2000	2,2	0,036	0,075	0,126	0,190	0,397	0,672	1,009	1,407	1,863	2,378
2200	2,5	0,039	0,082	0,139	0,208	0,436	0,735	1,103	1,537	2,035	2,594
2400	2,8	0,043	0,090	0,152	0,227	0,474	0,799	1,198	1,668	2,206	2,811
2600	3,0	0,047	0,098	0,164	0,246	0,513	0,863	1,293	1,798	2,378	3,028
2800	3,3	0,051	0,105	0,177	0,265	0,551	0,927	1,387	1,929	2,549	3,245

LZK, TZK width 258 mm / height 150, 200, 300, 400, 500, 600 mm

Length [mm]	Volume [l]	M – mass rate of flow in piping (kg/h) / R – hydraulic loss in exchanger (kPa)									
		M = 40	60	80	100	150	200	250	300	350	400
600	1,1	0,074	0,151	0,250	0,371	0,758	1,256	1,859	2,561	3,357	4,243
800	1,6	0,093	0,188	0,312	0,459	0,932	1,536	2,264	3,108	4,062	5,122
1000	2,2	0,113	0,228	0,373	0,549	1,105	1,817	2,670	3,655	4,767	6,001
1200	2,7	0,132	0,265	0,436	0,639	1,281	2,097	3,075	4,202	5,472	6,880
1400	3,3	0,152	0,305	0,497	0,728	1,454	2,377	3,479	4,750	6,178	7,759
1600	3,8	0,171	0,342	0,559	0,817	1,630	2,658	3,885	5,296	6,884	8,638
1800	4,3	0,192	0,382	0,620	0,906	1,803	2,938	4,290	5,844	7,590	9,517
2000	4,9	0,210	0,419	0,683	0,996	1,979	3,219	4,694	6,390	8,295	10,396
2200	5,4	0,231	0,457	0,744	1,086	2,152	3,499	5,100	6,938	9,000	11,275
2400	6,0	0,251	0,496	0,806	1,174	2,326	3,779	5,505	7,485	9,705	12,154
2600	6,5	0,270	0,534	0,868	1,264	2,501	4,059	5,910	8,032	10,411	13,033
2800	7,1	0,290	0,573	0,930	1,353	2,675	4,339	6,315	8,579	11,116	13,912

LZA width 138, TZA width 158 mm / height 350 mm

Length [mm]	Volume [l]	M – mass rate of flow in piping (kg/h) / R – hydraulic loss in exchanger (kPa)									
		M = 40	60	80	100	150	200	250	300	350	400
600	0,5	0,026	0,055	0,096	0,147	0,316	0,545	0,831	1,172	1,568	2,016
800	0,7	0,033	0,071	0,121	0,183	0,390	0,664	1,005	1,408	1,874	2,399
1000	0,9	0,041	0,086	0,146	0,220	0,463	0,783	1,178	1,644	2,180	2,782
1200	1,2	0,049	0,102	0,172	0,257	0,536	0,902	1,352	1,880	2,486	3,165
1400	1,2	0,057	0,118	0,197	0,294	0,609	1,021	1,525	2,116	2,791	3,549
1600	1,4	0,065	0,133	0,222	0,331	0,682	1,140	1,698	2,352	3,097	3,932
1800	1,6	0,072	0,149	0,248	0,368	0,756	1,259	1,872	2,588	3,403	4,315
2000	1,9	0,080	0,164	0,273	0,405	0,829	1,378	2,045	2,824	3,709	4,698
2200	2,1	0,088	0,180	0,298	0,442	0,902	1,497	2,219	3,060	4,015	5,081
2400	2,3	0,096	0,195	0,323	0,478	0,975	1,616	2,392	3,296	4,321	5,464
2600	2,6	0,104	0,211	0,349	0,515	1,048	1,735	2,566	3,532	4,627	5,848
2800	2,8	0,111	0,226	0,374	0,552	1,122	1,854	2,739	3,767	4,933	6,231

LZA, TZA width 168, 178 mm / height 350 mm

Length [mm]	Volume [l]	M – mass rate of flow in piping (kg/h) / R – hydraulic loss in exchanger (kPa)									
		M = 40	60	80	100	150	200	250	300	350	400
600	0,8	0,050	0,104	0,174	0,259	0,537	0,898	1,341	1,859	2,452	3,115
800	1,2	0,063	0,130	0,216	0,321	0,659	1,096	1,628	2,250	2,956	3,746
1000	1,6	0,077	0,157	0,259	0,383	0,781	1,295	1,916	2,639	3,461	4,377
1200	2,0	0,090	0,183	0,302	0,446	0,904	1,493	2,204	3,030	3,966	5,008
1400	2,3	0,104	0,210	0,345	0,508	1,026	1,691	2,491	3,420	4,471	5,639
1600	2,7	0,117	0,236	0,388	0,570	1,149	1,889	2,779	3,810	4,976	6,270
1800	3,1	0,131	0,263	0,430	0,632	1,271	2,087	3,067	4,200	5,481	6,901
2000	3,5	0,144	0,289	0,473	0,694	1,394	2,285	3,354	4,590	5,985	7,533
2200	3,9	0,158	0,315	0,516	0,757	1,516	2,483	3,642	4,980	6,490	8,164
2400	4,3	0,171	0,342	0,559	0,818	1,638	2,681	3,929	5,371	6,995	8,795
2600	4,7	0,184	0,368	0,602	0,881	1,761	2,879	4,217	5,760	7,500	9,426
2800	5,1	0,198	0,395	0,645	0,943	1,883	3,077	4,505	6,151	8,004	10,057

Pressure loss for wall-mounted models

LSK, TSK with 82 mm / height 200, 300 mm

Length [mm]	Volume [l]	M – mass rate of flow in piping (kg/h) / R – hydraulic loss in exchanger (kPa)									
		M = 40	60	80	100	150	200	250	300	350	400
600	0,3	0,015	0,033	0,059	0,092	0,205	0,362	0,563	0,807	1,094	1,423
800	0,5	0,019	0,042	0,073	0,113	0,249	0,437	0,674	0,962	1,298	1,683
1000	0,6	0,023	0,050	0,088	0,135	0,294	0,511	0,786	1,116	1,502	1,942
1200	0,8	0,027	0,059	0,102	0,156	0,338	0,586	0,897	1,271	1,706	2,201
1400	0,8	0,031	0,067	0,116	0,177	0,383	0,661	1,009	1,425	1,910	2,460
1600	0,9	0,035	0,076	0,131	0,199	0,427	0,735	1,120	1,580	2,114	2,719
1800	1,1	0,039	0,084	0,145	0,220	0,472	0,810	1,232	1,735	2,317	2,978
2000	1,2	0,044	0,093	0,159	0,242	0,516	0,884	1,343	1,889	2,521	3,238
2200	1,4	0,048	0,102	0,174	0,263	0,561	0,959	1,454	2,044	2,725	3,497
2400	1,6	0,052	0,110	0,188	0,285	0,605	1,034	1,566	2,199	2,929	3,756
2600	1,7	0,056	0,119	0,202	0,306	0,650	1,108	1,677	2,353	3,133	4,015
2800	1,9	0,060	0,127	0,217	0,328	0,694	1,183	1,789	2,508	3,337	4,274

LSK, TSK with 82 mm / height 400, 500, 600 mm

Length [mm]	Volume [l]	M – mass rate of flow in piping (kg/h) / R – hydraulic loss in exchanger (kPa)									
		M = 40	60	80	100	150	200	250	300	350	400
600	0,6	0,037	0,079	0,134	0,202	0,427	0,724	1,091	1,525	2,022	2,582
800	0,9	0,048	0,100	0,169	0,253	0,526	0,885	1,324	1,839	2,429	3,089
1000	1,2	0,059	0,122	0,204	0,304	0,626	1,045	1,556	2,154	2,835	3,597
1200	1,6	0,070	0,144	0,239	0,354	0,725	1,206	1,789	2,469	3,241	4,104
1400	1,6	0,081	0,165	0,274	0,405	0,825	1,366	2,021	2,783	3,648	4,611
1600	1,9	0,092	0,187	0,309	0,456	0,924	1,527	2,254	3,098	4,054	5,118
1800	2,2	0,103	0,209	0,344	0,507	1,024	1,687	2,486	3,413	4,460	5,625
2000	2,5	0,114	0,230	0,379	0,557	1,124	1,848	2,719	3,727	4,867	6,132
2200	2,8	0,125	0,252	0,414	0,608	1,223	2,009	2,951	4,042	5,273	6,639
2400	3,1	0,136	0,274	0,449	0,659	1,323	2,169	3,184	4,357	5,680	7,147
2600	3,4	0,147	0,295	0,484	0,709	1,422	2,330	3,416	4,671	6,086	7,654
2800	3,7	0,159	0,317	0,519	0,760	1,522	2,490	3,649	4,986	6,492	8,161

LSK, TSK with 122 mm / height 165, 200, 300, 400, 500, 600 mm

Length [mm]	Volume [l]	M – mass rate of flow in piping (kg/h) / R – hydraulic loss in exchanger (kPa)									
		M = 40	60	80	100	150	200	250	300	350	400
600	0,5	0,026	0,055	0,096	0,147	0,316	0,545	0,831	1,172	1,568	2,016
800	0,7	0,033	0,071	0,121	0,183	0,390	0,664	1,005	1,408	1,874	2,399
1000	0,9	0,041	0,086	0,146	0,220	0,463	0,783	1,178	1,644	2,180	2,782
1200	1,2	0,049	0,102	0,172	0,257	0,536	0,902	1,352	1,880	2,486	3,165
1400	1,2	0,057	0,118	0,197	0,294	0,609	1,021	1,525	2,116	2,791	3,549
1600	1,4	0,065	0,133	0,222	0,331	0,682	1,140	1,698	2,352	3,097	3,932
1800	1,6	0,072	0,149	0,248	0,368	0,756	1,259	1,872	2,588	3,403	4,315
2000	1,9	0,080	0,164	0,273	0,405	0,829	1,378	2,045	2,824	3,709	4,698
2200	2,1	0,088	0,180	0,298	0,442	0,902	1,497	2,219	3,060	4,015	5,081
2400	2,3	0,096	0,195	0,323	0,478	0,975	1,616	2,392	3,296	4,321	5,464
2600	2,6	0,104	0,211	0,349	0,515	1,048	1,735	2,566	3,532	4,627	5,848
2800	2,8	0,111	0,226	0,374	0,552	1,122	1,854	2,739	3,767	4,933	6,231

LSK, TSK with 182 mm / height 165, 200, 300, 400, 500, 600 mm

Length [mm]	Volume [l]	M – mass rate of flow in piping (kg/h) / R – hydraulic loss in exchanger (kPa)									
		M = 40	60	80	100	150	200	250	300	350	400
600	0,8	0,050	0,104	0,174	0,259	0,537	0,898	1,341	1,859	2,452	3,115
800	1,2	0,063	0,130	0,216	0,321	0,659	1,096	1,628	2,250	2,956	3,746
1000	1,6	0,077	0,157	0,259	0,383	0,781	1,295	1,916	2,639	3,461	4,377
1200	2,0	0,090	0,183	0,302	0,446	0,904	1,493	2,204	3,030	3,966	5,008
1400	2,3	0,104	0,210	0,345	0,508	1,026	1,691	2,491	3,420	4,471	5,639
1600	2,7	0,117	0,236	0,388	0,570	1,149	1,889	2,779	3,810	4,976	6,270
1800	3,1	0,131	0,263	0,430	0,632	1,271	2,087	3,067	4,200	5,481	6,901
2000	3,5	0,144	0,289	0,473	0,694	1,394	2,285	3,354	4,590	5,985	7,533
2200	3,9	0,158	0,315	0,516	0,757	1,516	2,483	3,642	4,980	6,490	8,164
2400	4,3	0,171	0,342	0,559	0,818	1,638	2,681	3,929	5,371	6,995	8,795
2600	4,7	0,184	0,368	0,602	0,881	1,761	2,879	4,217	5,760	7,500	9,426
2800	5,1	0,198	0,395	0,645	0,943	1,883	3,077	4,505	6,151	8,004	10,057

LSK, TSK with 242 mm / height 165, 200, 300, 400, 500, 600 mm

Length [mm]	Volume [l]	M – mass rate of flow in piping (kg/h) / R – hydraulic loss in exchanger (kPa)									
		M = 40	60	80	100	150	200	250	300	350	400
600	1,1	0,074	0,151	0,250	0,371	0,758	1,256	1,859	2,561	3,357	4,243
800	1,6	0,093	0,188	0,312	0,459	0,932	1,536	2,264	3,108	4,062	5,122
1000	2,2	0,113	0,228	0,373	0,549	1,105	1,817	2,670	3,655	4,767	6,001
1200	2,7	0,132	0,265	0,436	0,639	1,281	2,097	3,075	4,202	5,472	6,880
1400	3,3	0,152	0,305	0,497	0,728	1,454	2,377	3,479	4,750	6,178	7,759
1600	3,8	0,171	0,342	0,559	0,817	1,630	2,658	3,885	5,296	6,884	8,638
1800	4,3	0,192	0,382	0,620	0,906	1,803	2,938	4,290	5,844	7,590	9,517
2000	4,9	0,210	0,419	0,683	0,996	1,979	3,219	4,694	6,390	8,295	10,396
2200	5,4	0,231	0,457	0,744	1,086	2,152	3,499	5,100	6,938	9,000	11,275
2400	6,0	0,251	0,496	0,806	1,174	2,326	3,779	5,505	7,485	9,705	12,154
2600	6,5	0,270	0,534	0,868	1,264	2,501	4,059	5,910	8,032	10,411	13,033
2800	7,1	0,290	0,573	0,930	1,353	2,675	4,339	6,315	8,579	11,116	13,912

LSA with 122, TSA with 132 mm / height 500 mm

Length [mm]	Volume [l]	M – mass rate of flow in piping (kg/h) / R – hydraulic loss in exchanger (kPa)									
		M = 40	60	80	100	150	200	250	300	350	400
600	0,5	0,026	0,055	0,096	0,147	0,316	0,545	0,831	1,172	1,568	2,016
800	0,7	0,033	0,071	0,121	0,183	0,390	0,664	1,005	1,408	1,874	2,399
1000	0,9	0,041	0,086	0,146	0,220	0,463	0,783	1,178	1,644	2,180	2,782
1200	1,2	0,049	0,102	0,172	0,257	0,536	0,902	1,352	1,880	2,486	3,165
1400	1,2	0,057	0,118	0,197	0,294	0,609	1,021	1,525	2,116	2,791	3,549
1600	1,4	0,065	0,133	0,222	0,331	0,682	1,140	1,698	2,352	3,097	3,932
1800	1,6	0,072	0,149	0,248	0,368	0,756	1,259	1,872	2,588	3,403	4,315
2000	1,9	0,080	0,164	0,273	0,405	0,829	1,378	2,045	2,824	3,709	4,698
2200	2,1	0,088	0,180	0,298	0,442	0,902	1,497	2,219	3,060	4,015	5,081
2400	2,3	0,096	0,195	0,323	0,478	0,975	1,616	2,392	3,296	4,321	5,464
2600	2,6	0,104	0,211	0,349	0,515	1,048	1,735	2,566	3,532	4,627	5,848
2800	2,8	0,111	0,226	0,374	0,552	1,122	1,854	2,739	3,767	4,933	6,231

LSA, TSA with 152 mm / height 500 mm

Length [mm]	Volume [l]	M – mass rate of flow in piping (kg/h) / R – hydraulic loss in exchanger (kPa)									
		M = 40	60	80	100	150	200	250	300	350	400
600	0,8	0,050	0,104	0,174	0,259	0,537	0,898	1,341	1,859	2,452	3,115
800	1,2	0,063	0,130	0,216	0,321	0,659	1,096	1,628	2,250	2,956	3,746
1000	1,6	0,077	0,157	0,259	0,383	0,781	1,295	1,916	2,639	3,461	4,377
1200	2,0	0,090	0,183	0,302	0,446	0,904	1,493	2,204	3,030	3,966	5,008
1400	2,3	0,104	0,210	0,345	0,508	1,026	1,691	2,491	3,420	4,471	5,639
1600	2,7	0,117	0,236	0,388	0,570	1,149	1,889	2,779	3,810	4,976	6,270
1800	3,1	0,131	0,263	0,430	0,632	1,271	2,087	3,067	4,200	5,481	6,901
2000	3,5	0,144	0,289	0,473	0,694	1,394	2,285	3,354	4,590	5,985	7,533
2200	3,9	0,158	0,315	0,516	0,757	1,516	2,483	3,642	4,980	6,490	8,164
2400	4,3	0,171	0,342	0,559	0,818	1,638	2,681	3,929	5,371	6,995	8,795
2600	4,7	0,184	0,368	0,602	0,881	1,761	2,879	4,217	5,760	7,500	9,426
2800	5,1	0,198	0,395	0,645	0,943	1,883	3,077	4,505	6,151	8,004	10,057

Acoustics of Ecolite Fan-Operated Convectors

When planning the installation of Ecolite fan-operated convectors in living spaces, it is essential to take into account both the acoustic characteristics of the convector and the environment in which it will operate. The units run very quietly; only at maximum output is the sound of the fans noticeable. Each convector is selected for the project based on requirements for heat output, dimensions, aesthetics, and the specified acoustic parameters. These requirements differ depending on whether the installation is in living areas, service rooms, or public spaces.

Varying Environment-Based Requirements

- Entrance halls, corridors, waiting rooms, foyers
- Office spaces, administrative rooms
- Living areas, public buildings, car showrooms, shops – spaces where people spend time relaxing (living rooms, bedrooms)

Acoustic Parameters in the Catalogue

The acoustic parameters of Ecolite convectors are measured in accordance with the EN 16430-1 standard. The key parameter for assessing convector acoustics is the sound power level. Each fan-operated product includes a table listing these values. Measurements were carried out by an accredited testing facility in Brno, in compliance with EN ISO 9614-2: Acoustics - Determination of sound power levels of noise sources using sound intensity - Part 2: Measurement by scanning.

Description of Acoustic Parameters

In acoustics, two basic parameters are considered: sound **power** and sound **pressure**. The unit used to express acoustic parameters is the decibel [dB(A)].

Sound power level refers to the amount of acoustic energy emitted by the source, transmitted via sound waves.

Sound pressure level indicates the acoustic pressure at a specific point in the room. It varies across different measurement points and decreases significantly with increasing distance from the source.

The EN 16430-1 standard defines sound power as the primary acoustic parameter, which we specify for each product.

Design Considerations

Acoustic parameters are an important factor when dimensioning Ecolite convectors. It is necessary to achieve not only the required heat output but also compliance with regulations concerning health protection against the adverse effects of noise and vibration. The designer must consider the acoustic properties of the room and whether the convector is mounted on a wall or floor. An empty, unfurnished room with echo differs greatly from a furnished room with sound-absorbing elements. If the furnishing is unknown, the least favourable scenario should be assumed. This can be achieved by selecting a more powerful unit that operates at a lower fan speed for quieter performance.



Mounting the convector on a wall or floor may lead to noise and vibration transmission. Attention should be paid to the base material and its ability to dampen or amplify acoustic effects.



Orientation colour card

	colour series RAL 9016 shade snow/traffic white finish gloss extra charge - code 01		colour series RAL 9016 MAT shade white matt finish matt extra charge ✓ code 05		colour series S09 shade snow-white finish texture extra charge ✓ code 68
	colour series RAL 9001 MAT shade ivory finish matt extra charge ✓ code K9		colour series RAL 1015 shade jasmine finish gloss extra charge ✓ code 12		colour series S08 shade ivory finish texture extra charge ✓ code 67
	colour series S13 shade sandstone finish texture extra charge ✓ code 72		colour series S31 shade champagne finish metallic extra charge ✓ code 25		colour series S75 shade light gold finish metallic extra charge ✓ code L1
	colour series S36 shade antique gold finish metallic extra charge ✓ code 48		colour series S19 shade brass finish metallic extra charge ✓ code 83		colour series S28 shade gold olive finish texture extra charge ✓ code 22
	colour series S03 shade copper finish metallic extra charge ✓ code 62		colour series S35 shade cinnamon finish texture extra charge ✓ code 29		colour series S59 shade dark brown finish matt extra charge ✓ code H4
	colour series S66 shade brown quartz finish texture extra charge ✓ code J9		colour series RAL 6009 shade fir green finish gloss extra charge ✓ code 43		colour series S30 shade sapphire finish texture extra charge ✓ code 24
	colour series RAL 6027 MAT shade light green finish matt extra charge ✓ code K5		colour series S29 shade aquamarine finish metallic extra charge ✓ code 23		colour series RAL 7040 shade window grey finish gloss extra charge ✓ code 31
	colour series S23 shade pearl grey finish texture extra charge ✓ code 86		colour series S05 shade silver finish metallic extra charge ✓ code 64		colour series S33 shade lava ash finish texture extra charge ✓ code 27
	colour series RAL 7006 MAT shade beige grey finish matt extra charge ✓ code C7		colour series S02 shade anthracite finish metallic extra charge ✓ code 61		colour series S22 shade pearl black finish texture extra charge ✓ code 85
	colour series S40 shade black velvet finish matt extra charge ✓ code 51		colour series RAL 9005 shade black finish gloss extra charge ✓ code 19		

Special treatment

	colour series S20 shade transparent paint finish gloss extra charge ✓ code 84		colour series S41 antibacterial* shade snow white finish gloss extra charge ✓ code 88
---	--	---	--

*A silver-ion antibacterial finish provides protection against a wide range of bacteria and mildew.

The S20 "transparent paint" finish allows for visibility of the underlying surface, i.e. the steel radiator itself. All welds, processing features and the different shades of steel used (depending on the material supply) are visible. The progressive corroded appearance under the coating constitutes a natural material degradation and as such is not subject to a claim.

ECOLITE – coding for convector heaters with lamellar heat exchangers

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
L	S	K	0	3	0	0	0	1	9	8	1	6	0	0	C	0	1	R	1	V	R	K	-	
Model	Type of construction	Convector type	Height [mm]				Width [mm]				Length [mm]				Convector casing	Casing colour		Grille type	Grille colour	Design	Heating fluid connection		Installation	Non-standard design

Code description

ECOLITE wall-mounted convector heater; square LSK model; HxWxL 300x198x1,600mm; steel casing – white spray paint RAL 9016; grille: rectangular with cut slots - colour matching the coating; valve-equipped; right-side connection; floor-mounted – block stands

1	MODEL	L	Ecolite – design convectors with a lamellar heat exchanger	
		T	Safe convectors with rounded corners, convectors with a lamellar heat exchanger	
2	TYPE OF CONSTRUCTION	Z	Self-standing convector heater, standard	
		B	Self-standing convector heater with wooden board	
		S	Wall-mounted convector heater, standard	
		D	Wall-mounted convector heater, bottom suction, forward exhaust	
		G	Wall-mounted convector heater, lower forward suction, top exhaust, wall-mounted convector with casing extended to the floor , position 23 "W"	
		F	Wall-mounted convector heater, lower forward suction, forward exhaust, wall-mounted convector with casing extended to the floor , position 23 "W"	
3	CONVECTOR TYPE	K	Natural convection heater	
		A	Fan-operated convection heater	
4-7	HEIGHT [mm]	0090	Self-standing: 0090, 0150, 0200, 0300, 0400, 0500, 0600 mm Fan-operated self-standing: 0350 mm	Wall-mounted: 0165, 0200, 0300, 0400, 0500, 0600 mm Fan-operated wall-mounted: 0500, 0600 mm
		...		
		0600		
8-11	WIDTH [mm]	0138	Self-standing: 0138, 0198, 0258 mm Fan-operated self-standing: 0138, 168 (LZA), 0158, 178 (TZA)	Wall-mounted: 0082, 0122, 0182, 0242 mm Fan-operated wall-mounted: 0122 (LSA), 0132 (TSA), 0152 (LSA, TSA) mm
		...		
		0258		
12-15	LENGTH [mm]	0400	Self-standing and wall-mounted: 0400, 0500, 0600, 0700, 0800, 0900, 1000, 1100, 1200, 1400, 1600, 1800*, 2000*, 2200*, 2400*, 2600*, 2800* mm Fan-operated self-standing and wall-mounted: 0800, 1000, 1200, 1400, 1600, 1800, 2000 mm *some lengths may be reduced by individual types	
		...		
		2800		
16	CONVECTOR CASING	C	Sheet steel with a finish and epoxy polyester coating as per positions 17, 18	
17-18	CASING COLOUR	01	RAL9016 snow white	
		02	RAL9010 white	
		...	Other colour options, see page 57	
19	GRILLE TYPE	R	Rectangular grille slots	
		C	Round grille slots	
		L	Linear aluminium grille, available for LZK, LSK models only	
		P	Linear angled steel grille, available for LZK, LSK models only	
20	GRILLE COLOUR	1	Spray paint matching the casing (most common)	
		9	Colour different from the casing (specify in a note)	
		N	Al natur, anodized aluminium, available only for the linear grille L	
		B	Al bronze, anodized aluminium, available only for the linear grille L	
		C	Al black, anodized aluminium, available only for the linear grille L	
21	DESIGN	V	Valve design: self-standing and wall-mounted models with or without a fan, with a thermostatic valve, bottom connection with 50-mm spacing.	
		B	Side connection: self-standing and wall-mounted models, without control fitting, a heat exchanger with end pieces with 60-mm spacing.	
		Y	Wall connection, valve design, wall-mounted models only (not available for 82 mm width).	
		Z	Wall connection: no opening in the casing, wall-mounted models only (not available for 82 mm width).	
22	HEATING FLUID CONNECTION	L	Left-sided heating fluid connection	
		R	Right-sided heating fluid connection	
23	INSTALLATION	K	Block stands, not available for fan-operated self-standing units	
		S	Cover stands	
		W	Wall brackets (wall-mounted models only)	
24	ATYPICAL	A	For non-standard heater configurations	
			Empty position for a standard convector heater	



isan.cz/en/



ISAN Radiátory s.r.o

Poříčí 26
678 01 Blansko
Česká republika

CZ

obchod@isan.cz

SK

obchod@isan.sk

Export

sales@isan.cz