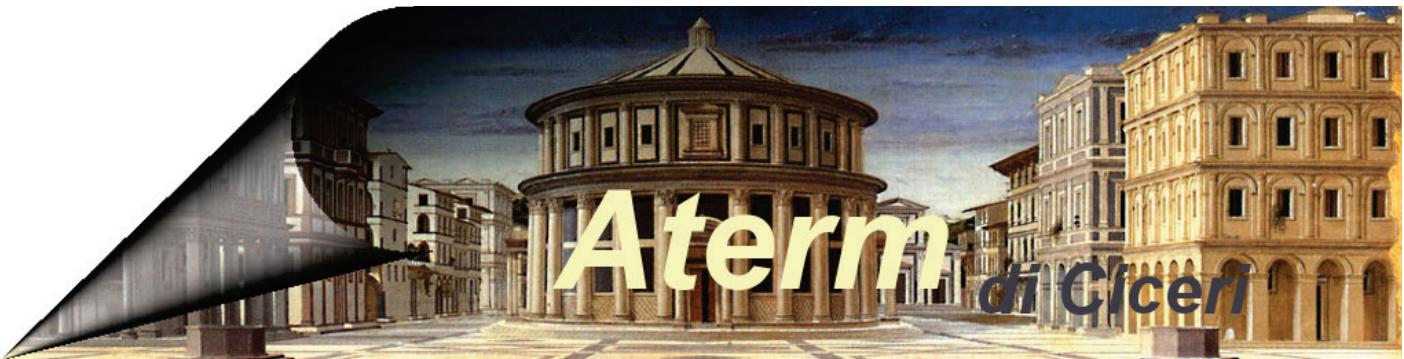


Activ

Floor Convector



CONTENT:

About company	2
Economy, energy saving and safety	3
TERMO DYNAMIC types	4
Construction, running and warranty conditions	5

GRILLS

Grills	6
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CROSS-FLOW FAN CONVECTION 24V

Convector with fans 24V DC	8
Designing of 24V DC	9
FLT 24 V DC floor covector regulation	10
Accessories for 24V DC convectors	11
FLT10-09	12
FLT20-09	13
FLT10-11	14
FLT20-11	15
FLT21-12	16

CONVECTORS FOR SWIMMING POOLS 12V DC

Convectors to the wet conditions 12V DC	18
Designing of FLB 12V DC	19
Regulation of 12V DC	20
Accessories for 12V DC convectors	21
FLB20-12	22

NATURAL CONVECTION

Convectors with natural convection	24
Designing	25
FLK convector regulation	26
Accessories for FLK convectors	27
FLK10-09, FLK20-09, FLK30-09, FLK40-09	28
FLK10-11, FLK20-11, FLK30-11, FLK40-11	30
FLK10-14, FLK20-14, FLK30-14, FLK40-14	32
FLK20-18, FLK30-18, FLK20-30, FLK30-30	34
Atypical convector	36
Ordering form	37



Floor convectors made and supplied by **Radiátory** represent a top quality mark based on innovation and technological progress. New trends and technologies are followed by professional team and implemented then into new products.

24V DC

Termo Activ is a new series of floor convectors, focused on electric power saving, intelligent control and operating safety. The economy is defined by inquiries of highly developed countries inclusively the EU markets.

Convector equipped with FLT fans work with **safe direct-current voltage of 24V DC**. Built-in fans characterized of low electric power consumption (in watt order) are provided with regulation units evaluating the values and reacting to the room environs. Revs correction, frost protection, window sensors and other algorithms take care for protection of user's regulation system against undesirable heat leakage or local piping freeze; the heating output has been adapted to ambient conditions. The automated mode enables comfortable operation all the year round.

Floor convector control:

- room thermostat
- in convector installed regulator

THERMOSTAT is a „brain“ of the whole system controlling its performance, enabling continuous revs adjustment, moderate heating, automated and antifreeze modes. It is able to differentiate between requirements for heating and cooling either. It can be used for working in double-tube as well as in four-tube heating systems.

REGULATOR is an independent element ensuring the right fan running and by means of sensors regulating the output values for the convec-

tor to work independently and to prevent heat leakage or exchanger damage.

COMMUNICATION with floor convector follows by a **data flow - CIB** protocol. The convector may be integrated in **Building Management Systems** (BMS - Tecomat Foxtrot, Lon Works, EIB and the like).

24V DC FANS with **electric commutation (EC-Technology)**, smooth revs regulation and efficiency of over 90 % have almost double lifetime in comparison with usual AC-engines. The continuous revs regulation of 24V DC engines used with FLT convectors follows by 0-10V input (eventually by PWM-signal).

HEAT EXCHANGERS SPIRO Cu-Cu

Cooper wire heat exchangers, special technology of wire basket on supporting cooper pipe

- **mechanical resistance** – high rigidity prevents damage during installation and cleaning
- **easy cleaning** – wire construction prevent from dust settling
- **stable characteristics** – soldered construction ensures long-term stable performance of the exchanger SPIRO
- **flexibility** – easy flexibility while maintaining the aesthetic appearance and functional properties



CONSTRUCTION



STAINLESS TANK

is made of stainless steel DIN 1,4301 (17240), wall thickness 0.8 mm, inner surface treatment by spray painting is also available. The tank containing all the convector functional elements is provided with openings for water inlet/outlet and for electric cables connection (FLT types). A solid peripheral aluminium frame holds a upper grill. The construction stiffened with inner ribs contains levelling screws for height adjusting within the installation.

HEAT EXCHANGER Cu-Cu

Special wire basket soldered on a copper tube through which the heat carrier circulates. The air flowing among wires distributes the collected heat to the room. The exchanger is provided with an air release valve and connection female thread G1/2".

UPPER GRILL

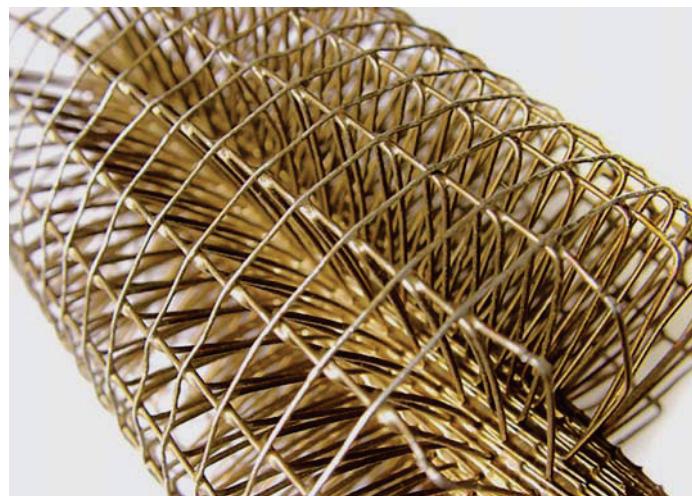
is a final visual element of the installed floor convector. The client may have a grid flooring, the long ribs of which follow the window line (material: aluminium, wood, stainless steel) or the client may choose a grill with short perpendicular ribs (material: aluminium). Convector installed in floating floors can be decked with finishing cover ledges.

TANGENTIAL FANS

Tangential fans obtain forced air circulation reflected in more effective use of exchanger heating capacity in comparison with natural air circulation (FLT types). Shields covering the rotating parts of engine prevent accidents, injuries and fan damages. The integrated regulator enables comfortable regulation of the floor convector heating capacity.

REGULATION

A regulator placed in the convector controls the fan revs and flow rate of the heating medium through exchanger. The regulator follows instructions by wall thermostat installed in the room. Regulation, fans and convector speed control working under safe voltage 24V DC.



RUNNING CONDITIONS

- Warm-water heating system with forced circulation
- Heat medium operating temperature, max. 110 °C
- Heat medium operating overpressure, max. 1 MPa
- Electric parts IP 20, operating voltage 24V DC, dry environs
- The convector is construed for ambient temperature between +2 and 40 °C and relative moisture of 20-70 %

WARRANTY CONDITIONS | EXTRACT

The Seller's warranty covers joint tightness, surface treatment, proclaimed values of heating capacity and loss in pressure relating to heating bodies professionally installed in a closed and sealed system in accordance with applicable standards and decrees, this all under the aspect that the used medium must only serve as the heat carrier. Other usage is excluded.

Electric heating bodies shall be professionally installed in accordance with the applicable standards. FLT floor convectors with fans, IP 20 - dry environs.

PERIODS OF RISK

The period of risk is 5 years for joint tightness, 10 years for exchanger and 2 years for electro-installation and stainless steel tank.

GRILLS



Convector becomes a functional design element of the interior by correct choose of upper grill suitable material and colour. The grill is fit in a massive aluminium peripheral frame creating an optical boundary between the floor and convector.

ALUMINIUM GRILLS

ROLL-UP GRILLS

The spacing between spring loaded transverse lamellas of aluminium alloy is delimited by residual rollers made of cured plastic. The lamellas have anodized and tinted surface. Any RAL shade may be reached by powder colour coating.



R1-1
Al-roll grill, natural
Al-frame, natural



R2-1
Al-roll grill, bronze
Al-frame, bronze



R3-1
Al-roll grill, black (coloured)
Al-frame black (coloured)

Grill supply is included in price, RAL shades to order.

LINEAR GRILLS

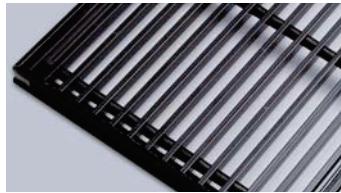
Lengthwise perforated aluminium lamellas are linked by carrying steel bar. Residual rollers of cured plastic delimitate the spacing.



R1-2
Linear Al-grill, natural
Al-frame, natural



R2-2
Linear Al-grill, bronze
Al-frame, bronze



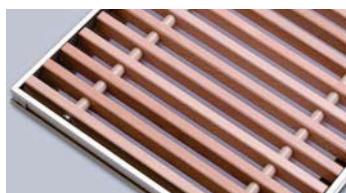
R3-2
Linear Al-grill, black (coloured)
Al-frame black (coloured)

Grill supply is included in price, RAL shades to order.

WOODEN GRILLS

ROLL-UP GRILLS

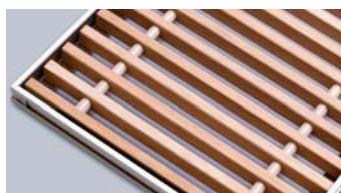
The spacing between spring loaded oak or beech lamellas is delimited by residual rollers made of cured plastic. The surface is raw or stained.



R6-1
Roll-up grill, natural beech
Al-frame, natural



R6-2
Roll-up grill, stained beech
Al-frame, bronze



R6-3
Roll-up grill, natural oak
Al-frame, natural



R6-4
Roll-up grill, stained oak
Al-frame, bronze

Grill supply is included in price.

STAINLESS STEEL GRILL

TRANSVERSE GRILL

Stainless steel rectangular profiles are linked by steel drawbars. The spacing of lamellas is delimited by residual metal rollers. A fix non-rolling grill.



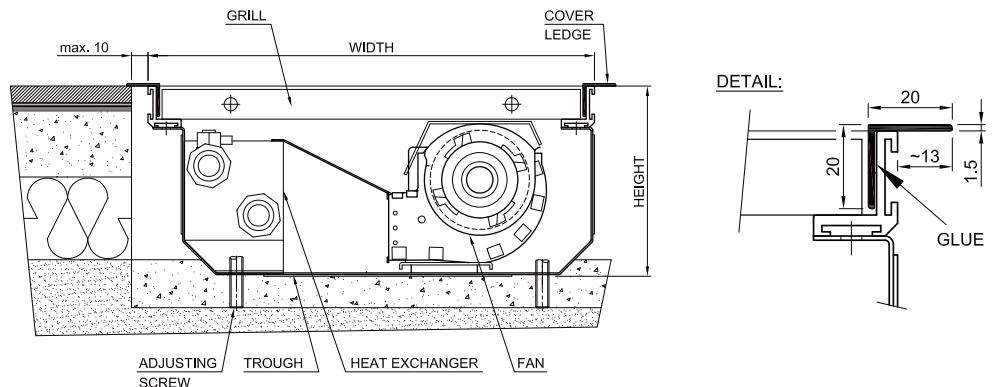
R5-1
stainless steel grill, transverse

A grill available to order, calculation as per the convector type.

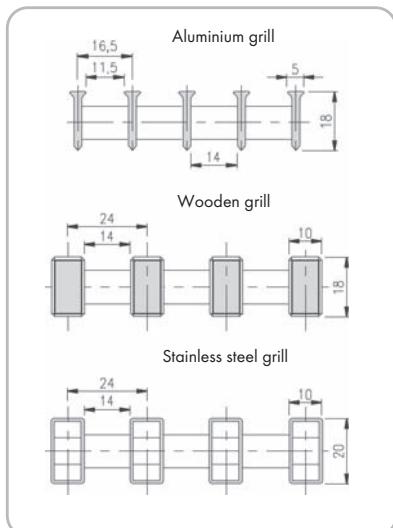
FINISHING COVER LEDGE

- for installation in wooden and floating floors to cover the dilatation joints
- variants available: Al natural, Al bronze (anodized aluminium) or coated with powder colour acc. to RAL Chart
- covers dilatation joints up to 10mm
- profile 20x20x1.5 mm
- ledge is a part of convector package
- installation after the finished convector mounting
- marking D instead of R in the code, colour matching with surface treatment of the frame (D1-1, D2-1, D3-1, D2-1, D2-2, D3-2, D6-1, D6-2, D6-3, D6-4, D5-1)

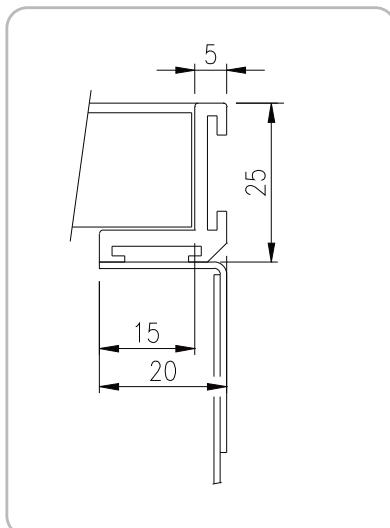
Because of modified grill width of convector, the option is to be specified when ordering the heating body. The top edge of convector frame may not protrude from the final floor level.



Grill cross section



Frame detail



Non standard frame



Samples of floor convector coding:

FLT20-11120-NR110 - convector with Al-frame and grill

FLT20-11120-ND110 - convector with Al-frame, modified grill and cover ledge

Ordering, see the page 37

CONVECTOR WITH FANS 24V DC



Floor convector equipped with tangential fans is characterized of high heating capacity surpassing the same of convector with natural convection. By using of quiet tangential fans and in connection with intelligent regulation, the convector became a full-bodied heating element for utilization in modern buildings.

Convector is fitted with Cu-Cu wire heat exchanger through which heating medium is flowing. Lengthwise placed tangential fans guarantee a balanced exchanger covering and subsequently an optimized heat distribution to the room.

- **High heating output**
- **Energy saving fans**
- **24V DC**
- **Continuous revs regulation**

TYPES WITH 24V DC TECHNOLOGY:

FLT10-09 (270x90x800-4800 mm)

FLT20-09 (320x90x800-4800 mm)

FLT10-11 (270x115x800-4800 mm)

FLT20-11 (320x115x800-4800 mm)

FLT21-12 (320x125x800-3200 mm)

Table of fans electric power input (FLT types)

TYPE	Speed	Revolutions [rpm]	FLT convector length [mm]										
			800	1200	1600	2000	2400	2800	3200	3600	4000	4400	4800
FLT10-09 FLT20-09	1	576	2W	2W	2W	4W	4W	5W	5W	6W	7W	7W	9W
	2	762	2W	2W	3W	4W	5W	6W	7W	7W	9W	9W	11W
	3	1057	3W	4W	4W	7W	8W	10W	11W	11W	14W	15W	17W
	max.*	2394	18W	18W	18W	36W	36W	54W	54W	54W	72W	72W	90W
FLT10-11 FLT20-11 FLT21-12	1	465	2W	2W	3W	3W	5W	5W	6W	6W	8W	8W	9W
	2	582	2W	2W	4W	4W	6W	6W	8W	8W	10W	10W	12W
	3	756	4W	4W	7W	7W	10W	10W	13W	13W	16W	16W	19W
	max.*	1519	20W	20W	40W	40W	60W	60W	80W	80W	100W	100W	120W

* revs max. are not regulated for the case of installation.

RECOMMENDED STANDARD INSTALLING IN FLOOR

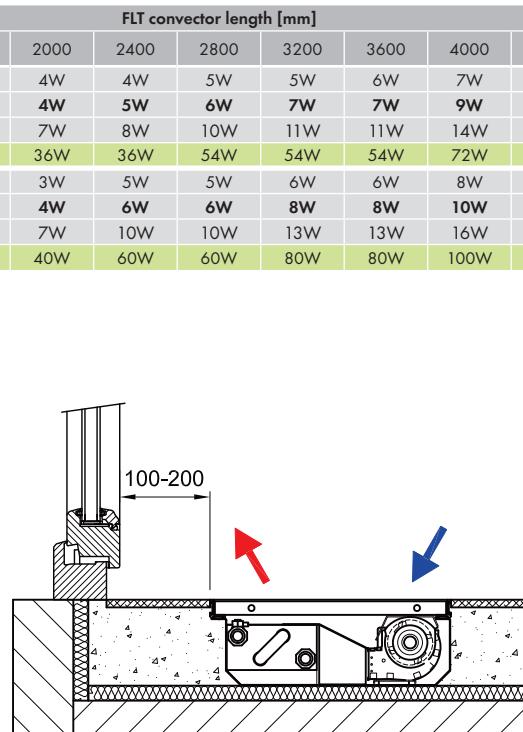
- Convector installation with exchanger towards window
- ideal position 100–200 mm distance from window
- fan draws in the room air
- the air is warmed up by flowing through exchanger
- hot air is mixed with cold air flowing off the window surface
- air circulation: warms up the room air
 - screens the window surface
 - secondary demisters the window surface
- installation with fan towards window and exchanger outwards slightly raises the convector heating output, but accelerates air circulation in the room.

24V DC FANS

The installed modern fans with **EC** engines work under the operating voltage of **24 V DC**. The continuous engine revs regulation **0–10V** enables accurate control of floor convector output. Power consumption of a fan is specified in watt units. Only one thermostat and one regulator is sufficient for all convectors installed in a standard room.

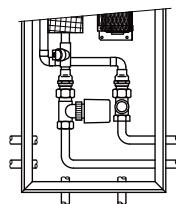
TABLE OF CONVECTOR ELECTRIC POWER INPUTS

- Convektory jsou vybaveny kontinuálně regulovanými 24V DC ventilátory
- Recomendedná regulační rozsah pro vložené konvektory je v rozmezí 0–4V
- Tabulka níže uvedená znázorňuje výkon uvnitř uvedených rychlostních stupňů 1, 2, 3
- Nejvyšší možný výkon ventilátoru (kontrolní napětí 10V) je uveden pro plné využití k dispozici v regulaci

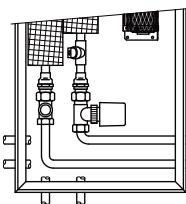


CONVECTOR CONNECTION TO THE HEATING SYSTEM

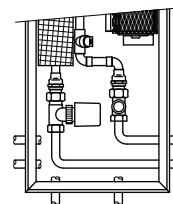
Floor convector is fitted with openings for connection to the heating system. There are three connection possibilities, from the room, side or window wall.



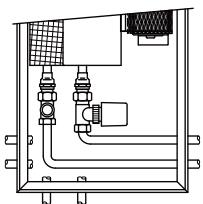
FLT10-09



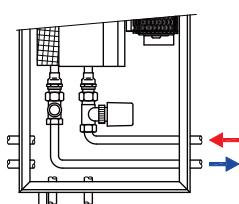
FLT20-09



FLT10-11



FLT20-11



FLT21-12

FLT 24V DC FLOOR COVECTOR REGULATION

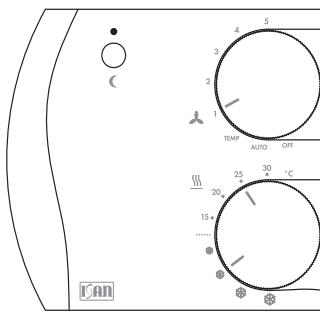


Regulation of floor convector with installed power saving 24V DC fans enables to utilize a modern control technology. Convector becoming a part of the heating system evaluates the situation and reacts to outer incentives. By means of very simple control and due to antifreeze protection eliminating any heat leakage, the heated room has all precon-

ditions for comfortable dwelling. The regulator power consumption is negligible. Communication between floor convector and thermostat follows by data flow based on CIB protocol. The system may be easily integrated in Foxtrot-BMS. Modifications for LonWorks, EIB, KNX and others are available to order.

REGULATION BY MEANS OF RTM101 THERMOSTAT AND INSTALLED SR201 REGULATOR

TEMPERATURE SETTING UP



15–30 °C range for heating
* * * * range for cooling

The system automatically changes between heating / cooling in dependence on ambient temperature and according to the temperature of heating medium flowing through exchanger. The medium flowing and the fans are stopped, as soon as the desired temperature in the room is reached.

Modes:

- OFF convector off
- AUTO automated regulation of floor convector detecting the actual room temperature; the mode regulates continuous revs adjustment of fans, watches over the exchanger temperature, switches between heating and cooling, reacts to window sensors

TEMP moderate heating, the fans are off, only the flow rate of heating medium is active
1–5 continuous fan revs regulation according to the user's demand

Sleep mode

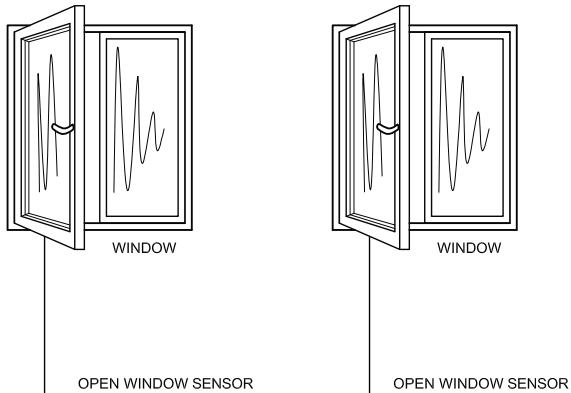
Decreases the demand for thermostat setting by -2 °C (heating) or +2 °C (cooling). It is not necessary to reset the thermostat parameters for the night or for a period of absence in the house. The sleep mode is signaled by LED diode on the thermostat cover.

Antifreeze protection

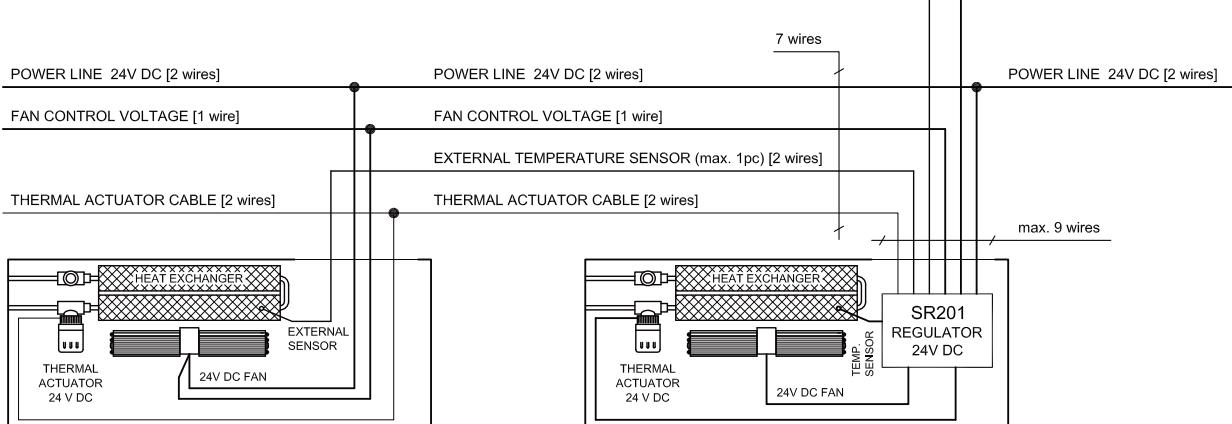
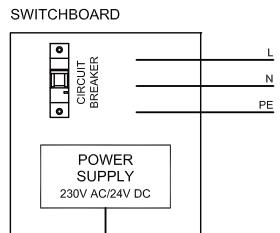
Regulator switches on a thermodrive when the local temperature drops below 5 °C around the floor convector. So, the heating medium flowing through exchanger prevents any system damage. The antifreeze protection functions within all mode options, inclusively the OFF-mode. The antifreeze protection is only available, when the heating system is supplied with heating medium.

Window sensors

In case of installed window sensor, regulator stops the convector running during ventilation. The antifreeze protection remains active and after the window is closed, system returns to the standard mode.



THERMOSTAT RTM101



For current installation, you only need 1 thermostat, 1 regulator and 1 power supply unit per a room.

In case of extended projects, where the power input of installed convectors goes beyond 100W, an additional regulator and a stronger power supply unit is to be installed. Please contact the manufacturer.

CONVECTORS TO THE WET CONDITIONS 12V DC



Floor convectors for wet conditions with axial fans achieve high thermal outputs. As advantage in hot summer days, they can be used also for cooling of window surfaces. The convectors are designed for heavy conditions – for pools, where they could be flooded with water for a short time period, for winter gardens etc. The convector is equipped with draining pipes on sides for water drainage. The trough is designed of special stainless steel DIN 1.4404, resistant to aggressive conditions (e.g. chlorine). They can be installed where there is no high requirement for acoustic parameters. **The convectors cannot be used at pools with salt water!**

The convectors are equipped with a Cu-Cu wire exchanger, in which heating medium flows through. There are axial fans with air distributors positioned along the whole length before the exchanger. They assure regular coverage of the heat exchanger and as a consequence, optimum temperature distribution in the room.

TABLE OF FAN ELECTRIC POWER OF FLB (REGULATOR RB25)

Maximum electric input power of 12V DC fans and a number of installed fans

TYPE	Voltage[V]*	800		1200		1600		2000		2400		2800		3200		3600		4000		4400		4800	
		W	pcs	W	pcs	W	pcs	W	pcs	W	pcs	W	pcs	W	pcs	W	pcs	W	pcs	W	pcs		
FLB20-12	12V DC	1,6	1	3,2	2	4,8	3	6,4	4	8	5	9,6	6	11,2	7	12,8	8	14,4	9	16	10	17,6	11

* standardly, the input power is lower because of used regulator (operating voltage e.g. 8, 10,12 V DC)

RECOMMENDED STANDARD INSTALLING IN FLOOR

- Convector installation with exchanger towards window
- Ideal position 100–200 mm distance from window
- Fan draws in the room air
- The air is warmed up by flowing through exchanger
- Hot air is mixed with cold air flowing off the window surface
- Air circulation: warms up the room air
 - screens the window surface
 - secondary demisters the window surface
- Installation with fan towards window and exchanger outwards slightly raises the convector heating output, but accelerates air circulation in the room.

CONVECTOR CONNECTION TO THE HEATING SYSTEM

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

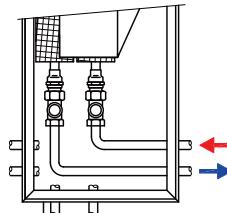
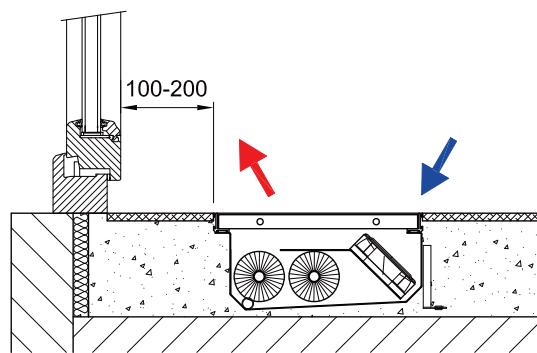
- high capacity
- energy saving fans
- 12 V DC
- 3-stage revolution control
- wet conditions

TYPES DELIVERED WITH 12 V DC TECHNOLOGY:

FLB20-12 (320×125×800–4800 mm)

FANS 12 V DC

There are axial fans installed in convectors, with a design suitable for conditions with higher wetness and flooding with water. They work with direct voltage of 12 V DC.



FLB20-12

REGULATION OF 12V DC



REGULATION OF FLB 12V DC FLOOR CONVECTORS

Regulation of floor convectors for wet environment enables control of fan revolutions in three stages.

Control elements:

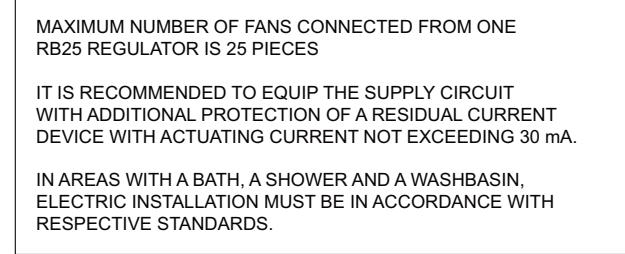
- **Thermostat** located in a room watches required temperature and switches fans according to the revolution switch
- **Revolution switch** – independently or in combination with the thermostat switches 3 revolution stages
- **RB25 regulator** transforms the network voltage to a safe voltage of 12 V (safety transformer). It is located outside the zone with wet conditions. RB25 supplies the thermostat and the voltage switch with 12 V AC, fans in convectors with 12 V DC. The regulator is installed in a box built-in in a wall.

RB25 parameters:

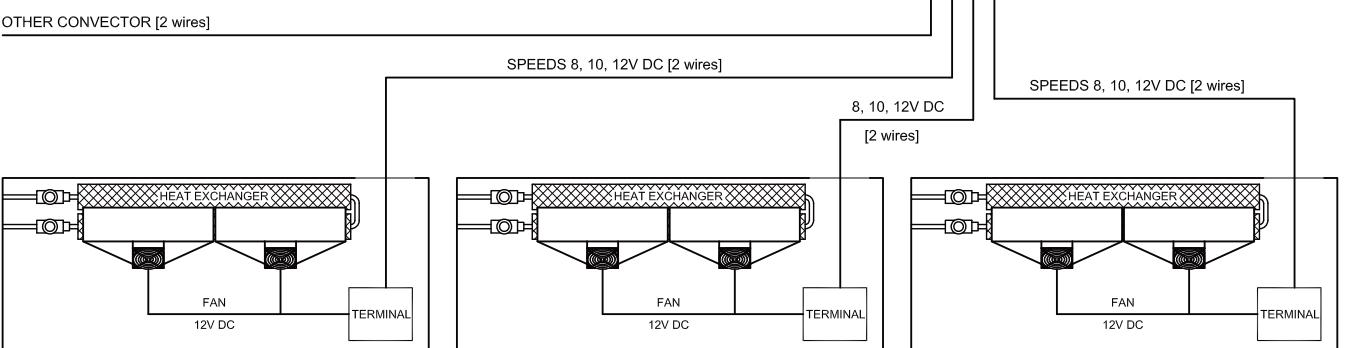
- the regulator can control up to **25 fans** (numbers see page 18)
- the regulator for convectors with axial fans – three-stage regulation by means of a thermostat with a switch (e.g. Z-RT001+Z-RT002)
- dimensions **135x135x75 mm** (box to be built-in in a wall outside the wet zone)
- a digital thermostat with a remote sensor can be used after consultation
- if a capacity of the regulator is used up, it is necessary to use an additional RB25 regulator

Remark: FLB regulation does not allow connection of a thermoelectric drive.

REGULATION: Z-RT001 THERMOSTAT, Z-RT002 SWITCH, RB25 REGULATOR



THERMOSTAT Z-RT001+Z-RT002



ACCESSORIES FOR 12V DC CONVECTORS



Z-DS002

Simple revolution switch with three speed stages

Switch levels:	0, 1, 2, 3
Operating voltage:	230V / 50Hz
Max. rating:	6 (2) A
Protection:	IP30
Colour:	white
Dimension:	97x100x43 mm



Z-RT001 + Z-RT002 – heating

manual room thermostat Z-RT001 placed at the sub-base Z-R002 with fan speed switch, heating. In this combination, it is possible to switch-off the fan and then thermostat control thermal actuator only (moderate heating).

Temperature range:	10–30 °C
Switch levels:	Speed: 0, 1, 2, 3 Switch:0/1
Operating voltage:	230V / 50Hz
Max. rating:	6 (2) A
Protection:	IP30 (thermostat)
Colour:	white
Dimension:	122x93x52 mm



RB25 – regulator of revolutions for FLB convectors

three-stage regulator, switches over fans revolutions according to thermostat instructions. The regulator is in an installation box, which is built-in in a wall, outside the wet zone.

Operating voltage:	Max. 230V / 50Hz
Input:	230V / 50Hz
Output1:	12V AC (thermostat, switcher)
Output2:	12V DC (fans)
Number of controlled fans:	25
Dimension:	135 x 135 x 75mm



Z-RD002 direct, Z-RE002 corner

Lockshield valves

Dimension:	DN15, NF norm
Connection thread:	M30x1,5 mm
Max. working temperature:	120 °C
Max. working overpressure:	PN10

T-turns	0,25	0,5	1,0	1,5	2,0	3,0	4,0
k_v (m³/h)	0,13	0,22	0,43	0,65	0,85	1,25	1,7



CONVECTORS WITH NATURAL CONVECTION



Floor convectors with natural convection are especially suitable for installation to all-glass. The so installed convector creates a thermal curtain screening the cold air coming from the glass surface. A part of warm air streaming to the room heats up dwelling interiors. The floor convectors have been usually used as heating bodies supporting and supplementing the function of other heating systems. The floor convectors may also serve as the main heating bodies provided that the heating capacity thereof is sufficient. The floor convectors are also suitable for tempering of entrance halls, long corridors or industrial and commercial rooms.

The convectors are equipped with an Cu-Cu wire heat exchanger through which the heating medium is flowing. Cold air of the window and room absorbed by and heated up in exchanger spontaneously rises up to the window glass surface.

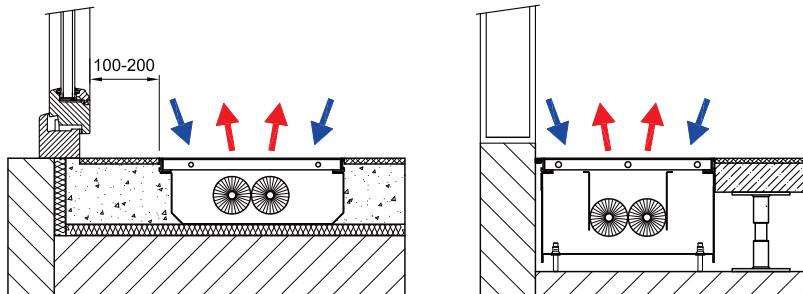
- Tempering of rooms
- Small water volume
- Quick heating up
- Broad assortment

AVAILABLE 24V DC TYPES:

FLK10-09	(170×90×800-4800 mm)
FLK10-11	(170×115×800-4800 mm)
FLK10-14	(170×140×800-4800 mm)
FLK20-09	(320×90×800-4800 mm)
FLK20-11	(320×115×800-4800 mm)
FLK20-14	(320×140×800-4800 mm)
FLK30-09	(360×90×800-4800 mm)
FLK30-11	(360×115×800-4800 mm)
FLK30-14	(360×140×800-4800 mm)
FLK40-09	(420×90×800-4800 mm)
FLK40-11	(420×115×800-4800 mm)
FLK40-14	(420×140×800-4800 mm)
FLK20-18	(300×180×800-4800 mm)
FLK20-30	(300×300×800-4800 mm)
FLK30-18	(360×180×800-4800 mm)
FLK30-30	(360×300×800-4800 mm)

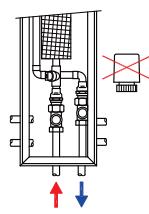
RECOMMENDED STANDARD INSTALLING IN FLOOR

- Ideal position 100-200 mm distance from window
- Fan draws in the room air
- The air is warmed up by flowing through exchanger
- Hot air is mixed with cold air flowing off the window surface
- Air circulation: warms up the room air screens the window surface secondary demisters the window surface
- Installation with fan towards window and exchanger outwards slightly raises the convector heating output, but accelerates air circulation in the room.

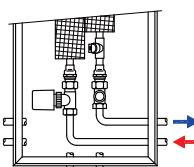


CONVECTOR CONNECTION TO THE HEATING SYSTEM

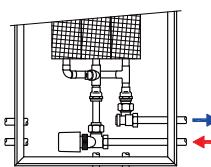
Floor convector is fitted with openings for connection to the heating system. There are three connection possibilities, from the room, side or window wall.



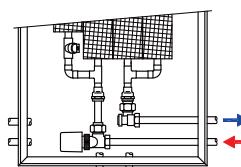
FLK10-09
FLK10-11
FLK10-14



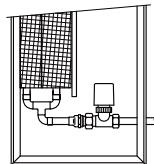
FLK20-09
FLK20-11
FLK20-14



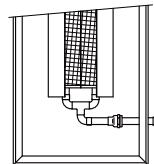
FLK30-09
FLK30-11
FLK30-14



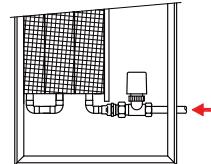
FLK40-09
FLK40-11
FLK40-14



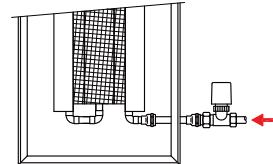
FLK20-18
FLK20-30
typ A



FLK20-18
FLK20-30
typ B



FLK30-18
FLK30-30
typ A



FLK30-18
FLK30-30
typ B

FLK CONVECTOR REGULATION



For regulation of fanless floor convectors, a thermostatic valve is to be installed on the input tube of heat exchanger.

ROOM THERMOSTAT Z-RT001 AND THERMAL ACTUATOR Z-TS230

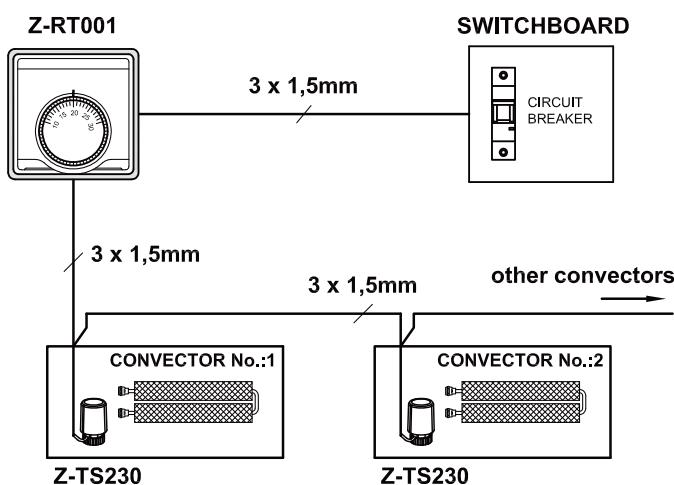
FLK convectors are regulated by means of thermo-drive opening or closing the heating medium circulation on the base of information by thermostat. The thermo-drive works in ON / OFF mode. Full circulation of heating medium follows within 3 minutes after the thermostat is activated.

Feeding voltage is 230V AC /50Hz. The thermo-drive hidden under the water connection is highly shielded with IP44 circuit breaker.

COMBINED USING OF CONVECTORS

In projects requiring combined installation of convectors fitted with 24V DC fans and convectors with natural convection, Z-TS24V thermo-drive controlled by convector fitted with regulator is used.

FLK - CABLING EXAMPLE FOR FLOOR CONVECTOR WITH Z-TS230



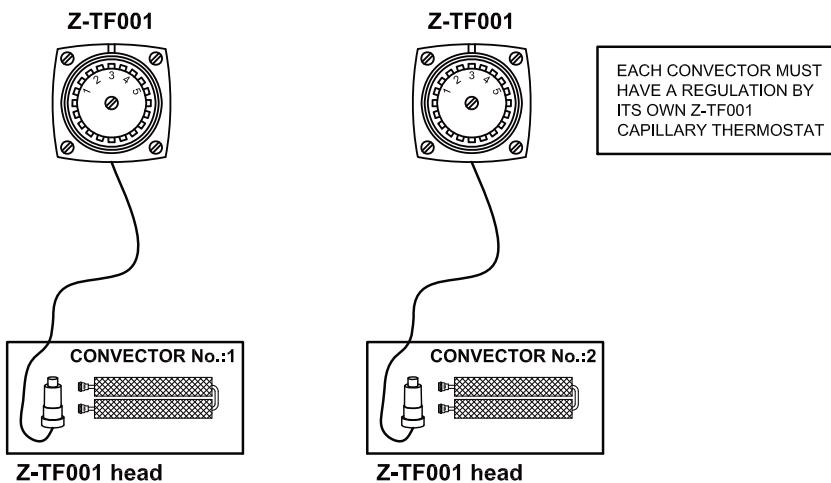
CAPILLARY THERMOSTAT Z-TF001

Thermostatic capillary head automatically controls keeping of the preset room temperature. The room temperature is regulated by user independently of any other power supply units. Keeping of the preset temperature is controlled by heat-sensitive element. Water volume in the

heating body, necessary for keeping of the preset room temperature, is regulated by thermostatic valve.

The thermostatic capillary head has been installed on each convector.

FLK - CONNECTING WITH CAPILLARY THERMOSTAT Z-TF001



ACCESSORIES FOR FLK CONVECTORS



Z-RT001

Room thermostat

Temperature range:	10 to 30 °C
Operating voltage:	230V/50Hz
Max. rating:	10 (3) A
Protection:	IP30
Colour:	white
Dimension:	83 × 83 × 40 mm



Z-TF001 (available for FLK only)

Capillary thermostat

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



Z-TS24

Thermoactuator – a drive to be installed on thermoelectric valve for ON/OFF flow rate regulation

Input voltage: 230V AC

Power input when switched on: 6VA

Power input during operation: 2.5W

Period of switching ON/OFF: 3 minutes

Ingress protection: IP41



Z-TD001 / Z-TE001

Thermostatic valve direct/corner

DN15 version NF, M30 × 1,5 mm, PN10, 120 °C

Valve adjusting	1	2	3	4	5	N
k_v (m³/h)	0,1	0,2	0,31	0,45	0,69	0,89



Z-RD002 direct, Z-RE002 corner

Lockshield valves

Dimension: DN15, NF norm

Connection thread: M30×1,5 mm

Max. working temperature: 120 °C

Max. working overpressure: PN10

T - turns	0,25	0,5	1,0	1,5	2,0	3,0	4,0
k_v (m³/h)	0,13	0,22	0,43	0,65	0,85	1,25	1,7



FLK10-09 | NATURAL CONVECTION



FLK20-09 | NATURAL CONVECTION



SPECIFICATIONS

- Width 170 mm
- Offices, corridors, halls, flats, winter garden
- High heating output of natural convection
- Suitable for combining with other heating systems
- Cu-Cu wire heat exchanger
- Mechanical resistance of the heat exchanger
- Easy cleaning – hygiene
- Using in dry ambience

SPECIFICATIONS

- Width 320 mm
- Offices, corridors, halls, flats, winter garden
- High heating output of natural convection
- Suitable for combining with other heating systems
- Cu-Cu wire heat exchanger
- Mechanical resistance of the heat exchanger
- Easy cleaning – hygiene
- Using in dry ambience

FLK30-09 | NATURAL CONVECTION



FLK40-09 | NATURAL CONVECTION

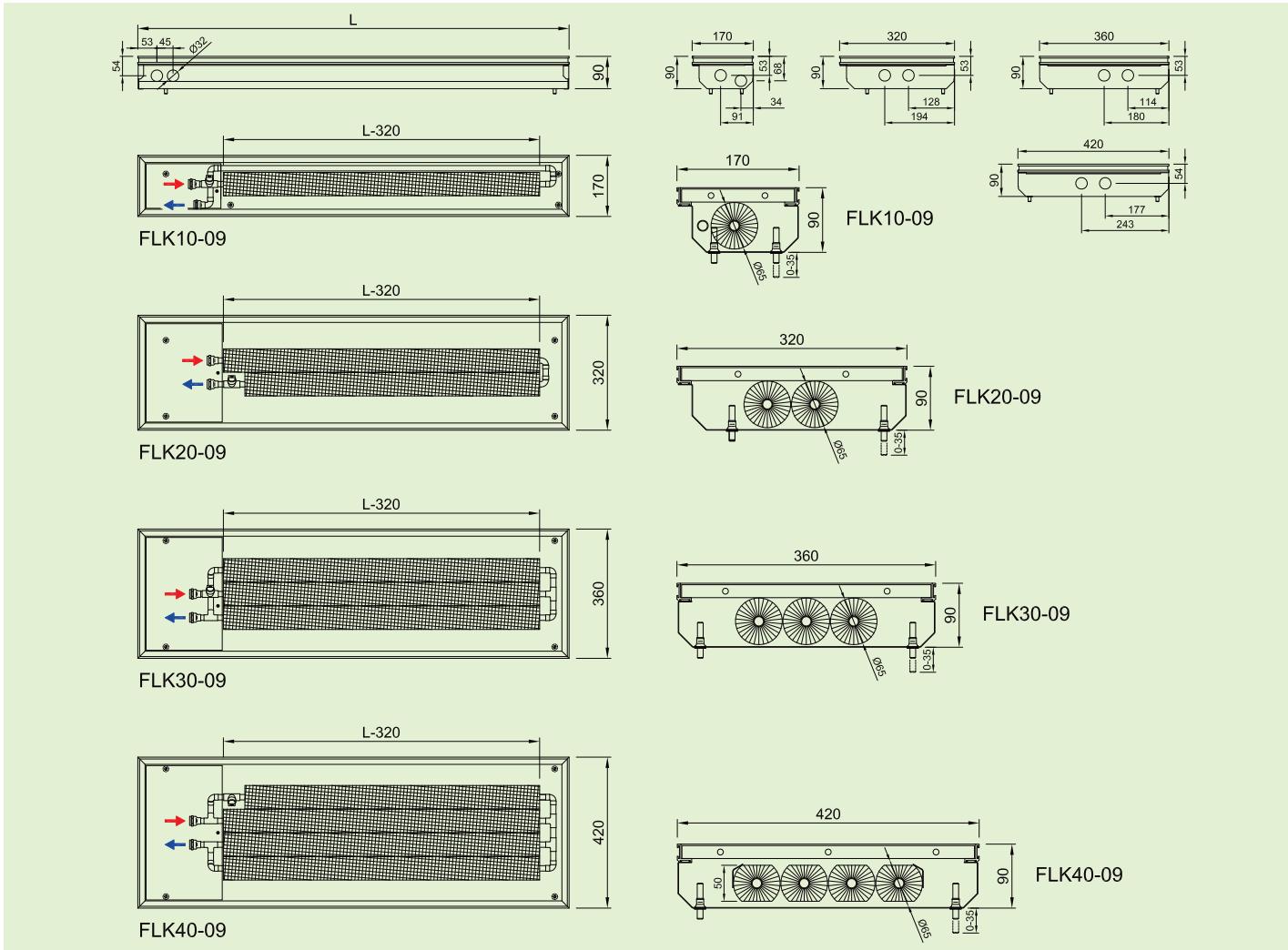


SPECIFICATIONS

- Width 360 mm
- Offices, corridors, halls, flats, winter garden
- High heating output of natural convection
- Suitable for combining with other heating systems
- Cu-Cu wire heat exchanger
- Mechanical resistance of the heat exchanger
- Easy cleaning – hygiene
- Using in dry ambience

SPECIFICATIONS

- Width 420 mm
- Offices, corridors, halls, flats, winter garden
- High heating output of natural convection
- Suitable for combining with other heating systems
- Cu-Cu wire heat exchanger
- Mechanical resistance of the heat exchanger
- Easy cleaning – hygiene
- Using in dry ambience



HEATING OUTPUT

Q [W] 90/70/20°C

TYPE	FLK10-09	FLK20-09	FLK30-09	FLK40-09
LENGTH [mm]	HEATING OUTPUT [W]			
800	118	199	282	365
1200	214	366	511	656
1600	316	541	747	953
2000	419	721	986	1251
2400	523	902	1227	1552
2800	630	1088	1472	1856
3200	736	1276	1716	2156
3600	844	1466	1964	2462
4000	952	1657	2212	2767
4400	1063	1851	2462	3073
4800	1172	2046	2711	3376

Q [W] 70/55/20°C

TYPE	FLK10-09	FLK20-09	FLK30-09	FLK40-09
LENGTH [mm]	HEATING OUTPUT [W]			
800	75	127	179	231
1200	137	234	326	419
1600	201	346	477	608
2000	267	461	630	799
2400	333	577	784	991
2800	401	695	940	1185
3200	469	815	1097	1378
3600	538	937	1255	1572
4000	607	1059	1413	1767
4400	677	1184	1573	1962
4800	747	1308	1733	2158

Qn [W] 75/65/20°C

TYPE	FLK10-09	FLK20-09	FLK30-09	FLK40-09
LENGTH [mm]	HEATING OUTPUT [W]			
800	95	161	227	293
1200	173	296	413	530
1600	255	438	604	770
2000	338	583	797	1011
2400	422	730	992	1254
2800	508	880	1190	1500
3200	594	1032	1388	1744
3600	681	1186	1588	1990
4000	768	1341	1789	2237
4400	857	1498	1991	2484
4800	945	1655	2193	2731

Q [W] 55/45/20°C

TYPE	FLK10-09	FLK20-09	FLK30-09	FLK40-09
LENGTH [mm]	HEATING OUTPUT [W]			
800	45	76	118	160
1200	81	140	211	282
1600	120	208	307	406
2000	159	277	406	535
2400	199	347	506	665
2800	240	419	606	793
3200	280	492	708	924
3600	321	565	808	1051
4000	363	639	911	1183
4400	405	714	1015	1316
4800	446	789	1118	1447

PARAMETERS

Convector	Width	170, 320, 360, 420 mm
	Height	90 mm
	Length	800–4800 mm in step 400 mm
	Height adjusting	0–35 mm
	Stainless trough width	150, 300, 360, 420 mm
	Grill type	cross / linear
	Grill material	anodized aluminum, wood, stainless steel
Exchanger	Width	170, 320, 360, 420 mm
	Height	1x, 2x, 3x, 4x Ø 65 mm
	Finned length	L-320 mm
	Heat medium connection	2 x G1/2" inner
	Max. working temperature	110 °C
	Max. working over-pressure	1 MPa
	Ambient temperature	+2 to +40 °C
Operating conditions	Relative humidity	20–70 %

FLK10-11 | NATURAL CONVECTION



SPECIFICATIONS

- Width 170 mm
- Offices, corridors, halls, flats, winter garden
- High heating output of natural convection
- Suitable for combining with other heating systems
- Cu-Cu wire heat exchanger
- Mechanical resistance of the heat exchanger
- Easy cleaning – hygiene
- Using in dry ambience

FLK20-11 | NATURAL CONVECTION



SPECIFICATIONS

- Width 320 mm
- Offices, corridors, halls, flats, winter garden
- High heating output of natural convection
- Suitable for combining with other heating systems
- Cu-Cu wire heat exchanger
- Mechanical resistance of the heat exchanger
- Easy cleaning – hygiene
- Using in dry ambience

FLK30-11 | NATURAL CONVECTION



SPECIFICATIONS

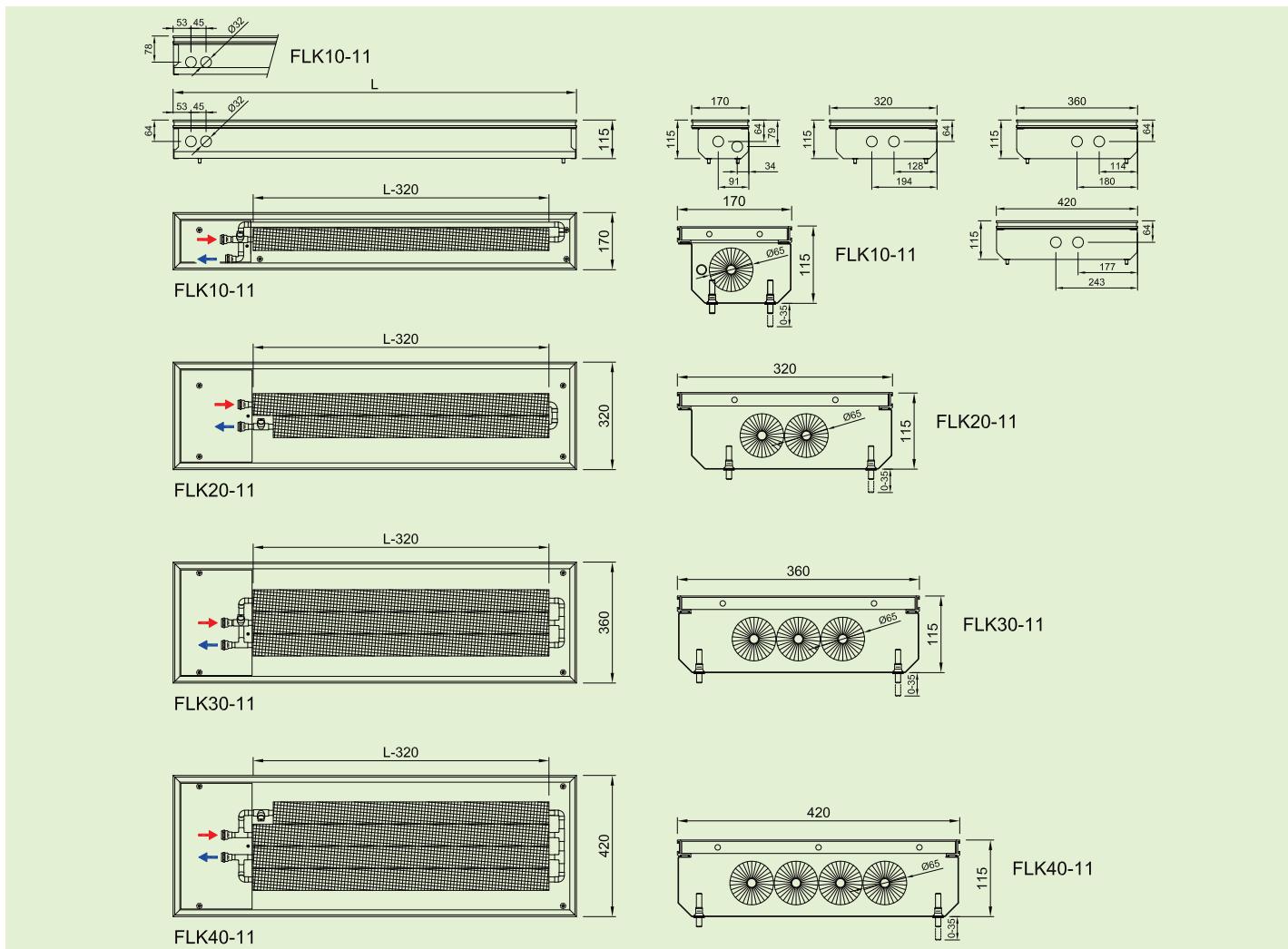
- Width 360 mm
- Offices, corridors, halls, flats, winter garden
- High heating output of natural convection
- Suitable for combining with other heating systems
- Cu-Cu wire heat exchanger
- Mechanical resistance of the heat exchanger
- Easy cleaning – hygiene
- Using in dry ambience

FLK40-11 | NATURAL CONVECTION



SPECIFICATIONS

- Width 420 mm
- Offices, corridors, halls, flats, winter garden
- High heating output of natural convection
- Suitable for combining with other heating systems
- Cu-Cu wire heat exchanger
- Mechanical resistance of the heat exchanger
- Easy cleaning – hygiene
- Using in dry ambience



HEATING OUTPUT

Q [W] 90/70/20°C

TYPE	FLK10-11	FLK20-11	FLK30-11	FLK40-11
LENGTH [mm]	HEATING OUTPUT [W]			
800	126	215	305	395
1200	230	398	546	694
1600	338	587	795	1003
2000	448	783	1052	1321
2400	560	980	1311	1642
2800	673	1182	1568	1954
3200	787	1386	1832	2278
3600	902	1592	2091	2590
4000	1019	1801	2358	2915
4400	1135	2011	2626	3241
4800	1253	2223	2895	3567

Q [W] 70/55/20°C

TYPE	FLK10-11	FLK20-11	FLK30-11	FLK40-11
LENGTH [mm]	HEATING OUTPUT [W]			
800	81	137	194	251
1200	147	254	348	442
1600	216	375	507	639
2000	286	500	672	843
2400	357	627	837	1048
2800	429	755	1002	1248
3200	502	886	1170	1454
3600	575	1018	1336	1654
4000	649	1151	1507	1862
4400	724	1285	1678	2071
4800	799	1421	1850	2279

Qn [W] 75/65/20°C

TYPE	FLK10-11	FLK20-11	FLK30-11	FLK40-11
LENGTH [mm]	HEATING OUTPUT [W]			
800	102	174	246	318
1200	186	322	441	560
1600	273	475	642	809
2000	362	633	850	1067
2400	452	793	1060	1327
2800	543	956	1268	1580
3200	635	1121	1481	1841
3600	728	1288	1691	2094
4000	822	1457	1907	2357
4400	916	1627	2124	2621
4800	1011	1798	2341	2884

Q [W] 55/45/20°C

TYPE	FLK10-11	FLK20-11	FLK30-11	FLK40-11
LENGTH [mm]	HEATING OUTPUT [W]			
800	48	84	118	152
1200	88	154	211	268
1600	129	227	307	387
2000	171	303	406	509
2400	213	379	506	633
2800	256	457	606	755
3200	300	536	708	880
3600	344	616	808	1000
4000	388	696	911	1126
4400	433	777	1015	1253
4800	478	859	1118	1377

PARAMETERS

Convector	Width	170, 320, 360, 420 mm
	Height	115 mm
	Length	800–4800 mm in step 400 mm
	Height adjusting	0–35 mm
	Stainless trough width	150, 300, 360, 420 mm
	Grill type	cross / linear
	Grill material	anodized aluminum, wood, stainless steel
Exchanger	Width	170, 320, 360, 420 mm
	Height	115 mm
	Finned length	L-320 mm
	Heat medium connection	2 × G1/2" inner
	Max. working temperature	110 °C
	Max. working over-pressure	1 MPa
	Ambient temperature	+2 to +40 °C
Operating conditions	Relative humidity	20–70 %

FLK10-14 | NATURAL CONVECTION



FLK20-14 | NATURAL CONVECTION



SPECIFICATIONS

- Width 170 mm
- Offices, corridors, halls, flats, winter garden
- High heating output of natural convection
- Suitable for combining with other heating systems
- Cu-Cu wire heat exchanger
- Mechanical resistance of the heat exchanger
- Easy cleaning – hygiene
- Using in dry ambience

SPECIFICATIONS

- Width 320 mm
- Offices, corridors, halls, flats, winter garden
- High heating output of natural convection
- Suitable for combining with other heating systems
- Cu-Cu wire heat exchanger
- Mechanical resistance of the heat exchanger
- Easy cleaning – hygiene
- Using in dry ambience

FLK30-14 | NATURAL CONVECTION



FLK40-14 | NATURAL CONVECTION

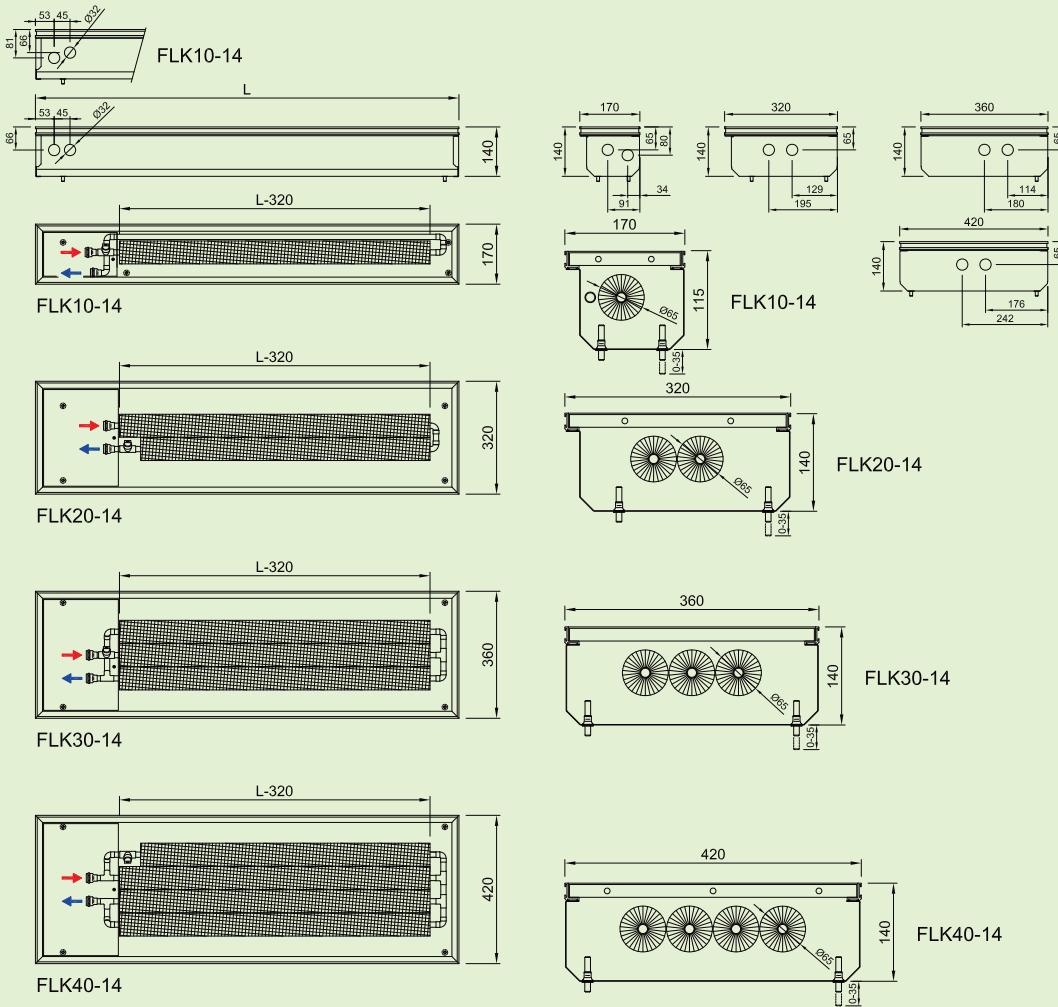


SPECIFICATIONS

- Width 360 mm
- Offices, corridors, halls, flats, winter garden
- High heating output of natural convection
- Suitable for combining with other heating systems
- Cu-Cu wire heat exchanger
- Mechanical resistance of the heat exchanger
- Easy cleaning – hygiene
- Using in dry ambience

SPECIFICATIONS

- Width 420 mm
- Offices, corridors, halls, flats, winter garden
- High heating output of natural convection
- Suitable for combining with other heating systems
- Cu-Cu wire heat exchanger
- Mechanical resistance of the heat exchanger
- Easy cleaning – hygiene
- Using in dry ambience



HEATING OUTPUT

Q [W] 90/70/20 °C

TYPE	FLK10-14	FLK20-14	FLK30-14	FLK40-14
LENGTH [mm]	HEATING OUTPUT [W]			
800	144	266	393	489
1200	264	493	704	860
1600	388	727	1025	1243
2000	515	970	1357	1638
2400	644	1215	1691	2036
2800	773	1465	2022	2422
3200	905	1718	2363	2824
3600	1037	1974	2697	3211
4000	1171	2233	3041	3614
4400	1305	2493	3387	4018
4800	1440	2756	3734	4423

Q [W] 70/55/20 °C

TYPE	FLK10-14	FLK20-14	FLK30-14	FLK40-14
LENGTH [mm]	HEATING OUTPUT [W]			
800	92	170	250	311
1200	168	315	449	548
1600	247	465	654	792
2000	329	619	866	1045
2400	410	777	1080	1300
2800	493	936	1292	1548
3200	577	1098	1509	1803
3600	661	1262	1723	2051
4000	747	1427	1944	2309
4400	832	1594	2164	2568
4800	918	1761	2385	2825

Qn [W] 75/65/20 °C

TYPE	FLK10-14	FLK20-14	FLK30-14	FLK40-14
LENGTH [mm]	HEATING OUTPUT [W]			
800	117	215	317	394
1200	213	399	568	694
1600	313	589	828	1003
2000	416	784	1096	1323
2400	519	983	1367	1645
2800	624	1185	1635	1959
3200	730	1390	1910	2282
3600	837	1597	2181	2596
4000	945	1806	2460	2922
4400	1053	2017	2739	3250
4800	1162	2229	3019	3576

Q [W] 55/45/20 °C

TYPE	FLK10-14	FLK20-14	FLK30-14	FLK40-14
LENGTH [mm]	HEATING OUTPUT [W]			
800	55	104	152	188
1200	101	190	272	332
1600	148	281	396	479
2000	196	375	523	631
2400	244	469	652	784
2800	294	566	781	936
3200	345	664	913	1091
3600	395	763	1042	1240
4000	446	863	1175	1396
4400	497	963	1309	1553
4800	549	1065	1442	1707

PARAMETERS

Convector	Width	170, 320, 360, 420 mm
	Height	140 mm
	Length	800–4800 mm in step 400 mm
	Height adjusting	0–35 mm
	Stainless trough width	150, 300, 360, 420 mm
	Grill type	cross / linear
	Grill material	anodized aluminum, wood, stainless steel
Exchanger	Width	1x, 2x, 3x, 4x Ø 65 mm
	Height	140 mm
	Finned length	L-320 mm
	Heat medium connection	2 × G1/2" inner
	Max. working temperature	110 °C
Operating conditions	Max. working over-pressure	1 MPa
	Ambient temperature	+2 to +40 °C
	Relative humidity	20–70 %

FLK20-18 | NATURAL CONVECTION



SPECIFIKACE

- Width 300 mm
- Possibility of inner construction A or B
- Installation to the double floor
- Administrative buildings, offices
- High heating output of natural convection
- Cu-Cu wire heat exchanger
- Mechanical resistance of the heat exchanger
- Easy cleaning – hygiene
- Using in dry ambience

FLK30-18 | NATURAL CONVECTION



SPECIFIKACE

- Width 360 mm
- Possibility of inner construction A or B
- Installation to the double floor
- Administrative buildings, offices
- High heating output of natural convection
- Cu-Cu wire heat exchanger
- Mechanical resistance of the heat exchanger
- Easy cleaning – hygiene
- Using in dry ambience

FLK20-30 | NATURAL CONVECTION



SPECIFIKACE

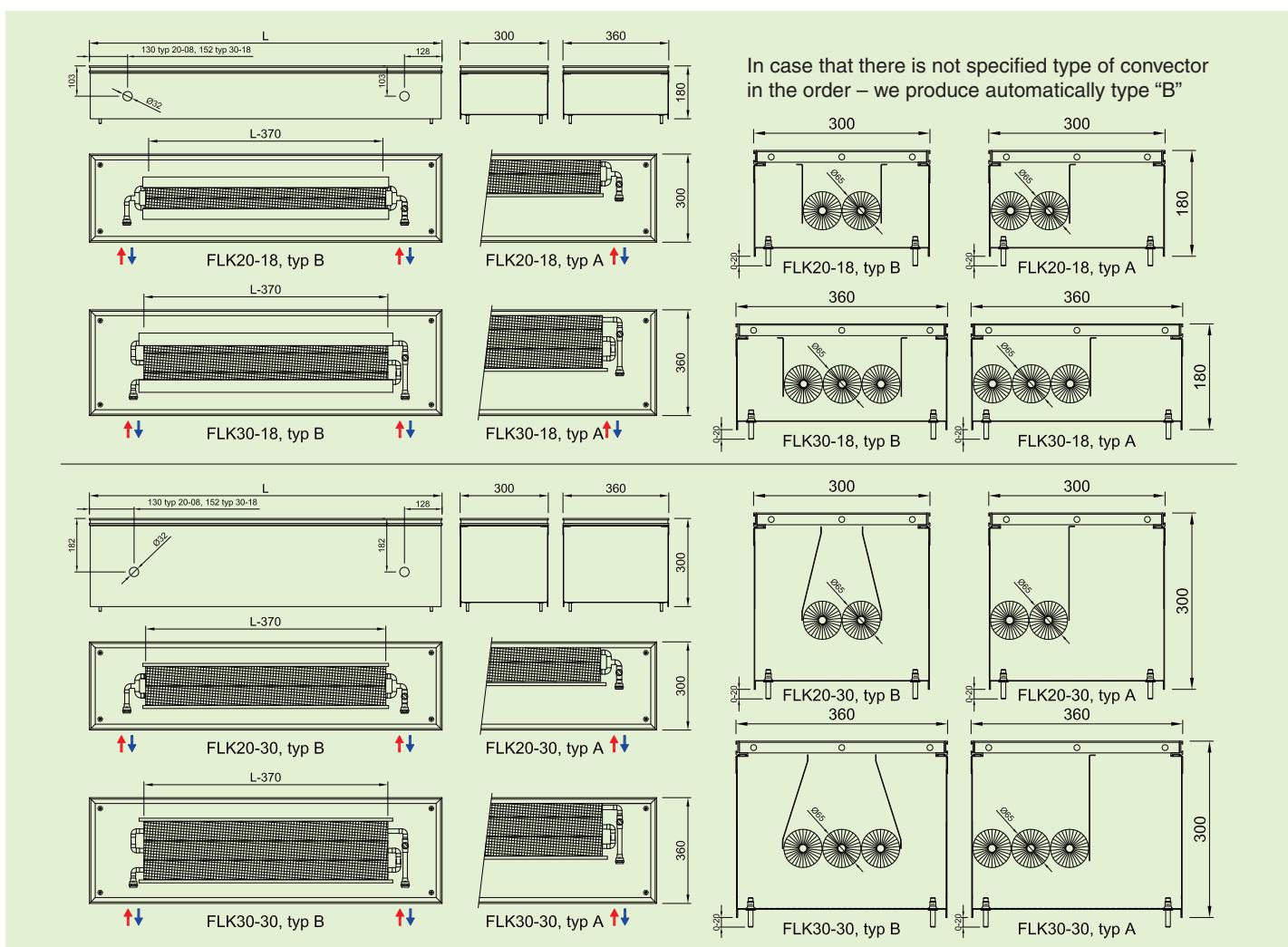
- Width 300 mm
- Possibility of inner construction A or B
- Installation to the double floor
- Administrative buildings, offices
- High heating output of natural convection
- Cu-Cu wire heat exchanger
- Mechanical resistance of the heat exchanger
- Easy cleaning – hygiene
- Using in dry ambience

FLK30-30 | NATURAL CONVECTION



SPECIFIKACE

- Width 360 mm
- Possibility of inner construction A or B
- Installation to the double floor
- Administrative buildings, offices
- High heating output of natural convection
- Cu-Cu wire heat exchanger
- Mechanical resistance of the heat exchanger
- Easy cleaning – hygiene
- Using in dry ambience



HEATING OUTPUT

Q [W] 90/70/20 °C

TYPE	FLK20-18	FLK30-18	FLK20-30	FLK30-30
LENGTH [mm]	HEATING OUTPUT [W]			
800	333	381	379	550
1200	661	754	752	1090
1600	995	1135	1132	1641
2000	1309	1494	1489	2159
2400	1643	1875	1869	2710
2800	1970	2248	2241	3250
3200	2304	2629	2621	3801
3600	2618	2988	2978	4319
4000	2952	3369	3358	4870
4400	3286	3750	3738	5421
4800	3613	4123	4110	5961

Q [W] 70/55/20 °C

TYPE	FLK20-18	FLK30-18	FLK20-30	FLK30-30
LENGTH [mm]	HEATING OUTPUT [W]			
800	204	233	227	329
1200	405	462	450	652
1600	609	695	677	981
2000	801	915	890	1291
2400	1006	1148	1117	1621
2800	1206	1377	1340	1944
3200	1411	1610	1567	2273
3600	1603	1829	1781	2582
4000	1808	2063	2008	2912
4400	2012	2296	2235	3242
4800	2213	2525	2458	3564

Qn [W] 75/65/20 °C

TYPE	FLK20-18	FLK30-18	FLK20-30	FLK30-30
LENGTH [mm]	HEATING OUTPUT [W]			
800	257	293	289	419
1200	510	582	573	831
1600	767	875	862	1250
2000	1009	1152	1134	1645
2400	1267	1446	1423	2065
2800	1519	1734	1707	2476
3200	1777	2028	1996	2896
3600	2019	2304	2269	3290
4000	2277	2598	2558	3710
4400	2534	2892	2847	4130
4800	2787	3180	3131	4541

Q [W] 55/45/20 °C

TYPE	FLK20-18	FLK30-18	FLK20-30	FLK30-30
LENGTH [mm]	HEATING OUTPUT [W]			
800	124	142	135	195
1200	246	281	267	387
1600	370	423	402	583
2000	487	556	529	767
2400	612	698	664	963
2800	734	837	796	1155
3200	858	979	931	1351
3600	975	1113	1058	1535
4000	1100	1255	1193	1731
4400	1224	1397	1328	1926
4800	1346	1536	1460	2118

PARAMETERS

Convector	Width	300, 360 mm
	Height	180, 300 mm
	Length	800–4800 mm in step 400 mm
	Height adjusting	0–20 mm
	Stainless trough width	300, 360 mm
	Grill type	cross / linear
	Grill material	anodized aluminum, wood, stainless steel
Exchanger	Width	2x, 3x Ø 65 mm
	Height	
	Finned length	L-370 mm
	Heat medium connection	2 x G1/2" inner
	Max. working temperature	110 °C
	Max. working over-pressure	1 MPa
	Ambient temperature	+2 to +40 °C
Operating conditions	Relative humidity	20–70 %

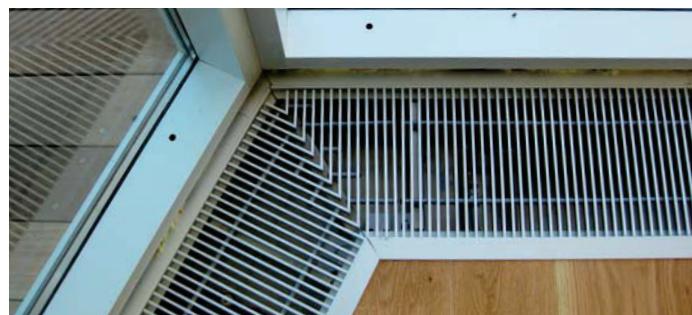
ATYPICAL CONVECTORS



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

The measurement of the convector, performed by the customer or by an Radiátor specialist, must be carried out on site on the actual structure (not based on the design). The level of completeness of the structure required for the measurement is as follows: final shape of the wall along which the convection heater is to be installed, windows mounted, access to the measuring area (scaffolding dismantled, etc.). The technical documentation developed for the convection heaters previously measured is discussed and approved by

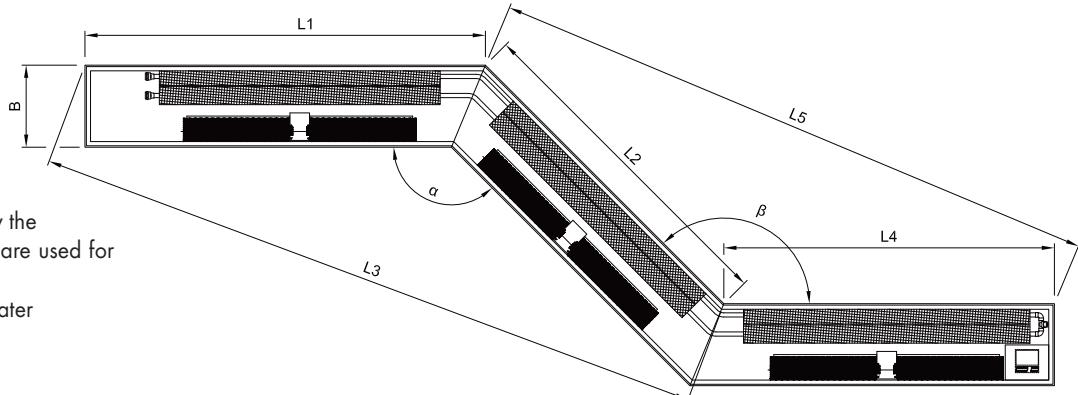
the customer and technical details are agreed (water connection side, power connection). Following that, the manufacturing of the floor convector starts.



BROKEN-LINE SHAPE CONVECTORS

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

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



ARCHED CONVECTORS

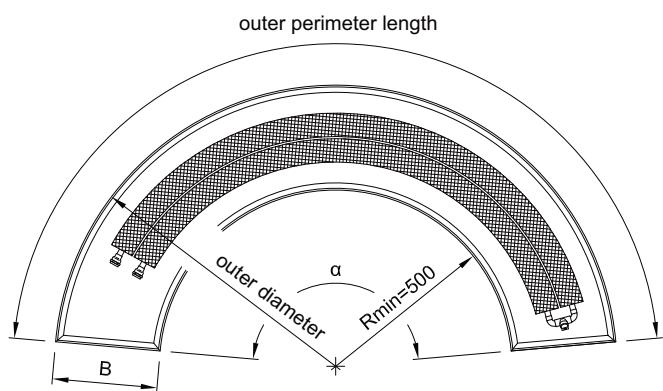
To allow for the design of an arched convector, the following measured values are necessary:

- outer (inner) diameter of the arc and a total angle formed by the arc sector calculated using the distance of the end points and the diameter (for gentle-curved arcs) or the angle α (for arcs forming an angle larger than 120°)
- width (type) of the convection heater
- a sketch of the convection heater

or

- outer (inner) diameter of the arc and the perimeter length of the outer (inner) edge of the arc
- width (type) of the convection heater
- a sketch of the convection heater

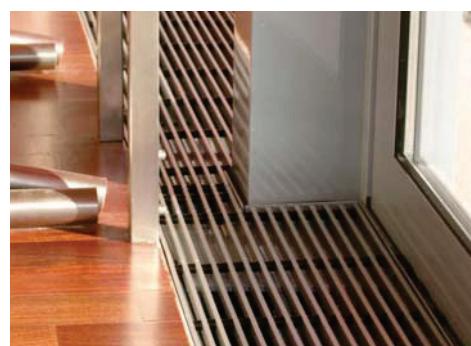
Remember that regular shapes occur rarely in real structures.



CURVED CONVECTORS

In case of more complicated shapes, it is necessary to use the reference points to determine the shape. It is recommended that the measurements are per-

formed by Radiátor specialists. The convection heaters are delivered within individually agreed deadlines, usually in 15 to 20 working days.



ORDERING FORM



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
F	L	T	2	0	-	1	1	1	6	0	-	N	R	1	2	5	-	
Model Activ			Convector type		Free position		Height [cm]		Length [cm]		Atypical lengths		Surface finish of trough		Type and colour combination of the frame and grill		24V DC regulation or without regulation	Indication of the atypical design

LEGEND

Positions 1, 2, 3, 4, 5, 6, 7, 8	An overview of standard products – model, type, height
24V DC with fan	
FLT10	FLT10-09, FLT20-09
FLT20	FLT20-09, FLT20-11
FLT21	FLT21-12
12V DC with fan	
FLB	FLB20-12
with natural convection	
FLK10	FLK10-09, FLK10-11, FLK10-14
FLK20	FLK20-09, FLK20-11, FLK20-14, FLK20-18, FLK20-30
FLK30	FLK30-09, FLK30-11, FLK30-14, FLK30-18, FLK30-30
FLK40	FLK40-09, FLK40-11, FLK40-14

Positions 9, 10, 11, 12	
	- convector length in centimeters, standards lengths are given in the power output tables for the individual types DYNAMIC
	- atypical length of convector is marked in mm including position 12
example:	
1 6 0	convector length 1600 mm, standard length
1 4 0 0	convector length 1400 mm, atypical length
1 6 7 5	convector length 1675 mm, atypical length

Position 13	Overview of available finishes of the convectors
N	basic alternative, stainless steel convector without a surface finish (standard)
1	colour RAL 7015 (dark grey, almost black) - matt
2	colour RAL 9006 (aluminium colour) - matt
3	colour RAL9005 black - matt
4	other colours (to be specified in the ordering form)

the convector surface finishes 1, 2, 3, 4 are delivered for extra charge, the price is based on current quotation

Positions 14, 15, 16	Frame and grill specification (see pages 6, 7)
example:	
R 1 2	linear Al-grill, natural, Al-frame, natural
D 1 1	Al-cross roll-up grill natural, Al-frame natural, Al-finishing cover ledge, natural

grill and frame type must be specified in the order, R and D can't be changed after delivery

ORDERING FORM



Position 17	Regulation of ACTIV convectors
24V DC with fan	
5	without regulator, convector with fans 24 V DC, control from th other convector or custom regulation
6	SR201 , regulator for FLT10-09, FLT20-09, FLT10-11, FLT20-11, FLT21-12 (24V DC) placed in the convector
12V DC with fan	
0	FLB are manufactured without regulation (not inside the convector), please order separately (regulator RB25)
With natural convection	
0	no regulator; the delivered convectors have no installed regulation

Position 18	Atypical floor convector
-	standard convector (position to be left free)
A	atypical convector, orders of atypical lengths, arched or other modified constructions (shape modification, additional holes, etc.).

Please enclose approved technical documentation or exact description and measurements of the required product, when ordering convectors of special lengths.