



FLOOR CONVECTORS

TERMO



DYNAMIC
FLOOR CONVECTORS

2012



ISAN Radiatory s.r.o. is a manufacturer of floor convectors supplying domestic and European markets for over 15 years.

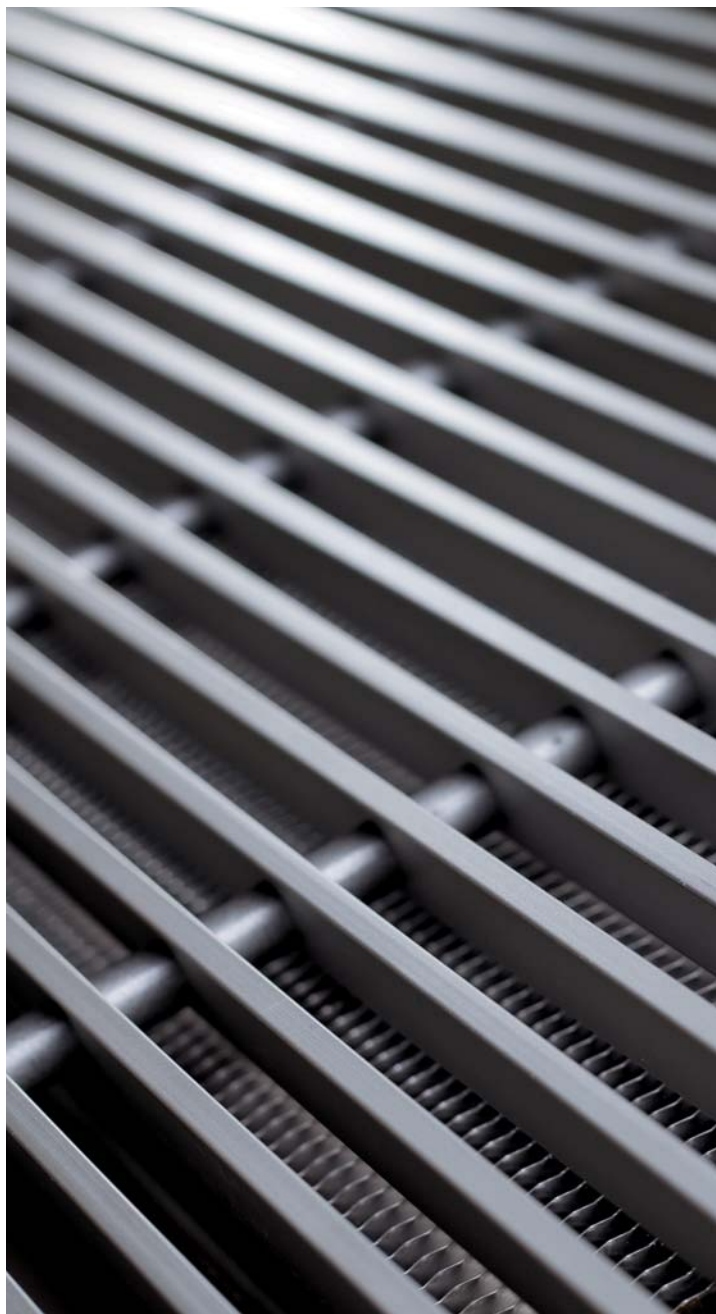
ISAN trade mark represents a traditional supplier with over 50 years' experience delivering a broad range of ISAN MELODY bathroom and design radiators, ISAN EXACT radiating convectors and lamellar radiators, ISAN EXACT ECOLITE convectors with lamellar exchangers, ISAN TERMO floor convectors, ISAN ATOL element radiators and ISAN SPIRAL finned tube radiators. Top modern technological procedures and progressive thinking of the Company's staff guarantee design and technical parameters of the best quality. ISAN is a specialist for manufacturing of radiators tailored to customer's needs and wishes.

ISAN's policy is primarily focused to customer's satisfaction. Ecological processing with greatest respect to environmental protection is taken for granted. The Company has introduced and maintains Quality Management System as per the ISO 9001:2008 standard. All the heating bodies comply with certification demands according to the actual rigorous legislative standards applicable in the supplied countries. Certification procedure for territory of the Czech Republic was performed by Strojírenský zkušební ústav (Engineering Testing Institute), Brno, a notified body ES1015.



CONTENT:

About company	2
Economy, energy saving and safety	3
TERMO DYNAMIC types.	4
Construction, running and warranty conditions.	5
GRILLS	
Grills	6
CROSS-FLOW FAN CONVECTION 24V	
Convector with fans 24V DC	8
Designing of 24V DC.	9
FCT 24V DC floor convector regulation	10
Accessories for 24V DC convectors	11
FCT20-09.	12
FCT40-09.	13
FCT20-11	14
FCT40-11	15
FCT41-12	16
CROSS-FLOW FAN CONVECTION 230V	
Convectors with fans 230V AC	18
Designing of 230V AC	19
Regulation of 230V AC	20
Accessories for 230V AC convectors	21
FCT20-08.	23
FCT20-09.	24
FCT40-09.	25
FCT20-11	26
FCT40-11	27
FCT41-12	28
NATURAL CONVECTION	
Convectors with natural convection.	30
Designing	31
FCK convector regulation.	32
Accessories for FCK convectors.	33
FCK20-09, FCK40-09, FCK80-09	34
FCK20-11, FCK40-11, FCK80-11.	36
FCK20-14, FCK40-14, FCK80-14	38
Atypical convectors.	40
Ordering form.	41





Floor convectors made and supplied by **ISAN Radiatory** 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 Dynamic 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.

Convectors equipped with FCT 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

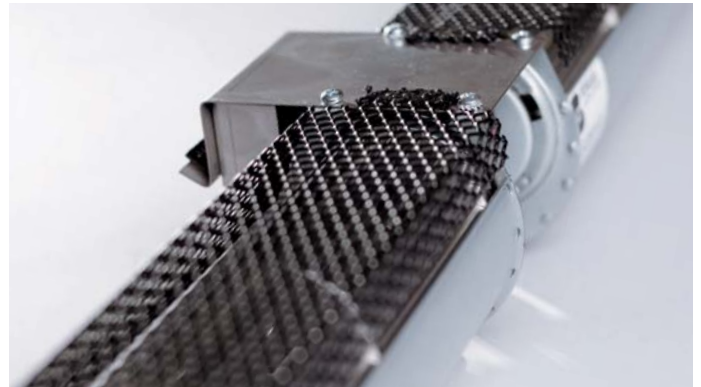
THERMOSTAT is a „brain“ of the whole system controlling its performance, enabling continuous revs adjustment, moderate heating, automated and antifreeze modes. It is able to differentiate between requirements for heating and cooling either. It can be used for working in double-tube as well as in four-tube 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 FCT convectors follows by 0-10V input (eventually by PWM-signal).



230V AC, 50HZ

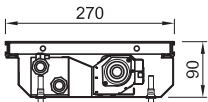
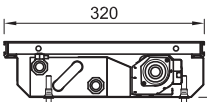
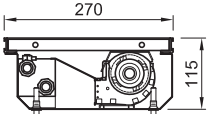
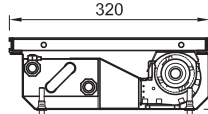
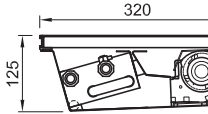
Supplies of convectors equipped with 230V fans will continue in order to meet demands relating to the existing ready projects. Convectors will be delivered simultaneously with 24V DC versions.



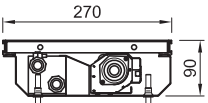
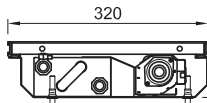
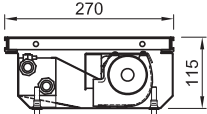
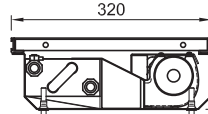
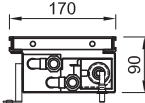
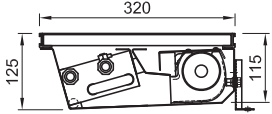


FCT FLOOR CONVECTOR WITH FAN

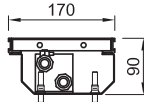
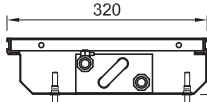
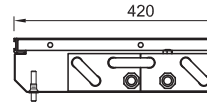
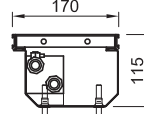
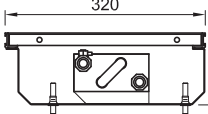
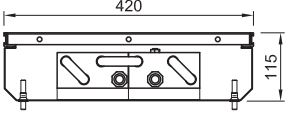
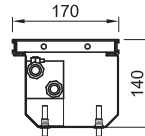
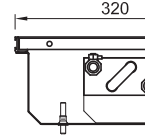
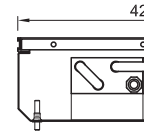
24V DC FLOOR CONVECTORS, DIRECT-CURRENT VOLTAGE

 <p>FCT20-09 270×90×800-4800 mm Q 75/65/20 °C: 394-4779 W Q 55/45/20 °C: 226-2748 W heating, 2 pipe system page 12</p>	 <p>FCT40-09 320×90×800-4800 mm Q 75/65/20 °C: 578-7039 W Q 55/45/20 °C: 345-4198 W heating, 2 pipe system page 13</p>	 <p>FCT20-11 270×115×800-4800 mm Q 75/65/20 °C: 401-4406 W Q 55/45/20 °C: 228-2513 W heating, 2 pipe system page 14</p>	 <p>FCT40-11 320×115×800-4800 mm Q 75/65/20 °C: 738-8122 W Q 55/45/20 °C: 435-4787 W heating, 2 pipe system page 15</p>	 <p>FCT41-12 320×125×1200-3200 mm Q 75/65/20 °C: 1238-4333 W Q 55/45/20 °C: 736-2578 W heating, cooling, 2 pipe system page 16</p>
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230V AC FLOOR CONVECTORS, ALTERNATING-CURRENT VOLTAGE

 <p>FCT20-09 270×90×800-3600 mm Q 75/65/20 °C: 488-3902 W Q 55/45/20 °C: 280-2244 W heating, 2 pipe system page 24</p>	 <p>FCT40-09 320×90×800-3600 mm Q 75/65/20 °C: 762-6094 W Q 55/45/20 °C: 434-3471 W heating, 2 pipe system page 25</p>	 <p>FCT20-11 270×115×800-4800 mm Q 75/65/20 °C: 457-4839 W Q 55/45/20 °C: 264-2795 W heating, 2 pipe system page 26</p>	 <p>FCT40-11 320×115×800-4800 mm Q 75/65/20 °C: 834-8845 W Q 55/45/20 °C: 482-5110 W heating, 2 pipe system page 27</p>	 <p>FCT20-08 170×90×800-4800 mm Q 75/65/20 °C: 450-4950 W Q 55/45/20 °C: 260-2863 W heating, 2 pipe system page 23</p>
 <p>FCT41-12 320×125×1200-3200 mm Q 75/65/20 °C: 1444-5198 W Q 55/45/20 °C: 855-3077 W heating, cooling, 2 pipe system page 28</p>	<p>Note: The values of Q-heating output above are valid for fan medium speed.</p>			

FCK FLOOR CONVECTOR WITH NATURAL CONVECTION

 <p>FCK20-09 170×90×800-4800 mm Q 75/65/20 °C: 70-656 W Q 55/45/20 °C: 34-318 W heating, 2 pipe system page 34</p>	 <p>FCK40-09 320×90×800-4800 mm Q 75/65/20 °C: 142-1323 W Q 55/45/20 °C: 66-614 W heating, 2 pipe system page 34</p>	 <p>FCK80-09 420×90×800-4800 mm Q 75/65/20 °C: 175-1637 W Q 55/45/20 °C: 82-768 W heating, 2 pipe system page 34</p>	 <p>FCK20-11 170×115×800-4800 mm Q 75/65/20 °C: 91-848 W Q 55/45/20 °C: 44-407 W heating, 2 pipe system page 36</p>	 <p>FCK40-11 320×115×800-4800 mm Q 75/65/20 °C: 174-1624 W Q 55/45/20 °C: 83-777 W heating, 2 pipe system page 36</p>
 <p>FCK80-11 420×115×800-4800 mm Q 75/65/20 °C: 230-2149 W Q 55/45/20 °C: 111-1034 W heating, 2 pipe system page 36</p>	 <p>FCK20-14 170×140×800-4800 mm Q 75/65/20 °C: 94-875 W Q 55/45/20 °C: 45-422 W heating, 2 pipe system page 38</p>	 <p>FCK40-14 320×140×800-4800 mm Q 75/65/20 °C: 186-1733 W Q 55/45/20 °C: 87-812 W heating, 2 pipe system page 38</p>	 <p>FCK80-14 420×140×800-4800 mm Q 75/65/20 °C: 263-2451 W Q 55/45/20 °C: 125-1169 W heating, 2 pipe system page 38</p>	

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 (FCT 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.

AL-CU HEAT EXCHANGER

Aluminium lamellas are firmly pressed on a copper tube through which the heat carrier circulates. The air flowing between lamellas 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). Convectors 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 (FCT 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. The Dynamic series enables regulation of floor convectors working under the voltage of 24V DC or 230V AC.



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/230V AC, 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. FCT floor convectors with fans, IP 20 – dry environs.

PERIODS OF RISK

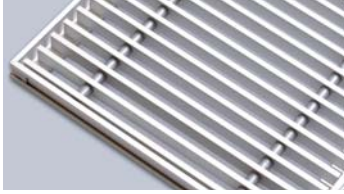
The period of risk is 5 years for joint tightness, 10 years for exchanger and 2 years for electro-installation and stainless steel tank.

Convactor 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 convactor.

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



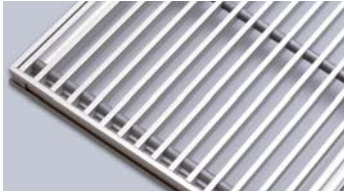
R3-1

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

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

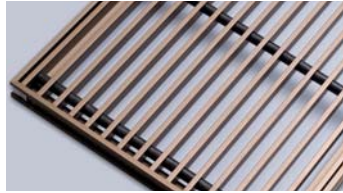
LINEAR GRILLS

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



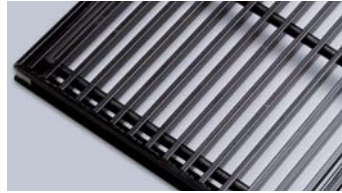
R1-2

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



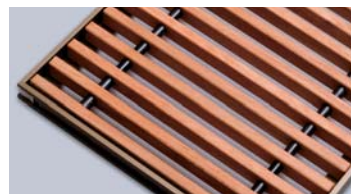
R6-2

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

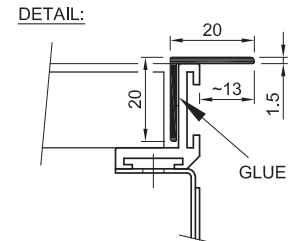
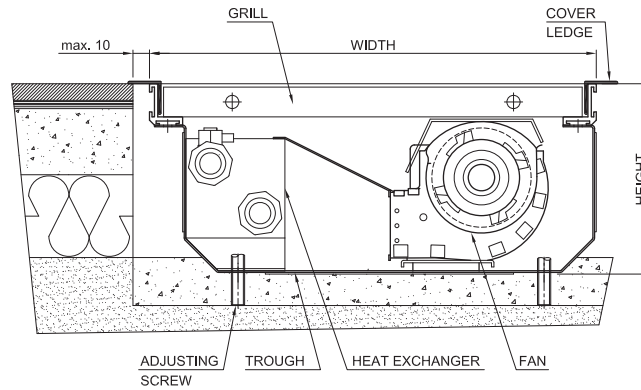
stainless steel grill, transverse

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

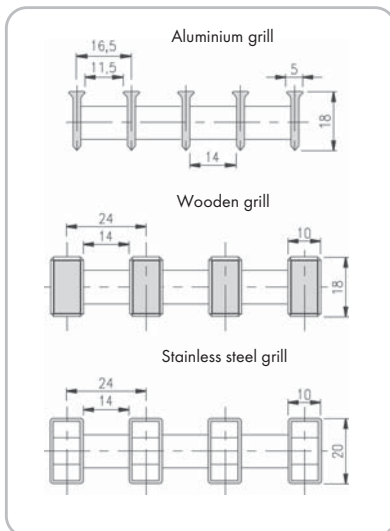
FINISHING COVER LEDGE

- 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)

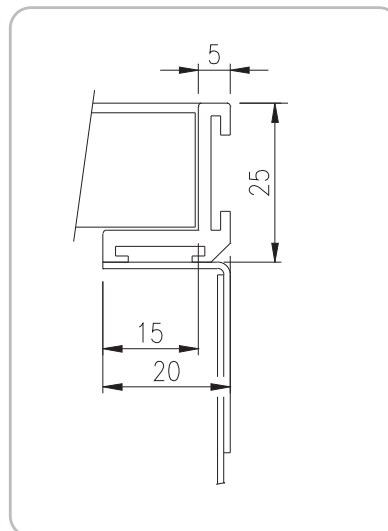
Because of modified grill width of convector, the option is to be specified when ordering the heating body. The top edge of convector frame may not protrude from the final floor level.



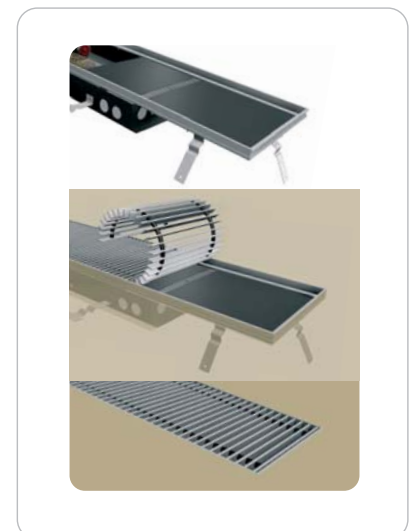
Grill cross section



Frame detail



Non standard frame



Samples of floor convector coding:
 FCT40-11120-NR110 - convector with Al-frame and grill
 FCT40-11120-ND110 - convector with Al-frame, modified grill and cover ledge
 Ordering, see the page 41



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 Al-Cu lamellar 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:

- FCT20-09 (270×90×800-4800 mm)
- FCT40-09 (320×90×800-4800 mm)
- FCT20-11 (270×115×800-4800 mm)
- FCT40-11 (320×115×800-4800 mm)
- FCT41-12 (320×125×1200-3200 mm)

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

- Convectors are equipped with continuously speed regulated 24V DC fans
- Recommended FCT floor convectors regulation is in the range of 0-4V
- The table below shows power take-off relating to fans performance within the standard speed gears of 1, 2, 3
- The highest possible power input of fans (control voltage of 10V) is specified for complete utilization of the available regulation levels

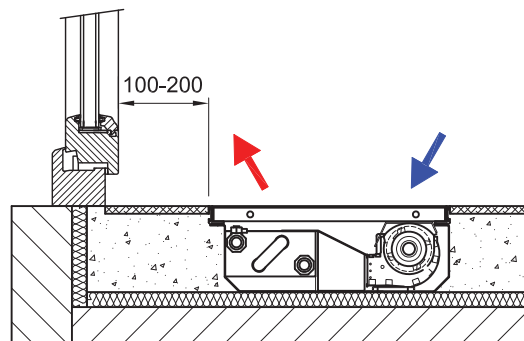
Table of fans electric power input (FCT types)

TYPE	Speed	Revolutions [rpm]	FCT convector length [mm]										
			800	1200	1600	2000	2400	2800	3200	3600	4000	4400	4800
FCT20-09 FCT40-09	1	576	2W	2W	2W	4W	4W	5W	5W	6W	7W	7W	9W
	2	762	2W	2W	3W	4W	5W	6W	7W	9W	9W	11W	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
FCT20-11 FCT40-11 FCT41-12	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.

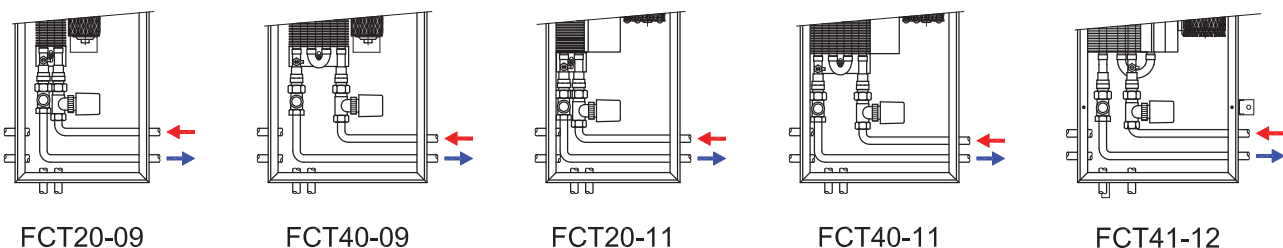
RECOMMENDED STANDARD INSTALLING IN FLOOR

- 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.



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.





HEATING OUTPUT RECALCULATION FOR ANOTHER TEMPERATURE GRADIENT

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

$$Q = Q_n * \Psi * \left(\frac{\Delta T}{50} \right)^m \text{ [W]; where } \Delta T = \left(\frac{T1 + T2}{2} \right) - T_i \text{ [}^\circ\text{C]}$$

m=1,083 pro FCT20-09
m=1,012 pro FCT40-09
m=1,100 pro FCT20-11

m=1,040 pro FCT40-11
m=1,027 pro FCT41-12

Q_n [W]	heating output for temperature gradient $T1/T2/Ti = 75/65/20$ °C
Ψ [-]	mass rate of flow coefficient (for current flow rate $\Psi=1$)
$T1$ [°C]	input water temperature
$T2$ [°C]	output water temperature
T_i [°C]	temperature in the room
m [-]	temperature exponent

QUICK CONVERSION TO $T_i=22$ °C A $T_i=15$ °C FOR ORIENTATION

- If you want to learn convector output for the room temperature of 22 °C or for a corridor temperature of 15 °C
- multiply heating output of the chosen convector by the "k" coefficient

For $T_i=22$ °C, $k=0.95$
E.g.: Q [55/45/22 °C] = 0.95 * Q [55/45/20 °C]

for $T_i=15$ °C, $k=1.12$
E.g.: Q [75/65/15 °C] = 1.12 * Q_n [75/65/20 °C]

HEATING WATER FLOW RATE THROUGH EXCHANGER

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

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

CONVECTOR DIMENSIONING BASED ON ACOUSTIC PARAMETERS

- Convector heating output must cover thermal loss in the room and observe the acoustic parameters
- Permissible noisiness levels are determined by national legislation
- Different values of permissible noisiness levels are valid for residential houses, hospitals, offices, hotels etc.
- Heating output of convector with fan is designed for revolutions conforming with the lowest admissible acoustic pressure level in the room
- Tables of acoustic pressure L_{pAmax} [dB(A)] are in chapters relating to the single floor convector types
- Quoted measuring of acoustic parameters follows diagonally in the distance of 1m above and 1m in front of the convector
- The acoustic field may differ in dependence on:
 - convector placing in the room and its appropriate installation
 - the room space and segmentation (corners, partitions, ceiling)
 - furnishings as absorbing elements: tables, chairs, cupboards, wardrobes, carpets etc.
 - installation of more convectors in one room
 - sometimes, e.g. when convector is placed in a corner, the noisiness parameters may show values increased by 3dB(A)

EXCHANGER HYDRAULIC LOSSES

TYPE	Length [mm]	Volume [l]	Qv – mass rate of flow in piping (kg/h) / R – hydraulic loss in exchanger (kPa)												
			20	40	60	80	100	120	150	200	250	300	350	400	450
FCT20-09 FCT20-11	800	0,15	0,01	0,02	0,04	0,07	0,10	0,15	0,23	0,40	0,62	0,88	1,19	1,54	1,93
	1200	0,27	0,01	0,02	0,06	0,09	0,14	0,20	0,30	0,52	0,81	1,13	1,52	1,98	2,46
	1600	0,39	0,01	0,03	0,07	0,12	0,17	0,25	0,37	0,65	0,99	1,38	1,86	2,41	3,00
	2000	0,52	0,01	0,03	0,09	0,14	0,21	0,30	0,45	0,77	1,18	1,63	2,20	2,84	3,53
	2400	0,64	0,01	0,04	0,10	0,16	0,24	0,35	0,52	0,89	1,36	1,89	2,54	3,28	4,06
	2800	0,76	0,01	0,05	0,11	0,19	0,28	0,40	0,59	1,01	1,55	2,14	2,87	3,71	4,59
	3200	0,89	0,01	0,05	0,13	0,21	0,31	0,45	0,66	1,14	1,73	2,39	3,21	4,15	5,12
	3600	1,01	0,02	0,06	0,14	0,23	0,34	0,50	0,73	1,26	1,91	2,64	3,55	4,58	5,66
	4000	1,13	0,02	0,06	0,16	0,26	0,38	0,55	0,81	1,38	2,10	2,89	3,88	5,01	6,19
	4400	1,26	0,02	0,07	0,17	0,28	0,41	0,60	0,88	1,50	2,28	3,15	4,22	5,45	6,72
4800	1,38	0,02	0,07	0,19	0,30	0,45	0,65	0,95	1,63	2,47	3,40	4,56	5,88	7,25	
FCT40-09 FCT40-11 FCT41-12	800	0,30	0,01	0,05	0,13	0,21	0,32	0,46	0,69	1,21	1,86	2,62	3,54	4,59	5,74
	1200	0,54	0,01	0,05	0,13	0,21	0,32	0,46	0,69	1,21	1,86	2,62	3,54	4,59	5,74
	1600	0,79	0,02	0,06	0,15	0,26	0,39	0,56	0,84	1,45	2,23	3,12	4,21	5,46	6,80
	2000	1,03	0,02	0,07	0,18	0,31	0,45	0,66	0,98	1,70	2,60	3,63	4,89	6,33	7,86
	2400	1,28	0,02	0,09	0,21	0,35	0,52	0,76	1,13	1,94	2,97	4,13	5,56	7,20	8,93
	2800	1,53	0,03	0,10	0,24	0,40	0,59	0,86	1,27	2,19	3,34	4,63	6,23	8,06	9,99
	3200	1,77	0,03	0,11	0,27	0,45	0,66	0,96	1,41	2,43	3,71	5,14	6,91	8,93	11,05
	3600	2,02	0,03	0,12	0,30	0,49	0,73	1,06	1,56	2,68	4,08	5,64	7,58	9,80	12,12
	4000	2,27	0,04	0,13	0,33	0,54	0,80	1,16	1,70	2,92	4,45	6,15	8,26	10,67	13,18
	4400	2,51	0,04	0,14	0,36	0,59	0,86	1,26	1,85	3,17	4,82	6,65	8,93	11,53	14,25
4800	2,76	0,04	0,15	0,39	0,64	0,93	1,36	1,99	3,41	5,19	7,15	9,60	12,40	15,31	

PARAMETERS OF LOCKSHIELD VALVES

T-turns	0,5	0,75	1	1,5	2	2,5	3	3,5	4	5	6	MAX
K_v (m³/h) - direct version	0,3	0,4	0,55	0,75	0,91	1,05	1,25	1,33	1,4	1,6	1,7	1,8
K_v (m³/h) - corner version	0,2	0,25	0,29	0,4	0,5	0,69	0,8	1	1,2	1,55	1,9	2,2

parameters of free packed in lockshield valves

FCT 24V DC FLOOR COVECTOR REGULATION

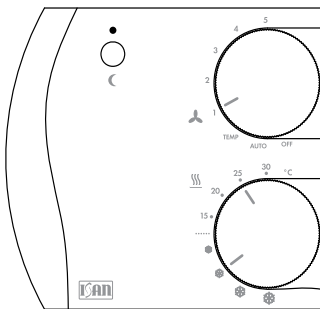


Regulation of floor convector with installed power saving 24V DC fans enables to utilize a modern control technology. Convector becoming a part of the heating system evaluates the situation and reacts to outer incentives. By means of very simple control and due to antifreeze protection eliminating any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

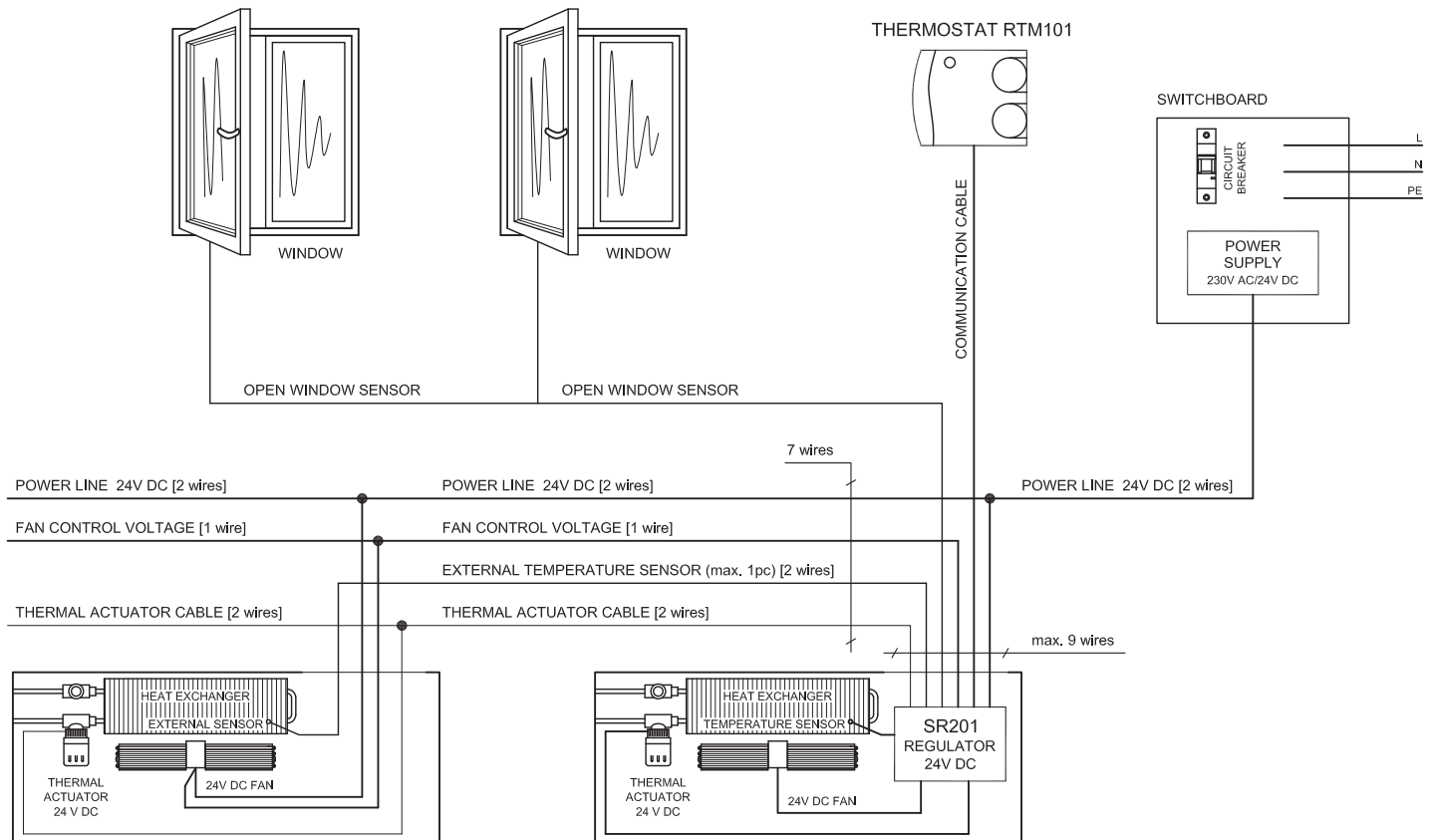
Decreases the demand for thermostat setting by -2 °C (heating) or +2 °C (cooling). It is not necessary to reset the thermostat parameters for the night or for a period of absence in the house. The sleep mode is signalized by LED diode on the thermostat cover.

Antifreeze protection

Regulator switches on a thermdrive 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.



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.



RTM101

Room thermostat, heating/cooling, continuous revs regulation, sleep mode, OFF, AUTO and TEMP modes, continuous revs range 1 –5

Colour: white
 Communication: CIB protocol
 CIB parameters: 24V DC; 2.2W
 Dimension: 98×106×34 mm
 Ingress protection: IP30



SR201 – double pipe system regulator

CIB fan controller for double pipe, regulation modulus heating/cooling, double-tube heating system containing exchanger temperature sensor for ISAN FCT convectors

Operating voltage: 24V DC
 Communication: CIB protocol
 Inputs: 24V DC, control signal from bus-bar and sensors
 Outputs: control signals for fans, 24V DC for thermo-drives



DR60-24, DR100-24

24V DC power supply unit, placing on DIN ledge

Input voltage: 240V /50Hz
 Output voltage: 24V DC
 Final nominal output / current DR60-24 **60W**/2.5A
 DR100-24 **100W**/4.2A



Z-TS24

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

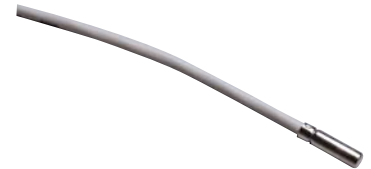
Input voltage: 24V DC
 Power input when switched on: 6VA
 Power input during operation: 2.5W
 Period of switching ON/OFF: 3 minutes
 Ingress protection: IP41



TE20

External temperature sensor as „antifreeze protection“

Sensor type: thermistor
 Temperature range: from -30 °C to 90 °C
 Cable length: 5 m
 Connection: by 2 cables



Z-TD001 direct, Z-TE001 corner

Thermostatic valve installed on the exchanger input tube regulates the flow rate of heating medium through the heat exchanger

Dimension: DN15, NF norm
 Connection thread: M30×1.5mm
 Operating temperature, max. 120 °C
 Operating pressure, max. PN10

Valve adjusting	1	2	3	4	5	N
k_v (m ³ /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

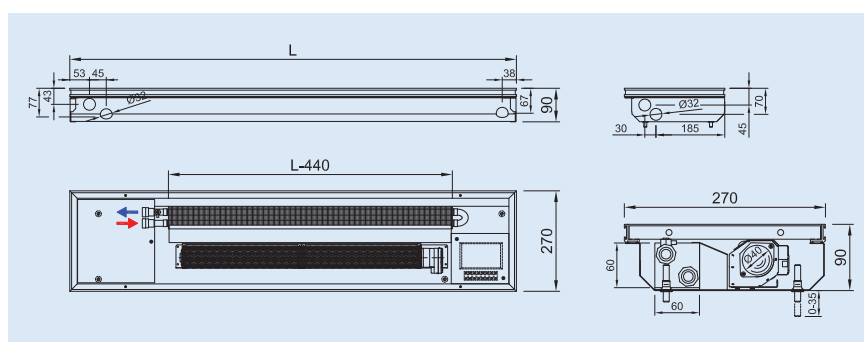
T- turns	0,25	0,5	1,0	1,5	2,0	3,0	4,0
k_v (m ³ /h)	0,13	0,22	0,43	0,65	0,85	1,25	1,7





PARAMETERS

Convector	Width	270 mm
	Height	90 mm
	Length	800-4800 mm in step 400 mm
	Height adjusting	0-35 mm
	Stainless trough width	250
	Grill type	cross / linear
Exchanger	Grill material	anodized aluminium, wood, stainless steel
	Width	60 mm
	Height	60 mm
	Finned length	L-440 mm
	Heat medium connection	2 x G1/2" female thread
	Max. working temperature	110 °C
Fan	Max. working overpressure	1 MPa
	Rotor diameter	∅ 40 mm
	Operating voltage	Safe voltage 24V DC
	Ingress protection	IP20
Operating conditions	Regulation	control voltage 0-10V (regulation SR201, ...)
	Ambient temperature	+2 to +40 °C
	Relative humidity	20-70%



	SPEED	LENGTH [mm]										
		800	1200	1600	2000	2400	2800	3200	3600	4000	4400	4800
ACOUSTIC PRESSURE L _p Max [dB(A)]	1	22	24	24	25	25	25	25	25	25	26	26
	2	24	25	27	28	29	30	31	31	31	31	31
	3	30	30	33	34	37	38	39	39	39	39	40
AIR VOLUME [m³/h]	1	28	57	85	114	142	171	199	228	256	285	313
	2	37	68	96	136	192	204	260	288	328	384	396
	3	52	108	146	216	291	323	399	437	507	583	615

Code example **FCT20-09200-NR126** Floor convector FCT20-09, H=90 mm, W=270 mm, L=2000 mm, stainless steel trough, Al natur frame, Al natur linear grill, installed regulation SR201, convector 24V DC

Ordering, see the page 41

SPECIFICATIONS

- Flats, detached houses, offices, halls
- High heating output
- Forced convection by tangential fans
- Smooth running
- Dry ambience
- Safe voltage 24V DC
- Low power consumption
- Easy control

HEATING OUTPUT

Q [W] 90/70/20 °C

SPEED	0	1	2	3
rpm	0	576	762	1057
LENGTH [mm]	HEATING OUTPUT [W]			
800	68	432	479	598
1200	144	863	959	1196
1600	221	1295	1438	1795
2000	298	1726	1918	2393
2400	374	2590	2877	3589
2800	450	2658	2945	3657
3200	527	3453	3835	4786
3600	603	3885	4315	5384
4000	679	4316	4794	5982
4400	756	5179	5753	7179
4800	832	5249	5823	7248

Qn [W] 75/65/20 °C

SPEED	0	1	2	3
rpm	0	576	762	1057
LENGTH [mm]	HEATING OUTPUT [W]			
800	52	354	394	491
1200	110	709	787	982
1600	170	1063	1181	1473
2000	229	1417	1574	1964
2400	287	2126	2361	2946
2800	346	2181	2417	3002
3200	405	2834	3148	3928
3600	463	3188	3542	4419
4000	522	3543	3935	4910
4400	581	4251	4722	5892
4800	639	4308	4779	5949

Q [W] 70/55/20 °C

SPEED	0	1	2	3
rpm	0	576	762	1057
LENGTH [mm]	HEATING OUTPUT [W]			
800	41	297	330	412
1200	87	594	660	823
1600	135	891	990	1235
2000	181	1188	1320	1647
2400	227	1782	1980	2470
2800	274	1829	2027	2517
3200	320	2376	2640	3294
3600	367	2674	2970	3706
4000	413	2971	3300	4117
4400	459	3565	3960	4941
4800	506	3613	4008	4989

Q [W] 55/45/20 °C

SPEED	0	1	2	3
rpm	0	576	762	1057
LENGTH [mm]	HEATING OUTPUT [W]			
800	25	204	226	282
1200	53	407	453	565
1600	81	611	679	847
2000	109	815	905	1129
2400	137	1222	1358	1694
2800	166	1254	1390	1726
3200	194	1629	1810	2259
3600	222	1833	2036	2541
4000	250	2037	2263	2823
4400	278	2444	2715	3388
4800	306	2477	2748	3421



SPECIFICATIONS

- Flats, detached houses, offices, halls
- High heating output
- Forced convection by tangential fans
- Smooth running
- Dry ambience
- Safe voltage 24V DC
- Low power consumption
- Easy control

HEATING OUTPUT

Q [W] 90/70/20 °C

SPEED	0	1	2	3
rpm	0	576	762	1057
LENGTH [mm]	HEATING OUTPUT [W]			
800	127	544	695	918
1200	268	1087	1390	1837
1600	410	1631	2084	2755
2000	551	2174	2779	3674
2400	692	3261	4169	5511
2800	833	3386	4293	5635
3200	974	4348	5558	7348
3600	1116	4892	6253	8266
4000	1257	5436	6948	9185
4400	1398	6523	8337	11021
4800	1539	6650	8464	11149

Qn [W] 75/65/20 °C

SPEED	0	1	2	3
rpm	0	576	762	1057
LENGTH [mm]	HEATING OUTPUT [W]			
800	98	452	578	764
1200	206	904	1156	1528
1600	315	1356	1733	2291
2000	423	1808	2311	3055
2400	532	2712	3467	4583
2800	640	2815	3570	4686
3200	749	3616	4622	6110
3600	858	4068	5200	6874
4000	966	4520	5778	7638
4400	1075	5424	6933	9165
4800	1183	5530	7039	9271

Q [W] 70/55/20 °C

SPEED	0	1	2	3
rpm	0	576	762	1057
LENGTH [mm]	HEATING OUTPUT [W]			
800	77	383	490	648
1200	163	767	980	1296
1600	249	1150	1470	1944
2000	335	1534	1961	2592
2400	421	2301	2941	3888
2800	506	2388	3029	3975
3200	592	3068	3921	5184
3600	678	3451	4411	5832
4000	764	3835	4902	6480
4400	850	4602	5882	7775
4800	936	4691	5971	7865

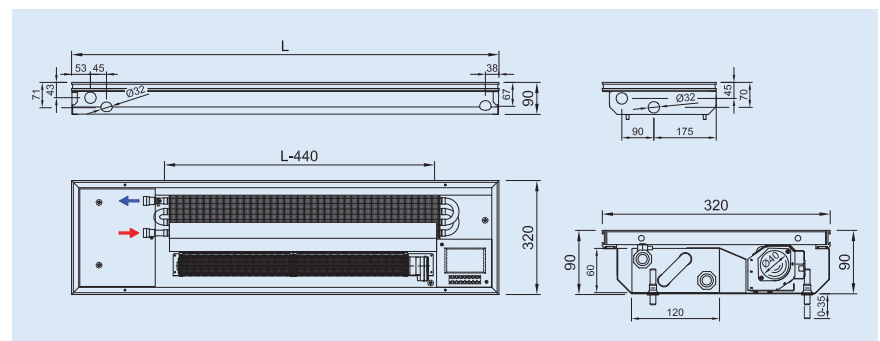
Q [W] 55/45/20 °C

SPEED	0	1	2	3
rpm	0	576	762	1057
LENGTH [mm]	HEATING OUTPUT [W]			
800	47	270	345	456
1200	99	539	689	911
1600	151	809	1034	1367
2000	202	1078	1378	1822
2400	254	1618	2068	2733
2800	306	1679	2129	2795
3200	358	2157	2757	3644
3600	410	2426	3101	4100
4000	462	2696	3446	4555
4400	514	3235	4135	5466
4800	566	3298	4198	5529



PARAMETERS

Convactor	Width	320 mm
	Height	90 mm
	Length	800–4800 mm in step 400 mm
	Height adjusting	0–35 mm
	Stainless trough width	300 mm
	Grill type	cross / linear
Exchanger	Grill material	anodized aluminium, wood, stainless steel
	Width	120 mm
	Height	60 mm
	Finned length	L-440 mm
	Heat medium connection	2 × G1/2" female thread
	Max. working temperature	110 °C
Fan	Max. working overpressure	1 MPa
	Rotor diameter	∅ 40 mm
	Operating voltage	Safe voltage 24V DC
	Ingress protection	IP20
Operating conditions	Regulation	control voltage 0–10V (regulation SR201, ...)
	Ambient temperature	+2 to +40 °C
	Relative humidity	20–70%



	SPEED	LENGTH [mm]										
		800	1200	1600	2000	2400	2800	3200	3600	4000	4400	4800
ACOUSTIC PRESSURE LpAmax [dB(A)]	1	22	24	24	25	25	25	25	25	25	26	26
	2	25	25	27	28	29	30	31	31	31	31	31
	3	30	30	33	34	37	38	39	39	39	39	40
AIR VOLUME [m³/h]	1	26	53	79	106	132	158	185	211	237	264	290
	2	35	63	89	126	178	189	241	267	304	356	367
	3	48	100	135	200	270	300	370	405	470	540	570

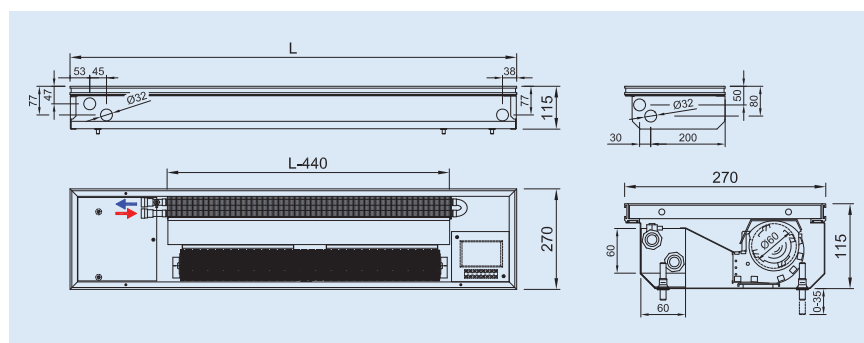
Code example	FCT40-09120-NR116	Floor convector FCT20-09, H=90 mm, W=320 mm, L=1200 mm, stainless steel trough, Al natur cross roll-up grill, installed regulation SR201, convactor 24V DC
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Ordering, see the page 41



PARAMETERS

Convector	Width	270 mm
	Height	115 mm
	Length	800-4800 mm in step 400 mm
	Height adjusting	0-35 mm
	Stainless trough width	250 mm
	Grill type	cross / linear
Exchanger	Grill material	anodized aluminium, wood, stainless steel
	Width	60 mm
	Height	60 mm
	Finned length	L-440 mm
	Heat medium connection	2 x G1/2" female thread
	Max. working temperature	110 °C
Fan	Max. working overpressure	1 MPa
	Rotor diameter	∅ 60 mm
	Operating voltage	Safe voltage 24V DC
	Ingress protection	IP20
Operating conditions	Regulation	control voltage 0-10V (regulation SR201, ...)
	Ambient temperature	+2 to +40 °C
	Relative humidity	20-70%



	SPEED	LENGTH [mm]										
		800	1200	1600	2000	2400	2800	3200	3600	4000	4400	4800
ACOUSTIC PRESSURE L _p Max [dB(A)]	1	19	21	23	23	23	23	24	24	24	24	25
	2	26	26	27	286	30	31	32	32	32	33	33
	3	35	35	35	37	39	39	40	40	40	40	41
AIR VOLUME [m³/h]	1	28	56	84	112	140	168	196	224	251	280	307
	2	37	79	116	158	196	237	275	317	355	397	434
	3	51	116	167	232	283	349	399	465	516	581	632

Code example	FCT20-11080-NR215	Floor convector FCT20-11, H=115 mm, W=270 mm, L=800 mm, stainless steel trough, Al bronze frame, Al bronze cross roll-up grill, without regulation, convector 24V DC
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Ordering, see the page 41

SPECIFICATIONS

- Flats, detached houses, offices, halls
- High heating output
- Forced convection by tangential fans
- Smooth running
- Dry ambience
- Safe voltage 24V DC
- Low power consumption
- Easy control

HEATING OUTPUT

Q [W] 90/70/20 °C

SPEED	0	1	2	3
rpm	0	465	582	756
LENGTH [mm]	HEATING OUTPUT [W]			
800	81	422	489	626
1200	171	844	979	1252
1600	262	1265	1468	1878
2000	352	1687	1957	2503
2400	442	2109	2447	3129
2800	532	2531	2936	3755
3200	622	2953	3425	4381
3600	712	3375	3915	5007
4000	803	3796	4404	5633
4400	893	4218	4893	6259
4800	983	4640	5382	6884

Qn [W] 75/65/20 °C

SPEED	0	1	2	3
rpm	0	465	582	756
LENGTH [mm]	HEATING OUTPUT [W]			
800	62	345	401	512
1200	132	691	801	1025
1600	201	1036	1202	1537
2000	270	1381	1602	2049
2400	340	1726	2003	2561
2800	409	2072	2403	3074
3200	478	2417	2804	3586
3600	548	2762	3204	4098
4000	617	3107	3605	4610
4400	686	3453	4005	5123
4800	756	3798	4406	5635

Q [W] 70/55/20 °C

SPEED	0	1	2	3
rpm	0	465	582	756
LENGTH [mm]	HEATING OUTPUT [W]			
800	49	289	335	428
1200	104	578	670	857
1600	159	866	1005	1285
2000	214	1155	1340	1714
2400	269	1444	1675	2142
2800	323	1733	2010	2571
3200	378	2022	2345	2999
3600	433	2310	2680	3428
4000	488	2599	3015	3856
4400	543	2888	3350	4285
4800	598	3177	3685	4713

Q [W] 55/45/20 °C

SPEED	0	1	2	3
rpm	0	465	582	756
LENGTH [mm]	HEATING OUTPUT [W]			
800	30	197	228	292
1200	63	394	457	585
1600	96	591	685	877
2000	129	788	914	1169
2400	162	985	1142	1461
2800	196	1182	1371	1754
3200	229	1379	1599	2046
3600	262	1576	1828	2338
4000	295	1773	2056	2630
4400	328	1970	2285	2923
4800	361	2167	2513	3215



SPECIFICATIONS

- Flats, detached houses, offices, halls
- High heating output
- Forced convection by tangential fans
- Smooth running
- Dry ambience
- Safe voltage 24V DC
- Low power consumption
- Easy control

HEATING OUTPUT

Q [W] 90/70/20 °C

SPEED	0	1	2	3
rpm	0	465	582	756
LENGTH [mm]	HEATING OUTPUT [W]			
800	156	705	892	1142
1200	329	1410	1783	2284
1600	503	2115	2675	3426
2000	676	2820	3567	4568
2400	850	3524	4458	5710
2800	1023	4229	5350	6852
3200	1196	4934	6242	7994
3600	1370	5639	7133	9137
4000	1543	6344	8025	10279
4400	1717	7049	8917	11421
4800	1890	7754	9808	12563

Qn [W] 75/65/20 °C

SPEED	0	1	2	3
rpm	0	465	582	756
LENGTH [mm]	HEATING OUTPUT [W]			
800	120	584	738	946
1200	253	1167	1477	1891
1600	386	1751	2215	2837
2000	520	2335	2953	3783
2400	653	2918	3692	4728
2800	786	3502	4430	5674
3200	920	4086	5168	6620
3600	1053	4669	5907	7565
4000	1186	5253	6645	8511
4400	1319	5837	7383	9457
4800	1453	6420	8122	10402

Q [W] 70/55/20 °C

SPEED	0	1	2	3
rpm	0	465	582	756
LENGTH [mm]	HEATING OUTPUT [W]			
800	95	493	624	799
1200	200	987	1248	1599
1600	306	1480	1872	2398
2000	411	1973	2496	3197
2400	516	2467	3120	3996
2800	622	2960	3744	4796
3200	727	3453	4368	5595
3600	833	3946	4992	6394
4000	938	4440	5616	7193
4400	1043	4933	6240	7993
4800	1149	5426	6864	8792

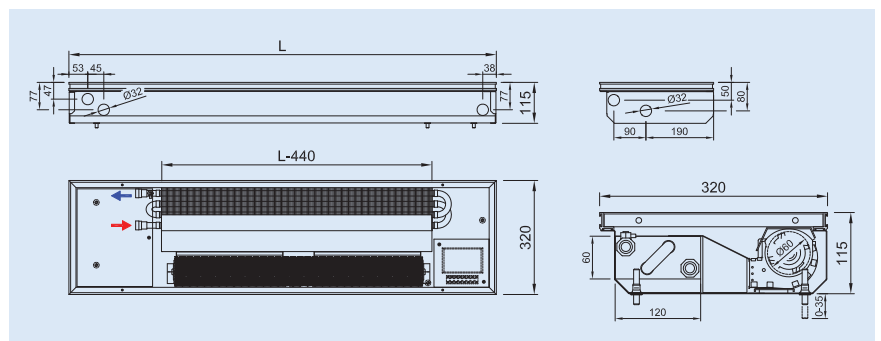
Q [W] 55/45/20 °C

SPEED	0	1	2	3
rpm	0	465	582	756
LENGTH [mm]	HEATING OUTPUT [W]			
800	57	344	435	557
1200	121	688	870	1115
1600	185	1032	1305	1672
2000	249	1376	1741	2229
2400	312	1720	2176	2787
2800	376	2064	2611	3344
3200	440	2408	3046	3901
3600	504	2752	3481	4459
4000	567	3096	3916	5016
4400	631	3440	4352	5573
4800	695	3784	4787	6131



PARAMETERS

Convector	Width	320 mm
	Height	115 mm
	Length	800-4800 mm in step 400 mm
	Height adjusting	0-35 mm
	Stainless trough width	300 mm
	Grill type	cross / linear
Exchanger	Grill material	anodized aluminium, wood, stainless steel
	Width	120 mm
	Height	60 mm
	Finned length	L-440 mm
	Heat medium connection	2 x G1/2" female thread
	Max. working temperature	110 °C
Fan	Max. working overpressure	1 MPa
	Rotor diameter	∅ 60 mm
	Operating voltage	Safe voltage 24V DC
	Ingress protection	IP20
Operating conditions	Regulation	control voltage 0-10V (regulation SR201, ...)
	Ambient temperature	+2 to +40 °C
	Relative humidity	20-70%



	SPEED	LENGTH [mm]										
		800	1200	1600	2000	2400	2800	3200	3600	4000	4400	4800
ACOUSTIC PRESSURE LpAmax [dB(A)]	1	19	21	23	23	23	23	24	24	24	24	25
	2	26	26	27	28	30	31	32	32	32	33	33
	3	36	36	36	38	39	39	40	40	40	40	41
AIR VOLUME [m³/h]	1	26	53	79	106	132	158	185	211	237	264	290
	2	35	75	110	150	185	224	260	299	335	375	410
	3	48	110	158	219	267	329	377	439	487	549	597

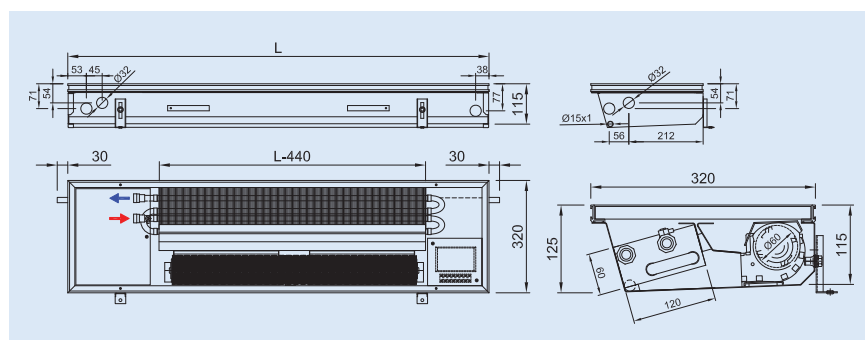
Code example	FCT40-11320-NR126	Floor convector FCT40-11, H=115 mm, W=320 mm, L=3200 mm, stainless steel trough, Al natur frame, Al natur linear grill, installed regulation SR201, convector 24V DC
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Ordering, see the page 41



PARAMETERS

Convector	Width	320 mm
	Height	125 mm
	Length	1200-3200 mm in step 400 mm
	Height adjusting	0-35 mm
	Stainless trough width	300 mm
	Grill type	cross / linear
	Grill material	anodized aluminium, wood, stainless steel
Exchanger	Width	120 mm
	Height	60 mm
	Finned length	L-440 mm
	Heat medium connection	2 x G1/2" female thread
	Max. working temperature	110 °C
	Max. working overpressure	1 MPa
Fan	Rotor diameter	∅ 60 mm
	Operating voltage	Safe voltage 24V DC
	Ingress protection	IP20
	Regulation	control voltage 0-10V (regulation SR201, ...)
Operating conditions	Ambient temperature	+2 to +40 °C
	Relative humidity	20-70%



	SPEED	LENGTH [mm]						
		800	1200	1600	2000	2400	2800	3200
ACOUSTIC PRESSURE L _{p,Amx} [dB(A)]	1	21	23	23	23	23	24	24
	2	26	27	28	30	31	32	32
	3	35	35	37	39	39	40	40
AIR VOLUME [m³/h]	1	54	83	110	136	167	192	185
	2	77	116	156	191	236	271	260
	3	113	166	229	276	347	393	377

Code example	FCT41-12120-NR116	Floor convector FCT41-12, H=125 mm, W=320 mm, L=1200 mm, stainless steel trough, Al natur frame, Al natur cross roll-up grill, installed regulation SR201, convector 24V DC
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Ordering, see the page 41

SPECIFICATIONS

- Flats, detached houses, offices, halls
- High heating output
- Forced convection by tangential fans
- Smooth running
- Dry ambience
- Safe voltage 24V DC
- Low power consumption
- Easy control

HEATING OUTPUT

Q [W] 90/70/20 °C

SPEED	0	1	2	3
rpm	0	475	583	755
LENGTH [mm]	HEATING OUTPUT [W]			
1200	322	1155	1490	1919
1600	491	1732	2235	2879
2000	660	2310	2980	3838
2400	830	2887	3725	4798
2800	999	3465	4470	5758
3200	1168	4042	5215	6717

Qn [W] 75/65/20 °C

SPEED	0	1	2	3
rpm	0	475	583	755
LENGTH [mm]	HEATING OUTPUT [W]			
1200	247	960	1238	1595
1600	377	1439	1857	2392
2000	508	1919	2476	3189
2400	638	2399	3095	3986
2800	768	2879	3714	4784
3200	898	3358	4333	5581

Q [W] 70/55/20 °C

SPEED	0	1	2	3
rpm	0	475	583	755
LENGTH [mm]	HEATING OUTPUT [W]			
1200	196	813	1049	1352
1600	298	1220	1574	2027
2000	401	1627	2099	2703
2400	504	2033	2624	3379
2800	607	2440	3148	4055
3200	710	2847	3673	4731

Q [W] 55/45/20 °C

SPEED	0	1	2	3
rpm	0	475	583	755
LENGTH [mm]	HEATING OUTPUT [W]			
1200	118	571	736	949
1600	181	856	1105	1423
2000	243	1142	1473	1897
2400	305	1427	1841	2371
2800	367	1712	2209	2846
3200	430	1998	2578	3320



Q [W] 6/12 °C, relative humidity 50 %

SPEED		1		2		3	
rpm/min		475		583		755	
LENGTH [mm]	Ti [°C]	COOLING OUTPUT [W]					
		Qk[W]	Qs[W]	Qk[W]	Qs[W]	Qk[W]	Qs[W]
1200	24	238	204	291	249	395	339
	26	269	230	329	282	447	383
	28	299	256	366	314	497	426
	30	330	283	403	346	548	470
1600	24	357	306	436	374	593	508
	26	403	345	493	422	670	574
	28	449	385	549	470	746	639
	30	495	424	605	518	822	705
2000	24	476	408	582	499	791	678
	26	537	461	657	563	893	765
	28	599	513	732	627	995	853
	30	660	565	806	691	1096	940
2400	24	595	510	727	623	989	847
	26	672	576	821	704	1116	957
	28	748	641	915	784	1243	1066
	30	825	707	1008	864	1370	1174
2800	24	714	612	873	748	1186	1017
	26	806	691	986	845	1340	1148
	28	898	769	1098	941	1492	1279
	30	989	848	1210	1037	1644	1409
3200	24	833	714	1018	873	1384	1186
	26	940	806	1150	985	1563	1339
	28	1048	898	1281	1097	1741	1492
	30	1154	989	1411	1209	1918	1644

Q [W] 8/14 °C, relative humidity 50 %

SPEED		1		2		3	
rpm/min		475		583		755	
LENGTH [mm]	Ti [°C]	COOLING OUTPUT [W]					
		Qk[W]	Qs[W]	Qk[W]	Qs[W]	Qk[W]	Qs[W]
1200	24	207	177	253	217	344	295
	26	238	204	291	249	395	339
	28	269	230	329	282	447	383
	30	299	256	366	314	497	426
1600	24	311	266	380	326	516	443
	26	357	306	436	374	593	508
	28	403	345	493	422	670	574
	30	449	385	549	470	746	639
2000	24	414	355	506	434	688	590
	26	476	408	582	499	791	678
	28	537	461	657	563	893	765
	30	599	513	732	627	995	853
2400	24	518	444	633	543	861	738
	26	595	510	727	623	989	847
	28	672	576	821	704	1116	957
	30	748	641	915	784	1243	1066
2800	24	621	532	760	651	1033	885
	26	714	612	873	748	1186	1017
	28	806	691	986	845	1340	1148
	30	898	769	1098	941	1492	1279
3200	24	725	621	886	760	1205	1033
	26	833	714	1018	873	1384	1186
	28	940	806	1150	985	1563	1339
	30	1048	898	1281	1097	1741	1492

Q [W] 10/15 °C, relative humidity 50 %

SPEED		1		2		3	
rpm/min		475		583		755	
LENGTH [mm]	Ti [°C]	COOLING OUTPUT [W]					
		Qk[W]	Qs[W]	Qk[W]	Qs[W]	Qk[W]	Qs[W]
1200	24	184	158	225	193	306	262
	26	215	184	263	225	357	306
	28	246	211	300	257	408	350
	30	276	237	338	290	459	394
1600	24	276	236	337	289	458	393
	26	322	276	394	338	536	459
	28	369	316	451	386	612	525
	30	415	355	507	434	689	590
2000	24	368	315	450	385	611	524
	26	430	368	525	450	714	612
	28	491	421	601	515	816	700
	30	553	474	676	579	918	787
2400	24	460	394	562	482	764	655
	26	537	460	657	563	893	765
	28	614	526	751	643	1021	875
	30	691	592	845	724	1148	984
2800	24	552	473	675	578	917	786
	26	645	552	788	675	1071	918
	28	737	632	901	772	1225	1050
	30	829	710	1014	869	1378	1181
3200	24	644	552	787	674	1070	917
	26	752	644	919	788	1250	1071
	28	860	737	1051	901	1429	1225
	30	967	829	1183	1013	1607	1378

Q [W] 12/16 °C, relative humidity 50 %

SPEED		1		2		3	
rpm/min		475		583		755	
LENGTH [mm]	Ti [°C]	COOLING OUTPUT [W]					
		Qk[W]	Qs[W]	Qk[W]	Qs[W]	Qk[W]	Qs[W]
1200	24	161	138	196	168	267	229
	26	192	164	234	201	318	273
	28	223	191	272	233	370	317
	30	253	217	310	265	421	361
1600	24	241	206	295	252	400	343
	26	287	246	351	301	478	409
	28	334	286	408	350	555	476
	30	380	326	465	398	632	541
2000	24	321	275	393	336	534	457
	26	383	328	469	402	637	546
	28	445	381	544	466	740	634
	30	507	434	619	531	842	722
2400	24	401	344	491	421	667	572
	26	479	411	586	502	796	682
	28	556	477	680	583	925	793
	30	633	543	774	664	1053	902
2800	24	482	413	589	505	801	686
	26	575	493	703	602	955	819
	28	668	572	816	700	1110	951
	30	760	651	929	796	1263	1083
3200	24	562	482	687	589	934	801
	26	671	575	820	703	1115	955
	28	779	668	952	816	1294	1110
	30	887	760	1084	929	1474	1263

Q [W] 16/18 °C, relative humidity 50 %

SPEED		1		2		3	
rpm/min		475		583		755	
LENGTH [mm]	Ti [°C]	COOLING OUTPUT [W]					
		Qk[W]	Qs[W]	Qk[W]	Qs[W]	Qk[W]	Qs[W]
1200	24	97	97	119	119	162	162
	26	124	124	152	152	207	207
	28	176	151	215	185	293	251
	30	207	177	253	217	344	295
1600	24	146	146	179	179	243	243
	26	186	186	228	228	310	310
	28	264	226	323	277	439	376
	30	311	266	380	326	516	443
2000	24	195	195	238	238	324	324
	26	248	248	304	304	413	413
	28	352	302	431	369	585	502
	30	414	355	506	434	688	590

Q [W] 16/18 °C, relative humidity 50 %

SPEED		1		2		3	
rpm/min		475		583		755	
LENGTH [mm]	Ti [°C]	COOLING OUTPUT [W]					
		Qk[W]	Qs[W]	Qk[W]	Qs[W]	Qk[W]	Qs[W]
2400	24	243	243	298	298	405	405
	26	311	311	380	380	516	516
	28	440	377	538	461	732	627
	30	518	444	633	543	861	738
2800	24	292	292	357	357	486	486
	26	373	373	456	456	620	620
	28	528	453	646	554	878	753
	30	621	532	760	651	1033	885
3200	24	341	341	417	417	566	566
	26	435	435	532	532	723	723
	28	617	528	754	646	1024	878
	30	725	621	886	760	1205	1033

Qk [W] - total cooling output, Qs[W] - sensible cooling output (air relative humidity 50 %)



Floor convectors fitted with tangential fans are characterized of high heating capacity surpassing the same of convectors with natural convection. Convenient placing in modern buildings is under the windows. This convector type is suitable for utilization in flats, offices, administration buildings, hotels, theatres, entrance halls, corridors etc. Supplies of convectors equipped with 230V fans will continue in order to meet demands relating to the existing ready projects. All models will have equivalents with 24V DC technology and EC-fans successively.

Convector is fitted with Al-Cu lamellar 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
- Fans with quiet tangential rotors
- 230V / 50Hz
- Engine speed regulation in the range of 1–3

TYPES SUPPLIED WITH 230V AC TECHNOLOGY:

FCT20-08	(170×90×800–4800 mm)
FCT20-09	(270×90×800–3600 mm)
FCT40-09	(320×90×800–3600 mm)
FCT20-11	(270×115×800–4800 mm)
FCT40-11	(320×115×880–4800 mm)
FCT41-12	(320×125×1200–3200 mm)

FANS 230V AC / 50HZ

The floor convectors have built-in fans with tangential rotors. The heating output of floor convector is regulated by alteration of engine speed enabling to reach optimized heating output under a low noisiness. The safety of convector working under a low voltage is ensured by grounding of components as well as by manufacturer's break-down and contact resistance control tests.

TABLE OF ELECTRIC POWER INPUTS

- Convectors have installed fans for alternating voltage of 230V
- The revs control follows by regulation of input voltage
- Standard running is limited by engine speed regulator

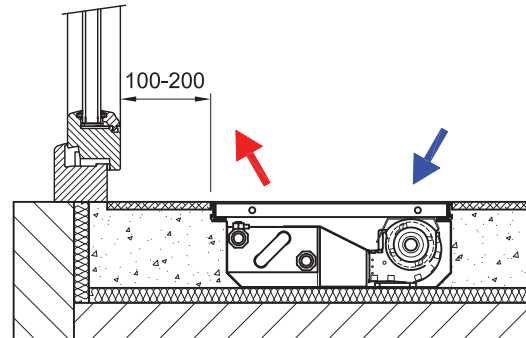
Maximal electric input at voltage 230V AC (without speed regulator) and number of installed fans

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	W	pcs
FCT20-08	230V = max.	6	1	17	1	23	2	34	2	40	3	51	3	57	4	68	4	74	5	85	5	91	6
FCT20-09		41	1	41	1	82	2	82	2	123	3	123	3	164	4	164	4	-	-	-	-	-	-
FCT40-09		41	1	41	1	82	2	82	2	123	3	123	3	164	4	164	4	-	-	-	-	-	-
FCT20-11		25	1	45	1	70	2	90	2	90	2	135	3	135	3	180	4	180	4	180	4	205	5
FCT40-11		25	1	45	1	70	2	90	2	90	2	135	3	135	3	180	4	180	4	180	4	205	5
FCT41-12		25	1	45	1	70	2	90	2	90	2	135	3	135	3	-	-	-	-	-	-	-	-

* standardly, the input power is lower because of used regulator (operating voltage e.g. 130V, 160V)

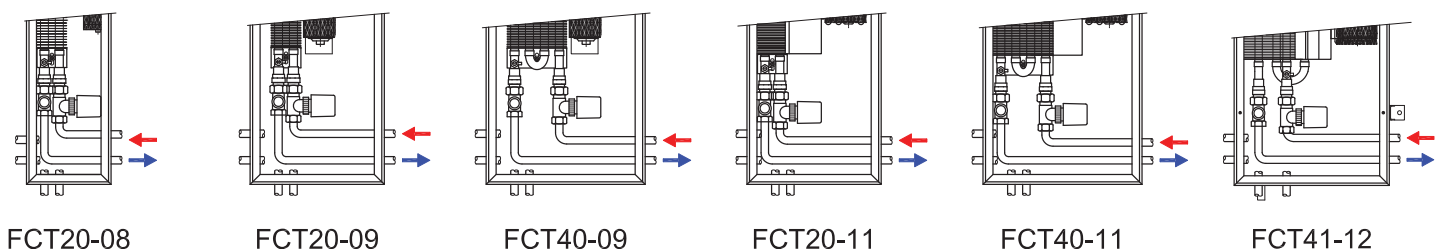
RECOMMENDED STANDARD INSTALLING IN FLOOR

- 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.





HEATING OUTPUT RECALCULATION FOR ANOTHER TEMPERATURE GRADIENT

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

$$Q = Q_n * \Psi * \left(\frac{\Delta T}{50}\right)^m \text{ [W]; where } \Delta T = \left(\frac{T_1 + T_2}{2}\right) - T_i \text{ [}^\circ\text{C]}$$

m=1,072 pro FCT20-08
m=1,083 pro FCT20-09
m=1,102 pro FCT40-09

m=1,074 pro FCT20-11
m=1,073 pro FCT40-11
m=1,017 pro FCT41-12

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

QUICK CONVERSION TO $T_i=22$ °C A $T_i=15$ °C FOR ORIENTATION

- If you want to learn convactor output for the room temperature of 22 °C or for a corridor temperature of 15 °C
- multiply heating output of the chosen convactor by the "k" coefficient

For $T_i=22$ °C, $k=0.95$
E.g.: Q [55/45/22 °C] = 0.95 * Q [55/45/20 °C]

for $T_i=15$ °C, $k=1.12$
E.g.: Q [75/65/15 °C] = 1.12 * Q_n [75/65/20 °C]

HEATING WATER FLOW RATE THROUGH EXCHANGER

$$M = 0.86Q/(T_1-T_2) \text{ [kg/h]}$$

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

CONVECTOR DIMENSIONING BASED ON ACOUSTIC PARAMETERS

- Convactor heating output must cover thermal loss in the room and observe the acoustic parameters
- Permissible noisiness levels are determined by national legislation
- Different values of permissible noisiness levels are valid for residential houses, hospitals, offices, hotels etc.
- Heating output of convactor with fan is designed for revolutions conforming with the lowest admissible acoustic pressure level in the room
- Tables of acoustic pressure L_{pAmax} [dB(A)] are in chapters relating to the single floor convactor types
- Quoted measuring of acoustic parameters follows diagonally in the distance of 1m above and 1m in front of the convactor
- The acoustic field may differ in dependence on:
 - convactor placing in the room and its appropriate installation
 - the room space and segmentation (corners, partitions, ceiling)
 - furnishings as absorbing elements: tables, chairs, cupboards, wardrobes, carpets etc.
 - installation of more convectors in one room
 - sometimes, e.g. when convactor is placed in a corner, the noisiness parameters may show values increased by 3dB(A)

EXCHANGER HYDRAULIC LOSSES

TYPE	Length [mm]	Volume [l]	Qv – mass rate of flow in piping (kg/h) / R – hydraulic loss in exchanger (kPa)												
			20	40	60	80	100	120	150	200	250	300	350	400	450
FCT20-08 FCT20-09 FCT20-11	800	0,15	0,01	0,02	0,04	0,07	0,10	0,15	0,23	0,40	0,62	0,88	1,19	1,54	1,93
	1200	0,27	0,01	0,02	0,06	0,09	0,14	0,20	0,30	0,52	0,81	1,13	1,52	1,98	2,46
	1600	0,39	0,01	0,03	0,07	0,12	0,17	0,25	0,37	0,65	0,99	1,38	1,86	2,41	3,00
	2000	0,52	0,01	0,03	0,09	0,14	0,21	0,30	0,45	0,77	1,18	1,63	2,20	2,84	3,53
	2400	0,64	0,01	0,04	0,10	0,16	0,24	0,35	0,52	0,89	1,36	1,89	2,54	3,28	4,06
	2800	0,76	0,01	0,05	0,11	0,19	0,28	0,40	0,59	1,01	1,55	2,14	2,87	3,71	4,59
	3200	0,89	0,01	0,05	0,13	0,21	0,31	0,45	0,66	1,14	1,73	2,39	3,21	4,15	5,12
	3600	1,01	0,02	0,06	0,14	0,23	0,34	0,50	0,73	1,26	1,91	2,64	3,55	4,58	5,66
	4000	1,13	0,02	0,06	0,16	0,26	0,38	0,55	0,81	1,38	2,10	2,89	3,88	5,01	6,19
	4400	1,26	0,02	0,07	0,17	0,28	0,41	0,60	0,88	1,50	2,28	3,15	4,22	5,45	6,72
4800	1,38	0,02	0,07	0,19	0,30	0,45	0,65	0,95	1,63	2,47	3,40	4,56	5,88	7,25	
FCT40-09 FCT40-11 FCT41-12	800	0,30	0,01	0,05	0,13	0,21	0,32	0,46	0,69	1,21	1,86	2,62	3,54	4,59	5,74
	1200	0,54	0,01	0,05	0,13	0,21	0,32	0,46	0,69	1,21	1,86	2,62	3,54	4,59	5,74
	1600	0,79	0,02	0,06	0,15	0,26	0,39	0,56	0,84	1,45	2,23	3,12	4,21	5,46	6,80
	2000	1,03	0,02	0,07	0,18	0,31	0,45	0,66	0,98	1,70	2,60	3,63	4,89	6,33	7,86
	2400	1,28	0,02	0,09	0,21	0,35	0,52	0,76	1,13	1,94	2,97	4,13	5,56	7,20	8,93
	2800	1,53	0,03	0,10	0,24	0,40	0,59	0,86	1,27	2,19	3,34	4,63	6,23	8,06	9,99
	3200	1,77	0,03	0,11	0,27	0,45	0,66	0,96	1,41	2,43	3,71	5,14	6,91	8,93	11,05
	3600	2,02	0,03	0,12	0,30	0,49	0,73	1,06	1,56	2,68	4,08	5,64	7,58	9,80	12,12
	4000	2,27	0,04	0,13	0,33	0,54	0,80	1,16	1,70	2,92	4,45	6,15	8,26	10,67	13,18
	4400	2,51	0,04	0,14	0,36	0,59	0,86	1,26	1,85	3,17	4,82	6,65	8,93	11,53	14,25
4800	2,76	0,04	0,15	0,39	0,64	0,93	1,36	1,99	3,41	5,19	7,15	9,60	12,40	15,31	

PARAMETERS OF LOCKSHIELD VALVES

T-turns	0,5	0,75	1	1,5	2	2,5	3	3,5	4	5	6	MAX
Kv (m³/h) - direct version	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 version	0,2	0,25	0,29	0,4	0,5	0,69	0,8	1	1,2	1,55	1,9	2,2

parameters of free packed in lockshield valves

FCT 230V AC FLOOR CONVECTOR REGULATION



REGULATION OF FCT 230V AC/50HZ FLOOR CONVECTORS

Standard regulation of floor convectors with installed tangential fans working under the alternating voltage of 230V AC enables speed alteration in the range of 1–3. Level 1 for sleep mode, level 2 for current running and level 3 for quick initial heating.

Standard equipment:

- thermostat with revs change-over switch, manual or digital control (Z-RT005, Z-RT006)
- regulator as an element controlling the fan and thermo-drive speed and reacting to revs blocking

Other regulation possibilities:

- Thermo-drive installed on thermostatic valve placed on piping and following the given instructions opens or closes the flowing of heating medium through exchanger.
- Revs blocking prevents fans running, until the heating water reaches the required temperature. The starting up temperature of heating water is adjustable

All regulation elements are available to order, as per the project demands. The manufacturer's offers reckon with one thermostat per a room, the number of regulators depends on the system capacity and convector length. Thermophone installation is influenced by consideration, whether

it is necessary to limit the medium flow rate through exchanger when the fans are not running. The revs blocking is installed in the first convector only.

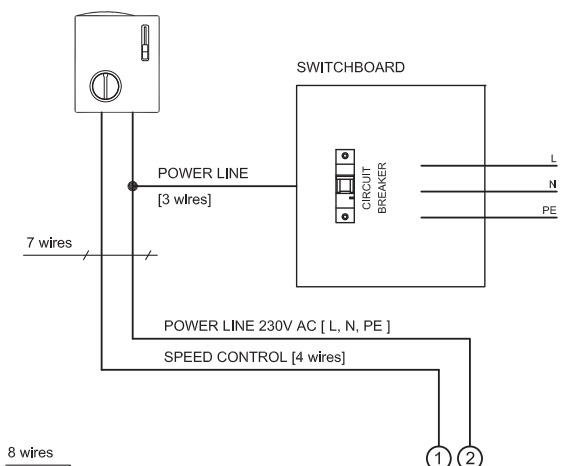
SAMPLE FOR REGULATION OF FCT40-11 CONVECTOR WITH INSTALLED Z-RT005 THERMOSTAT AND Z-VD003 REGULATOR

Setting of the desired temperature

0–30 °C range for heating or cooling

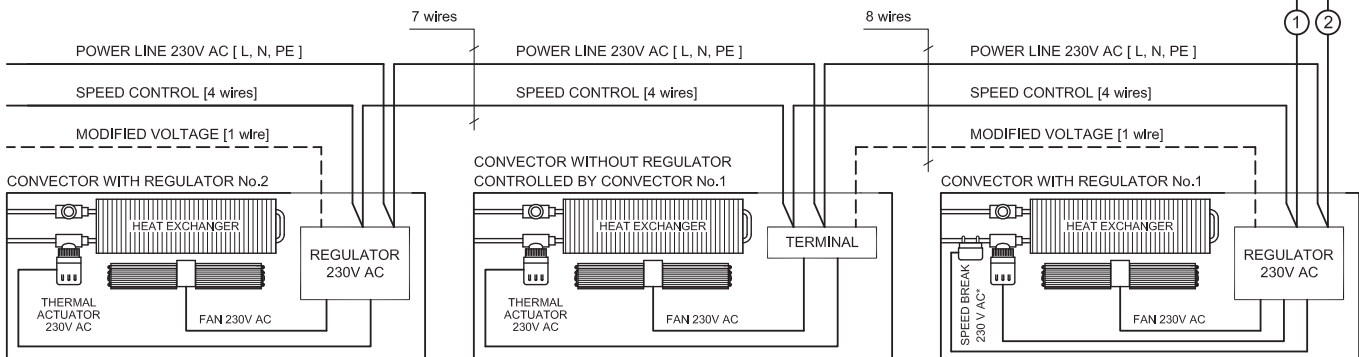
Thermostat, having received information requiring heating, activates the running of fans under the chosen speed and opens the exchanger for the necessary flow rate of heating medium.

THERMOSTAT Z-RT005



CONNECTION WITH MORE REGULATORS

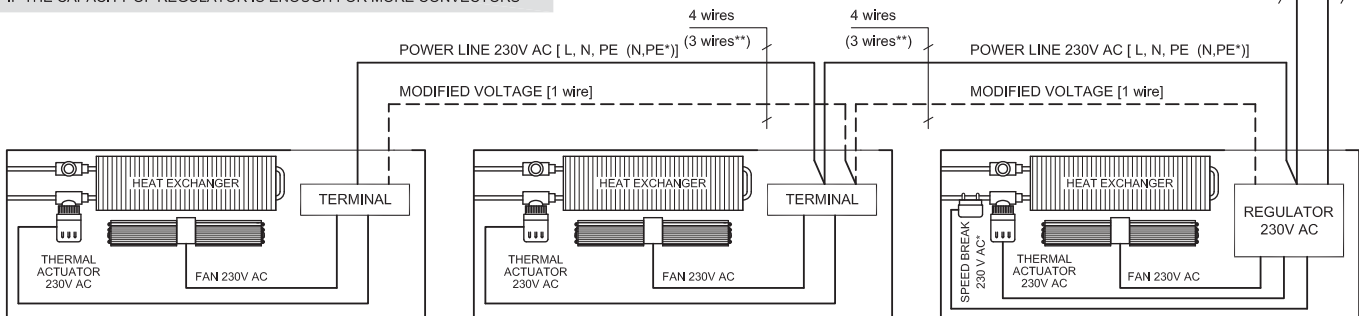
IF THE CAPACITY OF THE REGULATOR IS OVER USE NEXT REGULATOR



* installation of the speed break only to the first convector

CONNECTION WITH ONE REGULATOR

IF THE CAPACITY OF REGULATOR IS ENOUGH FOR MORE CONVECTORS



* installation of the speed break only to the first convector

** in case that thermal actuator is not used

Caution

It has **no antifreeze protection**. Floor convectors to be installed in places, where the local temperature can drop under 5 °C, have no thermo-drive for closing of the heat medium circuit.



Z-DS002

Fan speed switch

Switch levels: 0, 1, 2, 3
 Operating voltage: 230V / 50Hz
 Max. rating: 6 (2) A
 Protection: IP30
 Colour: white
 Dimension: 96×97×36 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: 122×93×52 mm



Z-RT004 – heating/cooling

Manual room thermostat with speed switch, heating/cooling

Temperature range: 8–30 °C
 Switch levels: Speeds: 0, 1, 2, 3 Switch: heating / cooling
 Operating voltage: 230V / 50Hz
 Max rating: 6 (2) A
 Protection: IP30
 Colour: white
 Dimension: 96×110×36 mm



Z-RT005 – heating

Manual room thermostat with speed switch, heating

Temperature range: 8–30 °C
 Switch levels: Speeds: 0, 1, 2, 3
 Operating voltage: 230V / 50Hz
 Max. rating: 6 (2) A
 Protection: IP30
 Colour: white
 Dimension: 96×110×36 mm



Z-RT006 – heating, cooling

Room thermostat with backlit LCD, 7-day time program, 8 programmable timers, manual or automatic speed switching, mode heating/cooling for 2-pipe and 4-pipe floor convectors

Temperature range: 0-49 °C
 Modes: Comfort, Economy, Protection
 Speeds: 1,2,3 or automatic
 Operating voltage: 230V / 50Hz
 Power consumption: max. 8VA
 Outputs rating: 5 (2)A
 Protection: IP30
 Colour: RAL9003 white
 Dimension: 87 × 87 × 58 mm



For installation is needed to use rectangle conduit box for semi-flush mounted thermostat ARG71, delivered as a part of thermostat



Z-VD001, Z-VD003, Z-VD004 – Speed controllers

Three-stage regulator switching-over the fan speed according to thermostat commands, actuating thermo-drive and reacting to speed brake. The ordered regulated convectors have been always fitted with suitable regulators matching the concrete convector types.

Operating voltage: 230V / 50Hz
 Protection: IP20
 Colour: black



Z-VD001

Convector type: **FCT20-08**
 Number of controlled fans: **7**

Convector type: **FCT20-09, 40-09**
 Number of controlled fans: **4**

Dimension: 114×70×65 mm

Z-VD003

Convector type: **FCT20-11, FCT40-11, FCT41-12**
 Number of controlled fans: **5**
 Dimension: 132×79×67 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-RT009

a speed brake stopping the fan(s) running, as soon as the water temperature drops under the standard level

Temperature range: 10–40 °C
 Operating voltage: 230V / 50Hz
 Max. rating: 4 (2) A
 Difference: 10K
 Colour: white
 Dimension: 44×79×54 mm



Z-TD001 direct, Z-TE001 corner

Thermostatic valve installed on the exchanger input tube regulates the flow rate of heating medium through the heat exchanger

Dimension: DN15, NF norm
 Connection thread: M30×1,5 mm
 Max. working temperature: 120 °C
 Max. working overpressure: PN10

Valve adjusting	1	2	3	4	5	N
k_v (m ³ /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

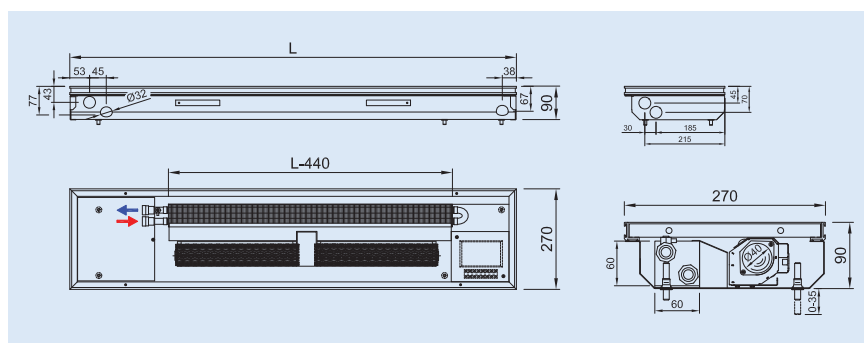
T- turns	0,25	0,5	1,0	1,5	2,0	3,0	4,0
k_v (m ³ /h)	0,13	0,22	0,43	0,65	0,85	1,25	1,7





PARAMETERS

Convector	Width	270 mm
	Height	90 mm
	Length	800–3600 mm v kroku po 400 mm
	Height adjusting	0–35 mm
	Stainless trough width	250 mm
	Grill type	cross / linear
Exchanger	Grill material	anodized aluminium, wood, stainless steel
	Width	60 mm
	Height	60 mm
	Finned length	L-440 mm
	Heat medium connection	2 × G1/2" female thread
	Max. working temperature	110 °C
Fan	Max. working overpressure	1 MPa
	Rotor diameter	∅ 40 mm
	Operating voltage	230V AC / 50Hz
	Ingress protection	IP20
Operating conditions	Regulation	by output voltage modification (regulation Z-VD...)
	Ambient temperature	+2 to +40 °C
	Relative humidity	20–70%



	SPEED	LENGTH [mm]							
		800	1200	1600	2000	2400	2800	3200	3600
ACOUSTIC PRESSURE L_{pAmax} [dB(A)]	1	22	24	24	25	25	25	25	26
	2	34	35	37	38	39	40	41	41
	3	42	42	46	46	49	51	51	51
AIR VOLUME [m³/h]	1	24	52	76	104	128	156	180	209
	2	50	108	158	216	216	324	374	432
	3	66	143	208	285	285	428	494	571

Code example **FCT20-09200-NR210** Floor convector FCT20-09, H=90 mm, W=270 mm, L=2000 mm, stainless steel trough, Al bronze frame, Al bronze cross roll-up grill, without regulation, Convector 230 V AC

Ordering, see the page 41

SPECIFICATIONS

- Offices, corridors, halls
- Optimal rating output
- Forced convection by tangential fans
- Smooth running
- Dry ambience

HEATING OUTPUT

Q [W] 90/70/20 °C

SPEED	0	1	2	3
rpm	0	576	972	1183
LENGTH [mm]	HEATING OUTPUT [W]			
800	64	422	594	720
1200	134	844	1188	1441
1600	205	1266	1783	2161
2000	276	1687	2377	2881
2400	346	2109	2971	3602
2800	417	2531	3565	4322
3200	488	2953	4160	5042
3600	558	3375	4754	5763

Qn [W] 75/65/20 °C

SPEED	0	1	2	3
rpm	0	576	972	1183
LENGTH [mm]	HEATING OUTPUT [W]			
800	49	346	488	591
1200	103	693	976	1183
1600	157	1039	1463	1774
2000	212	1385	1951	2365
2400	266	1731	2439	2956
2800	320	2078	2927	3548
3200	375	2424	3414	4139
3600	429	2770	3902	4730

Q [W] 70/55/20 °C

SPEED	0	1	2	3
rpm	0	576	972	1183
LENGTH [mm]	HEATING OUTPUT [W]			
800	39	290	409	496
1200	82	581	818	992
1600	125	871	1227	1487
2000	168	1161	1636	1983
2400	210	1452	2045	2479
2800	253	1742	2454	2975
3200	296	2033	2863	3471
3600	339	2323	3272	3967

Q [W] 55/45/20 °C

SPEED	0	1	2	3
rpm	0	576	972	1183
LENGTH [mm]	HEATING OUTPUT [W]			
800	23	199	280	340
1200	49	398	561	680
1600	75	597	841	1020
2000	101	796	1122	1360
2400	127	996	1402	1700
2800	153	1195	1683	2040
3200	179	1394	1963	2380
3600	205	1593	2244	2720



SPECIFICATIONS

- Offices, corridors, halls
- Optimal rating output
- Forced convection by tangential fans
- Smooth running
- Dry ambience

HEATING OUTPUT

Q [W] 90/70/20 °C

SPEED	0	1	2	3
rpm	0	576	972	1183
LENGTH [mm]	HEATING OUTPUT [W]			
800	127	550	931	1082
1200	269	1099	1863	2164
1600	410	1649	2794	3246
2000	551	2198	3725	4328
2400	693	2748	4656	5410
2800	834	3297	5588	6492
3200	976	3847	6519	7574
3600	1117	4396	7450	8655

Qn [W] 75/65/20 °C

SPEED	0	1	2	3
rpm	0	576	972	1183
LENGTH [mm]	HEATING OUTPUT [W]			
800	98	450	762	885
1200	206	899	1524	1770
1600	315	1349	2285	2655
2000	424	1798	3047	3540
2400	532	2248	3809	4425
2800	641	2697	4571	5310
3200	750	3147	5332	6195
3600	859	3596	6094	7080

Q [W] 70/55/20 °C

SPEED	0	1	2	3
rpm	0	576	972	1183
LENGTH [mm]	HEATING OUTPUT [W]			
800	77	376	637	740
1200	163	752	1274	1480
1600	249	1127	1911	2220
2000	335	1503	2547	2960
2400	421	1879	3184	3699
2800	507	2255	3821	4439
3200	593	2631	4458	5179
3600	679	3006	5095	5919

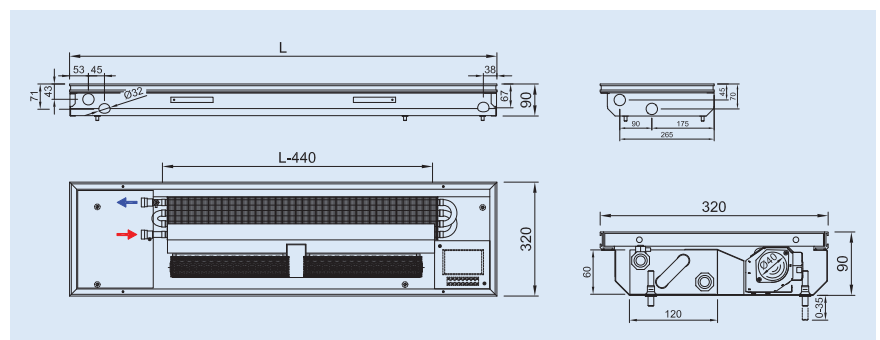
Q [W] 55/45/20 °C

SPEED	0	1	2	3
rpm	0	576	972	1183
LENGTH [mm]	HEATING OUTPUT [W]			
800	47	256	434	504
1200	99	512	868	1008
1600	151	768	1302	1512
2000	203	1024	1735	2016
2400	255	1280	2169	2520
2800	307	1536	2603	3024
3200	359	1792	3037	3528
3600	411	2048	3471	4032



PARAMETERS

Convector	Width	320 mm
	Height	90 mm
	Length	800-3600 mm v kroku po 400 mm
	Height adjusting	0-35 mm
	Stainless trough width	300 mm
	Grill type	cross / linear
Exchanger	Grill material	anodized aluminium, wood, stainless steel
	Width	120 mm
	Height	60 mm
	Finned length	L-440 mm
	Heat medium connection	2 x G1/2" female thread
	Max. working temperature	110 °C
Fan	Max. working overpressure	1 MPa
	Rotor diameter	∅ 40 mm
	Operating voltage	230V AC / 50Hz
	Ingress protection	IP20
Operating conditions	Regulation	by output voltage modification (regulation Z-VD...)
	Ambient temperature	+2 to +40 °C
	Relative humidity	20-70%



	SPEED	LENGTH [mm]							
		800	1200	1600	2000	2400	2800	3200	3600
ACOUSTIC PRESSURE L _{pAmax} [dB(A)]	1	23	24	24	25	25	25	25	26
	2	35	35	37	38	39	40	41	41
	3	42	42	46	46	49	51	51	51
AIR VOLUME [m ³ /h]	1	22	48	71	97	119	145	167	193
	2	46	100	146	200	200	301	347	401
	3	61	132	193	265	265	397	458	529

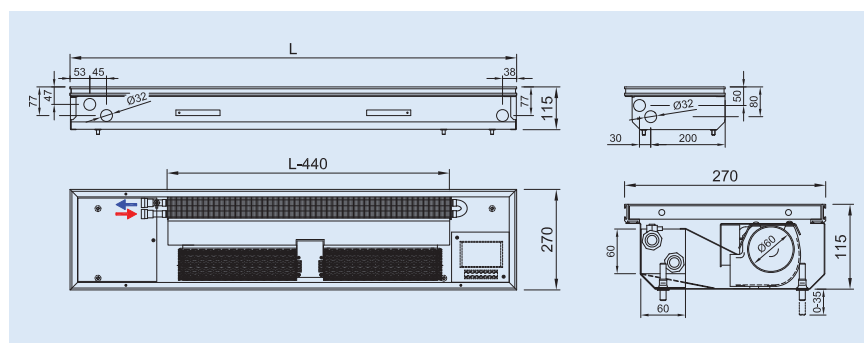
Code example **FCT40-09200-NR111** Floor convector FCT40-09, H=90 mm, W=320 mm, L=2000 mm, stainless steel trough, Al natur frame, Al natur cross roll-up grill, installed regulation Z-VD001, Convector 230 V AC

Ordering, see the page 41



PARAMETERS

Convector	Width	270 mm
	Height	115 mm
	Length	800-4800 mm in step 400 mm
	Height adjusting	0-35 mm
	Stainless trough width	250 mm
	Grill type	cross / linear
Exchanger	Grill material	anodized aluminium, wood, stainless steel
	Width	60 mm
	Height	60 mm
	Finned length	L-440mm
	Heat medium connection	2 x G1/2" female thread
	Max. working temperature	110 °C
Fan	Max. working overpressure	1 MPa
	Rotor diameter	∅ 60 mm
	Operating voltage	230V AC / 50Hz
	Ingress protection	IP20
Operating conditions	Regulation	by output voltage modification (regulation Z-VD...)
	Ambient temperature	+2 to +40 °C
	Relative humidity	20-70%



	SPEED	LENGTH [mm]											
		800	1200	1600	2000	2400	2800	3200	3600	4000	4400	4800	
ACOUSTIC PRESSURE LpAmax [dB(A)]	1	23	23	24	25	26	26	27	26	27	28	28	28
	2	29	29	30	32	33	33	34	33	34	34	34	34
	3	42	43	44	47	47	47	48	48	48	48	48	48
AIR VOLUME [m³/h]	1	31	76	107	151	179	227	269	303	358	358	389	
	2	48	119	167	239	258	358	387	477	516	516	564	
	3	79	171	249	341	428	512	643	682	857	857	936	

Code example **FCT20-11320-NR120** Floor convector FCT20-11, H=115 mm, W=270 mm, L=3200 mm, stainless steel trough, Al natur frame, Al natur linear grill, without regulation, Convector 230 V AC

Ordering, see the page 41

SPECIFICATIONS

- Offices, corridors, halls
- Optimal rating output
- Forced convection by tangential fans
- Smooth running
- Dry ambience

HEATING OUTPUT

Q [W] 90/70/20 °C

SPEED	0	1	2	3
rpm	0	433	631	967
LENGTH [mm]	HEATING OUTPUT [W]			
800	81	321	555	675
1200	172	642	1111	1351
1600	262	963	1666	2026
2000	352	1283	2221	2702
2400	443	1540	2665	3242
2800	533	1925	3332	4053
3200	623	2310	3998	4863
3600	714	2567	4442	5404
4000	804	3080	5330	6485
4400	894	3164	5415	6569
4800	985	3401	5886	7160

Qn [W] 75/65/20 °C

SPEED	0	1	2	3
rpm	0	433	631	967
LENGTH [mm]	HEATING OUTPUT [W]			
800	62	264	457	555
1200	132	528	913	1111
1600	201	791	1370	1666
2000	271	1055	1826	2221
2400	340	1266	2191	2666
2800	410	1583	2739	3332
3200	479	1899	3287	3999
3600	549	2110	3652	4443
4000	618	2532	4382	5331
4400	687	2602	4452	5401
4800	757	2796	4839	5887

Q [W] 70/55/20 °C

SPEED	0	1	2	3
rpm	0	433	631	967
LENGTH [mm]	HEATING OUTPUT [W]			
800	49	222	383	466
1200	104	443	767	933
1600	159	665	1150	1399
2000	214	886	1534	1866
2400	269	1063	1840	2239
2800	324	1329	2300	2798
3200	379	1595	2760	3358
3600	434	1772	3067	3731
4000	489	2127	3680	4477
4400	544	2185	3739	4536
4800	599	2348	4064	4944

Q [W] 55/45/20 °C

SPEED	0	1	2	3
rpm	0	433	631	967
LENGTH [mm]	HEATING OUTPUT [W]			
800	30	152	264	321
1200	63	305	527	642
1600	96	457	791	962
2000	130	610	1055	1283
2400	163	731	1266	1540
2800	196	914	1582	1925
3200	229	1097	1899	2310
3600	262	1219	2110	2567
4000	296	1463	2532	3080
4400	329	1503	2572	3120
4800	362	1615	2795	3401



SPECIFICATIONS

- Offices, corridors, halls
- Optimal rating output
- Forced convection by tangential fans
- Smooth running
- Dry ambience

HEATING OUTPUT

Q [W] 90/70/20 °C

SPEED	0	1	2	3
rpm	0	433	631	967
LENGTH [mm]	HEATING OUTPUT [W]			
800	156	749	1015	1377
1200	330	1499	2030	2754
1600	504	2248	3045	4131
2000	678	2997	4060	5508
2400	852	3597	4872	6609
2800	1025	4496	6090	8261
3200	1199	5395	7307	9914
3600	1373	5995	8119	11015
4000	1547	7194	9743	13218
4400	1721	7356	9906	13380
4800	1894	7943	10758	14595

Qn [W] 75/65/20 °C

SPEED	0	1	2	3
rpm	0	433	631	967
LENGTH [mm]	HEATING OUTPUT [W]			
800	120	616	834	1132
1200	254	1232	1669	2264
1600	387	1848	2503	3396
2000	521	2464	3338	4528
2400	655	2957	4005	5434
2800	788	3696	5007	6792
3200	922	4436	6008	8150
3600	1055	4929	6675	9056
4000	1189	5914	8010	10867
4400	1322	6048	8144	11001
4800	1456	6530	8845	11999

Q [W] 70/55/20 °C

SPEED	0	1	2	3
rpm	0	433	631	967
LENGTH [mm]	HEATING OUTPUT [W]			
800	95	517	701	951
1200	201	1035	1402	1901
1600	306	1552	2102	2852
2000	412	2070	2803	3803
2400	518	2483	3364	4563
2800	623	3104	4205	5704
3200	729	3725	5046	6845
3600	835	4139	5606	7605
4000	940	4967	6727	9127
4400	1046	5079	6840	9239
4800	1152	5484	7428	10077

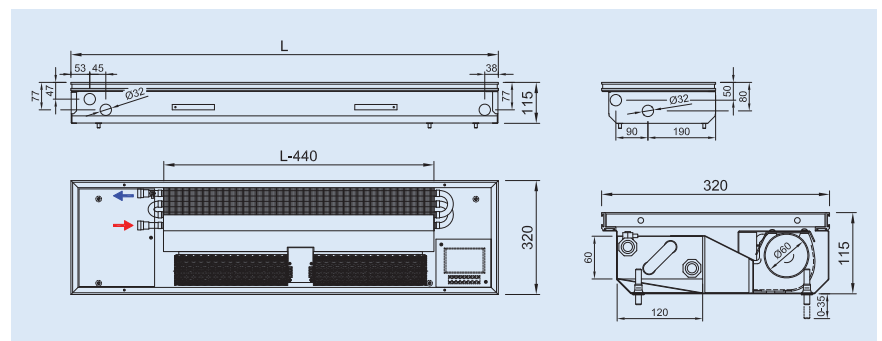
Q [W] 55/45/20 °C

SPEED	0	1	2	3
rpm	0	433	631	967
LENGTH [mm]	HEATING OUTPUT [W]			
800	58	356	482	654
1200	121	712	964	1308
1600	185	1068	1446	1962
2000	249	1424	1928	2616
2400	313	1708	2314	3139
2800	377	2135	2892	3924
3200	441	2563	3471	4709
3600	505	2847	3856	5232
4000	569	3417	4628	6278
4400	633	3494	4705	6355
4800	696	3773	5110	6932



PARAMETERS

Convector	Width	320 mm
	Height	115 mm
	Length	800-4800 mm in step 400 mm
	Height adjusting	0-35 mm
	Stainless trough width	300 mm
	Grill type	cross / linear
Exchanger	Grill material	anodized aluminium, wood, stainless steel
	Width	120 mm
	Height	60 mm
	Finned length	L-440 mm
	Heat medium connection	2 x G1/2" female thread
	Max. working temperature	110 °C
Fan	Max. working overpressure	1 MPa
	Rotor diameter	∅ 60 mm
	Operating voltage	230V AC / 50Hz
	Ingress protection	IP20
Operating conditions	Regulation	by output voltage modification (regulation Z-VD...)
	Ambient temperature	+2 to +40 °C
	Relative humidity	20-70%



	SPEED	LENGTH [mm]										
		800	1200	1600	2000	2400	2800	3200	3600	4000	4400	4800
ACOUSTIC PRESSURE LpAmax [dB(A)]	1	23	23	24	25	26	25	27	26	27	28	28
	2	29	29	30	32	33	33	34	33	34	34	34
	3	43	43	44	47	47	47	48	48	48	48	48
AIR VOLUME [m³/h]	1	29	71	100	142	168	213	252	284	336	336	365
	2	45	112	157	224	242	336	363	448	484	484	529
	3	74	160	234	320	402	480	603	640	804	804	878

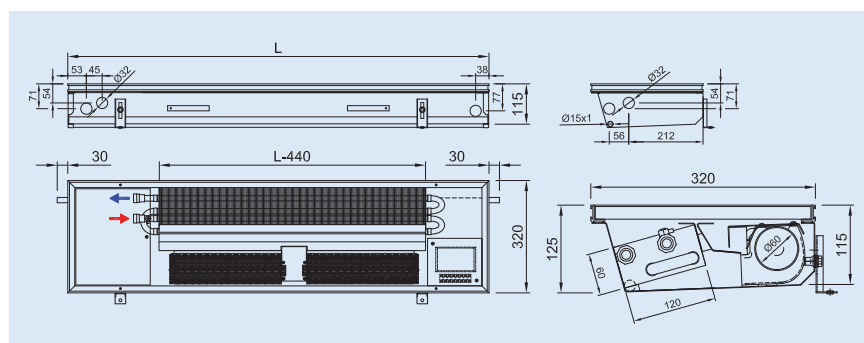
Code example **FCT40-11320-NR223** Floor convector FCT40-11, H=115 mm, W=320 mm, L=3200 mm, stainless steel trough, Al bronze frame, Al bronze linear grill, installed regulation Z-VD003, Convector 230 V AC

Ordering, see the page 41



PARAMETERS

Convector	Width	320 mm
	Height	125 mm
	Length	1200-3200 mm in step 400 mm
	Height adjusting	0-35 mm
	Stainless trough width	300 mm
	Grill type	cross / linear
	Grill material	anodized aluminium, wood, stainless steel
Exchanger	Width	120 mm
	Height	60 mm
	Finned length	L-440 mm
	Heat medium connection	2 x G1/2" female thread
	Max. working temperature	110 °C
	Max. working overpressure	1 MPa
Fan	Rotor diameter	∅ 60 mm
	Operating voltage	230V AC / 50Hz
	Ingress protection	IP20
	Regulation	by output voltage modification (regulation Z-VD...)
Operating conditions	Ambient temperature	+2 to +40 °C
	Relative humidity	20-70%



	SPEED	LENGTH [mm]						
		800	1200	1600	2000	2400	2800	3200
ACOUSTIC PRESSURE L _{pAmax} [dB(A)]	1	23	24	25	26	25	27	27
	2	29	30	32	33	33	34	34
	3	43	44	47	47	47	48	48
AIR VOLUME [m³/h]	1	70	102	141	168	213	252	252
	2	111	159	223	242	343	364	363
	3	159	234	316	399	477	600	603

Code example	FCT41-12120-NR213	Floor convector FCT41-12, H=125 mm, W=320 mm, L=1200 mm, stainless steel trough, Al bronze frame, Al bronze cross roll-up grill, installed regulation Z-VD003, convector 230V AC
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Ordering, see the page 41

SPECIFICATIONS

- Flats, detached houses, offices, halls
- High heating output
- Forced convection by tangential fans
- Smooth running
- Dry ambience
- Low power consumption
- Easy control

HEATING OUTPUT

Q [W] 90/70/20 °C

SPEED	0	1	2	3
rpm	0	540	675	1085
LENGTH [mm]	HEATING OUTPUT [W]			
1200	322	1366	1741	2442
1600	491	2049	2612	3662
2000	660	2732	3483	4883
2400	830	3279	4179	5860
2800	999	4098	5224	7325
3200	1168	4918	6269	8790

Qn [W] 75/65/20 °C

SPEED	0	1	2	3
rpm	0	540	675	1085
LENGTH [mm]	HEATING OUTPUT [W]			
1200	247	1133	1444	2025
1600	377	1699	2166	3037
2000	508	2266	2888	4049
2400	638	2719	3466	4859
2800	768	3399	4332	6074
3200	898	4078	5198	7289

Q [W] 70/55/20 °C

SPEED	0	1	2	3
rpm	0	540	675	1085
LENGTH [mm]	HEATING OUTPUT [W]			
1200	196	959	1222	1714
1600	298	1438	1833	2570
2000	401	1917	2444	3427
2400	504	2301	2933	4112
2800	607	2876	3666	5141
3200	710	3451	4399	6169

Q [W] 55/45/20 °C

SPEED	0	1	2	3
rpm	0	540	675	1085
LENGTH [mm]	HEATING OUTPUT [W]			
1200	118	670	855	1198
1600	181	1006	1282	1797
2000	243	1341	1709	2397
2400	305	1609	2051	2876
2800	367	2011	2564	3595
3200	430	2414	3077	4314



Q [W] 6/12 °C, relative humidity 50 %

SPEED		1		2		3	
rpm/min		540		675		1085	
LENGTH [mm]	Ti [°C]	COOLING OUTPUT [W]					
		Qk[W]	Qs[W]	Qk[W]	Qs[W]	Qk[W]	Qs[W]
1200	24	281	261	358	333	439	408
	26	308	287	393	366	481	448
	28	335	311	427	397	523	486
	30	360	335	459	427	563	524
1600	24	421	392	537	500	658	612
	26	462	430	589	548	722	672
	28	502	467	640	595	784	729
	30	540	503	689	641	844	785
2000	24	562	523	716	666	878	816
	26	616	573	786	731	963	896
	28	669	622	853	794	1 045	972
	30	721	670	919	855	1 126	1 047
2400	24	674	627	860	800	1 053	980
	26	740	688	943	877	1 155	1 075
	28	803	747	1 024	952	1 254	1 167
	30	865	804	1 103	1 026	1 351	1 257
2800	24	843	784	1 074	1 000	1 316	1 225
	26	924	860	1 179	1 097	1 444	1 343
	28	1 004	934	1 280	1 191	1 568	1 459
	30	1 081	1 006	1 378	1 282	1 688	1 571
3200	24	1 011	941	1 289	1 199	1 580	1 469
	26	1 109	1 032	1 414	1 316	1 733	1 612
	28	1 205	1 120	1 536	1 429	1 882	1 750
	30	1 297	1 207	1 654	1 539	2 026	1 885

Q [W] 8/14 °C, relative humidity 50 %

SPEED		1		2		3	
rpm/min		540		675		1085	
LENGTH [mm]	Ti [°C]	COOLING OUTPUT [W]					
		Qk[W]	Qs[W]	Qk[W]	Qs[W]	Qk[W]	Qs[W]
1200	24	253	235	322	300	395	367
	26	281	261	358	333	439	408
	28	308	287	393	366	481	448
	30	335	311	427	397	523	486
1600	24	379	353	483	450	592	551
	26	421	392	537	500	658	612
	28	462	430	589	548	722	672
	30	502	467	640	595	784	729
2000	24	505	470	644	599	789	734
	26	562	523	716	666	878	816
	28	616	573	786	731	963	896
	30	669	622	853	794	1 045	972
2400	24	606	564	773	719	947	881
	26	674	627	860	800	1 053	980
	28	740	688	943	877	1 155	1 075
	30	803	747	1 024	952	1 254	1 167
2800	24	758	705	966	899	1 184	1 102
	26	843	784	1 074	1 000	1 316	1 225
	28	924	860	1 179	1 097	1 444	1 343
	30	1 004	934	1 280	1 191	1 568	1 459
3200	24	910	846	1 160	1 079	1 421	1 322
	26	1 011	941	1 289	1 199	1 580	1 469
	28	1 109	1 032	1 414	1 316	1 733	1 612
	30	1 205	1 120	1 536	1 429	1 882	1 750

Q [W] 10/15 °C, relative humidity 50 %

SPEED		1		2		3	
rpm/min		540		675		1085	
LENGTH [mm]	Ti [°C]	COOLING OUTPUT [W]					
		Qk[W]	Qs[W]	Qk[W]	Qs[W]	Qk[W]	Qs[W]
1200	24	231	215	294	274	360	335
	26	260	242	331	308	406	378
	28	288	268	367	341	450	418
	30	315	293	401	373	492	458
1600	24	346	322	441	411	541	503
	26	390	363	497	462	609	566
	28	432	402	550	512	674	627
	30	472	439	602	560	738	686
2000	24	462	429	588	547	721	671
	26	520	483	663	616	812	755
	28	576	535	734	683	899	836
	30	630	586	803	747	984	915
2400	24	554	515	706	657	865	805
	26	624	580	795	740	974	906
	28	691	643	881	819	1 079	1 004
	30	756	703	963	896	1 180	1 098
2800	24	692	644	883	821	1 081	1 006
	26	779	725	994	925	1 218	1 133
	28	863	803	1 101	1 024	1 349	1 255
	30	944	879	1 204	1 120	1 475	1 373
3200	24	831	773	1 059	985	1 298	1 207
	26	935	870	1 193	1 109	1 461	1 359
	28	1 036	964	1 321	1 229	1 618	1 506
	30	1 133	1 054	1 445	1 344	1 770	1 647

Q [W] 12/16 °C, relative humidity 50 %

SPEED		1		2		3	
rpm/min		540		675		1085	
LENGTH [mm]	Ti [°C]	COOLING OUTPUT [W]					
		Qk[W]	Qs[W]	Qk[W]	Qs[W]	Qk[W]	Qs[W]
1200	24	208	194	265	247	325	302
	26	238	222	304	282	372	346
	28	267	248	340	317	417	388
	30	295	274	376	349	460	428
1600	24	312	290	398	370	488	454
	26	357	332	455	424	558	519
	28	400	372	510	475	625	582
	30	442	411	563	524	690	642
2000	24	416	387	531	494	650	605
	26	476	443	607	565	744	692
	28	534	497	681	633	834	776
	30	589	548	751	699	920	856
2400	24	499	465	637	592	780	726
	26	572	532	729	678	893	831
	28	641	596	817	760	1 001	931
	30	707	658	902	839	1 105	1 028
2800	24	624	581	796	740	975	907
	26	714	665	911	847	1 116	1 038
	28	801	745	1 021	950	1 251	1 164
	30	884	822	1 127	1 048	1 381	1 284
3200	24	749	697	955	889	1 170	1 089
	26	857	797	1 093	1 017	1 339	1 246
	28	961	894	1 225	1 140	1 501	1 396
	30	1 061	987	1 352	1 258	1 657	1 541

Q [W] 16/18 °C, relative humidity 50 %

SPEED		1		2		3	
rpm/min		540		675		1085	
LENGTH [mm]	Ti [°C]	COOLING OUTPUT [W]					
		Qk[W]	Qs[W]	Qk[W]	Qs[W]	Qk[W]	Qs[W]
1200	24	149	149	190	190	232	232
	26	179	179	228	228	280	280
	28	223	208	285	265	349	324
	30	253	235	322	300	395	367
1600	24	223	223	284	284	348	348
	26	269	269	342	342	420	420
	28	335	312	427	397	523	487
	30	379	353	483	450	592	551
2000	24	297	297	379	379	464	464
	26	358	358	457	457	559	559
	28	447	415	569	530	698	649
	30	505	470	644	599	789	734

Q [W] 16/18 °C, relative humidity 50 %

SPEED		1		2		3	
rpm/min		540		675		1085	
LENGTH [mm]	Ti [°C]	COOLING OUTPUT [W]					
		Qk[W]	Qs[W]	Qk[W]	Qs[W]	Qk[W]	Qs[W]
2400	24	357	357	455	455	557	557
	26	430	430	548	548	671	671
	28	536	498	683	636	837	779
	30	606	564	773	719	947	881
2800	24	446	446	569	569	697	697
	26	537	537	685	685	839	839
	28	670	623	854	795	1 046	973
	30	758	705	966	899	1 184	1 102
3200	24	535	535	682	682	836	836
	26	645	645	822	822	1 007	1 007
	28	804	748	1 025	953	1 256	1 168
	30	910	846	1 160	1 079	1 421	1 322

Qk [W] - total cooling output, Qs[W] - sensible cooling output (air relative humidity 50 %)

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 Al-Cu lamellar 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.

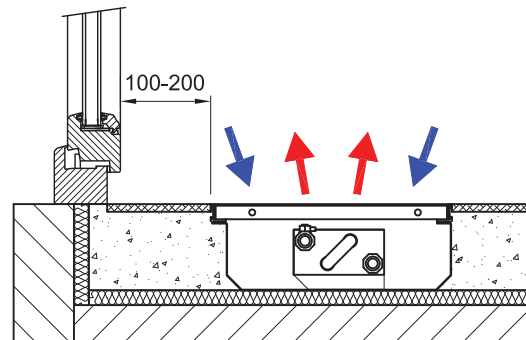
- Tempering of rooms
- Small water volume
- Quick heating up
- Broad assortment

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.

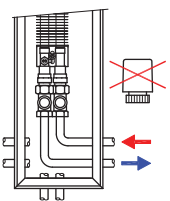
AVAILABLE 24V DC TYPES:

FCK20-09	(170×90×800–4800 mm)
FCK20-11	(170×115×800–4800 mm)
FCK20-14	(170×140×800–4800 mm)
FCK40-09	(320×90×800–4800 mm)
FCK40-11	(320×115×800–4800 mm)
FCK40-14	(320×140×800–4800 mm)
FCK80-09	(420×90×800–4800 mm)
FCK80-11	(420×115×800–4800 mm)
FCK80-14	(420×140×800–4800 mm)

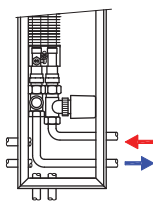


CONVECTOR CONNECTION TO THE HEATING SYSTEM

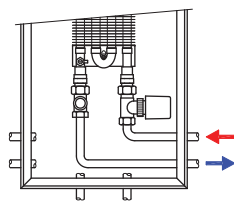
Floor convector is fitted with openings for connection to the heating system. There are three connection possibilities, from the room, side or window wall.



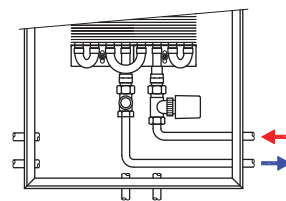
FCK20-09



FCK20-11,14



FCK40-09,11,14



FCK80-09,11,14



HEATING OUTPUT RECALCULATION FOR ANOTHER TEMPERATURE GRADIENT

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

$$Q = Q_n * \Psi * \left(\frac{\Delta T}{50}\right)^m \text{ [W]; where } \Delta T = \left(\frac{T_1 + T_2}{2}\right) - T_i \text{ [°C]}$$

m=1,415 pro FCK20-09
m=1,502 pro FCK40-09
m=1,482 pro FCK80-09

m=1,439 pro FCK20-11
m=1,443 pro FCK40-11
m=1,432 pro FCK80-11

m=1,426 pro FCK20-14
m=1,484 pro FCK40-14
m=1,449 pro FCK80-14

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

QUICK CONVERSION TO $T_i=22$ °C A $T_i=15$ °C FOR ORIENTATION

- If you want to learn convactor output for the room temperature of 22 °C or for a corridor temperature of 15 °C
- multiply heating output of the chosen convactor by the "k" coefficient

For $T_i=22$ °C, $k=0.95$
E.g.: $Q [55/45/22$ °C] = 0.95 * $Q [55/45/20$ °C]

for $T_i=15$ °C, $k=1.12$
E.g.: $Q [75/65/15$ °C] = 1.12 * $Q_n [75/65/20$ °C]

HEATING WATER FLOW RATE THROUGH EXCHANGER

$$M = 0.86Q / (T_1 - T_2) \text{ [kg/h]}$$

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

EXCHANGER HYDRAULIC LOSSES

TYPE	Length [mm]	Volume [l]	Qv – mass rate of flow in piping (kg/h) / R – hydraulic loss in exchanger (kPa)												
			20	40	60	80	100	120	150	200	250	300	350	400	450
FCK20-09 FCK20-11 FCK20-14	800	0,15	0,01	0,02	0,04	0,07	0,10	0,15	0,23	0,40	0,62	0,88	1,19	1,54	1,93
	1200	0,27	0,01	0,02	0,06	0,09	0,14	0,20	0,30	0,52	0,81	1,13	1,52	1,98	2,46
	1600	0,39	0,01	0,03	0,07	0,12	0,17	0,25	0,37	0,65	0,99	1,38	1,86	2,41	3,00
	2000	0,52	0,01	0,03	0,09	0,14	0,21	0,30	0,45	0,77	1,18	1,63	2,20	2,84	3,53
	2400	0,64	0,01	0,04	0,10	0,16	0,24	0,35	0,52	0,89	1,36	1,89	2,54	3,28	4,06
	2800	0,76	0,01	0,05	0,11	0,19	0,28	0,40	0,59	1,01	1,55	2,14	2,87	3,71	4,59
	3200	0,89	0,01	0,05	0,13	0,21	0,31	0,45	0,66	1,14	1,73	2,39	3,21	4,15	5,12
	3600	1,01	0,02	0,06	0,14	0,23	0,34	0,50	0,73	1,26	1,91	2,64	3,55	4,58	5,66
	4000	1,13	0,02	0,06	0,16	0,26	0,38	0,55	0,81	1,38	2,10	2,89	3,88	5,01	6,19
	4400	1,26	0,02	0,07	0,17	0,28	0,41	0,60	0,88	1,50	2,28	3,15	4,22	5,45	6,72
4800	1,38	0,02	0,07	0,19	0,30	0,45	0,65	0,95	1,63	2,47	3,40	4,56	5,88	7,25	
FCK40-09 FCK40-11 FCK40-14	800	0,30	0,01	0,05	0,13	0,21	0,32	0,46	0,69	1,21	1,86	2,62	3,54	4,59	5,74
	1200	0,54	0,01	0,05	0,13	0,21	0,32	0,46	0,69	1,21	1,86	2,62	3,54	4,59	5,74
	1600	0,79	0,02	0,06	0,15	0,26	0,39	0,56	0,84	1,45	2,23	3,12	4,21	5,46	6,80
	2000	1,03	0,02	0,07	0,18	0,31	0,45	0,66	0,98	1,70	2,60	3,63	4,89	6,33	7,86
	2400	1,28	0,02	0,09	0,21	0,35	0,52	0,76	1,13	1,94	2,97	4,13	5,56	7,20	8,93
	2800	1,53	0,03	0,10	0,24	0,40	0,59	0,86	1,27	2,19	3,34	4,63	6,23	8,06	9,99
	3200	1,77	0,03	0,11	0,27	0,45	0,66	0,96	1,41	2,43	3,71	5,14	6,91	8,93	11,05
	3600	2,02	0,03	0,12	0,30	0,49	0,73	1,06	1,56	2,68	4,08	5,64	7,58	9,80	12,12
	4000	2,27	0,04	0,13	0,33	0,54	0,80	1,16	1,70	2,92	4,45	6,15	8,26	10,67	13,18
	4400	2,51	0,04	0,14	0,36	0,59	0,86	1,26	1,85	3,17	4,82	6,65	8,93	11,53	14,25
4800	2,76	0,04	0,15	0,39	0,64	0,93	1,36	1,99	3,41	5,19	7,15	9,60	12,40	15,31	
FCK80-09 FCK80-11 FCK80-14	800	0,59	0,02	0,10	0,25	0,42	0,64	0,92	1,39	2,42	3,72	5,24	7,07	9,18	11,47
	1200	1,08	0,03	0,10	0,25	0,42	0,64	0,92	1,39	2,42	3,72	5,24	7,07	9,18	11,47
	1600	1,58	0,04	0,13	0,31	0,52	0,77	1,12	1,68	2,91	4,46	6,24	8,42	10,92	13,60
	2000	2,07	0,04	0,15	0,37	0,61	0,91	1,32	1,96	3,40	5,20	7,25	9,77	12,65	15,73
	2400	2,56	0,05	0,17	0,43	0,70	1,05	1,52	2,25	3,89	5,94	8,26	11,12	14,39	17,85
	2800	3,05	0,06	0,19	0,49	0,80	1,18	1,72	2,54	4,38	6,68	9,27	12,47	16,13	19,98
	3200	3,55	0,06	0,22	0,55	0,89	1,32	1,92	2,83	4,87	7,42	10,28	13,82	17,86	22,11
	3600	4,04	0,07	0,24	0,61	0,99	1,46	2,11	3,12	5,35	8,16	11,28	15,16	19,60	24,24
	4000	4,53	0,08	0,26	0,66	1,08	1,59	2,31	3,41	5,84	8,90	12,29	16,51	21,33	26,36
	4400	5,02	0,08	0,28	0,72	1,18	1,73	2,51	3,69	6,33	9,64	13,30	17,86	23,07	28,49
4800	5,52	0,09	0,31	0,78	1,27	1,86	2,71	3,98	6,82	10,38	14,31	19,21	24,80	30,62	

FCK 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

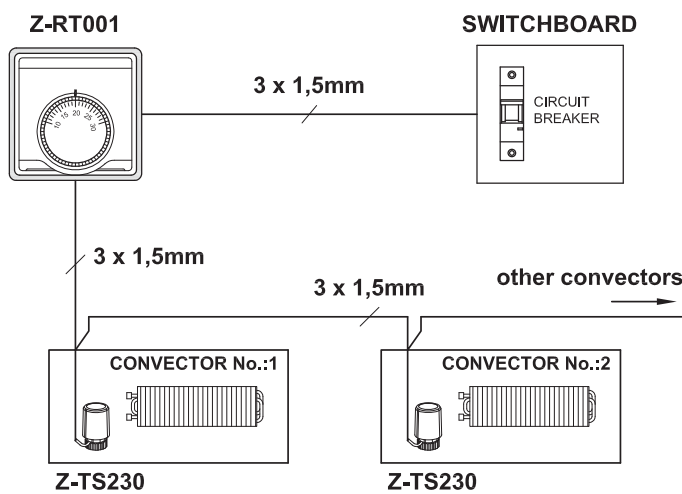
FCK convectors are regulated by means of thermo-drive opening or closing the heating medium circulation on the base of information by thermostat. The thermo-drive works in ON / OFF mode. Full circulation of heating medium follows within 3 minutes after the thermostat is activated.

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.

FCK- CABLING EXAMPLE FOR FLOOR CONVECTOR WITH Z-TS230



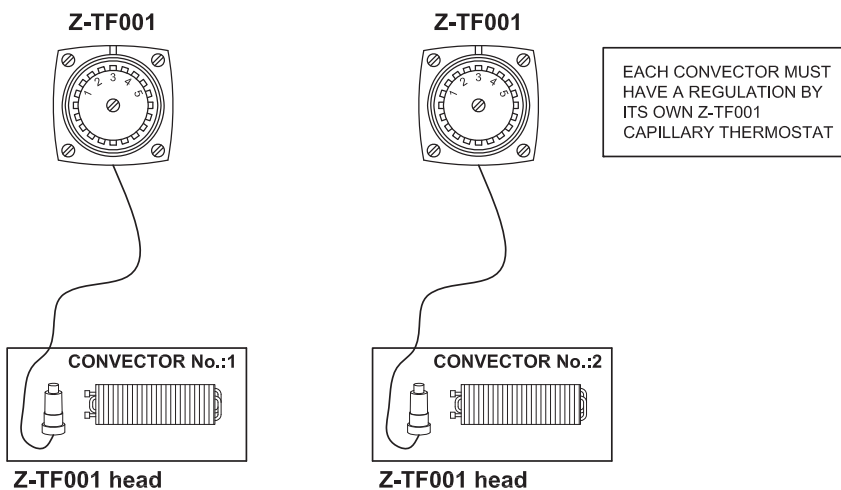
CAPILLARY THERMOSTAT Z-TF001

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.

FCK- CONNECTING WITH CAPILLARY THERMOSTAT Z-TF001





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 FCK 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 (m ³ /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 (m ³ /h)	0,13	0,22	0,43	0,65	0,85	1,25	1,7



FCK20-09 | NATURAL CONVECTION



SPECIFICATIONS

- Width 170 mm
- Offices, corridors, halls, flats, winter gardens
- High heating output of natural convection
- Suitable for combining with other heating systems
- Dry ambience



FCK40-09 | NATURAL CONVECTION



SPECIFICATIONS

- Width 320 mm
- Offices, corridors, halls, flats, winter gardens
- High heating output of natural convection
- Suitable for combining with other heating systems
- Dry ambience



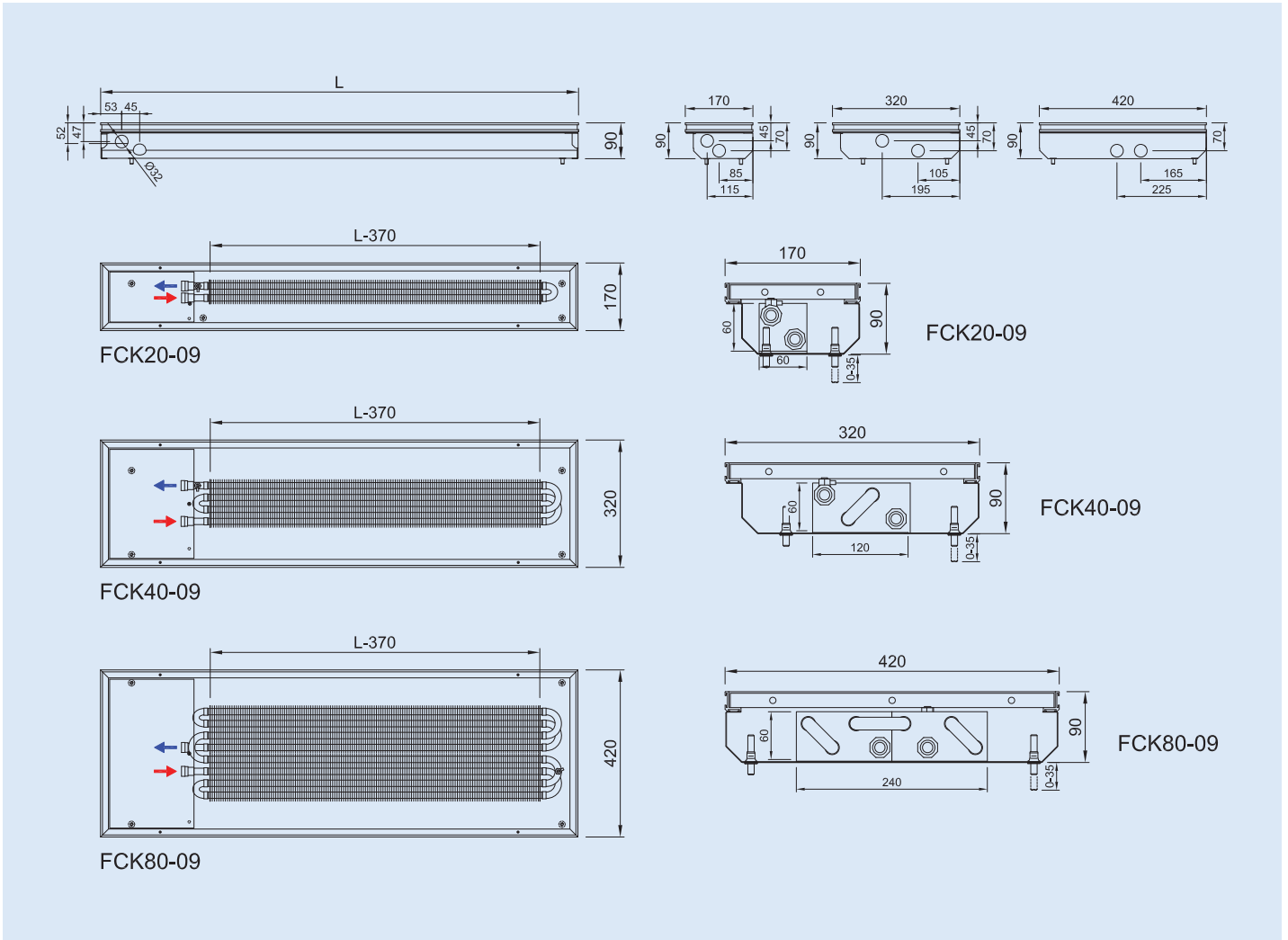
FCK80-09 | NATURAL CONVECTION



SPECIFICATIONS

- Width 420 mm
- Offices, corridors, halls, flats, winter gardens
- High heating output of natural convection
- Suitable for combining with other heating systems
- Dry ambience





HEATING OUTPUT

Q [W] 90/70/20°C

TYPE	FCK20-09	FCK40-09	FCK80-09
LENGTH [mm]	HEATING OUTPUT [W]		
800	91	186	230
1200	167	342	421
1600	243	497	613
2000	318	652	804
2400	394	808	996
2800	470	963	1188
3200	546	1118	1379
3600	622	1273	1571
4000	697	1429	1762
4400	773	1584	1954
4800	849	1739	2145

Qn [W] 75/65/20°C

TYPE	FCK20-09	FCK40-09	FCK80-09
LENGTH [mm]	HEATING OUTPUT [W]		
800	70	142	175
1200	129	260	322
1600	187	378	468
2000	246	496	614
2400	305	614	760
2800	363	732	906
3200	422	850	1053
3600	480	968	1199
4000	539	1086	1345
4400	597	1205	1491
4800	656	1323	1637

Q [W] 70/55/20°C

TYPE	FCK20-09	FCK40-09	FCK80-09
LENGTH [mm]	HEATING OUTPUT [W]		
800	56	111	138
1200	102	204	253
1600	149	296	368
2000	195	388	482
2400	242	481	597
2800	289	574	712
3200	335	666	827
3600	382	759	942
4000	428	851	1057
4400	475	944	1172
4800	521	1036	1287

Q [W] 55/45/20°C

TYPE	FCK20-09	FCK40-09	FCK80-09
LENGTH [mm]	HEATING OUTPUT [W]		
800	34	66	82
1200	63	121	151
1600	91	175	219
2000	119	230	288
2400	148	285	357
2800	176	340	425
3200	205	395	494
3600	233	450	562
4000	262	504	631
4400	290	559	699
4800	318	614	768

PARAMETERS

Convector		
Width		170, 320, 420 mm
Height		90 mm
Length		800-4800 mm in step 400 mm
Height adjusting		0-35 mm
Stainless trough width		150, 300, 400 mm
Grill type		cross / linear
Grill material		anodized aluminium, wood, stainless steel
Exchanger		
Width		60, 120, 240 mm
Height		60 mm
Finned length		L370 mm
Heat medium connection		2 × G1/2" inner
Max. working temperature		110 °C
Max. working overpressure		1 MPa
Operating conditions		
Ambient temperature		+2 to +40 °C
Relative humidity		20-70 %

FCK20-11 | NATURAL CONVECTION



SPECIFICATIONS

- Width 170 mm
- Offices, corridors, halls, flats, winter gardens
- High heating output of natural convection
- Suitable for combining with other heating systems
- Dry ambience



FCK40-11 | NATURAL CONVECTION



SPECIFICATIONS

- Width 320 mm
- Offices, corridors, halls, flats, winter gardens
- High heating output of natural convection
- Suitable for combining with other heating systems
- Dry ambience



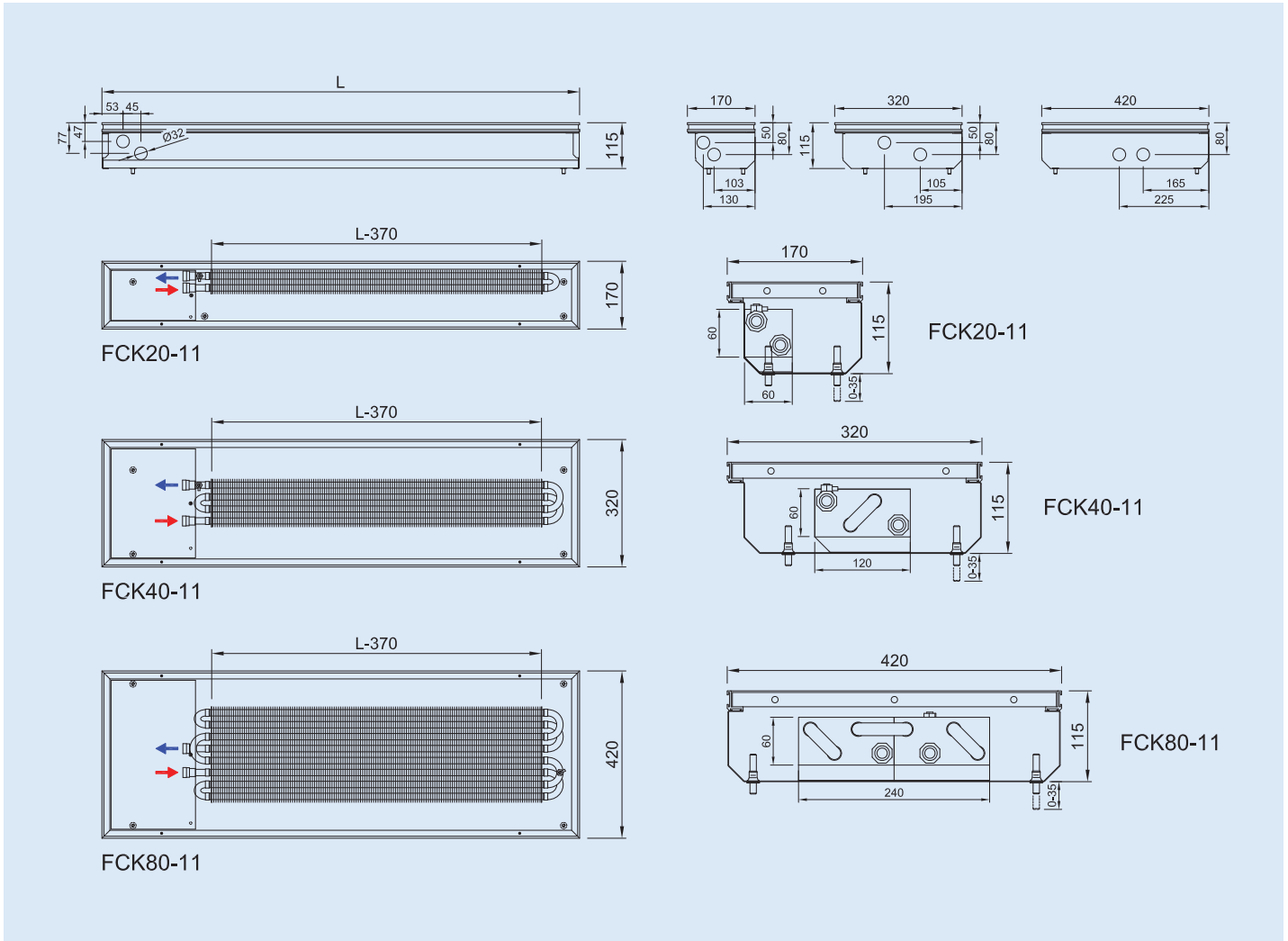
FCK80-11 | NATURAL CONVECTION



SPECIFICATIONS

- Width 420 mm
- Offices, corridors, halls, flats, winter gardens
- High heating output of natural convection
- Suitable for combining with other heating systems
- Dry ambience





HEATING OUTPUT

Q [W] 90/70/20 °C

TYPE	FCK20-11	FCK40-11	FCK80-11
LENGTH [mm]	HEATING OUTPUT [W]		
800	118	226	299
1200	217	415	548
1600	315	604	797
2000	414	793	1047
2400	512	981	1296
2800	610	1170	1545
3200	709	1358	1794
3600	807	1547	2043
4000	906	1736	2292
4400	1004	1924	2541
4800	1102	2113	2790

Qn [W] 75/65/20 °C

TYPE	FCK20-11	FCK40-11	FCK80-11
LENGTH [mm]	HEATING OUTPUT [W]		
800	91	174	230
1200	167	319	422
1600	242	464	614
2000	318	609	806
2400	394	754	998
2800	469	899	1190
3200	545	1044	1382
3600	621	1189	1574
4000	697	1334	1766
4400	772	1479	1957
4800	848	1624	2149

Q [W] 70/55/20 °C

TYPE	FCK20-11	FCK40-11	FCK80-11
LENGTH [mm]	HEATING OUTPUT [W]		
800	72	138	182
1200	132	252	335
1600	192	367	487
2000	252	482	639
2400	312	596	791
2800	372	711	943
3200	431	826	1095
3600	491	940	1247
4000	551	1055	1399
4400	611	1170	1551
4800	671	1284	1703

Q [W] 55/45/20 °C

TYPE	FCK20-11	FCK40-11	FCK80-11
LENGTH [mm]	HEATING OUTPUT [W]		
800	44	83	111
1200	80	153	203
1600	116	222	296
2000	153	291	388
2400	189	361	480
2800	225	430	573
3200	261	499	665
3600	298	569	757
4000	334	638	850
4400	370	707	942
4800	407	777	1034

PARAMETERS

Convector	Width	170, 320, 420mm
	Height	115mm
	Length	800-4800 mm in step 400 mm
	Height adjusting	0-35 mm
	Stainless trough width	150, 300, 400 mm
	Grill type	cross / linear
Exchanger	Grill material	anodized aluminium, wood, stainless steel
	Width	60, 120, 240 mm
	Height	60 mm
	Finned length	L370 mm
	Heat medium connection	2 × G1/2" inner
Operating conditions	Max. working temperature	110 °C
	Max. working overpressure	1 MPa
	Ambient temperature	+2 to +40 °C
	Relative humidity	20-70 %

FCK20-14 | NATURAL CONVECTION



SPECIFICATIONS

- Width 170 mm
- Offices, corridors, halls, flats, winter gardens
- High heating output of natural convection
- Suitable for combining with other heating systems
- Dry ambience



FCK40-14 | NATURAL CONVECTION



SPECIFICATIONS

- Width 320 mm
- Offices, corridors, halls, flats, winter gardens
- High heating output of natural convection
- Suitable for combining with other heating systems
- Dry ambience



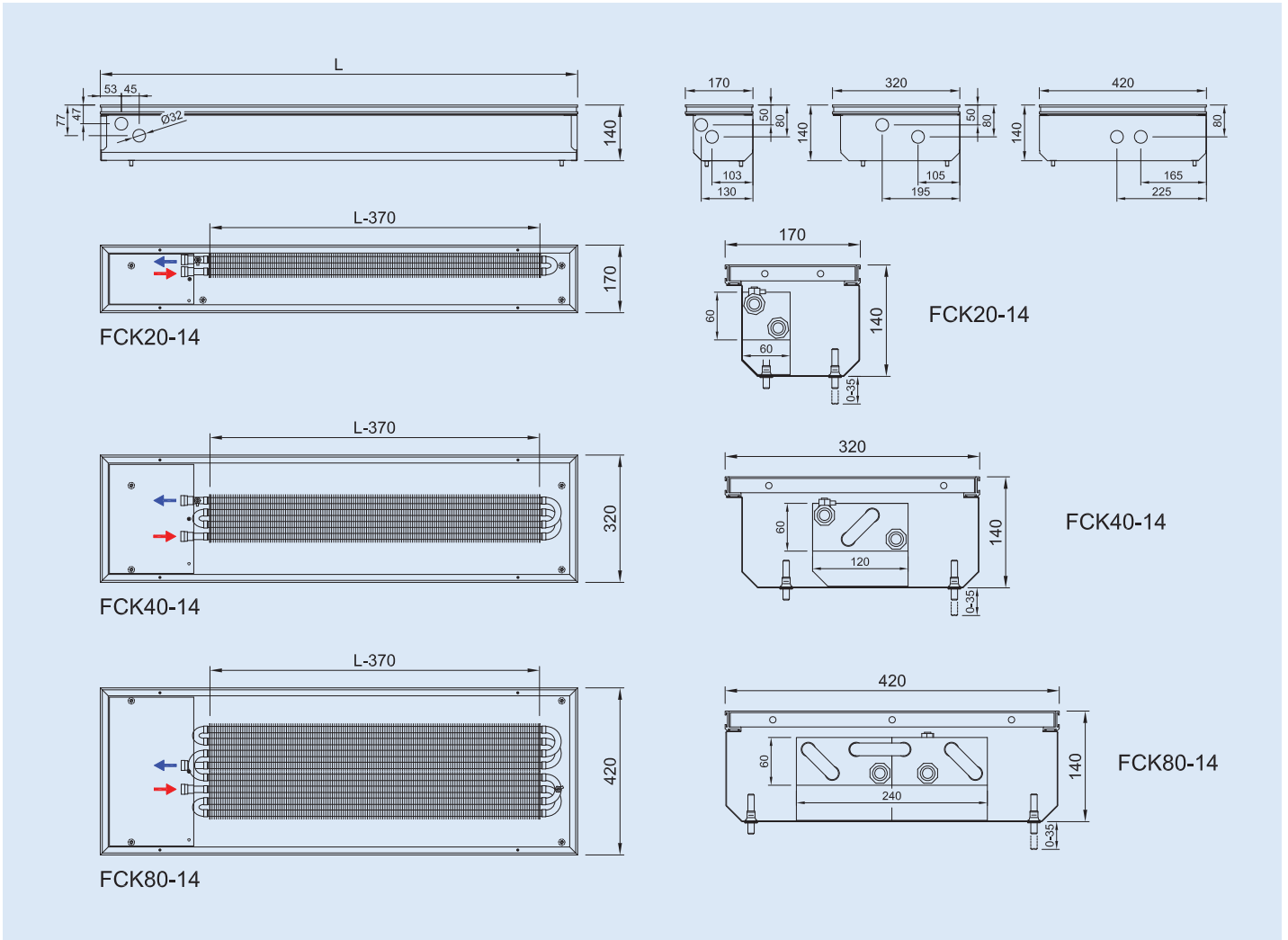
FCK80-14 | NATURAL CONVECTION



SPECIFICATIONS

- Width 420 mm
- Offices, corridors, halls, flats, winter gardens
- High heating output of natural convection
- Suitable for combining with other heating systems
- Dry ambience





HEATING OUTPUT

Q [W] 90/70/20°C

TYPE	FCK20-14	FCK40-14	FCK80-14
LENGTH [mm]	HEATING OUTPUT [W]		
800	122	243	342
1200	223	446	627
1600	324	649	912
2000	426	852	1197
2400	527	1055	1482
2800	628	1258	1767
3200	729	1461	2052
3600	831	1663	2337
4000	932	1866	2622
4400	1033	2069	2907
4800	1134	2272	3191

Qn [W] 75/65/20°C

TYPE	FCK20-14	FCK40-14	FCK80-14
LENGTH [mm]	HEATING OUTPUT [W]		
800	94	186	263
1200	172	340	481
1600	250	495	700
2000	328	650	919
2400	406	805	1138
2800	484	960	1357
3200	562	1114	1575
3600	640	1269	1794
4000	718	1424	2013
4400	797	1579	2232
4800	875	1733	2451

Q [W] 70/55/20°C

TYPE	FCK20-14	FCK40-14	FCK80-14
LENGTH [mm]	HEATING OUTPUT [W]		
800	74	146	207
1200	136	268	380
1600	198	389	553
2000	260	511	726
2400	322	632	899
2800	384	754	1072
3200	446	875	1245
3600	508	997	1418
4000	570	1119	1591
4400	632	1240	1764
4800	694	1362	1937

Q [W] 55/45/20°C

TYPE	FCK20-14	FCK40-14	FCK80-14
LENGTH [mm]	HEATING OUTPUT [W]		
800	45	87	125
1200	83	160	230
1600	121	232	334
2000	158	305	438
2400	196	377	543
2800	234	450	647
3200	271	522	752
3600	309	595	856
4000	347	667	960
4400	384	740	1065
4800	422	812	1169

PARAMETERS

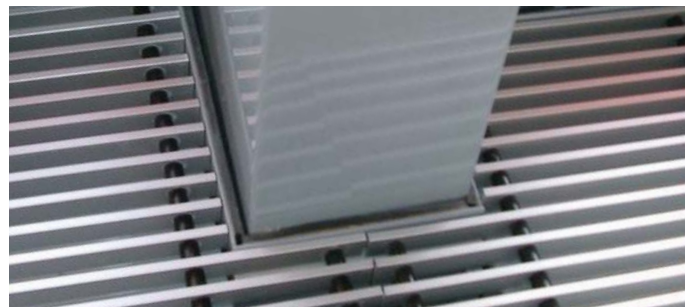
Convector	Width	170, 320, 420 mm
	Height	140 mm
	Length	800-4800 mm in step 400 mm
	Height adjusting	0-35 mm
	Stainless trough width	150, 300, 400 mm
	Grill type	cross / linear
	Grill material	anodized aluminium, wood, stainless steel
Exchanger	Width	60, 120, 240 mm
	Height	60 mm
	Finned length	L370 mm
	Heat medium connection	2 × G1/2" inner
	Max. working temperature	110 °C
Operating conditions	Max. working overpressure	1 MPa
	Ambient temperature	+2 to +40 °C
	Relative humidity	20-70 %



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 ISAN Radiatory 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

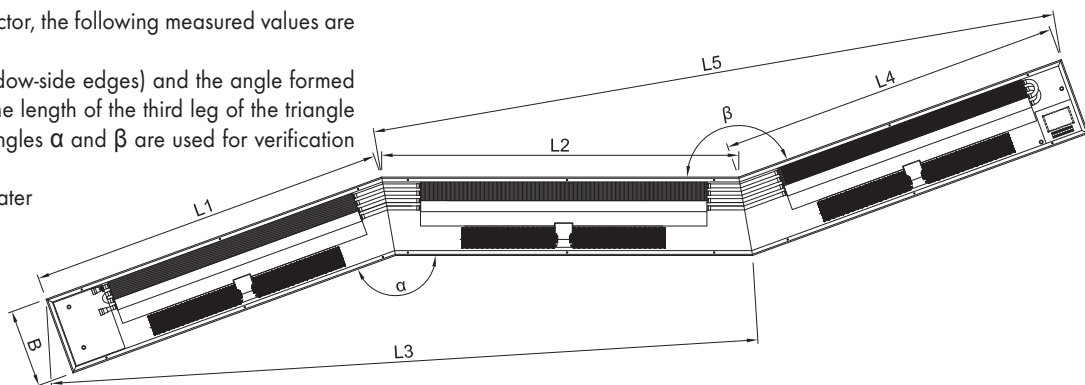
the customer and technical details are agreed (water connection side, power connection). Following that, the manufacturing of the floor convector starts.



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



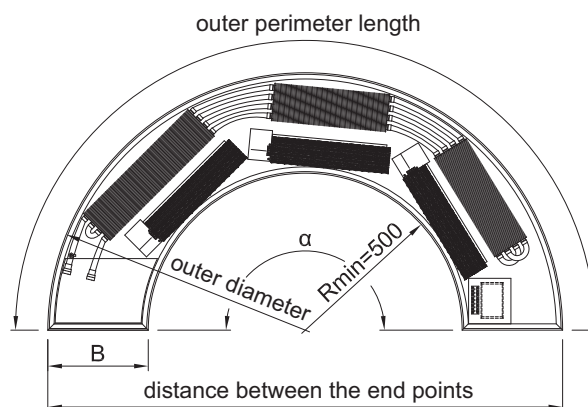
ARCHED CONVECTORS

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 ISAN Radiatory 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	C	T	4	0	-	1	1	1	6	0	-	N	R	1	2	1	-
Model Dynamic			Convector type		Free position	Height [cm]		Length [cm]			Atypical lengths	Surface finish of trough	Type and colour combination of the frame and grill			Regulation type 24V DC, 230V AC 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	
FCT20	FCT20-09, FCT20-11
FCT40	FCT40-09, FCT40-11
FCT41	FCT41-12
230V AC with fan	
FCT20	FCT20-08, FCT20-09, FCT20-11
FCT40	FCT40-09, FCT40-11
FCT41	FCT41-12
with natural convection	
FCK20	FCK20-09, FCK20-11, FCK20-14
FCK40	FCK40-09, FCK40-11, FCK40-14
FCK80	FCK80-09, FCK80-11, FCK80-14

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



Position 1	Regulation of DYNAMIC convectors
230V AC with fan	
0	without regulator, convector with 230V AC fans, control by another convector or custom regulation
1	Z-VD001 , regulator for FCT20-08, FCT20-09, FCT40-09 (230V AC), placed in the convector
2	free position
3	Z-VD003 regulator for FCT20-11, FCT40-11, FCT41-12 (230V AC) placed in the convector
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 FCT20-09, FCT40-09, FCT20-11, FCT40-11, FCT41-12 (24V DC) placed in the convector
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.



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