



# COMODO CALIENTE STANDARD

WALL-MOUNTED AND FLOOR-MOUNTED CONVECTORS

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**NATURAL CONVECTION**



**OPERATING PRINCIPLE OF WALL-MOUNTED AND FLOOR-MOUNTED NATURAL CONVECTION HEATERS**

Convection heating systems utilize the phenomenon of heat absorption by air particles flowing through heat exchanger. The difference in densities of cold and heated air causes a delicate draft that initiates the airflow that flows gently from the bottom to the top of the unit. Natural air circulation is created in the room, which facilitates uniform heating. The correct air circulation in case of convection heaters take place when the air flows to the convector from the bottom,

and then rises, and that is why minimum separation distances should always be kept between the walls and other elements surrounding the convector. This principle is the basis for operation of convection heaters that are characterized by low mass of the convectors, its small water capacity and low thermal inertia. This makes the convectors capable of appropriately fast reaction to the changing heat demand of a room, when compared to traditional radiators.

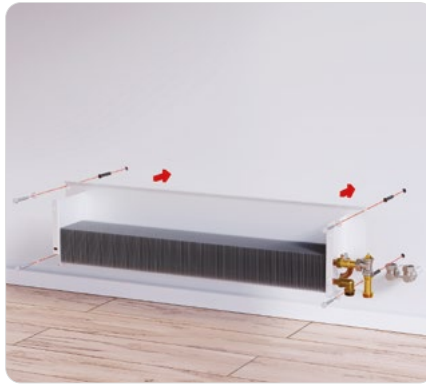
Convectors are considered the easiest to control, which in their case takes the form of controlling the flow of heating fluid through the heater with use of thermostatic valve. Details concerning the installation were included in the Installation and maintenance manual of Wall-mounted and Floor-mounted convectors chapter.

**ADVANTEGES**



**DURABILITY**

The high quality of the materials the heat exchanger is made of (copper-aluminum) guarantees resistance to corrosion and low sensitivity to water quality.



**EASY TO ASSEMBLY AND SERVICE**

Thanks to the universal design of the convector, it's easy to assembly and the future hassle-free maintenance is secured.



**DEDICATED CONTROL SYSTEM**

Modern room controllers allow full control of the operation of the convectors.



**COMPLIANCE WITH EN 16430 STANDARD**

The VERANO convectors have been tested in accordance with the applicable EN 16430 standard, which confirms their high quality.



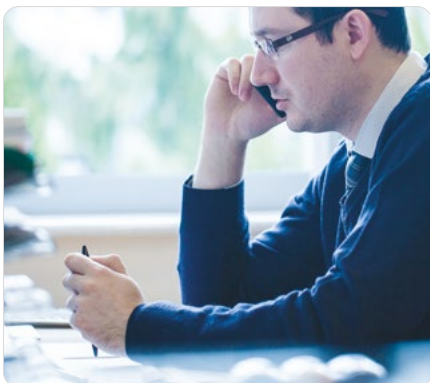
**WIRELESS CONTROL**

It is extremely easy to precisely control the heaters using a phone or tablet with the free application installed.



**TOOLS FOR DESIGNERS**

Our products are available in the renowned INSTALSOFT and SANKOM design programs.



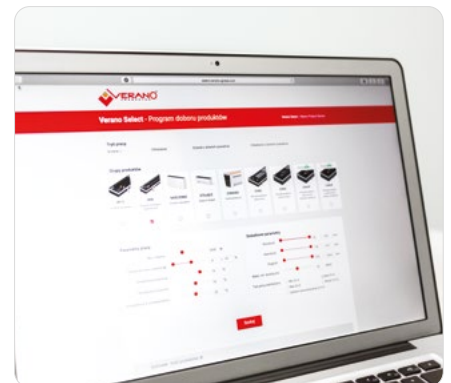
**TECHNICAL ADVICE**

We provide specialized consulting throughout your investment, from the design stage, till the completion of construction works.



**MODERN DESIGN**

The convectors with CALIENTE casing are a construction based on modern design, with panel casing, masking panels and traditional grilles.



**VERANO SELECT**

The selection program enables the selection of an appropriate type of device for any operating parameters, depending on the required heat output.

## CONFIRMED QUALITY

The wall-mounted and floor-mounted convectors are designed for using in residential, office, service, hotel, sacral and sports utility buildings.

It is advised to consult the selection of convectors with designers and/or using the computer software designed to facilitate the design of C.H. installations.

A proper technical project will secure the optimal selection of convectors sizes and peripheral equipment, and the correct installation and hydraulic regulations of the heating system, which will allow for future seamless and energy-saving operation.



On a foundation of the extensive R&D process that was executed both externally (with Technical Universities of Warsaw, Cracow and Lublin and with Polish Academy of Sciences) we have developed and constructed brand new and extremely efficient high-end heating unit.

The excellent heating parameters of VERANO products were confirmed during the tests conducted at a laboratory of the HEATEST s.r.o. Notified Body.

According to the EN-442 standard the tightness and pressure resilience tests were performed. Independent, accredited laboratory confirmed, that a pressure of 2.70 MPa resulted no cracks or leaks found in the convectors, while the maximum permissible operating pressure is 1.6 MPa.

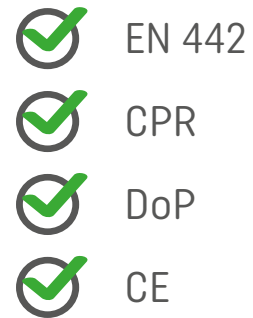
A test according to the PN-EN ISO 4628 standard proved lack of damage to the paint coat of convectors in salt chamber, proving that the VERANO convectors are corrosion resistant.

The STANDARD & CALIENTE units are fully compliant to A1 fire resistance class.

The VERANO convectors are manufactured in Poland, in accordance to EU regulations. The marketing of products takes place according to the Regulation (EU) 305/2011 of the European Parliament and of the Council laying down harmonized conditions for the marketing of construction products (CPR).

VERANO convectors hold all the documents required by European Union regulations:

- Declaration of performance characteristics according to EN 442.
- PZH hygienic attestation.



## RESEARCH AND DEVELOPMENT



The new casing of wall-mounted and floor-mounted CALIENTE convectors as well as the COMODO heating bench were developed by an interdisciplinary team of designers and engineers.

The aim of their work was to develop simple and timeless products, that will easily fit every modern interior.



The tests of the heat output of wall- and floor-mounted convectors and the COMODO heating bench were carried out in a specially prepared climatic chamber, in accordance with the requirements of the European standard EN-442.



The COMODO heating bench qualified as a FINALIST OF THE 2016 GOOD DESIGN [DOBRY WZÓR] competition, organised by the Institute of The Industrial Design.

The goal of the competition is to select the products and services, which stand out with their high quality of design, and support their manufacturers and retailers.



**EQUIPMENT**

**STANDARD EQUIPMENT:**

- Cover made of zinc-magnesium galvanized steel, powder coated in one of the standard colours: RAL 7047 or RAL 9005,
- Heater sides made of toughened glass, colours: RAL 7047 or RAL 9005,
- Copper-aluminium heat exchanger,
- Air vent,
- Thermostatic valve,
- 3/4" male threaded connectors,
- Seat made of lacquered oak wood.

**OTHER OPTIONS:**

- Any other materials or colours available on request.

**DIMENSIONS**

DIMENSIONS	[mm]
Height	453
Width	420
Length	1062, 1562

**ORDER CODE:**

**S-G23-45,3/42/L (L/P)**

Height [cm]

Width [cm]

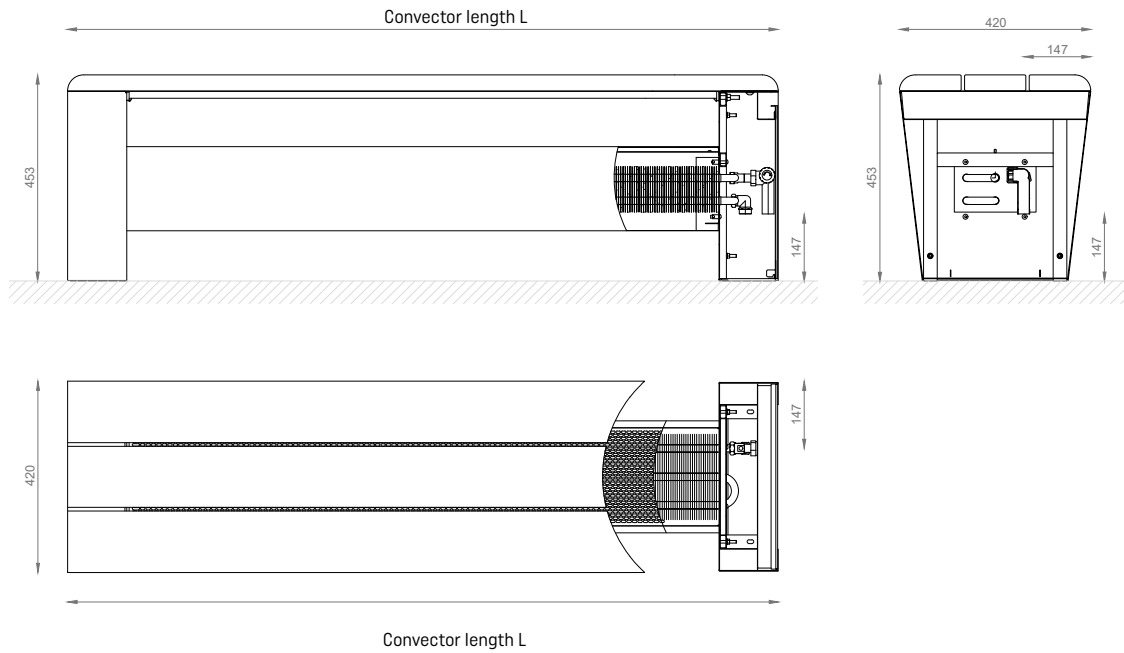
Connection side L - Left / P - Right

Length [cm]

**COMODO HEATING BENCH**

**S-G23-45,3/42/L (L/P)**

◀ ORDER CODE



DIMENSIONS	[mm]
Height	453
Width	420
Length	1062, 1562

CONNECTION	TYPE
Connection side	Right (P) standard Left (L) option
Connection threads	3/4" male thread

Convactor length L [mm]	Heat output $t_s/t_r$ [°C]				Heat output according to the variable average temperature *
	75/65 °C	70/55 °C	55/45 °C	50/40 °C	
	$\Phi$ [W]				
1062	1002	799	492	382	$\Phi=4,3394 \cdot \Delta T^{1,3911}$
1562	1629	1299	800	621	$\Phi=7,0548 \cdot \Delta T^{1,3911}$

Standard heating output [W] according to the PN-EN 442-1:2015-02 European Standard, room air temperature  $\theta_i = 20^\circ\text{C}$

\* where  $\Delta T$  - mean temperature difference. The formula makes it possible to accurately determine the heat output under various operating conditions. Please refer to the corrective factors table on page 8 for a quick conversion of the heat output for selected flow and return temperatures.



## CORRECTIVE FACTORS FOR COMODO HEATING BENCH

Heat output corrective factors for COMODO heating bench, for installation temperatures other than 75/65/20°C.

Flow and Return temperatures [°C]		Room air temperature $\theta_i$ [°C]						
$t_s$	$t_r$	5	8	12	16	20	24	32
90	85	2,007	1,906	1,774	1,645	1,518	1,394	1,156
	80	1,923	1,823	1,693	1,565	1,440	1,319	1,084
	75	1,840	1,741	1,613	1,487	1,364	1,244	1,014
	70	1,758	1,661	1,534	1,410	1,289	1,171	0,945
85	80	1,840	1,741	1,613	1,487	1,364	1,244	1,014
	75	1,758	1,661	1,534	1,410	1,289	1,171	0,945
	70	1,677	1,581	1,456	1,334	1,215	1,099	0,877
	65	1,597	1,503	1,379	1,259	1,142	1,028	0,811
80	75	1,677	1,581	1,456	1,334	1,215	1,099	0,877
	70	1,597	1,503	1,379	1,259	1,142	1,028	0,811
	65	1,518	1,425	1,304	1,185	1,070	0,959	0,746
	60	1,440	1,349	1,229	1,113	1,000	0,890	0,683
75	70	1,518	1,425	1,304	1,185	1,070	0,959	0,746
	65	1,440	1,349	1,229	1,113	1,000	0,890	0,683
	60	1,364	1,274	1,156	1,042	0,931	0,824	0,621
	55	1,289	1,200	1,084	0,972	0,864	0,759	0,561
70	65	1,364	1,274	1,156	1,042	0,931	0,824	0,621
	60	1,289	1,200	1,084	0,972	0,864	0,759	0,561
	55	1,215	1,127	1,014	0,904	0,798	0,695	0,503
	50	1,142	1,056	0,945	0,837	0,733	0,633	0,446
65	60	1,215	1,127	1,014	0,904	0,798	0,695	0,503
	55	1,142	1,056	0,945	0,837	0,733	0,633	0,446
	50	1,070	0,986	0,877	0,772	0,670	0,573	0,392
	45	1,000	0,918	0,811	0,708	0,609	0,514	0,340
60	55	1,070	0,986	0,877	0,772	0,670	0,573	0,392
	50	1,000	0,918	0,811	0,708	0,609	0,514	0,340
	45	0,931	0,850	0,746	0,645	0,549	0,458	0,289
	40	0,864	0,785	0,683	0,585	0,491	0,403	0,241
55	50	0,931	0,850	0,746	0,645	0,549	0,458	0,289
	45	0,864	0,785	0,683	0,585	0,491	0,403	0,241
	40	0,798	0,720	0,621	0,526	0,435	0,350	0,196
	35	0,733	0,658	0,561	0,469	0,381	0,299	0,154
50	45	0,798	0,720	0,621	0,526	0,435	0,350	0,196
	40	0,733	0,658	0,561	0,469	0,381	0,299	0,154
	35	0,670	0,597	0,503	0,413	0,329	0,251	0,114
45	40	0,670	0,597	0,503	0,413	0,329	0,251	0,114
	35	0,609	0,537	0,446	0,360	0,280	0,205	0,078

## COMODO HEATING BENCH CONTROL OPTIONS

The optimal method of managing the temperature from the COMODO heating bench is the use of wireless control system. The actuator that is mounted on the built-in thermostatic valve connects to the room controller using the wifi network.

It allows for a discreet and precise adjustment of a room temperature. This method allows to install the entire control system even after the finishing work is completed.

Comodo can be also controlled with use of typical room controller, connected with actuator on the thermostatic valve. Still in this case there is the need to lead cable lines from the actuator to the controller. The work of the COMODO heating bench can also be controlled from the level of manifolds.

For information on how to regulate the heating bench, see page 50.



## COMODO WATER CAPACITY

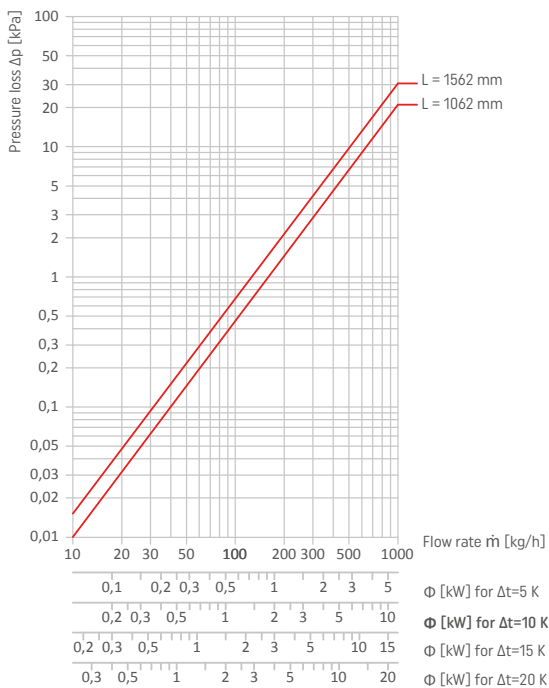
Convector length L [mm]	CONVECTOR TYPE
	S-G23-45,3/42/L
	Water capacity [dm <sup>3</sup> ]

1062	1,27
1562	1,89

## DECLARED PROPERTIES

Fire safety class:	Class D
Harmful substances release:	None
Water tightness under the high pressure:	No leakage at pressure 2,08 times higher than maximum acceptable operating pressure
Resistance to pressure:	No cracks at pressure 2,70 times higher than maximum acceptable operating pressure
Maximum working pressure:	1,6 MPa
Surface temperature:	maximum 95°C
Corrosion resistance:	No corrosion after 100 hours in humid environment
Resistance to weak impacts:	Class 0

## PRESSURE LOSS





## WALL-MOUNTED AND FLOOR-MOUNTED CONVECTORS, TYPE STANDARD AND CALIENTE

There are two types of casings available for the wall-mounted and floor-mounted convectors – STANDARD and CALIENTE. The units do not differ from each other internally and they both use the same technology principle - the casing variant does not influence the heat outputs, hydraulic resistance and the connectors used.

The CALIENTE casings, designed in the spirit of modern elegance, additionally allow for the use of built-in, dedicated controller.

Feature	Available for casing type	
	STANDARD	CALIENTE
TRV head	●	●
Wireless TRV head	●	●
Wireless TRV head or thermal actuator built-in inside the casing	●	●
Built-in temperature controller	—	●
Casing powder coating in any RAL colour	●	●
Selection of grille type	●	●
Glass masking panels	—	●
Removable front casing panel	●	●
Connection type C (side) or V (bottom)	●	●
Wall-mounted or Floor-mounted type	●	●



Example of wall-mounted STANDARD type convector



Example of wall-mounted CALIENTE type convector



TRV head assembly (classic or wireless type), V-type convector



The example of assembly of TRV wireless head or thermal actuator inside the convector casing, V-type convector, non-standard solution

The assembly of classic TRV head or wireless TRV head is available for V-type (bottom connection) convectors. TRV head is to be installed on the thermostatic valve which is built into the heater.

The assembly of wireless TRV head or thermal actuator inside the casing is available for V-type (bottom connection) convectors, non-standard solution. Thermal actuator should be connected to the controller.

For CALIENTE convectors with built in Controller, thermal actuator is to be installed inside the convector casing.

## TYPES OF GRILLES FOR STANDARD TYPE CONVECTORS



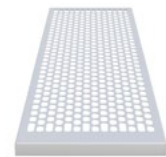
Long oval (Standard)



Cross oval



Honeycomb



Oval

## TYPES OF GRILLES FOR CALIENTE TYPE CONVECTORS



Modular aluminium grille (Standard - black)



Roll-up aluminium grille, closed profile



Roll-up aluminium grille, double T-bar grille



Natural wood roll-up grille

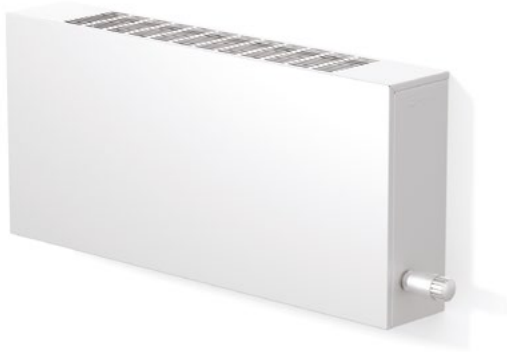


Linear aluminium grille

## STANDARD CASING

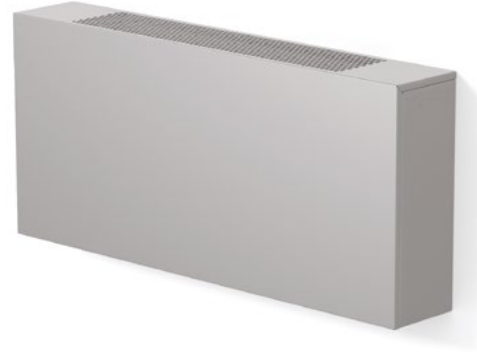
The wall-mounted and floor-mounted units with STANDARD casing are a classic convector variant with casing made of galvanized steel, with a grille that allows for unobstructed airflow. The convectors are available with bottom connection (V-type) or side connection (C-type). Removable front panel facilitates easy access for cleaning and maintenance into heat exchanger and connectors.

The standard heater casing finish is white RAL 9003 paint coat. We also offer other colours and grille types as an option. Non-standard finishes also include the installation of actuator or wireless head inside the convector casing.



**Wall-mounted convector, STANDARD casing**

Standard finish: RAL 9003 colour, Long Oval grille, Thermostatic head installed outside the convector casing



**Wall-mounted convector, STANDARD casing**

Example of optional finish: RAL 9007 colour, Honeycomb grille, Actuator installed inside the convector casing

## CALIENTE CASING

The wall-mounted and standing units with CALIENTE casings are based on modern design, with panel casing, masking panels and grille that allows unobstructed airflow. The convectors are available with bottom connection (V-type) or side connection (C-type). Removable heater cover and grille facilitate cleaning and maintenance of heat exchanger and connectors.

The casing (painted with RAL 9003 white paint coat as a standard) and the masking panels (painted RAL 9005 black as a standard) are also optionally available in any desired RAL palette colour. The basic equipment includes black anodized modular aluminium grille.

The painted masking panels can also be replaced with a glass or a dedicated black or white controller. The modular aluminium grille can be replaced with other grille type.



**Wall-mounted convector, CALIENTE casing**

Standard finish: RAL 9003 colour, Black anodized modular grille, Masking panels painted in black RAL 9005, Thermostatic head installed outside the convector casing



**Wall-mounted convector, CALIENTE casing**

Example of optional finish: RAL 9007 colour, Black anodized modular grille, VER-34 controller and masking panel in black colour, Actuator installed inside the convector casing

## ADDITIONAL EQUIPMENT FOR WALL-/FLOOR-MOUNTED CONVECTOR, CALIENTE CASING



The paint-coated masking panel can be replaced with black or white colour glass masking panel



The wall-mounted and floor-mounted CALIENTE convectors can optionally include the built-in VER 34 controller in black or white color.



**WALL-MOUNTED CONVECTORS**



**EQUIPMENT**

**STANDARD EQUIPMENT (STANDARD CASING):**

- Casing made of zinc-magnesium steel, powder coated in white RAL 9003,
- Copper-aluminium heat exchanger with air vent
- Built-in thermostatic valve (only for V type connection convectors)
- Assembly kit
- 3/4" female threaded connectors in C type (side connection) convectors
- 3/4" male threaded connectors in V type (bottom connection) convectors

**ADDITIONAL EQUIPMENT (STANDARD CASING):**

- Casing in any RAL colour
- Non standard punched grille type
- Thermal actuator or wireless TRV head (installed inside the casing)

**STANDARD EQUIPMENT (CALIENTE CASING):**

- Casing made of zinc-magnesium steel, powder coated in white RAL 9003
- Copper-aluminium heat exchanger with air vent
- Built-in thermostatic valve (only for V type connection convectors)
- Assembly kit
- Masking panels in RAL 9005 black
- Modular anodized aluminium grille, snap profile, black finish,
- 3/4" female threaded connectors in C type (side connection) convectors
- 3/4" male threaded connectors in V type (bottom connection) convectors

**ADDITIONAL EQUIPMENT (CALIENTE CASING):**

- Casing in any RAL colour
- Non standard grille type
- Glass masking panels or glass masking panels with built-in controller and thermal actuator
- Thermal actuator or wireless TRV head (installed inside the casing)

VERANO wall-mounted convectors are available as two connection types:

- type V - bottom connection
- type C - side connection

Non standard convector length available on request

**DIMENSIONS**

DIMENSIONS	[mm]
Height	230, 300, 400, 600
Width	147, 210
Length	880÷2580

**ORDER CODE:**

**N-C22-23/14,7/L SV (L)**

Height [cm]

Width [cm]

Length [cm]

Casing type  
S - STANDARD  
C - CALIENTE

Connection type  
C or V

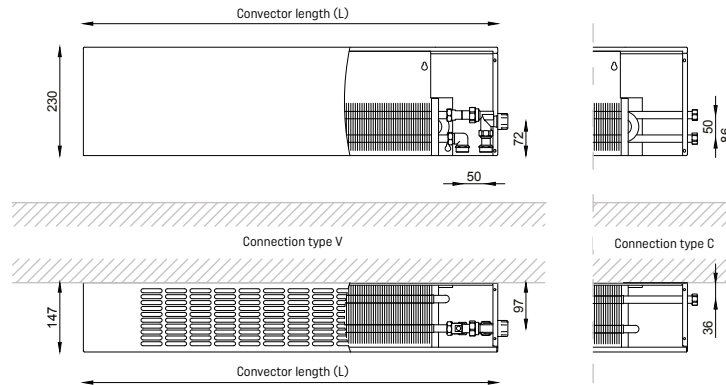
Connection side  
L - Left  
P - Right

**WALL-MOUNTED 230 mm high**

**N-C22-23/14,7/L S(C/V) (L/P)**

◀ ORDER CODE

**STANDARD**

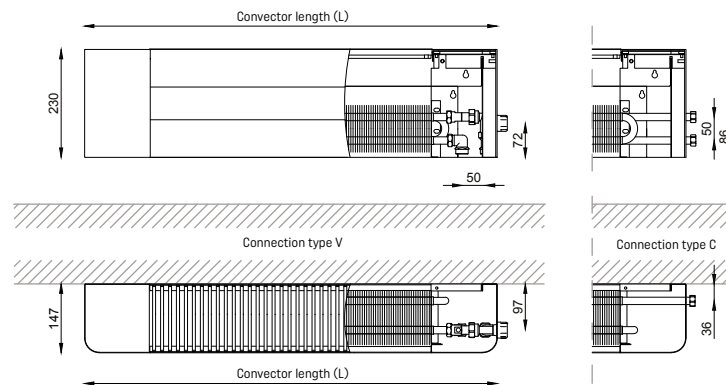


**N-C22-23/14,7/L C(C/V) (L/P)**

◀ ORDER CODE

**CALIENTE**

**CALIENTE**



DIMENSIONS	[mm]
Height	230
Width	147
Length	880÷2580

CONNECTION	TYPE
Connection side	Right (P) standard Left (L) option
Connection type	Type C, Type V
Connection threads	Type C: 3/4" female thread Type V: 3/4" male thread

Convector length	Heat output $t_s/t_r$ [°C]				Heat output according to the variable average temperature *
	75/65 °C	70/55 °C	55/45 °C	50/40 °C	
L [mm]	$\Phi$ [W]				
880	649	522	326	256	$\Phi=3,3793 \cdot \Delta T^{1,3440}$
1080	853	686	429	336	$\Phi=4,4415 \cdot \Delta T^{1,3440}$
1330	1108	891	558	436	$\Phi=5,7693 \cdot \Delta T^{1,3440}$
1580	1364	1096	687	537	$\Phi=7,1023 \cdot \Delta T^{1,3440}$
1830	1619	1301	815	638	$\Phi=8,4301 \cdot \Delta T^{1,3440}$
2080	1874	1506	943	738	$\Phi=9,7578 \cdot \Delta T^{1,3440}$
2330	2130	1712	1072	839	$\Phi=11,0908 \cdot \Delta T^{1,3440}$
2580	2385	1917	1200	939	$\Phi=12,4186 \cdot \Delta T^{1,3440}$

Standard heating output [W] according to the PN-EN 442-1:2015-02 European Standard, room air temperature  $\Theta_i = 20^\circ\text{C}$

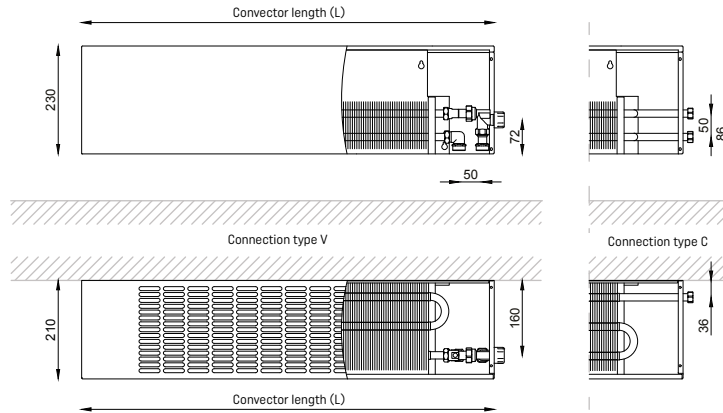
\* where  $\Delta T$  - mean temperature difference. The formula makes it possible to accurately determine the heat output under various operating conditions. Please refer to the corrective factors table on page 23 for a quick conversion of the heat output for selected flow and return temperatures.

**WALL-MOUNTED 230 mm high**

**N-G23-23/21,0/L S(C/V) (L/P)**

◀ ORDER CODE

**STANDARD**

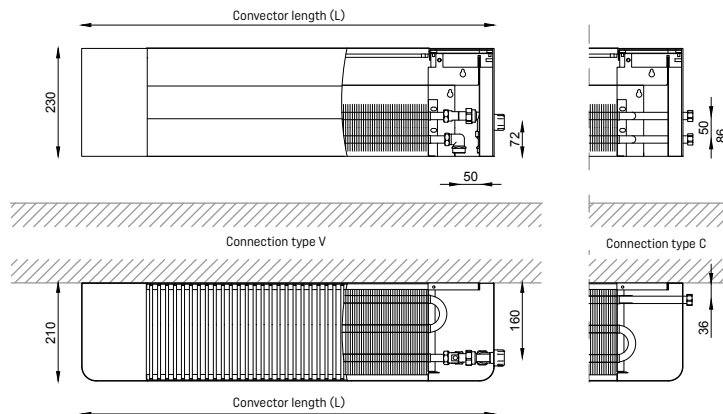


**N-G23-23/21,0/L C(C/V) (L/P)**

◀ ORDER CODE

**CALIENTE**

**CALIENTE**



DIMENSIONS	[mm]
Height	230
Width	210
Length	880÷2580

CONNECTION	TYPE
Connection side	Right (P) standard Left (L) option
Connection type	Type C, Type V
Connection threads	Type C: 3/4" female thread Type V: 3/4" male thread

Convector length	Heat output $t_s/t_r$ [°C]				Heat output according to the variable average temperature *
	75/65 °C	70/55 °C	55/45 °C	50/40 °C	
L [mm]	$\Phi$ [W]				
880	980	788	493	386	$\Phi=5,0769 \cdot \Delta T^{1,3453}$
1080	1289	1036	648	507	$\Phi=6,6777 \cdot \Delta T^{1,3453}$
1330	1675	1346	842	659	$\Phi=8,6774 \cdot \Delta T^{1,3453}$
1580	2061	1656	1037	811	$\Phi=10,6771 \cdot \Delta T^{1,3453}$
1830	2447	1966	1231	963	$\Phi=12,6768 \cdot \Delta T^{1,3453}$
2080	2833	2277	1425	1115	$\Phi=14,6765 \cdot \Delta T^{1,3453}$
2330	3218	2586	1619	1267	$\Phi=16,6710 \cdot \Delta T^{1,3453}$
2580	3604	2896	1813	1419	$\Phi=18,6707 \cdot \Delta T^{1,3453}$

Standard heating output [W] according to the PN-EN 442-1:2015-02 European Standard, room air temperature  $\Theta_i = 20^\circ\text{C}$

\* where  $\Delta T$  - mean temperature difference. The formula makes it possible to accurately determine the heat output under various operating conditions. Please refer to the corrective factors table on page 23 for a quick conversion of the heat output for selected flow and return temperatures.

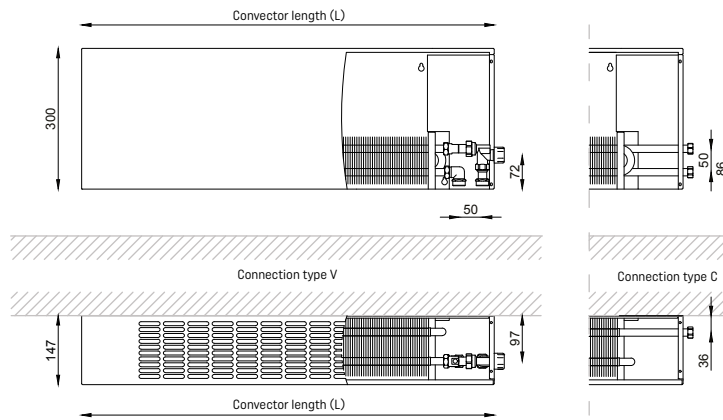


**WALL-MOUNTED 300 mm high**

**N-C22-30/14,7/L S(C/V) (L/P)**

◀ ORDER CODE

**STANDARD**

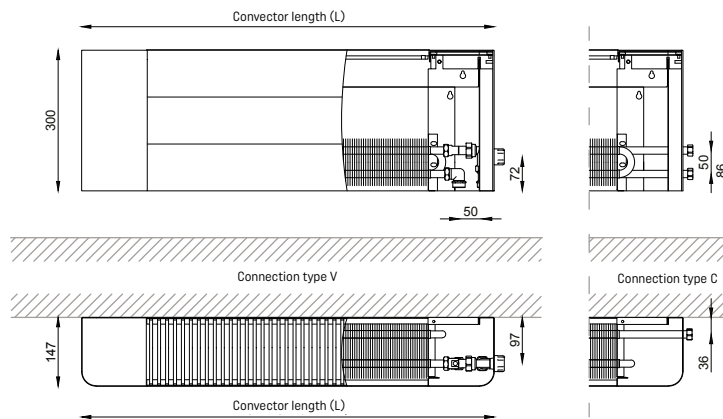


**N-C22-30/14,7/L C(C/V) (L/P)**

◀ ORDER CODE

**CALIENTE**

**CALIENTE**



DIMENSIONS	[mm]
Height	300
Width	147
Length	880÷2580

CONNECTION	TYPE
Connection side	Right (P) standard Left (L) option
Connection type	Type C, Type V
Connection threads	Type C: ¾" female thread Type V: ¾" male thread

Convector length	Heat output $t_s/t_r$ [°C]				Heat output according to the variable average temperature *
	75/65 °C	70/55 °C	55/45 °C	50/40 °C	
L [mm]	$\Phi$ [W]				
880	726	585	369	290	$\Phi=4,0513 \cdot \Delta T^{1,3263}$
1080	954	769	485	380	$\Phi=5,3236 \cdot \Delta T^{1,3263}$
1330	1240	1000	630	495	$\Phi=6,9195 \cdot \Delta T^{1,3263}$
1580	1525	1229	775	608	$\Phi=8,5099 \cdot \Delta T^{1,3263}$
1830	1811	1460	920	722	$\Phi=10,1059 \cdot \Delta T^{1,3263}$
2080	2097	1690	1065	836	$\Phi=11,7018 \cdot \Delta T^{1,3263}$
2330	2382	1920	1210	950	$\Phi=13,2922 \cdot \Delta T^{1,3263}$
2580	2668	2151	1355	1064	$\Phi=14,8882 \cdot \Delta T^{1,3263}$

Standard heating output [W] according to the PN-EN 442-1:2015-02 European Standard, room air temperature  $\Theta_i = 20^\circ\text{C}$

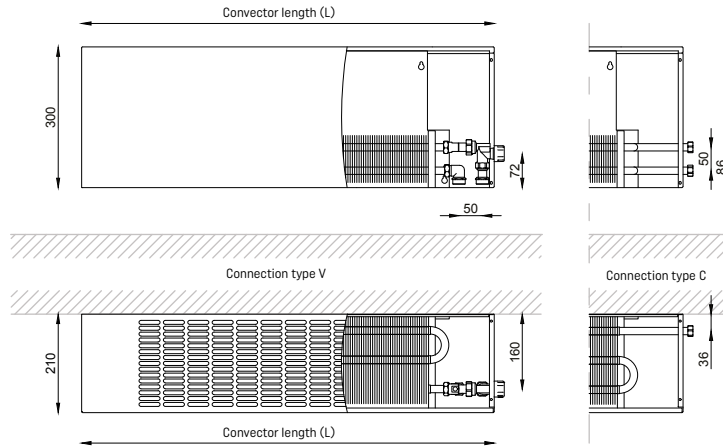
\* where  $\Delta T$  - mean temperature difference. The formula makes it possible to accurately determine the heat output under various operating conditions. Please refer to the corrective factors table on page 24 for a quick conversion of the heat output for selected flow and return temperatures.

**WALL-MOUNTED 300 mm high**

**N-G23-30/21,0/L S(C/V) (L/P)**

◀ ORDER CODE

**STANDARD**

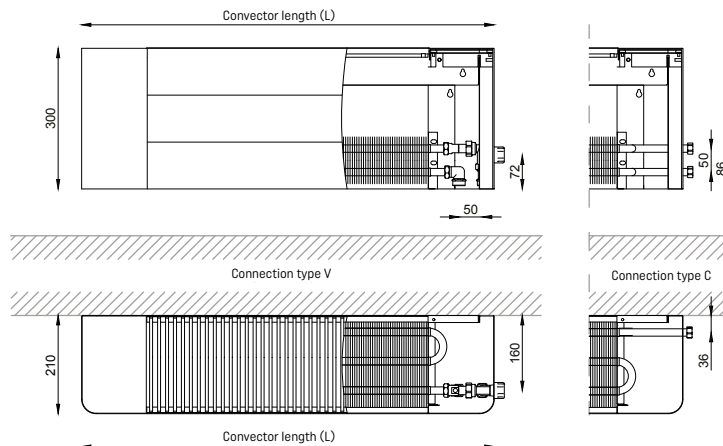


**N-G23-30/21,0/L C(C/V) (L/P)**

◀ ORDER CODE

**CALIENTE**

**CALIENTE**



DIMENSIONS	[mm]
Height	300
Width	210
Length	880÷2580

CONNECTION	TYPE
Connection side	Right (P) standard Left (L) option
Connection type	Type C, Type V
Connection threads	Type C: ¾" female thread Type V: ¾" male thread

Convective length	Heat output $t_s/t_r$ [°C]				Heat output according to the variable average temperature *
	75/65 °C	70/55 °C	55/45 °C	50/40 °C	
L [mm]	Φ [W]				
880	1098	885	558	438	Φ=6,1367 · ΔT <sup>1,3259</sup>
1080	1444	1164	734	576	Φ=8,0705 · ΔT <sup>1,3259</sup>
1330	1877	1513	953	749	Φ=10,4906 · ΔT <sup>1,3259</sup>
1580	2309	1862	1173	921	Φ=12,9050 · ΔT <sup>1,3259</sup>
1830	2741	2210	1392	1093	Φ=15,3195 · ΔT <sup>1,3259</sup>
2080	3174	2559	1612	1266	Φ=17,7395 · ΔT <sup>1,3259</sup>
2330	3606	2907	1832	1438	Φ=20,1540 · ΔT <sup>1,3259</sup>
2580	4038	3255	2051	1611	Φ=22,5685 · ΔT <sup>1,3259</sup>

Standard heating output [W] according to the PN-EN 442-1:2015-02 European Standard, room air temperature  $\theta_i = 20^\circ\text{C}$

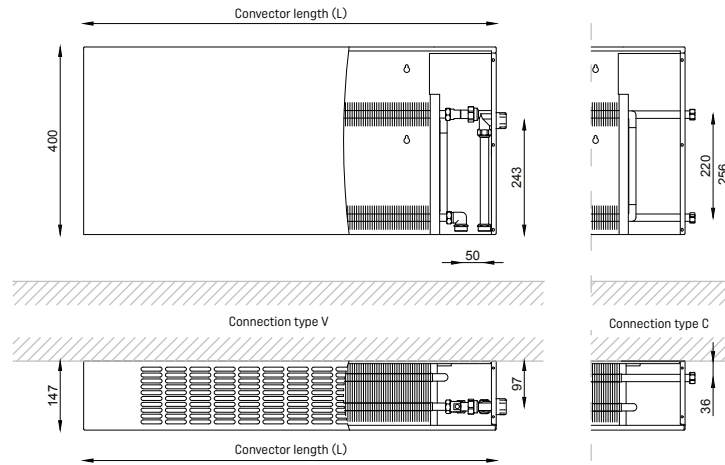
\* where  $\Delta T$  - mean temperature difference. The formula makes it possible to accurately determine the heat output under various operating conditions. Please refer to the corrective factors table on page 24 for a quick conversion of the heat output for selected flow and return temperatures.

**WALL-MOUNTED 400 mm high**

**N-C22-40/14,7/L S(C/V) (L/P)**

◀ ORDER CODE

**STANDARD**

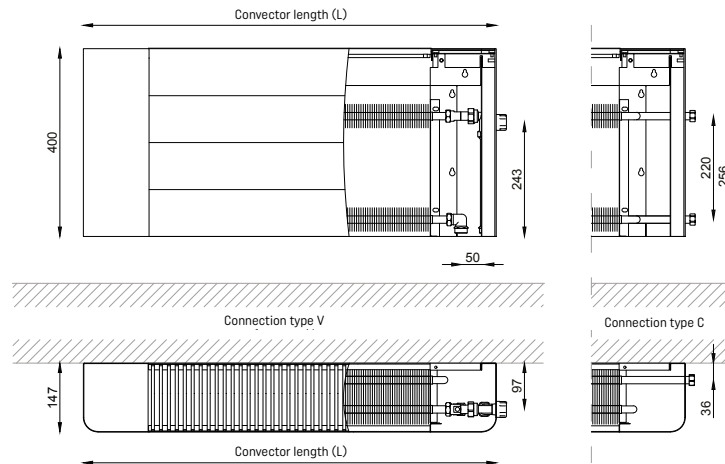


**N-C22-40/14,7/L C(C/V) (L/P)**

◀ ORDER CODE

**CALIENTE**

**CALIENTE**



DIMENSIONS	[mm]
Height	400
Width	147
Length	880÷2580

CONNECTION	TYPE
Connection side	Right (P) standard Left (L) option
Connection type	Type C, Type V
Connection threads	Type C: ¾" female thread Type V: ¾" male thread

Convector length	Heat output $t_s/t_r$ [°C]				Heat output according to the variable average temperature *
	75/65 °C	70/55 °C	55/45 °C	50/40 °C	
L [mm]	$\Phi$ [W]				
880	835	676	430	339	$\Phi=5,1423 \cdot \Delta T^{1,3011}$
1080	1098	889	565	446	$\Phi=6,7620 \cdot \Delta T^{1,3011}$
1330	1427	1155	734	579	$\Phi=8,7881 \cdot \Delta T^{1,3011}$
1580	1756	1421	903	713	$\Phi=10,8142 \cdot \Delta T^{1,3011}$
1830	2085	1688	1073	846	$\Phi=12,8403 \cdot \Delta T^{1,3011}$
2080	2414	1954	1242	980	$\Phi=14,8665 \cdot \Delta T^{1,3011}$
2330	2743	2220	1411	1113	$\Phi=16,8926 \cdot \Delta T^{1,3011}$
2580	3072	2486	1580	1247	$\Phi=18,9187 \cdot \Delta T^{1,3011}$

Standard heating output [W] according to the PN-EN 442-1:2015-02 European Standard, room air temperature  $\Theta_i = 20^\circ\text{C}$

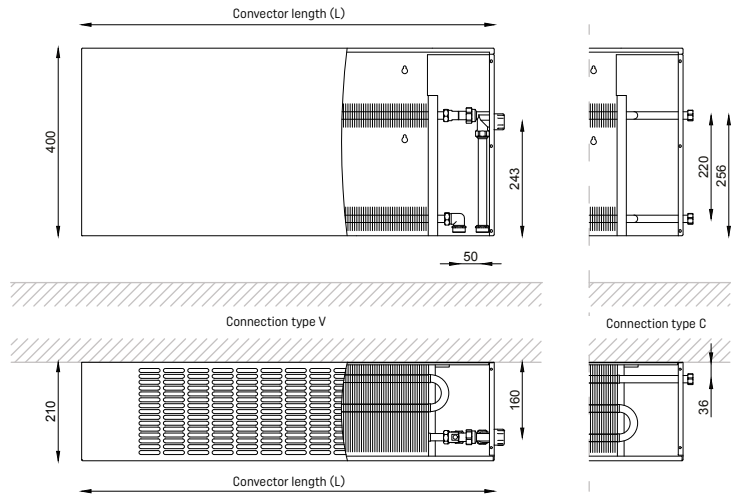
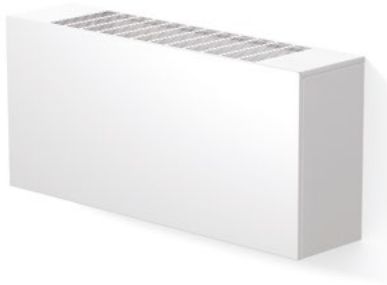
\* where  $\Delta T$  - mean temperature difference. The formula makes it possible to accurately determine the heat output under various operating conditions. Please refer to the corrective factors table on page 25 for a quick conversion of the heat output for selected flow and return temperatures.

**WALL-MOUNTED 400 mm high**

**N-G23-40/21,0/L S(C/V) (L/P)**

◀ ORDER CODE

**STANDARD**

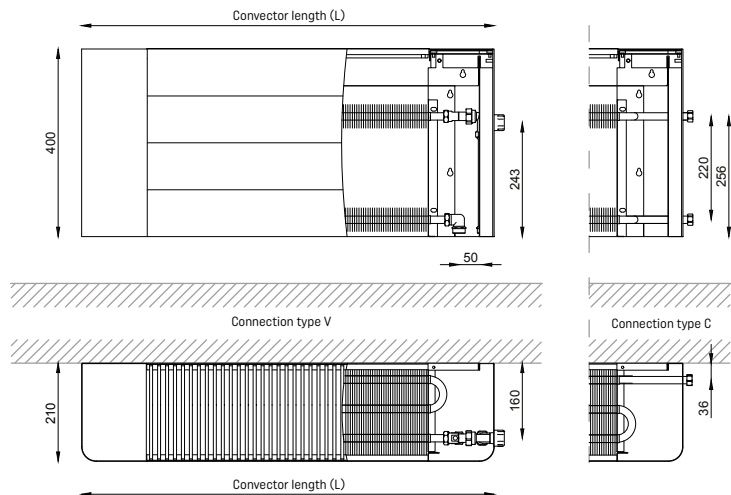


**N-G23-40/21,0/L C(C/V) (L/P)**

◀ ORDER CODE

**CALIENTE**

**CALIENTE**



DIMENSIONS	[mm]
Height	400
Width	210
Length	880÷2580

CONNECTION	TYPE
Connection side	Right (P) standard Left (L) option
Connection type	Type C, Type V
Connection threads	Type C: 3/4" female thread Type V: 3/4" male thread

Convector length	Heat output $t_s/t_r$ [°C]				Heat output according to the variable average temperature *
	75/65 °C	70/55 °C	55/45 °C	50/40 °C	
L [mm]	$\Phi$ [W]				
880	1267	1026	653	515	$\Phi=7,8948 \cdot \Delta T^{1,2981}$
1080	1666	1349	858	678	$\Phi=10,3811 \cdot \Delta T^{1,2981}$
1330	2164	1752	1115	880	$\Phi=13,4904 \cdot \Delta T^{1,2981}$
1580	2663	2156	1372	1083	$\Phi=16,5935 \cdot \Delta T^{1,2981}$
1830	3162	2561	1629	1286	$\Phi=19,7028 \cdot \Delta T^{1,2981}$
2080	3661	2965	1886	1489	$\Phi=22,8122 \cdot \Delta T^{1,2981}$
2330	4160	3369	2143	1692	$\Phi=25,9215 \cdot \Delta T^{1,2981}$
2580	4658	3772	2400	1894	$\Phi=29,0246 \cdot \Delta T^{1,2981}$

Standard heating output [W] according to the PN-EN 442-1:2015-02 European Standard, room air temperature  $\Theta_i = 20^\circ\text{C}$

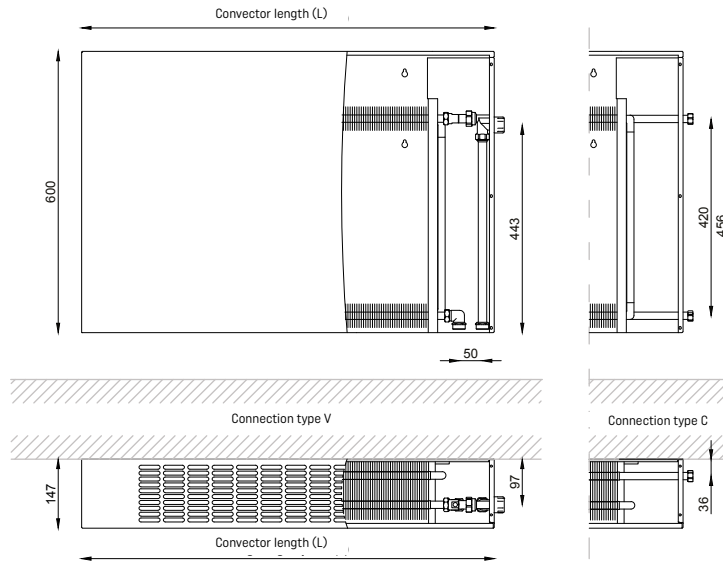
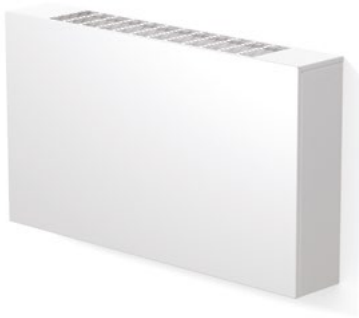
\* where  $\Delta T$  - mean temperature difference. The formula makes it possible to accurately determine the heat output under various operating conditions. Please refer to the corrective factors table on page 25 for a quick conversion of the heat output for selected flow and return temperatures.

**WALL-MOUNTED 600 mm high**

**N-C22-60/14,7/L S(C/V) (L/P)**

◀ ORDER CODE

**STANDARD**

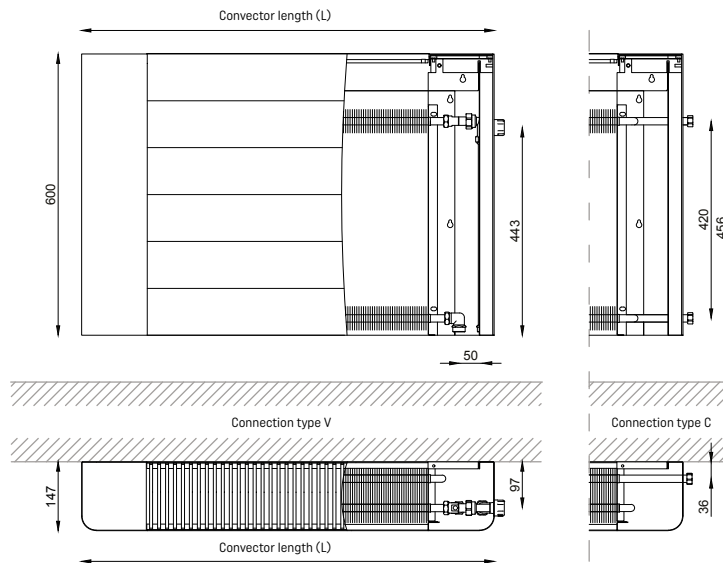


**N-C22-60/14,7/L C(C/V) (L/P)**

◀ ORDER CODE

**CALIENTE**

**CALIENTE**



DIMENSIONS	[mm]
Height	600
Width	147
Length	880÷2580

CONNECTION	TYPE
Connection side	Right (P) standard Left (L) option
Connection type	Type C, Type V
Connection threads	Type C: ¾" female thread Type V: ¾" male thread

Convector length	Heat output $t_s/t_r$ [°C]				Heat output according to the variable average temperature *
	75/65 °C	70/55 °C	55/45 °C	50/40 °C	
L [mm]	$\Phi$ [W]				
880	933	759	488	387	$\Phi=6,4765 \cdot \Delta T^{1,2705}$
1080	1226	997	641	508	$\Phi=8,5104 \cdot \Delta T^{1,2705}$
1330	1594	1297	833	661	$\Phi=11,0649 \cdot \Delta T^{1,2705}$
1580	1961	1595	1025	813	$\Phi=13,6124 \cdot \Delta T^{1,2705}$
1830	2328	1894	1217	965	$\Phi=16,1600 \cdot \Delta T^{1,2705}$
2080	2695	2192	1408	1117	$\Phi=18,7076 \cdot \Delta T^{1,2705}$
2330	3062	2491	1600	1269	$\Phi=21,2551 \cdot \Delta T^{1,2705}$
2580	3429	2789	1792	1421	$\Phi=23,8027 \cdot \Delta T^{1,2705}$

Standard heating output [W] according to the PN-EN 442-1:2015-02 European Standard, room air temperature  $\theta_i = 20^\circ\text{C}$

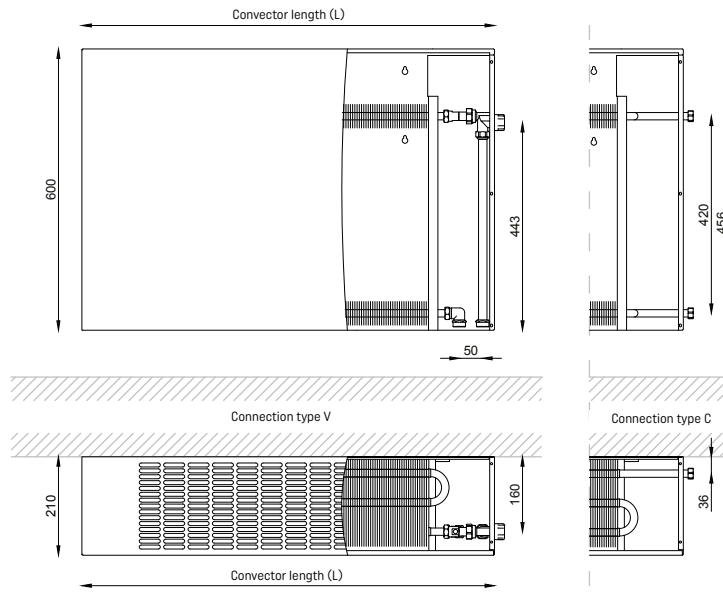
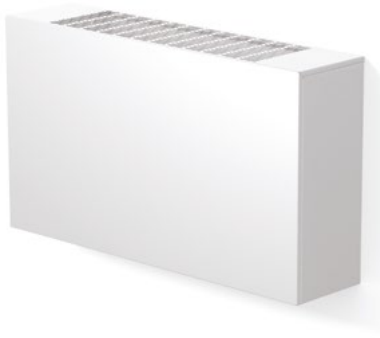
\* where  $\Delta T$  - mean temperature difference. The formula makes it possible to accurately determine the heat output under various operating conditions. Please refer to the corrective factors table on page 26 for a quick conversion of the heat output for selected flow and return temperatures.

**WALL-MOUNTED 600 mm high**

**N-G23-60/21,0/L S(C/V) (L/P)**

◀ ORDER CODE

**STANDARD**

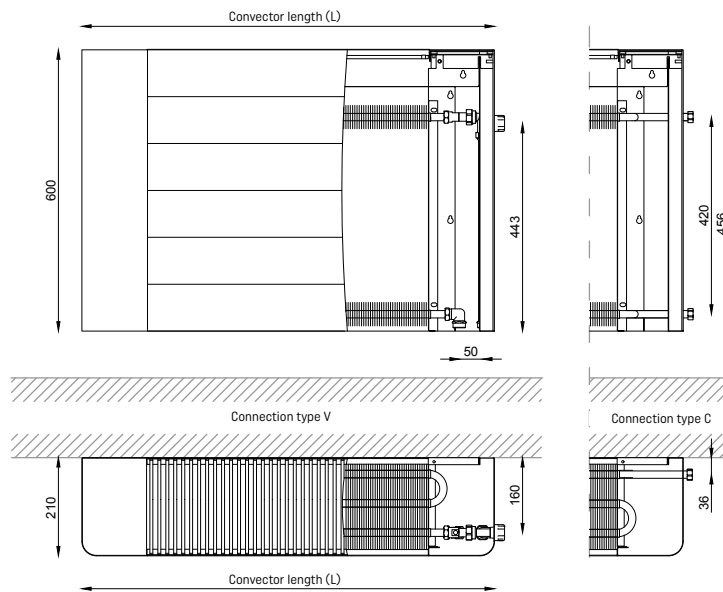


**N-G23-60/21,0/L C(C/V) (L/P)**

◀ ORDER CODE

**CALIENTE**

**CALIENTE**



DIMENSIONS	[mm]
Height	600
Width	210
Length	880÷2580
CONNECTION	TYPE
Connection side	Right (P) standard Left (L) option
Connection type	Type C, Type V
Connection threads	Type C: ¾" female thread Type V: ¾" male thread

Convector length	Heat output $t_s/t_r$ [°C]				Heat output according to the variable average temperature *
	75/65 °C	70/55 °C	55/45 °C	50/40 °C	
L [mm]	Φ [W]				
880	1372	1116	717	569	Φ=9,5425 · ΔT <sup>1,2700</sup>
1080	1804	1468	943	748	Φ=12,5471 · ΔT <sup>1,2700</sup>
1330	2344	1907	1225	972	Φ=16,3029 · ΔT <sup>1,2700</sup>
1580	2884	2348	1508	1197	Φ=20,0587 · ΔT <sup>1,2700</sup>
1830	3424	2785	1790	1420	Φ=23,8145 · ΔT <sup>1,2700</sup>
2080	3964	3225	2072	1644	Φ=27,5703 · ΔT <sup>1,2700</sup>
2330	4504	3664	2354	1868	Φ=31,3261 · ΔT <sup>1,2700</sup>
2580	5045	4104	2637	2092	Φ=35,0889 · ΔT <sup>1,2700</sup>

Standard heating output [W] according to the PN-EN 442-1:2015-02 European Standard, room air temperature  $\Theta_i = 20^\circ\text{C}$

\* where  $\Delta T$  - mean temperature difference. The formula makes it possible to accurately determine the heat output under various operating conditions. Please refer to the corrective factors table on page 26 for a quick conversion of the heat output for selected flow and return temperatures.

## CORRECTIVE FACTORS FOR WALL-MOUNTED CONVECTORS - 230 mm high

Heat output corrective factors for wall-mounted convectors 230 mm high, for installation temperatures other than 75/65/20°C.

Flow and Return temperatures [°C]		Room air temperature $\theta_i$ [°C]						
$t_s$	$t_r$	5	8	12	16	20	24	32
90	85	1,961	1,866	1,740	1,618	1,497	1,379	1,151
	80	1,881	1,787	1,663	1,542	1,423	1,307	1,082
	75	1,803	1,710	1,587	1,467	1,350	1,235	1,014
	70	1,725	1,633	1,512	1,394	1,278	1,165	0,947
85	80	1,803	1,710	1,587	1,467	1,350	1,235	1,014
	75	1,725	1,633	1,512	1,394	1,278	1,165	0,947
	70	1,648	1,557	1,438	1,321	1,207	1,095	0,881
	65	1,572	1,482	1,365	1,249	1,137	1,027	0,816
80	75	1,648	1,557	1,438	1,321	1,207	1,095	0,881
	70	1,572	1,482	1,365	1,249	1,137	1,027	0,816
	65	1,497	1,408	1,292	1,179	1,068	0,960	0,753
	60	1,423	1,335	1,221	1,109	1,000	0,894	0,691
75	70	1,497	1,408	1,292	1,179	1,068	0,960	0,753
	65	1,423	1,335	1,221	1,109	1,000	0,894	0,691
	60	1,350	1,264	1,151	1,041	0,933	0,829	0,631
	55	1,278	1,193	1,082	0,973	0,868	0,766	0,572
70	65	1,350	1,264	1,151	1,041	0,933	0,829	0,631
	60	1,278	1,193	1,082	0,973	0,868	0,766	0,572
	55	1,207	1,123	1,014	0,907	0,804	0,704	0,514
	50	1,137	1,054	0,947	0,842	0,741	0,643	0,459
65	60	1,207	1,123	1,014	0,907	0,804	0,704	0,514
	55	1,137	1,054	0,947	0,842	0,741	0,643	0,459
	50	1,068	0,987	0,881	0,778	0,679	0,584	0,404
	45	1,000	0,920	0,816	0,716	0,619	0,526	0,352
60	55	1,068	0,987	0,881	0,778	0,679	0,584	0,404
	50	1,000	0,920	0,816	0,716	0,619	0,526	0,352
	45	0,933	0,855	0,753	0,655	0,560	0,470	0,302
	40	0,868	0,791	0,691	0,595	0,503	0,415	0,253
55	50	0,933	0,855	0,753	0,655	0,560	0,470	0,302
	45	0,868	0,791	0,691	0,595	0,503	0,415	0,253
	40	0,804	0,728	0,631	0,537	0,448	0,362	0,207
	35	0,741	0,667	0,572	0,481	0,394	0,311	0,163
50	45	0,804	0,728	0,631	0,537	0,448	0,362	0,207
	40	0,741	0,667	0,572	0,481	0,394	0,311	0,163
	35	0,679	0,607	0,514	0,426	0,342	0,263	0,123
45	40	0,679	0,607	0,514	0,426	0,342	0,263	0,123
	35	0,619	0,549	0,459	0,373	0,292	0,216	0,085

## CORRECTIVE FACTORS FOR WALL-MOUNTED CONVECTORS - 300 mm high

Heat output corrective factors for wall-mounted convectors 300 mm high, for installation temperatures other than 75/65/20°C.

Flow and Return temperatures [°C]		Room air temperature $\theta_i$ [°C]						
$t_s$	$t_r$	5	8	12	16	20	24	32
90	85	1,943	1,850	1,727	1,607	1,489	1,373	1,148
	80	1,865	1,773	1,652	1,533	1,416	1,302	1,080
	75	1,788	1,697	1,577	1,460	1,344	1,231	1,013
	70	1,712	1,622	1,503	1,387	1,274	1,162	0,947
85	80	1,788	1,697	1,577	1,460	1,344	1,231	1,013
	75	1,712	1,622	1,503	1,387	1,274	1,162	0,947
	70	1,637	1,548	1,431	1,316	1,204	1,094	0,882
	65	1,562	1,474	1,359	1,245	1,135	1,027	0,819
80	75	1,637	1,548	1,431	1,316	1,204	1,094	0,882
	70	1,562	1,474	1,359	1,245	1,135	1,027	0,819
	65	1,489	1,402	1,288	1,176	1,067	0,960	0,756
	60	1,416	1,330	1,218	1,107	1,000	0,895	0,695
75	70	1,489	1,402	1,288	1,176	1,067	0,960	0,756
	65	1,416	1,330	1,218	1,107	1,000	0,895	0,695
	60	1,344	1,259	1,148	1,040	0,934	0,831	0,635
	55	1,274	1,190	1,080	0,974	0,870	0,769	0,576
70	65	1,344	1,259	1,148	1,040	0,934	0,831	0,635
	60	1,274	1,190	1,080	0,974	0,870	0,769	0,576
	55	1,204	1,121	1,013	0,908	0,806	0,707	0,519
	50	1,135	1,053	0,947	0,844	0,744	0,647	0,464
65	60	1,204	1,121	1,013	0,908	0,806	0,707	0,519
	55	1,135	1,053	0,947	0,844	0,744	0,647	0,464
	50	1,067	0,987	0,882	0,781	0,683	0,588	0,409
	45	1,000	0,921	0,819	0,719	0,623	0,531	0,357
60	55	1,067	0,987	0,882	0,781	0,683	0,588	0,409
	50	1,000	0,921	0,819	0,719	0,623	0,531	0,357
	45	0,934	0,857	0,756	0,659	0,565	0,475	0,307
	40	0,870	0,794	0,695	0,600	0,508	0,420	0,258
55	50	0,934	0,857	0,756	0,659	0,565	0,475	0,307
	45	0,870	0,794	0,695	0,600	0,508	0,420	0,258
	40	0,806	0,732	0,635	0,542	0,453	0,367	0,212
	35	0,744	0,671	0,576	0,486	0,399	0,317	0,168
50	45	0,806	0,732	0,635	0,542	0,453	0,367	0,212
	40	0,744	0,671	0,576	0,486	0,399	0,317	0,168
	35	0,683	0,611	0,519	0,431	0,347	0,268	0,126
45	40	0,683	0,611	0,519	0,431	0,347	0,268	0,126
	35	0,623	0,553	0,464	0,378	0,297	0,221	0,088



## CORRECTIVE FACTORS FOR WALL-MOUNTED CONVECTORS - 400 mm high

Heat output corrective factors for wall-mounted convectors 400 mm high, for installation temperatures other than 75/65/20°C.

Flow and Return temperatures [°C]		Room air temperature $\theta_i$ [°C]						
$t_s$	$t_r$	5	8	12	16	20	24	32
90	85	1,917	1,827	1,708	1,592	1,477	1,364	1,145
	80	1,842	1,753	1,635	1,520	1,406	1,295	1,079
	75	1,767	1,679	1,563	1,449	1,336	1,226	1,013
	70	1,694	1,606	1,491	1,378	1,267	1,159	0,948
85	80	1,767	1,679	1,563	1,449	1,336	1,226	1,013
	75	1,694	1,606	1,491	1,378	1,267	1,159	0,948
	70	1,621	1,534	1,420	1,309	1,199	1,092	0,885
	65	1,549	1,463	1,350	1,240	1,132	1,026	0,822
80	75	1,621	1,534	1,420	1,309	1,199	1,092	0,885
	70	1,549	1,463	1,350	1,240	1,132	1,026	0,822
	65	1,477	1,392	1,281	1,172	1,065	0,961	0,760
	60	1,406	1,323	1,213	1,105	1,000	0,897	0,700
75	70	1,477	1,392	1,281	1,172	1,065	0,961	0,760
	65	1,406	1,323	1,213	1,105	1,000	0,897	0,700
	60	1,336	1,254	1,145	1,039	0,936	0,834	0,641
	55	1,267	1,186	1,079	0,974	0,872	0,773	0,583
70	65	1,336	1,254	1,145	1,039	0,936	0,834	0,641
	60	1,267	1,186	1,079	0,974	0,872	0,773	0,583
	55	1,199	1,119	1,013	0,910	0,810	0,712	0,526
	50	1,132	1,052	0,948	0,847	0,748	0,653	0,471
65	60	1,199	1,119	1,013	0,910	0,810	0,712	0,526
	55	1,132	1,052	0,948	0,847	0,748	0,653	0,471
	50	1,065	0,987	0,885	0,785	0,688	0,594	0,417
	45	1,000	0,923	0,822	0,724	0,629	0,537	0,365
60	55	1,065	0,987	0,885	0,785	0,688	0,594	0,417
	50	1,000	0,923	0,822	0,724	0,629	0,537	0,365
	45	0,936	0,859	0,760	0,664	0,571	0,482	0,314
	40	0,872	0,797	0,700	0,606	0,515	0,428	0,265
55	50	0,936	0,859	0,760	0,664	0,571	0,482	0,314
	45	0,872	0,797	0,700	0,606	0,515	0,428	0,265
	40	0,810	0,736	0,641	0,549	0,460	0,375	0,218
	35	0,748	0,676	0,583	0,493	0,406	0,324	0,174
50	45	0,810	0,736	0,641	0,549	0,460	0,375	0,218
	40	0,748	0,676	0,583	0,493	0,406	0,324	0,174
	35	0,688	0,617	0,526	0,438	0,354	0,275	0,132
45	40	0,688	0,617	0,526	0,438	0,354	0,275	0,132
	35	0,629	0,560	0,471	0,385	0,304	0,227	0,092

## CORRECTIVE FACTORS FOR WALL-MOUNTED CONVECTORS - 600 mm high

Heat output corrective factors for wall-mounted convectors 600 mm high, for installation temperatures other than 75/65/20°C.

Flow and Return temperatures [°C]		Room air temperature $\theta_i$ [°C]						
$t_s$	$t_r$	5	8	12	16	20	24	32
90	85	1,889	1,802	1,688	1,575	1,464	1,355	1,142
	80	1,817	1,731	1,617	1,506	1,396	1,287	1,077
	75	1,745	1,660	1,547	1,437	1,328	1,221	1,013
85	70	1,674	1,589	1,478	1,368	1,261	1,155	0,950
	80	1,745	1,660	1,547	1,437	1,328	1,221	1,013
	75	1,674	1,589	1,478	1,368	1,261	1,155	0,950
80	70	1,603	1,519	1,409	1,301	1,194	1,090	0,887
	65	1,533	1,450	1,341	1,234	1,129	1,026	0,826
	75	1,603	1,519	1,409	1,301	1,194	1,090	0,887
75	70	1,533	1,450	1,341	1,234	1,129	1,026	0,826
	65	1,464	1,382	1,274	1,168	1,064	0,962	0,765
	60	1,396	1,314	1,207	1,103	1,000	0,900	0,706
70	70	1,464	1,382	1,274	1,168	1,064	0,962	0,765
	65	1,396	1,314	1,207	1,103	1,000	0,900	0,706
	60	1,328	1,247	1,142	1,038	0,937	0,838	0,647
65	55	1,261	1,181	1,077	0,975	0,875	0,777	0,590
	65	1,328	1,247	1,142	1,038	0,937	0,838	0,647
	60	1,261	1,181	1,077	0,975	0,875	0,777	0,590
60	55	1,194	1,116	1,013	0,912	0,813	0,717	0,534
	50	1,129	1,051	0,950	0,850	0,753	0,659	0,479
	60	1,194	1,116	1,013	0,912	0,813	0,717	0,534
55	55	1,129	1,051	0,950	0,850	0,753	0,659	0,479
	50	1,064	0,987	0,887	0,789	0,694	0,601	0,425
	45	1,000	0,924	0,826	0,729	0,636	0,545	0,373
50	55	1,064	0,987	0,887	0,789	0,694	0,601	0,425
	50	1,000	0,924	0,826	0,729	0,636	0,545	0,373
	45	0,937	0,862	0,765	0,670	0,579	0,490	0,322
45	40	0,875	0,801	0,706	0,613	0,523	0,436	0,273
	50	0,937	0,862	0,765	0,670	0,579	0,490	0,322
	45	0,875	0,801	0,706	0,613	0,523	0,436	0,273
40	40	0,813	0,741	0,647	0,556	0,468	0,383	0,226
	35	0,753	0,682	0,590	0,501	0,415	0,332	0,181
	45	0,813	0,741	0,647	0,556	0,468	0,383	0,226
35	40	0,753	0,682	0,590	0,501	0,415	0,332	0,181
	35	0,694	0,624	0,534	0,446	0,363	0,283	0,138
	40	0,694	0,624	0,534	0,446	0,363	0,283	0,138
30	40	0,636	0,567	0,479	0,394	0,312	0,235	0,098
	35	0,636	0,567	0,479	0,394	0,312	0,235	0,098

## WALL-MOUNTED CONVECTORS WATER CAPACITY

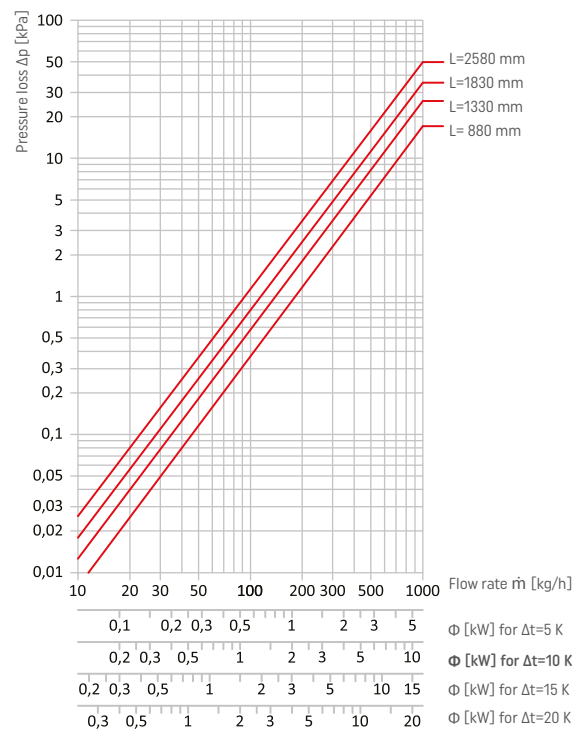
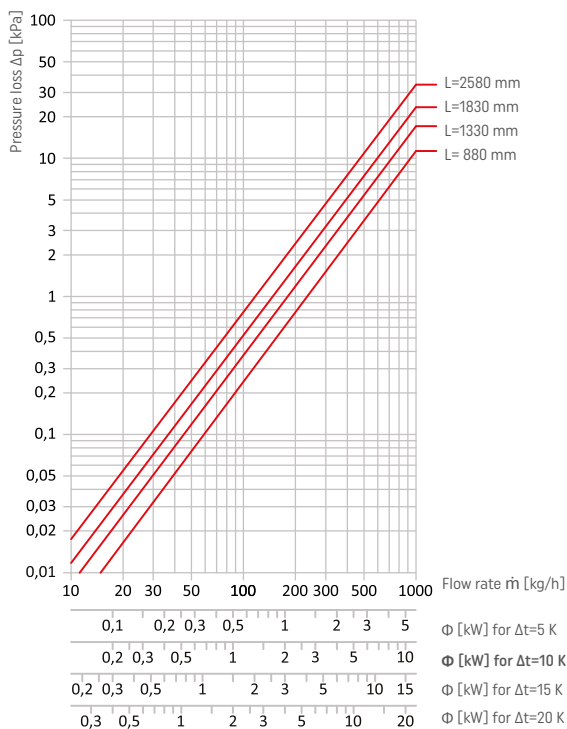
Convector length L [mm]	Convector type	
	N-C22-23/14,7/L N-C22-30/14,7/L N-C22-40/14,7/L N-C22-60/14,7/L	N-G23-23/21,0/L N-G23-30/21,0/L N-G23-40/21,0/L N-G23-60/21,0/L
Water capacity [dm <sup>3</sup> ]		
880	0,49	0,94
1080	0,61	1,19
1330	0,77	1,51
1580	0,93	1,82
1830	1,08	2,13
2080	1,24	2,44
2330	1,39	2,75
2580	1,55	3,07

## DECLARED PROPERTIES

Fire safety class:	Class A1
Harmful substances release:	None
Water tightness under the high pressure:	no leakage at pressure 2,08 times higher than maximum acceptable operating pressure
Resistance to pressure:	No cracks at pressure 2,70 times higher than maximum acceptable operating pressure
Maximum working pressure:	1,6 MPa
Surface temperature:	maximum 95°C
Corrosion resistance:	No corrosion after 100 hours in humid environment
Resistance to weak impacts:	Class 0

## PRESSURE LOSS

- N-C22-23/14,7/L
- N-C22-30/14,7/L
- N-C22-40/14,7/L
- N-C22-60/14,7/L
- N-G23-23/21,0/L
- N-G23-30/21,0/L
- N-G23-40/21,0/L
- N-G23-60/21,0/L







**FLOOR-MOUNTED CONVECTORS**



**EQUIPMENT**

**STANDARD EQUIPMENT (STANDARD CASING):**

- Casing made of zinc-magnesium steel, powder coated in white RAL 9003
- Copper-aluminium heat exchanger with air vent
- Built-in thermostatic valve (only for V type connection convectors)
- Assembly kit
- 3/4" female threaded connectors in C type (side connection) convectors
- 3/4" male threaded connectors in V type (bottom connection) convectors
- Heater brackets/legs 100 mm high

**ADDITIONAL EQUIPMENT (STANDARD CASING):**

- Casing in any RAL colour
- Non standard punched grille type
- Thermal actuator or wireless TRV head (installed inside the casing)

**STANDARD EQUIPMENT (CALIENTE CASING):**

- Casing made of zinc-magnesium steel, powder coated in white RAL 9003
- Copper-aluminium heat exchanger with air vent
- Built-in thermostatic valve (only for V type connection heaters)
- Assembly kit
- Masking panels in black RAL 9005
- Modular anodized aluminium grille, snap profile, black finish,
- 3/4" female threaded connectors in C type (side connection) convectors
- 3/4" male threaded connectors in V type (bottom connection) convectors
- Heater brackets/legs 100 mm high

**ADDITIONAL EQUIPMENT (CALIENTE CASING):**

- Casing in any RAL colour
- Non standard grille type
- Glass masking panels or glass masking panels with built-in controller and thermal actuator
- Thermal actuator or wireless TRV head (installed inside the casing)

VERANO wall-mounted convectors are available as two connection types:

- type V - bottom connection
- type C - side connection

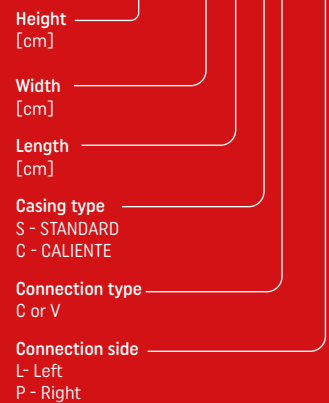
Non standard convector length available on request

**DIMENSIONS**

DIMENSIONS	[mm]
Height	100, 160, 230, 300
Width	159, 222, 284
Length	880÷2580

**ORDER CODE:**

**S-C12-10/15,9/L SV (L)**

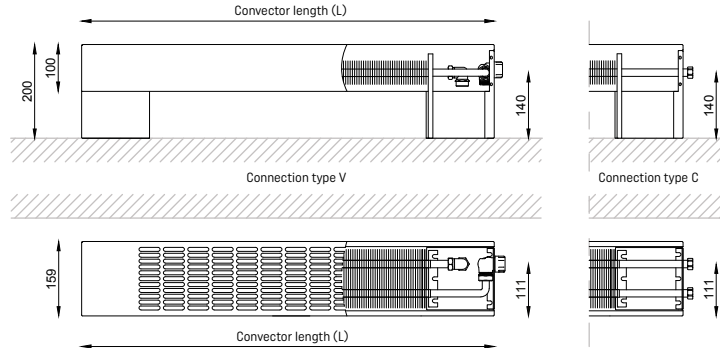


**FLOOR-MOUNTED 100 mm high**

**S-C12-10/15,9/L S(C/V) (L/P)**

◀ ORDER CODE

**STANDARD**

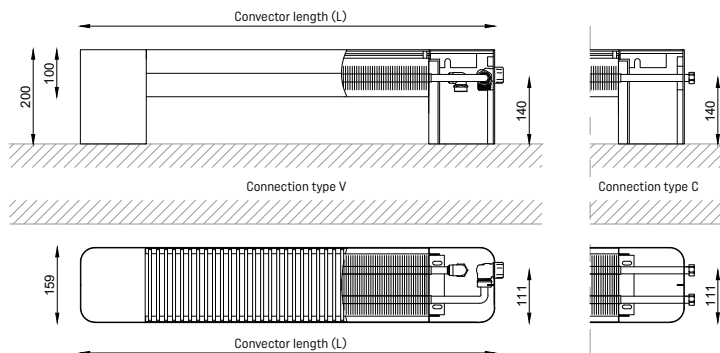


**S-C12-10/15,9/L C(C/V) (L/P)**

◀ ORDER CODE

**CALIENTE**

**CALIENTE**



DIMENSIONS	[mm]
Height	100
Width	159
Length	880÷2580

CONNECTION	TYPE
Connection side	Right (P) standard Left (L) option
Connection type	Type C, Type V
Connection threads	Type C: ¾" female thread Type V: ¾" male thread

Convector length	Heat output $t_s/t_r$ [°C]				Heat output according to the variable average temperature *
	75/65 °C	70/55 °C	55/45 °C	50/40 °C	
L [mm]	$\Phi$ [W]				
880	337	271	170	133	$\Phi=1,795 \cdot \Delta T^{1,3382}$
1080	449	361	227	178	$\Phi=2,3916 \cdot \Delta T^{1,3382}$
1330	590	475	298	233	$\Phi=3,1426 \cdot \Delta T^{1,3382}$
1580	730	587	369	289	$\Phi=3,8883 \cdot \Delta T^{1,3382}$
1830	871	701	440	344	$\Phi=4,6393 \cdot \Delta T^{1,3382}$
2080	1011	813	510	400	$\Phi=5,3850 \cdot \Delta T^{1,3382}$
2330	1152	927	582	456	$\Phi=6,1361 \cdot \Delta T^{1,3382}$
2580	1292	1039	652	511	$\Phi=6,8818 \cdot \Delta T^{1,3382}$

Standard heating output [W] according to the PN-EN 442-1:2015-02 European Standard, room air temperature  $\Theta_i = 20^\circ\text{C}$

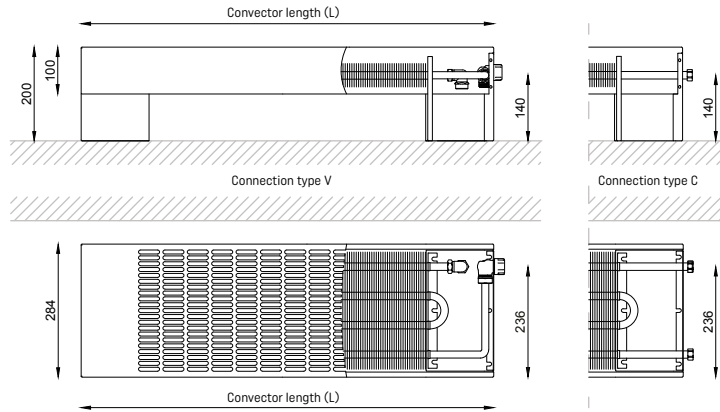
\* where  $\Delta T$  - mean temperature difference. The formula makes it possible to accurately determine the heat output under various operating conditions. Please refer to the corrective factors table on page 42 for a quick conversion of the heat output for selected flow and return temperatures.

**FLOOR-MOUNTED 100 mm high**

**S-G14-10/28,4/L S(C/V) (L/P)**

◀ ORDER CODE

**STANDARD**

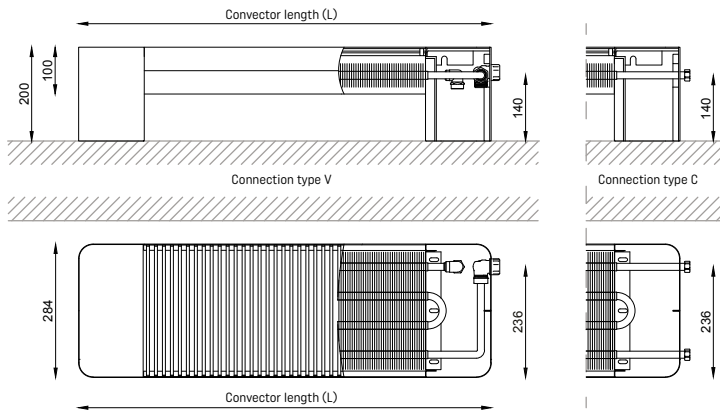


**S-G14-10/28,4/L C(C/V) (L/P)**

◀ ORDER CODE

**CALIENTE**

**CALIENTE**



DIMENSIONS	[mm]
Height	100
Width	284
Length	880÷2580

CONNECTION	TYPE
Connection side	Right (P) standard Left (L) option
Connection type	Type C, Type V
Connection threads	Type C: ¾" female thread Type V: ¾" male thread

Convector length	Heat output $t_s/t_r$ [°C]				Heat output according to the variable average temperature *
	75/65 °C	70/55 °C	55/45 °C	50/40 °C	
L [mm]	Φ [W]				
880	709	574	365	288	Φ=4,4213 · ΔT <sup>1,2979</sup>
1080	945	765	487	384	Φ=5,8930 · ΔT <sup>1,2979</sup>
1330	1241	1005	639	505	Φ=7,7389 · ΔT <sup>1,2979</sup>
1580	1536	1244	792	625	Φ=9,5785 · ΔT <sup>1,2979</sup>
1830	1831	1483	944	745	Φ=11,4181 · ΔT <sup>1,2979</sup>
2080	2127	1722	1096	865	Φ=13,2640 · ΔT <sup>1,2979</sup>
2330	2422	1961	1248	985	Φ=15,1036 · ΔT <sup>1,2979</sup>
2580	2718	2201	1401	1105	Φ=16,9495 · ΔT <sup>1,2979</sup>

Standard heating output [W] according to the PN-EN 442-1:2015-02 European Standard, room air temperature  $\theta_i = 20^\circ\text{C}$

\* where  $\Delta T$  - mean temperature difference. The formula makes it possible to accurately determine the heat output under various operating conditions. Please refer to the corrective factors table on page 42 for a quick conversion of the heat output for selected flow and return temperatures.

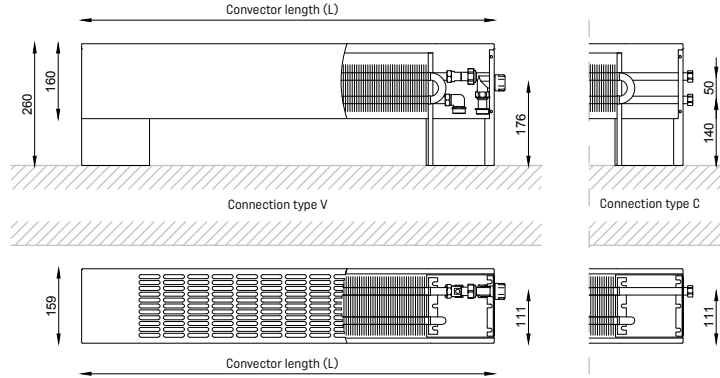


**FLOOR-MOUNTED 160 mm high**

**S-C22-16/15,9/L S(C/V) (L/P)**

◀ ORDER CODE

**STANDARD**

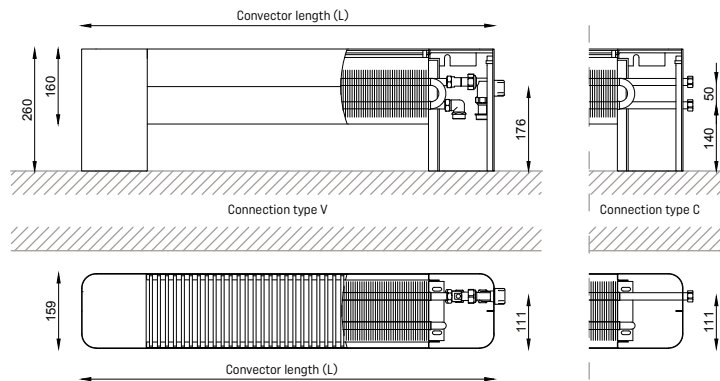


**S-C22-16/15,9/L C(C/V) (L/P)**

◀ ORDER CODE

**CALIENTE**

**CALIENTE**



DIMENSIONS	[mm]
Height	160
Width	159
Length	880÷2580

CONNECTION	TYPE
Connection side	Right (P) standard Left (L) option
Connection type	Type C, Type V
Connection threads	Type C: ¾" female thread Type V: ¾" male thread

Convector length	Heat output $t_s/t_r$ [°C]				Heat output according to the variable average temperature *
	75/65 °C	70/55 °C	55/45 °C	50/40 °C	
L [mm]	$\Phi$ [W]				
880	533	425	262	203	$\Phi=2,2975 \cdot \Delta T^{1,3923}$
1080	711	567	349	271	$\Phi=3,0647 \cdot \Delta T^{1,3923}$
1330	933	744	458	355	$\Phi=4,0217 \cdot \Delta T^{1,3923}$
1580	1156	922	568	440	$\Phi=4,9829 \cdot \Delta T^{1,3923}$
1830	1378	1099	677	525	$\Phi=5,9398 \cdot \Delta T^{1,3923}$
2080	1600	1276	786	610	$\Phi=6,8967 \cdot \Delta T^{1,3923}$
2330	1822	1453	895	694	$\Phi=7,8537 \cdot \Delta T^{1,3923}$
2580	2044	1630	1004	779	$\Phi=8,8106 \cdot \Delta T^{1,3923}$

Standard heating output [W] according to the PN-EN 442-1:2015-02 European Standard, room air temperature  $\Theta_i = 20^\circ\text{C}$

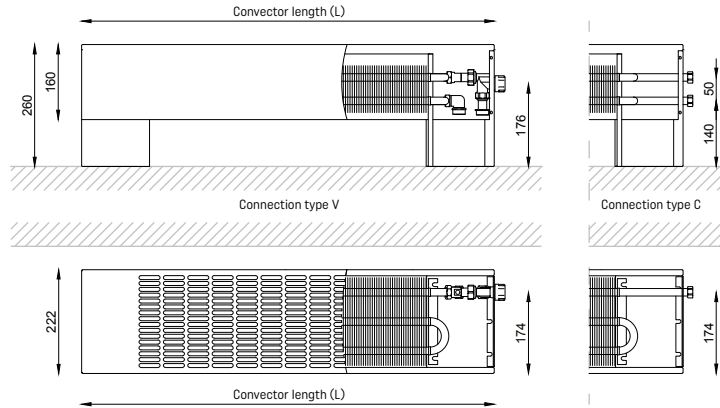
\* where  $\Delta T$  - mean temperature difference. The formula makes it possible to accurately determine the heat output under various operating conditions. Please refer to the corrective factors table on page 43 for a quick conversion of the heat output for selected flow and return temperatures.

**FLOOR-MOUNTED 160 mm high**

**S-G23-16/22,2/L S(C/V) (L/P)**

◀ ORDER CODE

**STANDARD**

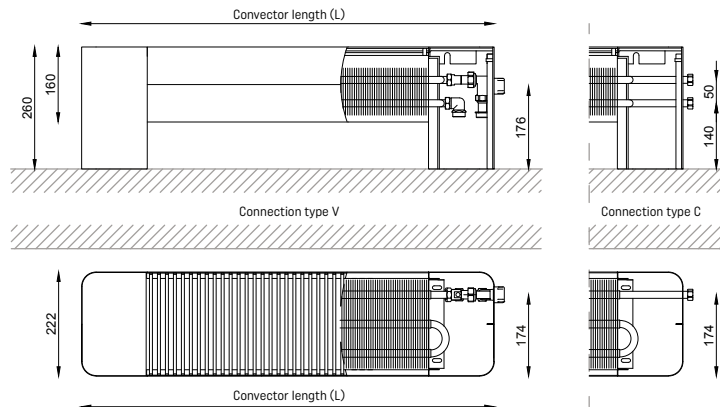


**S-G23-16/22,2/L C(C/V) (L/P)**

◀ ORDER CODE

**CALIENTE**

**CALIENTE**



DIMENSIONS	[mm]
Height	160
Width	222
Length	880÷2580

CONNECTION	TYPE
Connection side	Right (P) standard Left (L) option
Connection type	Type C, Type V
Connection threads	Type C: 3/4" female thread Type V: 3/4" male thread

Convector length	Heat output $t_s/t_r$ [°C]				Heat output according to the variable average temperature *
	75/65 °C	70/55 °C	55/45 °C	50/40 °C	
L [mm]	$\Phi$ [W]				
880	836	666	410	317	$\Phi=3,5393 \cdot \Delta T^{1,3969}$
1080	1114	888	546	423	$\Phi=4,7162 \cdot \Delta T^{1,3969}$
1330	1462	1165	716	555	$\Phi=6,1895 \cdot \Delta T^{1,3969}$
1580	1811	1443	887	688	$\Phi=7,6670 \cdot \Delta T^{1,3969}$
1830	2159	1721	1058	820	$\Phi=9,1403 \cdot \Delta T^{1,3969}$
2080	2507	1998	1228	952	$\Phi=10,6136 \cdot \Delta T^{1,3969}$
2330	2855	2275	1399	1084	$\Phi=12,0869 \cdot \Delta T^{1,3969}$
2580	3203	2552	1569	1216	$\Phi=13,5602 \cdot \Delta T^{1,3969}$

Standard heating output [W] according to the PN-EN 442-1:2015-02 European Standard, room air temperature  $\Theta_i = 20^\circ\text{C}$

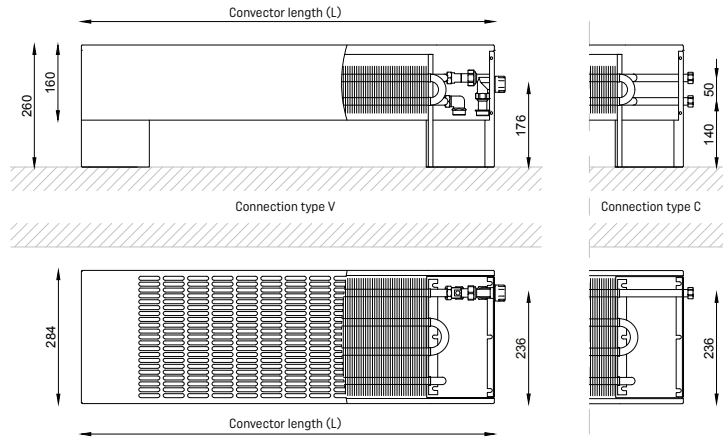
\* where  $\Delta T$  - mean temperature difference. The formula makes it possible to accurately determine the heat output under various operating conditions. Please refer to the corrective factors table on page 43 for a quick conversion of the heat output for selected flow and return temperatures.

**FLOOR-MOUNTED 160 mm high**

**S-G24-16/28,4/L S(C/V) (L/P)**

◀ ORDER CODE

**STANDARD**

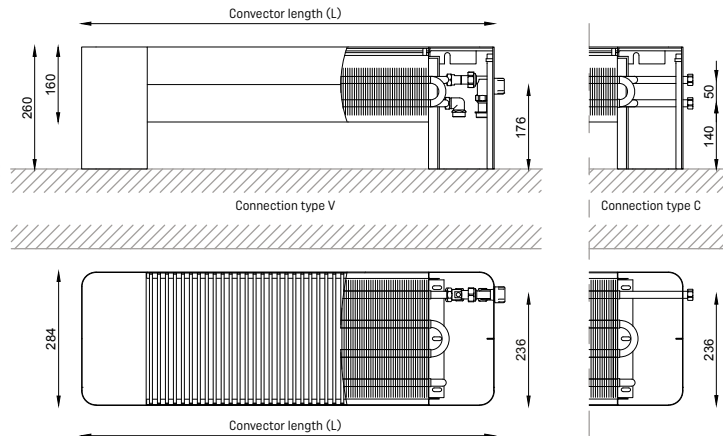


**S-G24-16/28,4/L C(C/V) (L/P)**

◀ ORDER CODE

**CALIENTE**

**CALIENTE**



DIMENSIONS	[mm]
Height	160
Width	222
Length	880÷2580

CONNECTION	TYPE
Connection side	Right (P) standard Left (L) option
Connection type	Type C, Type V
Connection threads	Type C: ¾" female thread Type V: ¾" male thread

Convector length	Heat output $t_s/t_r$ [°C]				Heat output according to the variable average temperature *
	75/65 °C	70/55 °C	55/45 °C	50/40 °C	
L [mm]	Φ [W]				
880	1104	883	547	425	Φ=5,0741 · ΔT <sup>1,3759</sup>
1080	1472	1177	729	567	Φ=6,7654 · ΔT <sup>1,3759</sup>
1330	1932	1545	957	744	Φ=8,8796 · ΔT <sup>1,3759</sup>
1580	2392	1913	1184	922	Φ=10,9938 · ΔT <sup>1,3759</sup>
1830	2852	2280	1412	1099	Φ=13,1080 · ΔT <sup>1,3759</sup>
2080	3312	2648	1640	1276	Φ=15,2222 · ΔT <sup>1,3759</sup>
2330	3772	3016	1868	1453	Φ=17,3364 · ΔT <sup>1,3759</sup>
2580	4232	3384	2096	1631	Φ=19,4506 · ΔT <sup>1,3759</sup>

Standard heating output [W] according to the PN-EN 442-1:2015-02 European Standard, room air temperature  $\theta_i = 20^\circ\text{C}$

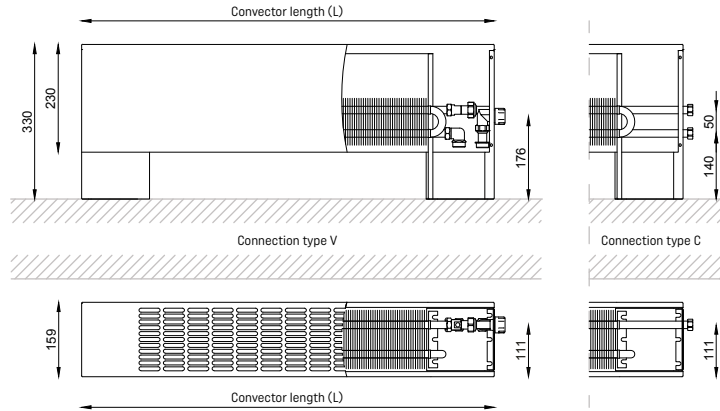
\* where  $\Delta T$  - mean temperature difference. The formula makes it possible to accurately determine the heat output under various operating conditions. Please refer to the corrective factors table on page 43 for a quick conversion of the heat output for selected flow and return temperatures.

**FLOOR-MOUNTED 230 mm high**

**S-C22-23/15,9/L S(C/V) (L/P)**

◀ ORDER CODE

**STANDARD**

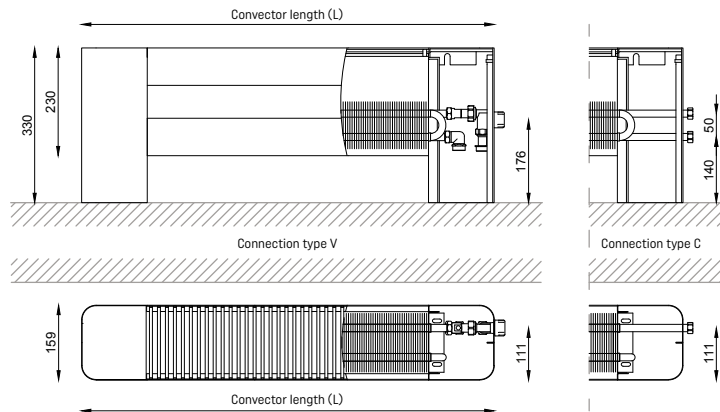


**S-C22-23/15,9/L C(C/V) (L/P)**

◀ ORDER CODE

**CALIENTE**

**CALIENTE**



DIMENSIONS	[mm]
Height	230
Width	159
Length	880÷2580

CONNECTION	TYPE
Connection side	Right (P) standard Left (L) option
Connection type	Type C, Type V
Connection threads	Type C: ¾" female thread Type V: ¾" male thread

Convector length	Heat output $t_s/t_r$ [°C]				Heat output according to the variable average temperature *
	75/65 °C	70/55 °C	55/45 °C	50/40 °C	
L [mm]	$\Phi$ [W]				
880	615	493	306	239	$\Phi=2,9578 \cdot \Delta T^{1,3643}$
1080	821	658	409	319	$\Phi=3,9486 \cdot \Delta T^{1,3643}$
1330	1077	863	536	418	$\Phi=5,1798 \cdot \Delta T^{1,3643}$
1580	1333	1068	664	518	$\Phi=6,4110 \cdot \Delta T^{1,3643}$
1830	1590	1274	792	618	$\Phi=7,6470 \cdot \Delta T^{1,3643}$
2080	1846	1479	920	717	$\Phi=8,8782 \cdot \Delta T^{1,3643}$
2330	2103	1685	1048	817	$\Phi=10,1143 \cdot \Delta T^{1,3643}$
2580	2359	1890	1175	916	$\Phi=11,3455 \cdot \Delta T^{1,3643}$

Standard heating output [W] according to the PN-EN 442-1:2015-02 European Standard, room air temperature  $\Theta_i = 20^\circ\text{C}$

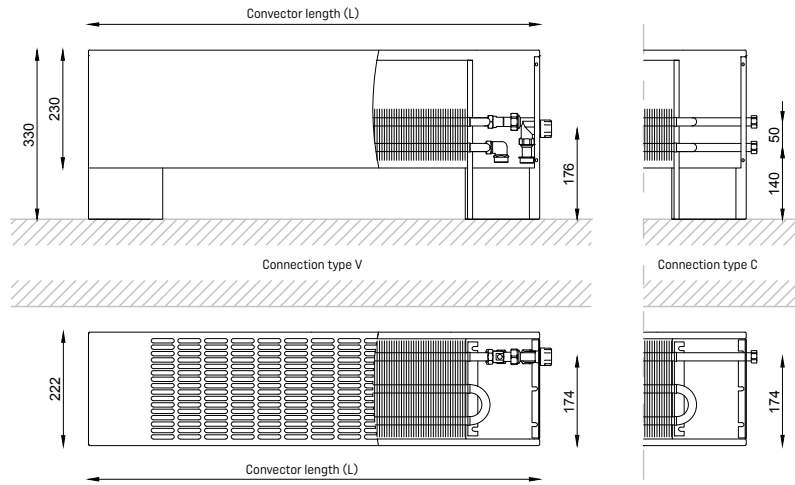
\* where  $\Delta T$  - mean temperature difference. The formula makes it possible to accurately determine the heat output under various operating conditions. Please refer to the corrective factors table on page 44 for a quick conversion of the heat output for selected flow and return temperatures.

**FLOOR-MOUNTED 230 mm high**

**S-G23-23/22,2/L S(C/V) (L/P)**

◀ ORDER CODE

**STANDARD**

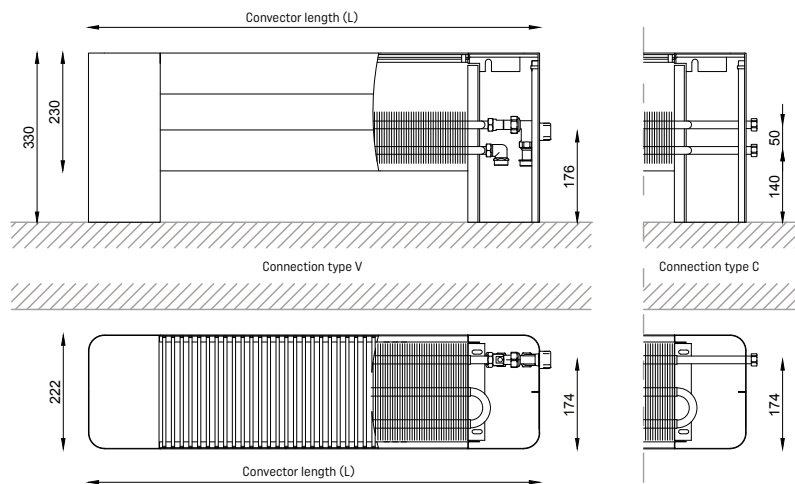


**S-G23-23/22,2/L C(C/V) (L/P)**

◀ ORDER CODE

**CALIENTE**

**CALIENTE**



DIMENSIONS	[mm]
Height	230
Width	222
Length	880÷2580

CONNECTION	TYPE
Connection side	Right (P) standard Left (L) option
Connection type	Type C, Type V
Connection threads	Type C: ¾" female thread Type V: ¾" male thread

Convector length	Heat output $t_s/t_r$ [°C]				Heat output according to the variable average temperature *
	75/65 °C	70/55 °C	55/45 °C	50/40 °C	
L [mm]	$\Phi$ [W]				
880	954	766	479	374	$\Phi=4,8465 \cdot \Delta T^{1,3503}$
1080	1272	1021	638	499	$\Phi=6,4620 \cdot \Delta T^{1,3503}$
1330	1669	1340	837	655	$\Phi=8,4789 \cdot \Delta T^{1,3503}$
1580	2066	1659	1036	810	$\Phi=10,4957 \cdot \Delta T^{1,3503}$
1830	2464	1979	1236	966	$\Phi=12,5176 \cdot \Delta T^{1,3503}$
2080	2861	2297	1435	1122	$\Phi=14,5345 \cdot \Delta T^{1,3503}$
2330	3259	2617	1635	1278	$\Phi=16,5564 \cdot \Delta T^{1,3503}$
2580	3656	2936	1834	1434	$\Phi=18,5732 \cdot \Delta T^{1,3503}$

Standard heating output [W] according to the PN-EN 442-1:2015-02 European Standard, room air temperature  $\Theta_i = 20^\circ\text{C}$

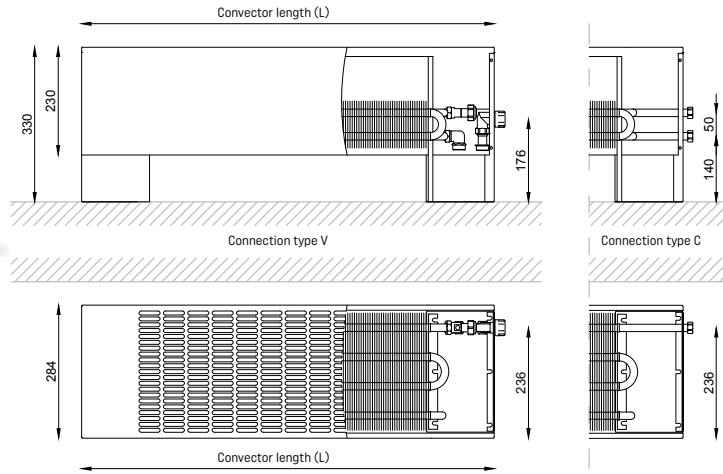
\* where  $\Delta T$  - mean temperature difference. The formula makes it possible to accurately determine the heat output under various operating conditions. Please refer to the corrective factors table on page 44 for a quick conversion of the heat output for selected flow and return temperatures.

**FLOOR-MOUNTED 230 mm high**

**S-G24-23/28,4/L S(C/V) (L/P)**

◀ ORDER CODE

**STANDARD**

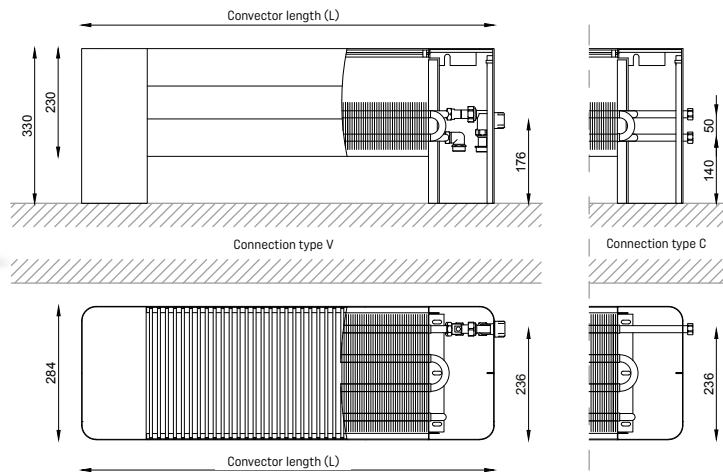


**S-G24-23/28,4/L C(C/V) (L/P)**

◀ ORDER CODE

**CALIENTE**

**CALIENTE**



DIMENSIONS	[mm]
Height	230
Width	284
Length	880÷2580

CONNECTION	TYPE
Connection side	Right (P) standard Left (L) option
Connection type	Type C, Type V
Connection threads	Type C: ¾" female thread Type V: ¾" male thread

Convector length	Heat output $t_s/t_r$ [°C]				Heat output according to the variable average temperature *
	75/65 °C	70/55 °C	55/45 °C	50/40 °C	
L [mm]	Φ [W]				
880	1255	1009	633	496	Φ=6,6404 · ΔT <sup>1,3399</sup>
1080	1673	1346	844	661	Φ=8,8521 · ΔT <sup>1,3399</sup>
1330	2196	1766	1108	867	Φ=11,6194 · ΔT <sup>1,3399</sup>
1580	2719	2187	1371	1074	Φ=14,3866 · ΔT <sup>1,3399</sup>
1830	3242	2608	1635	1281	Φ=17,1539 · ΔT <sup>1,3399</sup>
2080	3765	3028	1899	1487	Φ=19,9212 · ΔT <sup>1,3399</sup>
2330	4287	3448	2162	1693	Φ=22,6832 · ΔT <sup>1,3399</sup>
2580	4810	3869	2426	1900	Φ=25,4504 · ΔT <sup>1,3399</sup>

Standard heating output [W] according to the PN-EN 442-1:2015-02 European Standard, room air temperature  $\theta_i = 20^\circ\text{C}$

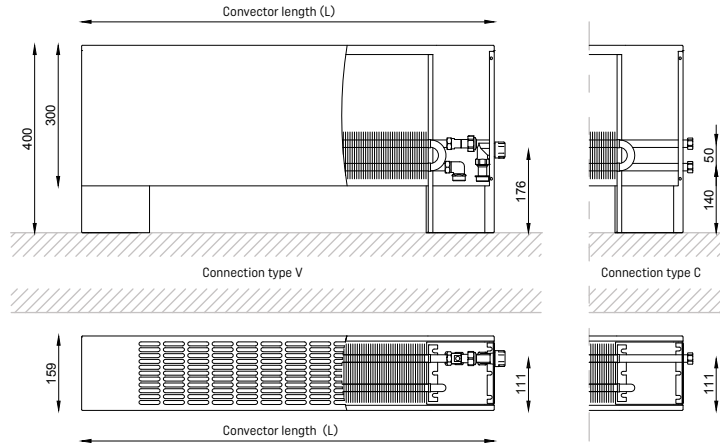
\* where  $\Delta T$  - mean temperature difference. The formula makes it possible to accurately determine the heat output under various operating conditions. Please refer to the corrective factors table on page 44 for a quick conversion of the heat output for selected flow and return temperatures.

**FLOOR-MOUNTED 300 mm high**

**S-C22-30/15,9/L S(C/V) (L/P)**

◀ ORDER CODE

**STANDARD**

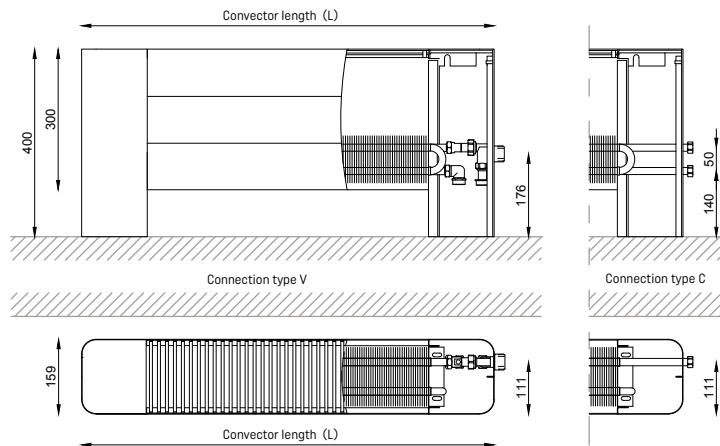


**S-C22-30/15,9/L C(C/V) (L/P)**

◀ ORDER CODE

**CALIENTE**

**CALIENTE**



DIMENSIONS	[mm]
Height	300
Width	159
Length	880÷2580

CONNECTION	TYPE
Connection side	Right (P) standard Left (L) option
Connection type	Type C, Type V
Connection threads	Type C: ¾" female thread Type V: ¾" male thread

Convector length	Heat output $t_s/t_r$ [°C]				Heat output according to the variable average temperature *
	75/65 °C	70/55 °C	55/45 °C	50/40 °C	
L [mm]	Φ [W]				
880	698	562	353	276	Φ=3,7471 · ΔT <sup>1,3362</sup>
1080	930	748	470	368	Φ=4,9925 · ΔT <sup>1,3362</sup>
1330	1221	983	617	484	Φ=6,5547 · ΔT <sup>1,3362</sup>
1580	1511	1216	764	599	Φ=8,1115 · ΔT <sup>1,3362</sup>
1830	1802	1450	911	714	Φ=9,6737 · ΔT <sup>1,3362</sup>
2080	2093	1684	1058	829	Φ=11,2358 · ΔT <sup>1,3362</sup>
2330	2383	1918	1204	944	Φ=12,7926 · ΔT <sup>1,3362</sup>
2580	2674	2152	1351	1059	Φ=14,3548 · ΔT <sup>1,3362</sup>

Standard heating output [W] according to the PN-EN 442-1:2015-02 European Standard, room air temperature  $\Theta_i = 20^\circ\text{C}$

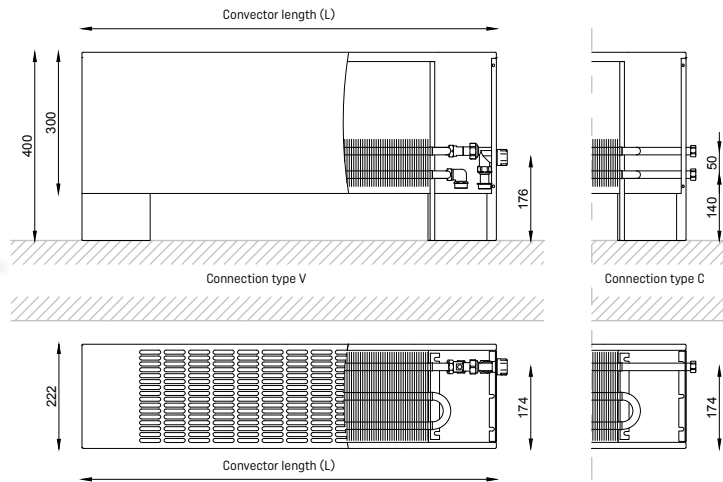
\* where  $\Delta T$  - mean temperature difference. The formula makes it possible to accurately determine the heat output under various operating conditions. Please refer to the corrective factors table on page 45 for a quick conversion of the heat output for selected flow and return temperatures.

**FLOOR-MOUNTED 300 mm high**

**S-G23-30/22,2/L S(C/V) (L/P)**

◀ ORDER CODE

**STANDARD**

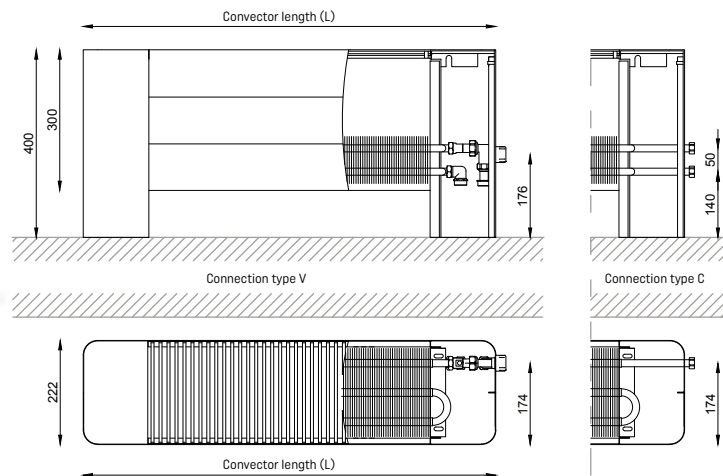


**S-G23-30/22,2/L C(C/V) (L/P)**

◀ ORDER CODE

**CALIENTE**

**CALIENTE**



DIMENSIONS	[mm]
Height	300
Width	222
Length	880÷2580

CONNECTION	TYPE
Connection side	Right (P) standard Left (L) option
Connection type	Type C, Type V
Connection threads	Type C: ¾" female thread Type V: ¾" male thread

Convector length	Heat output $t_s/t_r$ [°C]				Heat output according to the variable average temperature *
	75/65 °C	70/55 °C	55/45 °C	50/40 °C	
L [mm]	$\Phi$ [W]				
880	1072	867	551	434	$\Phi=6,5376 \cdot \Delta T^{1,3036}$
1080	1429	1156	734	579	$\Phi=8,7147 \cdot \Delta T^{1,3036}$
1330	1875	1517	963	760	$\Phi=11,4347 \cdot \Delta T^{1,3036}$
1580	2322	1879	1193	941	$\Phi=14,1607 \cdot \Delta T^{1,3036}$
1830	2768	2240	1422	1121	$\Phi=16,8806 \cdot \Delta T^{1,3036}$
2080	3215	2601	1652	1302	$\Phi=19,6067 \cdot \Delta T^{1,3036}$
2330	3661	2962	1881	1483	$\Phi=22,3266 \cdot \Delta T^{1,3036}$
2580	4108	3324	2111	1664	$\Phi=25,0526 \cdot \Delta T^{1,3036}$

Standard heating output [W] according to the PN-EN 442-1:2015-02 European Standard, room air temperature  $\Theta_i = 20^\circ\text{C}$

\* where  $\Delta T$  - mean temperature difference. The formula makes it possible to accurately determine the heat output under various operating conditions. Please refer to the corrective factors table on page 45 for a quick conversion of the heat output for selected flow and return temperatures.

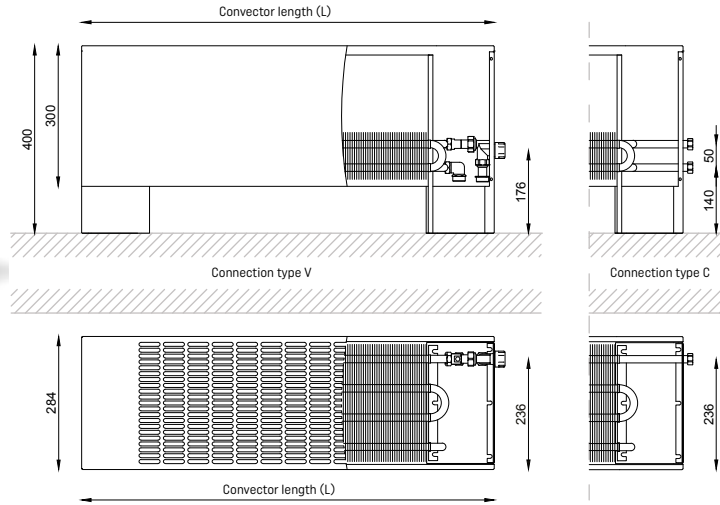


**FLOOR-MOUNTED 300 mm high**

**S-G24-30/28,4/L S(C/V) (L/P)**

◀ ORDER CODE

**STANDARD**

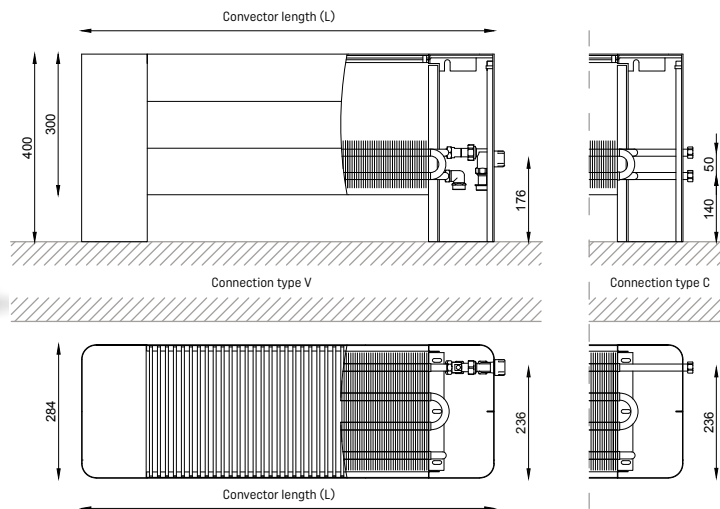


**S-G24-30/28,4/L C(C/V) (L/P)**

◀ ORDER CODE

**CALIENTE**

**CALIENTE**



DIMENSIONS	[mm]
Height	300
Width	284
Length	880÷2580

CONNECTION	TYPE
Connection side	Right (P) standard Left (L) option
Connection type	Type C, Type V
Connection threads	Type C: ¾" female thread Type V: ¾" male thread

Convector length	Heat output $t_s/t_r$ [°C]				Heat output according to the variable average temperature *
	75/65 °C	70/55 °C	55/45 °C	50/40 °C	
L [mm]	$\Phi$ [W]				
880	1405	1137	722	569	$\Phi=8,5617 \cdot \Delta T^{1,3038}$
1080	1874	1516	963	759	$\Phi=11,4196 \cdot \Delta T^{1,3038}$
1330	2459	1990	1263	996	$\Phi=14,9845 \cdot \Delta T^{1,3038}$
1580	3045	2464	1564	1234	$\Phi=18,5554 \cdot \Delta T^{1,3038}$
1830	3631	2938	1865	1471	$\Phi=22,1263 \cdot \Delta T^{1,3038}$
2080	4216	3411	2166	1708	$\Phi=25,6911 \cdot \Delta T^{1,3038}$
2330	4802	3885	2467	1945	$\Phi=29,2621 \cdot \Delta T^{1,3038}$
2580	5387	4359	2768	2182	$\Phi=32,8269 \cdot \Delta T^{1,3038}$

Standard heating output [W] according to the PN-EN 442-1:2015-02 European Standard, room air temperature  $\Theta_i = 20^\circ\text{C}$

\* where  $\Delta T$  - mean temperature difference. The formula makes it possible to accurately determine the heat output under various operating conditions. Please refer to the corrective factors table on page 45 for a quick conversion of the heat output for selected flow and return temperatures.

## CORRECTIVE FACTORS FOR FLOOR-MOUNTED CONVECTORS - 100 mm high

Heat output corrective factors for floor-mounted convectors 100 mm high, for installation temperatures other than 75/65/20°C.

Flow and Return temperatures [°C]		Room air temperature $\theta_i$ [°C]						
$t_s$	$t_r$	5	8	12	16	20	24	32
90	85	1,935	1,843	1,722	1,602	1,485	1,370	1,148
	80	1,858	1,767	1,647	1,529	1,413	1,300	1,080
	75	1,782	1,692	1,573	1,456	1,342	1,230	1,013
	70	1,707	1,617	1,500	1,385	1,272	1,161	0,948
85	80	1,782	1,692	1,573	1,456	1,342	1,230	1,013
	75	1,707	1,617	1,500	1,385	1,272	1,161	0,948
	70	1,632	1,544	1,428	1,314	1,202	1,093	0,883
	65	1,558	1,471	1,356	1,244	1,134	1,026	0,820
80	75	1,632	1,544	1,428	1,314	1,202	1,093	0,883
	70	1,558	1,471	1,356	1,244	1,134	1,026	0,820
	65	1,485	1,399	1,286	1,175	1,066	0,961	0,758
	60	1,413	1,328	1,216	1,107	1,000	0,896	0,696
75	70	1,485	1,399	1,286	1,175	1,066	0,961	0,758
	65	1,413	1,328	1,216	1,107	1,000	0,896	0,696
	60	1,342	1,258	1,148	1,040	0,935	0,832	0,637
	55	1,272	1,189	1,080	0,974	0,870	0,770	0,578
70	65	1,342	1,258	1,148	1,040	0,935	0,832	0,637
	60	1,272	1,189	1,080	0,974	0,870	0,770	0,578
	55	1,202	1,120	1,013	0,909	0,807	0,709	0,521
	50	1,134	1,053	0,948	0,845	0,745	0,649	0,466
65	60	1,202	1,120	1,013	0,909	0,807	0,709	0,521
	55	1,134	1,053	0,948	0,845	0,745	0,649	0,466
	50	1,066	0,987	0,883	0,782	0,684	0,590	0,412
	45	1,000	0,922	0,820	0,721	0,625	0,533	0,359
60	55	1,066	0,987	0,883	0,782	0,684	0,590	0,412
	50	1,000	0,922	0,820	0,721	0,625	0,533	0,359
	45	0,935	0,858	0,758	0,661	0,567	0,477	0,309
	40	0,870	0,795	0,696	0,602	0,510	0,422	0,260
55	50	0,935	0,858	0,758	0,661	0,567	0,477	0,309
	45	0,870	0,795	0,696	0,602	0,510	0,422	0,260
	40	0,807	0,733	0,637	0,544	0,455	0,370	0,214
	35	0,745	0,672	0,578	0,488	0,401	0,319	0,170
50	45	0,807	0,733	0,637	0,544	0,455	0,370	0,214
	40	0,745	0,672	0,578	0,488	0,401	0,319	0,170
	35	0,684	0,613	0,521	0,433	0,349	0,270	0,128
45	40	0,684	0,613	0,521	0,433	0,349	0,270	0,128
	35	0,625	0,555	0,466	0,380	0,299	0,223	0,089

## CORRECTIVE FACTORS FOR FLOOR-MOUNTED CONVECTORS - 160 mm high

Heat output corrective factors for floor-mounted convectors 160 mm high, for installation temperatures other than 75/65/20°C.

Flow and Return temperatures [°C]		Room air temperature $\theta_i$ [°C]						
$t_s$	$t_r$	5	8	12	16	20	24	32
90	85	2,004	1,904	1,772	1,643	1,517	1,394	1,156
	80	1,920	1,821	1,691	1,564	1,439	1,318	1,084
	75	1,838	1,740	1,611	1,486	1,363	1,244	1,014
	70	1,756	1,659	1,533	1,409	1,288	1,170	0,945
85	80	1,838	1,740	1,611	1,486	1,363	1,244	1,014
	75	1,756	1,659	1,533	1,409	1,288	1,170	0,945
	70	1,675	1,580	1,455	1,333	1,214	1,099	0,877
	65	1,595	1,501	1,378	1,258	1,141	1,028	0,811
80	75	1,675	1,580	1,455	1,333	1,214	1,099	0,877
	70	1,595	1,501	1,378	1,258	1,141	1,028	0,811
	65	1,517	1,424	1,303	1,185	1,070	0,959	0,746
	60	1,439	1,348	1,229	1,113	1,000	0,891	0,683
75	70	1,517	1,424	1,303	1,185	1,070	0,959	0,746
	65	1,439	1,348	1,229	1,113	1,000	0,891	0,683
	60	1,363	1,273	1,156	1,042	0,931	0,824	0,622
	55	1,288	1,200	1,084	0,972	0,864	0,759	0,562
70	65	1,363	1,273	1,156	1,042	0,931	0,824	0,622
	60	1,288	1,200	1,084	0,972	0,864	0,759	0,562
	55	1,214	1,127	1,014	0,904	0,798	0,696	0,503
	50	1,141	1,056	0,945	0,837	0,734	0,634	0,447
65	60	1,214	1,127	1,014	0,904	0,798	0,696	0,503
	55	1,141	1,056	0,945	0,837	0,734	0,634	0,447
	50	1,070	0,986	0,877	0,772	0,671	0,574	0,393
	45	1,000	0,918	0,811	0,708	0,609	0,515	0,340
60	55	1,070	0,986	0,877	0,772	0,671	0,574	0,393
	50	1,000	0,918	0,811	0,708	0,609	0,515	0,340
	45	0,931	0,851	0,746	0,646	0,550	0,458	0,290
	40	0,864	0,785	0,683	0,585	0,492	0,403	0,242
55	50	0,931	0,851	0,746	0,646	0,550	0,458	0,290
	45	0,864	0,785	0,683	0,585	0,492	0,403	0,242
	40	0,798	0,721	0,622	0,527	0,436	0,351	0,197
	35	0,734	0,658	0,562	0,469	0,382	0,300	0,154
50	45	0,798	0,721	0,622	0,527	0,436	0,351	0,197
	40	0,734	0,658	0,562	0,469	0,382	0,300	0,154
	35	0,671	0,597	0,503	0,414	0,330	0,252	0,115
45	40	0,671	0,597	0,503	0,414	0,330	0,252	0,115
	35	0,609	0,538	0,447	0,361	0,280	0,206	0,079

## CORRECTIVE FACTORS FOR FLOOR-MOUNTED CONVECTORS - 230 mm high

Heat output corrective factors for floor-mounted convectors 230 mm high, for installation temperatures other than 75/65/20°C.

Flow and Return temperatures [°C]		Room air temperature $\theta_i$ [°C]						
$t_s$	$t_r$	5	8	12	16	20	24	32
90	85	1,968	1,872	1,745	1,622	1,500	1,381	1,151
	80	1,887	1,792	1,668	1,545	1,426	1,308	1,082
	75	1,808	1,714	1,591	1,470	1,352	1,236	1,014
	70	1,730	1,637	1,515	1,396	1,279	1,166	0,946
85	80	1,808	1,714	1,591	1,470	1,352	1,236	1,014
	75	1,730	1,637	1,515	1,396	1,279	1,166	0,946
	70	1,652	1,561	1,440	1,323	1,208	1,096	0,880
	65	1,576	1,485	1,367	1,251	1,137	1,027	0,816
80	75	1,652	1,561	1,440	1,323	1,208	1,096	0,880
	70	1,576	1,485	1,367	1,251	1,137	1,027	0,816
	65	1,500	1,411	1,294	1,180	1,068	0,960	0,752
	60	1,426	1,337	1,222	1,110	1,000	0,893	0,690
75	70	1,500	1,411	1,294	1,180	1,068	0,960	0,752
	65	1,426	1,337	1,222	1,110	1,000	0,893	0,690
	60	1,352	1,265	1,151	1,041	0,933	0,828	0,629
	55	1,279	1,194	1,082	0,973	0,867	0,765	0,570
70	65	1,352	1,265	1,151	1,041	0,933	0,828	0,629
	60	1,279	1,194	1,082	0,973	0,867	0,765	0,570
	55	1,208	1,124	1,014	0,907	0,803	0,702	0,513
	50	1,137	1,054	0,946	0,841	0,740	0,641	0,457
65	60	1,208	1,124	1,014	0,907	0,803	0,702	0,513
	55	1,137	1,054	0,946	0,841	0,740	0,641	0,457
	50	1,068	0,987	0,880	0,777	0,678	0,582	0,403
	45	1,000	0,920	0,816	0,715	0,618	0,524	0,350
60	55	1,068	0,987	0,880	0,777	0,678	0,582	0,403
	50	1,000	0,920	0,816	0,715	0,618	0,524	0,350
	45	0,933	0,854	0,752	0,654	0,559	0,468	0,300
	40	0,867	0,790	0,690	0,594	0,501	0,413	0,251
55	50	0,933	0,854	0,752	0,654	0,559	0,468	0,300
	45	0,867	0,790	0,690	0,594	0,501	0,413	0,251
	40	0,803	0,727	0,629	0,536	0,446	0,360	0,205
	35	0,740	0,666	0,570	0,479	0,392	0,310	0,162
50	45	0,803	0,727	0,629	0,536	0,446	0,360	0,205
	40	0,740	0,666	0,570	0,479	0,392	0,310	0,162
	35	0,678	0,606	0,513	0,424	0,340	0,261	0,121
	40	0,678	0,606	0,513	0,424	0,340	0,261	0,121
45	40	0,678	0,606	0,513	0,424	0,340	0,261	0,121
	35	0,618	0,547	0,457	0,371	0,290	0,214	0,084

## CORRECTIVE FACTORS FOR FLOOR-MOUNTED CONVECTORS - 300 mm high

Heat output corrective factors for floor-mounted convectors 300 mm high, for installation temperatures other than 75/65/20°C.

Flow and Return temperatures [°C]		Room air temperature $\theta_i$ [°C]						
$t_s$	$t_r$	5	8	12	16	20	24	32
90	85	1,932	1,840	1,719	1,600	1,484	1,369	1,147
	80	1,855	1,764	1,645	1,527	1,412	1,299	1,080
	75	1,779	1,689	1,571	1,455	1,341	1,229	1,013
	70	1,704	1,615	1,498	1,383	1,271	1,161	0,948
85	80	1,779	1,689	1,571	1,455	1,341	1,229	1,013
	75	1,704	1,615	1,498	1,383	1,271	1,161	0,948
	70	1,630	1,542	1,426	1,313	1,202	1,093	0,883
	65	1,556	1,469	1,355	1,243	1,133	1,026	0,820
80	75	1,630	1,542	1,426	1,313	1,202	1,093	0,883
	70	1,556	1,469	1,355	1,243	1,133	1,026	0,820
	65	1,484	1,398	1,285	1,174	1,066	0,961	0,758
	60	1,412	1,327	1,215	1,106	1,000	0,896	0,697
75	70	1,484	1,398	1,285	1,174	1,066	0,961	0,758
	65	1,412	1,327	1,215	1,106	1,000	0,896	0,697
	60	1,341	1,257	1,147	1,040	0,935	0,833	0,638
	55	1,271	1,188	1,080	0,974	0,871	0,770	0,579
70	65	1,341	1,257	1,147	1,040	0,935	0,833	0,638
	60	1,271	1,188	1,080	0,974	0,871	0,770	0,579
	55	1,202	1,120	1,013	0,909	0,808	0,709	0,522
	50	1,133	1,053	0,948	0,845	0,746	0,649	0,467
65	60	1,202	1,120	1,013	0,909	0,808	0,709	0,522
	55	1,133	1,053	0,948	0,845	0,746	0,649	0,467
	50	1,066	0,987	0,883	0,783	0,685	0,591	0,413
	45	1,000	0,922	0,820	0,721	0,626	0,533	0,360
60	55	1,066	0,987	0,883	0,783	0,685	0,591	0,413
	50	1,000	0,922	0,820	0,721	0,626	0,533	0,360
	45	0,935	0,858	0,758	0,661	0,568	0,478	0,310
	40	0,871	0,795	0,697	0,602	0,511	0,423	0,261
55	50	0,935	0,858	0,758	0,661	0,568	0,478	0,310
	45	0,871	0,795	0,697	0,602	0,511	0,423	0,261
	40	0,808	0,734	0,638	0,545	0,456	0,371	0,215
	35	0,746	0,673	0,579	0,489	0,402	0,320	0,170
50	45	0,808	0,734	0,638	0,545	0,456	0,371	0,215
	40	0,746	0,673	0,579	0,489	0,402	0,320	0,170
	35	0,685	0,614	0,522	0,434	0,350	0,271	0,129
45	40	0,685	0,614	0,522	0,434	0,350	0,271	0,129
	35	0,626	0,556	0,467	0,381	0,300	0,224	0,090

### FLOOR-MOUNTED CONVECTORS WATER CAPACITY

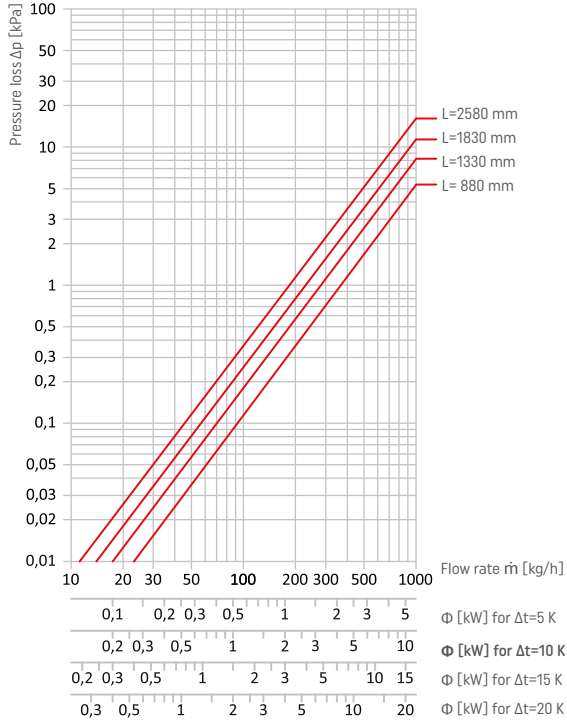
Convector length L [mm]	Convector type			
	S-C12-10/15,9/L	S-G14-10/28,4/L S-C22-16/15,9/L S-C22-23/15,9/L S-C22-30/15,9/L	S-G23-16/22,2/L S-G23-23/22,2/L S-G23-30/22,2/L	S-G24-16/28,4/L S-G24-23/28,4/L S-G24-30/28,4/L
Water capacity [dm <sup>3</sup> ]				
880	0,24	0,49	0,94	1,03
1080	0,29	0,61	1,19	1,28
1330	0,37	0,77	1,51	1,59
1580	0,45	0,93	1,82	1,90
1830	0,52	1,08	2,13	2,22
2080	0,60	1,24	2,44	2,53
2330	0,68	1,39	2,75	2,84
2580	0,76	1,55	3,07	3,15

### DECLARED PROPERTIES

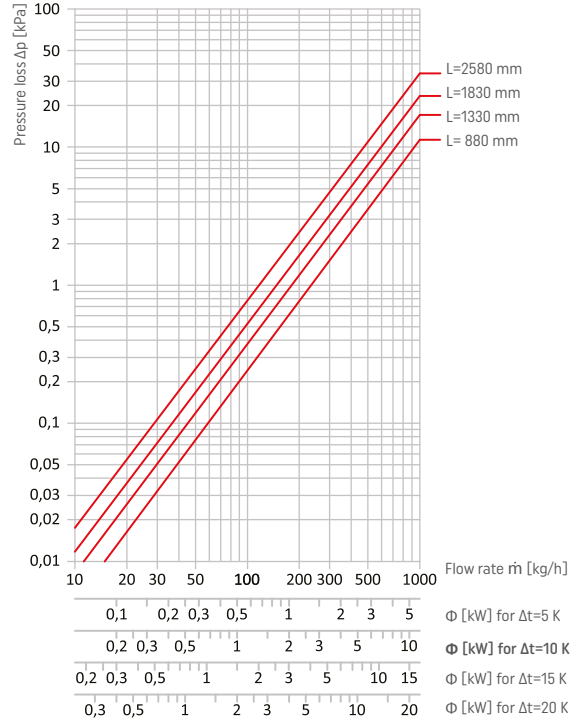
Fire safety class:	Class A1
Harmful substances release:	None
Water tightness under the high pressure:	No leakage at pressure 2,08 times higher than maximum acceptable operating pressure
Resistance to pressure:	No cracks at pressure 2,70 times higher than maximum acceptable operating pressure
Maximum working pressure:	1,6 MPa
Surface temperature:	maximum 95°C
Corrosion resistance:	No corrosion after 100 hours in humid environment
Resistance to weak impacts:	Class 0

**PRESSURE LOSS**

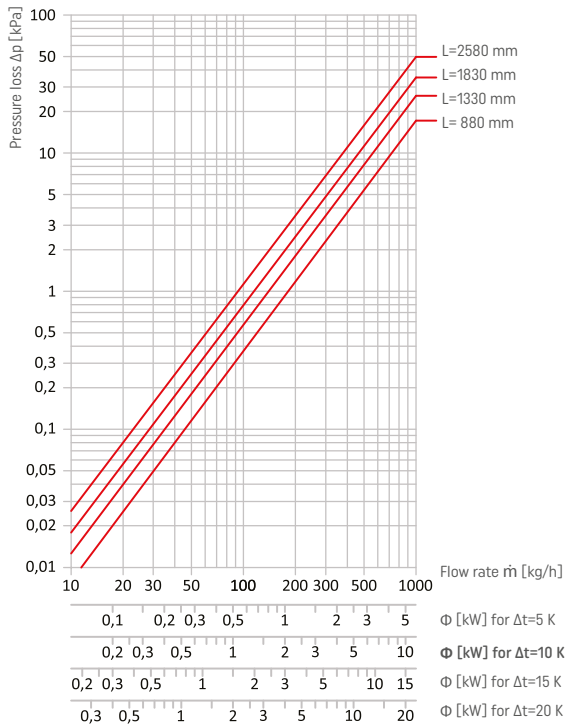
- S-C12-10/15,9/L



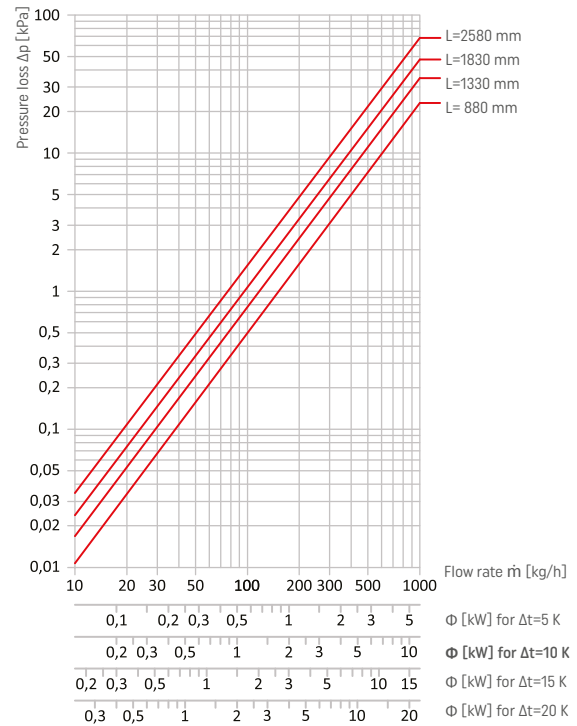
- S-G14-10/28,4/L
- S-C22-16/15,9/L
- S-C22-23/15,9/L
- S-C22-30/15,9/L



- S-G23-16/22,2/L
- S-G23-23/22,2/L
- S-G23-30/22,2/L



- S-G24-16/28,4/L
- S-G24-23/28,4/L
- S-G24-30/28,4/L





# HOW TO SELECT THE CORRECT HEATER

**Example calculations for the following convector:** N-C22-60/14,7/133  
 Heat output for 75/65/20°C:  $\Phi=1577$  W  
 Installation temperatures:  $t_f/t_r/\theta_i = 65/55/20^\circ\text{C}$

**METHOD 1**  
**based on the corrective factors**

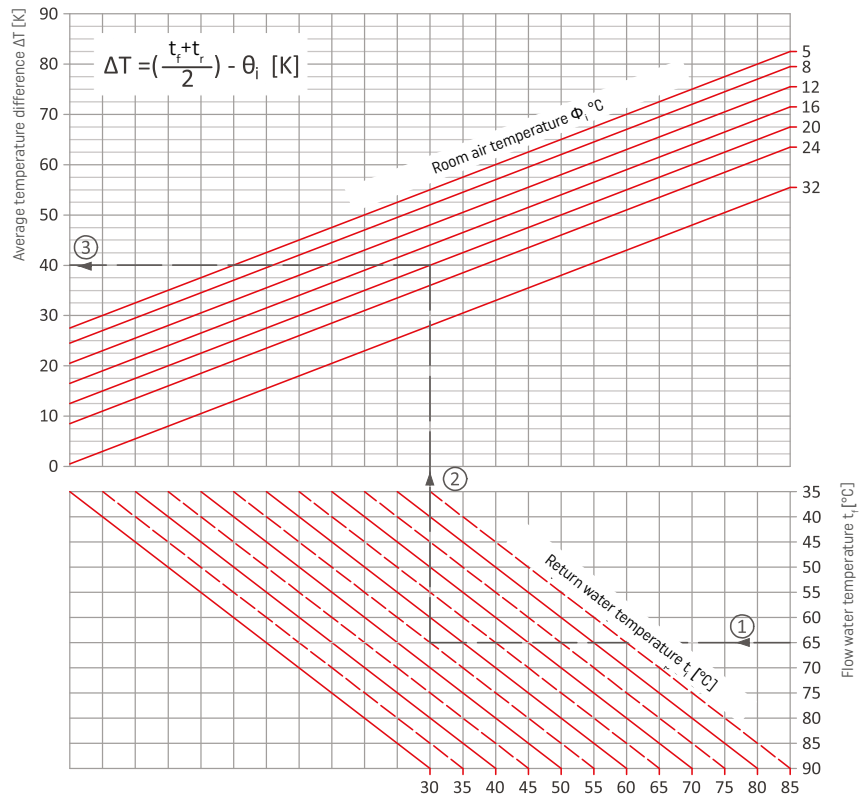
Read out the right corrective factor for project installation temperatures - flow and return temperature and room air temperature. In this case, according to the table on page 26 corrective factors is 0,753. Next step is to multiple heat output value for standard installation parameters 75/65/20°C by corrective factor: Heat output for 65/55/20°C:  $\Phi=1594 \cdot 0,753 = 1200$  W.

**METHOD 2**  
**based on heating output**

Calculate/read the average temperature difference for respective parameters, using the graph.

The graph allows for easy readout of the average temperature difference  $\Delta T$  for the selected parameters of heating water  $t_f$  and  $t_r$ , depending on the room temperature  $\theta_i$ .

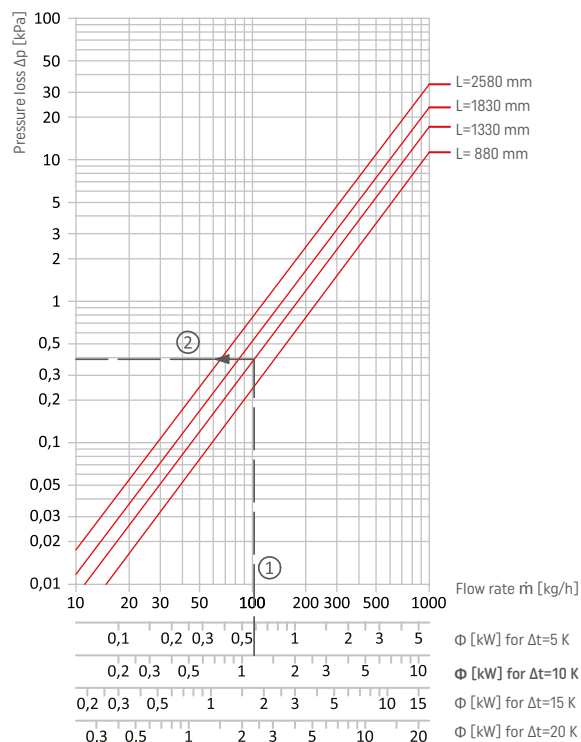
1. First draw a horizontal line from flow temperature  $t_f=65^\circ\text{C}$  to its crossing with the slanted line of outlet temperature  $t_r=55^\circ\text{C}$
2. Then draw a vertical line from the crossing point with the slanted line of room temperature  $\theta_i=20^\circ\text{C}$
3. Draw a horizontal line and read the temperature difference of  $\Delta T=40$  K. Then use the equation for heating output of convectors for different conditions, for the Caliente N-C22-60/14,7/133 convector it will be:  $\Phi=11,0649 \cdot \Delta T^{1,2705}$  [W]
4. Heating power for the selected parameters 65/55/20°C:  $\Phi=11,0649 \cdot 40^{1,2705} = 1200$  W



## PRESSURE LOSS

Based on convector selection data presented above we selected the heating output of **1200 W** for 65/55/20°C temperatures. Cooling temperature (the difference between flow and return temperatures) is  $\Delta t=10^\circ\text{C}$ .

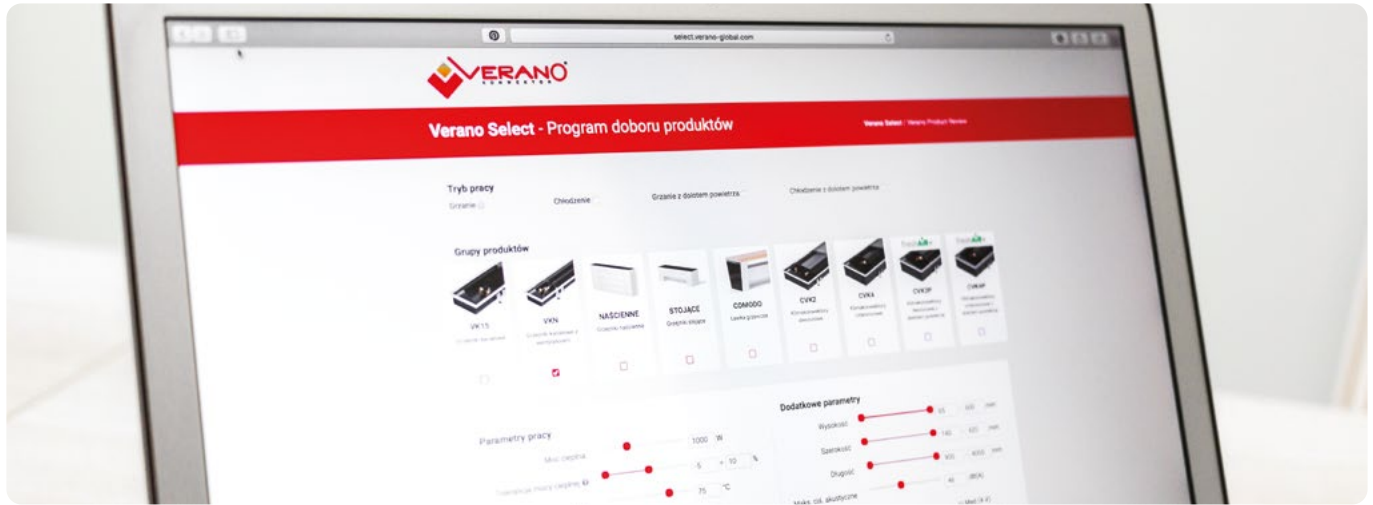
1. Using the axis for 10°C cooling temperature draw a vertical line from the 1.20kW heat output to its crossing with the slanted line representing the length of the convector  $L=1330$  mm.
2. Draw a horizontal line from that crossing and read the pressure loss  $\Delta p=0,39$  kPa.





## HOW TO SELECT THE CORRECT HEATER

- METHOD 3  
based on **VERANO SELECT** program



The **VERANO SELECT** program enables the practical selection of a convector for any operating parameters, depending on the heat demand in the room.

The program also allows you to create lists of a group of products and export the list to PDF or XLS formats.

Scan the QR code:



The product selection programme is available at [WWW.SELECTVERANO-GLOBAL.COM](http://WWW.SELECTVERANO-GLOBAL.COM)

## HEATER CONTROL

Depending on the needs, it is possible to control the heaters locally with the VER-15S regulator or control the heaters located in different zones using the VER-8S WiFi and VER-16S WiFi controllers. The undoubted advantage of VER-8S WiFi and VER-16S WiFi controllers is a possible to expand the system with other peripherals communicating wirelessly with controllers, as well as the ability to control via a web application or smartphone application.



### VER-15S CONTROLLER

- room temperature control
- manual, daily, weekly program
- built-in temperature sensor
- 3mm glass front panel with physical buttons
- battery powered (2 x AA 1.5 V)
- surface mounting



### VER-8S WIFI CONTROLLER

- temperature control in max. 8 zones
- wireless temperature sensor
- individual operating mode for each zone
- control via a web application and for smartphones
- physical buttons
- powered by 230 V AC
- installation in an electrical box DN 60 mm



### VER-16S WIFI CONTROLLER

- temperature control in max. 16 zones
- built-in temperature sensor
- individual operating mode for each zone
- control via a web application and for smartphones
- front panel made of 2mm glass with a large, color touch screen
- powered by 230 V AC
- installation in an electrical box DN 60 mm

## WALL-/FLOOR-MOUNTED CONVECTORS AND COMODO CONTROL OPTIONS

The wall-mounted and floor-mounted convectors are equipped with water exchanger. Also, V-type convectors and COMODO heating benches have a built-in thermostatic valve that allows for different heating water flow control methods to be applied. The basic solution available for V-type radiators is the assembly of thermostatic head on the built-in valve, and for controlling COMODO is the assembly of TRV head with capillary, that allows for the installation of temperature sensor and adjustment knob to the wall of the room.

Use of room controller and actuators allows for the simultaneous control of several convectors/COMODO and scheduling their operation. What is required is the cabling between the actuators, controllers and power supply source. Due to aesthetic considerations (cables of actuators) the wall-mounted and floor-mounted heaters may be optionally adjusted to working with actuators, by using special valves that allow the assembly of actuators inside the radiator casing. Please contact us prior to finalizing the order if the optional adjustment of convectors to internal installation of actuators is required.

The V-type heaters in CALIENTE finish can be equipped with built-in actuators and dedicated controller. The C-type radiators have no built-in thermostatic valve – the exemplary control method is the assembly of valve and thermostatic head between the convector and the installation.

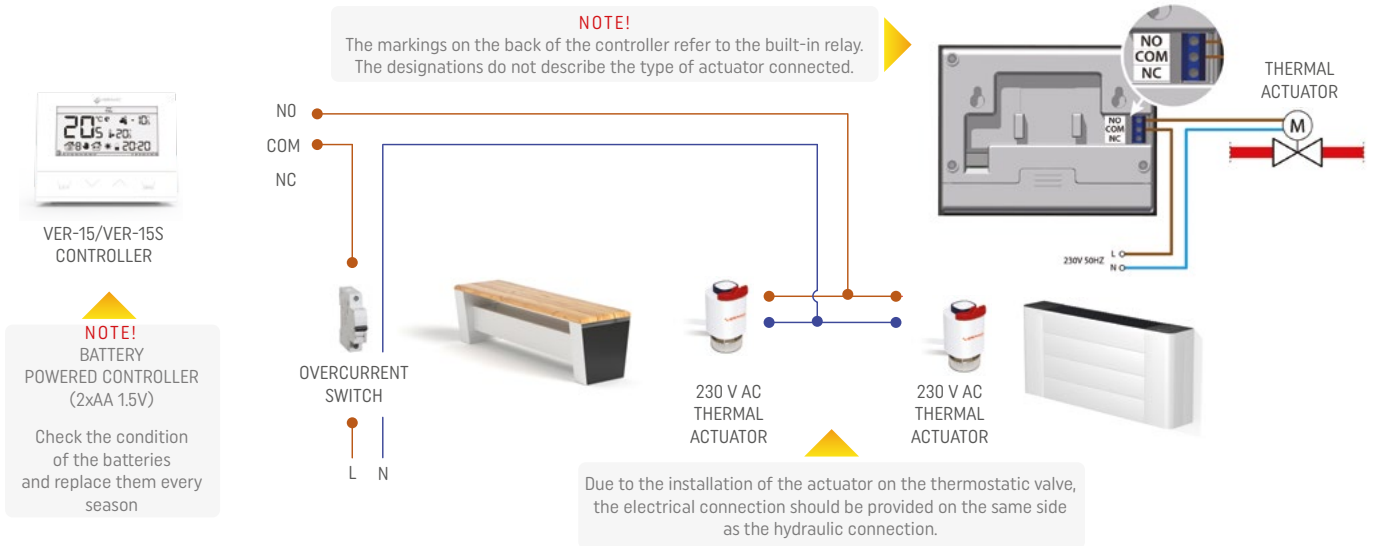
In the case of wall-/floor-mounted convectors and Comodo heating bench, it is also possible to use a wireless system, the elements of which are presented on page 51.

**ATTENTION!**

Electric wiring should be done only by the electrical skilled worker who can confirm his membership in an approved self-certification scheme. The power can only be connected after the correctness of the whole connection diagram was verified.



Connection space of the COMODO heating bench



Exemplary wiring diagram for convectors with the use of a room temperature controller and NC type ON/OFF actuators

## WIRELESS CONTROL SYSTEM FOR WALL-/FLOOR-MOUNTED CONVECTORS AND COMODO

The wireless control system allows you to adjust the maximum of:

- 8 different zones when using VER-8S WiFi controllers
- 16 different zones when using the VER-16S WiFi controller.

Each zone can accommodate up to 6 wireless VERSTT actuators controlling the operation of wall-/floor-mounted convectors or COMODO.

Each of the heating zones can be assigned its own individual operating mode (constant temperature, time limit or 6 different work schedules). The controllers can update the software via the USB port.

The controller is to be installed in the installation box  $\varnothing=60\text{mm}$ .

Additional devices available as part of the wireless system:

- VET-CT temperature sensor
- VER-RP room controller

- VER-RP230 room controller (230V powered)
- VER-COO window opening sensor (max. 6 pcs in the zone)
- VER-CTZ outside temperature sensor

The VER-8S WiFi controller, VER-16S WiFi and the VER-RP230 room controller are powered directly from the 230 V AC. Other devices of the wireless system are battery powered.

The VER-8S WiFi controller comes with a wireless temperature sensor.

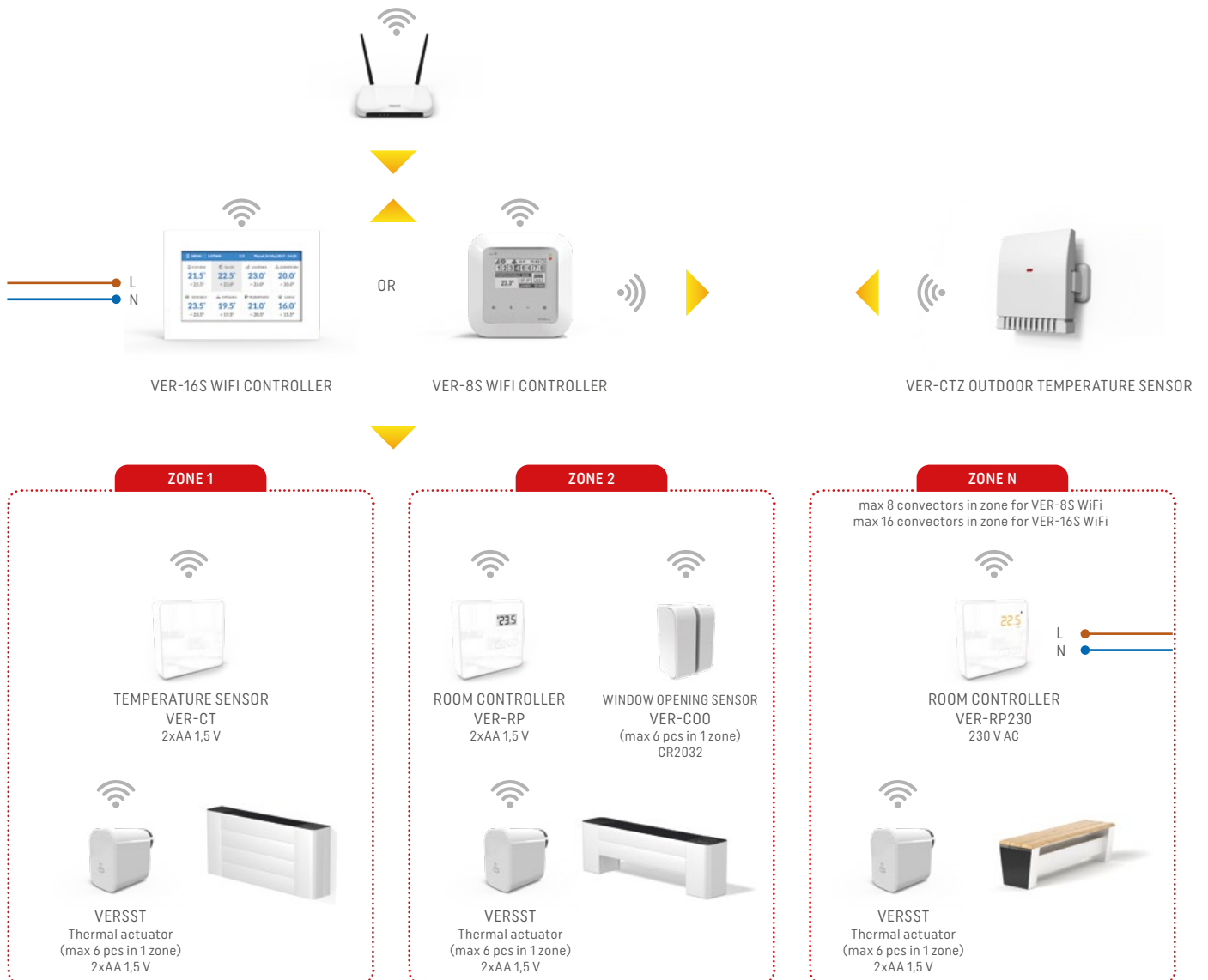
From the level of the web application (verano.emodul.eu) or smartphone application (downloadable from the Google Play store) it is possible to remotely control the controllers, including:

- preview of the current parameters of the controller,
- editing parameters available from the controller level,
- access to temperature history,

- access to alarm history,
- the ability to support many internet modules from one user account,
- activation of e-mail notifications about controller alarms.



An exemplary view of the application for wireless control of convectors



An exemplary connection diagram of several heaters located in different zones/rooms with the use of the main wireless controller and local temperature controllers/sensors and other devices of the wireless system.

NOTE: Controllers and other battery-powered devices should be checked for battery condition. Battery life up to 2 years of operation.

NOTE: Electrical connections may only be made by qualified electrician following relevant EN standards. Supply voltage can only be enabled after validating all connections with diagram connections.

## CONTROLLING THE CALIENTE CONVECTORS WITH USE OF THE BUILT-IN VER-34 CONTROLLER

The floor-mounted and wall-mounted CALIENTE casing convectors can be equipped with built-in VER-34 controller as an option.

This controller has a glass finish, LED display and intuitive buttons.

VER-34 allows for precise setting of expected room temperature and readout of current temperature.

The VER-34 controller is available in black or white. The VER-34 controller forms an integral part of the convector with CALLIENTE casing.

The controller set includes:

- VER-34 controller
- glass masking panel in the same colour as the controller
- VERSST24 actuator to be assembled on the thermostatic valve.

The CALLIENTE convector with built-in controller is designed for assembly of the actuator within the heater casing.

The built-in VER-34 controller can be used in CALIENTE convectors that are 160mm high or higher than that.

NOTE – the controller can only be installed on the right side of the convector.



## VER-34 CONTROLLER

The VER-34 controller is designed to work with CALIENTE convectors. It allows the user to set the room temperature. Once this temperature is reached, the controller closes the heater valve via thermal actuator.

The room temperature is measured with use of the temperature sensor that is built-in the controller.

At the idle mode the controller screen displays current room temperature. After pressing the PLUS or MINUS button the set temperature will be displayed. The value of the set temperature can be adjusted by pressing the PLUS and MINUS buttons.

The built-in light intensity sensor adjust the screen brightness to the current room conditions.

**Controllers for floor-mounted radiators:**

- S-C22 type, white or black VERSC22B or VERSC22C
- S-G23 type, white or black VERSG23B or VERSG23C
- S-G24 type, white or black VERSG24B or VERSG24C

**Controllers for wall-mounted convectors:**

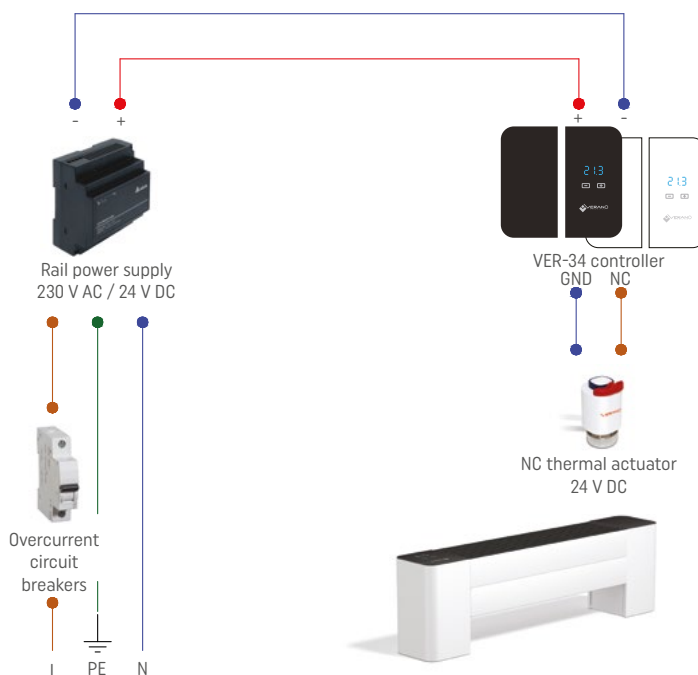
- N-C22 type, white or black VERNC22B or VERNC22C
- N-G23 type, white or black VERNG23B or VERNG23C

All controllers are to be supplied with 24 V DC voltage.

VERSST24 actuator: 24 V AC/DC power supply; PVC 2x0.75 mm 1m connection cable, M30x1.5.



## ELECTRICAL CONNECTION DIAGRAM



Wiring diagram for the CALIENTE convectors with the use of a VER-34 controller and VERSST24 actuator

The VER-34 controller requires 24 V DC power supply for its correct operations.

Connection of the power cable and the actuator circuit should be executed, as per the attached diagram. Due to the use of the VER-34 controller the power should be connected to the right side of the convector.

### ATTENTION!

Electric wiring should be done only by the electrical skilled worker who can confirm his membership in an approved self-certification scheme. The power can only be connected after the correctness of the whole connection diagram was verified.

The control accessories should be powered with use of 24 V DC voltage. It is prohibited to power up the control accessories directly from 230 V AC grid.

## INSTALLATION AND MAINTENANCE MANUAL OF WALL-MOUNTED CONVECTORS

Take the convector out of its package, remove the front panel, and then measure and transfer to the wall the location of assembly spots of the back casing.

The distance of convector to floor level and its distance to the window level should be both no less than 10 cm.

After preparation of holes and insertion of wall plugs hang the back casing and the heat exchanger on the wall. Secure all fastening screws tightly.

The next step is the hydraulic connection of exchanger with central heating installation – make sure that the connectors were correctly counter-locked. V-type convectors are used with the so-called H-valves.

In V-type convectors thermostatic valve is to be connected to the central heating flow piping. In C-type convectors central heating flow piping is to be connected to the thermostatic valve installed on the upper connector of convector.

After completed hydraulic works put on the front panel and fasten the fastening screw that hold it from underneath. The V-type convector assembly is completed with the screwing in the TRV head onto the valve, in case of Caliente convectors – with assembly of the decorative grille.

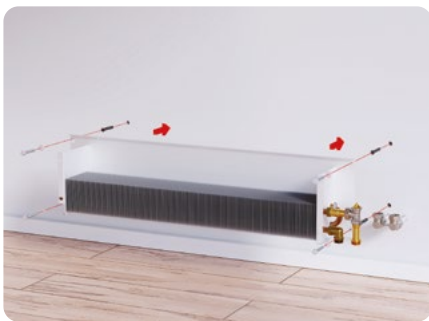
For Caliente convectors with built-in actuator or a dedicated VER-34 controller, the controller or the wireless head should be installed prior to installation of the front panel of the casing.

Wireless head can be installed instead of the thermostatic head or the actuator. Page 51 includes the description of convector control with use of the wireless system.

Wall-mounted convector should not be covered by furniture, drapes or another interior finish elements.

At least once a year, prior to the heating season, the convector should be cleaned from the dust in the exchanger. Precise cleaning is possible after removing the front casing panel, or in case of the Caliente convectors, after removal of the decorative grille.

Detailed information can be found in manuals for the respective types of convectors.



## INSTALLATION AND MAINTENANCE MANUAL OF FLOOR-MOUNTED CONVECTORS

Take the convector out of its package, remove the leg covers and the casing (V-type Standard convectors) or grille (Caliente convectors) and place the convector in the desired installation position.

Then mark the spots for plug holes of the heat exchanger and casing on the floor.

Floor-mounted convectors that are longer than 1330 mm have an additional, middle support leg. Put the convector to the side and drill the holes and insert the plugs into the floor. Install the heat exchanger first, fasten its support in appropriate locations. The next step is its hydraulic connection with the central heating installation – make sure that the connectors were correctly counter-locked.

In V-type convectors thermostatic valve is to be connected to the central heating flow piping. In C-type convectors central heating flow piping is to be connected to the thermostatic valve installed on the upper connector of heater.

After finished assembly of the exchanger assemble the casing (V-type Standard convectors) or install the grille (Caliente convectors).

Finish the assembly of the convector by placing the masking panels of legs and screwing in the thermostatic head or wireless thermostatic valve.

In case of Caliente convector with built-in actuator or a dedicated VER-34 controller the actuator or the wireless head should be installed prior to installation of the front panel of the casing.

In case of a C-type convector the hydraulic connection is performed after closing the casing with leg-masking elements. After the connection, make sure that the connectors were correctly counter-locked.

Floor-mounted convectors should not be covered by furniture, drapes or other furnishings.

Floor-mounted convectors are not adjusted to bearing loads – one should not attempt to sit on them or place heavy objects on top.

At least once a year, prior to the heating season, the convectors should be cleaned from the dust on the exchanger.



## TOOLS FOR DESIGNERS

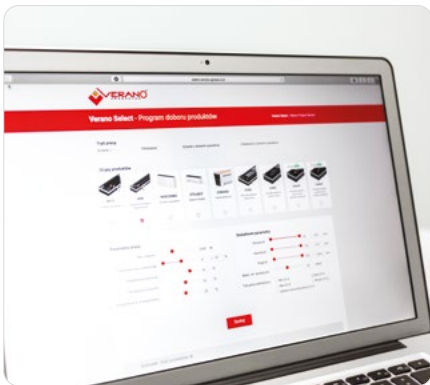
We invite you to visit the properly prepared website subpage dedicated to designers, which contains the necessary information about computer-aided design programs: [www.veranoconvector.co.uk/for-engineering-consultants](http://www.veranoconvector.co.uk/for-engineering-consultants).



### BIM MODELING

Design documentation made in BIM technology is becoming a standard in Poland and around the world, which is why VERANO, in order to meet the expectations of designers, provides downloadable models of wall-/floor-mounted convectors and COMODO heating benches. They will certainly accelerate the project preparation process and improve inter-branch communication.

The BIM VERANO models enable the modification of the convector dimensions and, in the case of CALIENTE convectors, the choice of the type of the grille. They also provide all information about the parameters of the products, and allow the heating output of the device to be measured, depending on the operating parameters of the installation.



### VERANO SELECT

The Verano Select selection program allows you to search for and select wall-/floor-mounted convectors and COMODO heating benches for any operating parameters and required dimensions of the device set by the user. The selection results provide the necessary information about the device needed to design the installation.

The program allows you to create product lists and download them as a PDF or XLS file. The constantly updated database of all VERANO products means that the statements generated in the program constitute an integral attachment to the design documentation.



### INSTALSOFT PROGRAMS

The Instal-System calculation software package is intended for designing heating and sanitary installations inside buildings. The package includes programs for calculating heat losses and seasonal energy demand, designing central heating and surface heating installations, preparing bills and cost estimates of materials.

We especially recommend a dedicated program for selecting heaters: Verano-convector - Selection of the heaters PL.



### SANKOM PROGRAMS

The Sankom software package is used to support the calculation of the design heat load of rooms, the determination of the seasonal demand for thermal energy for heating buildings and the preparation of Energy Certificates for buildings and their individual parts. Sankom Auditor C.O. is designed to graphically support the

design of new central heating installations as well as regulation of existing installations (e.g. in insulated buildings). The program also allows you to design a network of pipes in chilled water installations. We especially recommend the VERANO SDG 2.0 heater selection program.

**HEATEST, s. r. o.**  
Býkev č. p. 84, PSC 276 01, Česká republika  
oznamovaná laboratoř 2693  
notified laboratory 2693

**PROTOKOL  
O POSOUZENÍ VLASTNOSTÍ VÝROBKŮ  
PRODUCT PERFORMANCE ASSESSMENT  
REPORT**

podle nařízení Evropského parlamentu a Rady (EU) č. 305/2011 ze dne 9. března 2011, (nařízení o stavebních výrobcích – CPR), příloha V, čl. 1.4 (system 3) v platném znění  
in accordance with regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 (construction product regulation – CPR), annex V, par. 1.4 (System 3), as amended

č. / No. **2693-CPR-001-2020**

Základ č. / Application No.: 001/2020

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Number of pages including title page and enclosures  
Počet výstisků / Number of copies: 2 Výstisk č. / Copy No.: 1

Otopná tělesa  
Connectors **S-G23-45,342** pro použití v budovách  
for the use in buildings

dle / in accordance with  
EN 442-1:2014

kteřá byla vyrobena výrobcem nebo pro výrobce / manufactured by or manufactured for  
**VERANO GLOBAL Sp. z o.o.**  
Vetterow 7A,  
20-277 Lublin, Poland

ve výrobě / at manufacturing site  
Vetterow 7A,  
20-277 Lublin, Poland

Protokol zhotovili / Edited by  
Zástupce oznamované laboratoře 2693  
Representative of the notified laboratory 2693  
Ing. Jiří Brzd, Ph.D., hodnostář  
Ing. Tomáš Langer, vedoucí ZL, jednatel

15-04-2020

HEATEST, s. r. o. Býkev č. p. 84, PSC 276 01, Česká republika  
Tel: +420 737 284 443, info@heatest.cz, www.heatest.cz

**VERANO**

**DEKLARACE VLASTNOSTÍ UŽITKOVÝCH**  
nr 003-2020-04-15

1. Nejvýznamnější kód identifikující typ výrobku:  
Konektor stojky z nr odebíraných – laská gresovica (zgodine z nrs. G:R):  
S-G23-45,342

2. Zamýšlené zastošovanie lub zastošovanie:  
Poznamenané priroz producenta zamýšlené zastošovanie výrobu budovného zgodine z normy EN 442-1:2014. V inštaláciách gresových v budovkách. Gresový konektor zmontované na státo v inštaláciách centrálného ogrzewania budovky, zastane wodę gresowca z zewnytrzych źródeł ciepła.

3. Producent:  
**VERANO**  
VERANO GLOBAL Sp. z o.o.  
ul. Vetterow 7A, 20-277 Lublin  
www.v-k.pl info@v-k.pl

4. Upowazniony przedstawiciel:  
nie dotyczy

5. System oceny i weryfikacji stabilności własności użytkowych:  
System 3

6a. Norma zharmonizowana:  
EN 442-1:2014  
Jednostka notyfikowana:  
HEATEST, s.r.o.

6b. Europejski dokument oceny:  
nie dotyczy  
Jednostka ds. oceny technicznej:  
nie dotyczy  
Jednostka notyfikowana:  
nie dotyczy

VERANO GLOBAL Sp. z o.o.  
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tel. +48 81 41 02 330, fax 81 41 02 333  
NIP 1415032017, v-kg@v-k.pl

Strona 1 z 3

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notified laboratory 2693

**PROTOKOL  
O POSOUZENÍ VLASTNOSTÍ VÝROBKŮ  
PRODUCT PERFORMANCE ASSESSMENT  
REPORT**

podle nařízení Evropského parlamentu a Rady (EU) č. 305/2011 ze dne 9. března 2011, (nařízení o stavebních výrobcích – CPR), příloha V, čl. 1.4 (system 3) v platném znění  
in accordance with regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 (construction product regulation – CPR), annex V, par. 1.4 (System 3), as amended

č. / No. **2693-CPR-002-2020**

Základ č. / Application No.: 001/2020

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Otopná tělesa  
Connectors **S-C12-1015,9; S-G14-1028,4** pro použití v budovách  
for the use in buildings

dle / in accordance with  
EN 442-1:2014

kteřá byla vyrobena výrobcem nebo pro výrobce / manufactured by or manufactured for  
**VERANO GLOBAL Sp. z o.o.**  
Vetterow 7A,  
20-277 Lublin, Poland

ve výrobě / at manufacturing site  
Vetterow 7A,  
20-277 Lublin, Poland

Protokol zhotovili / Edited by  
Zástupce oznamované laboratoře 2693  
Representative of the notified laboratory 2693  
Ing. Jiří Brzd, Ph.D., hodnostář  
Ing. Tomáš Langer, vedoucí ZL, jednatel

15-04-2020

HEATEST, s. r. o. Býkev č. p. 84, PSC 276 01, Česká republika  
Tel: +420 737 284 443, info@heatest.cz, www.heatest.cz

**VERANO**

**DEKLARACE VLASTNOSTÍ UŽITKOVÝCH**  
nr 002-2020-04-15

1. Nejvýznamnější kód identifikující typ výrobku:  
Konektor stojky z nr odebíraných (zgodine z nrs. G:R):  
S-C12-1015,9; S-G14-1028,4  
S-C22-1615,9; S-G23-1622,2; S-G24-1628,4  
S-C22-2315,9; S-G23-2322,2; S-G24-2328,4  
S-C22-3015,9; S-G23-3022,2; S-G24-3028,4

2. Zamýšlené zastošovanie lub zastošovanie:  
Poznamenané priroz producenta zamýšlené zastošovanie výrobu budovného zgodine z normy EN 442-1:2014. V inštaláciách gresových v budovkách. Gresový konektor zmontované na státo v inštaláciách centrálného ogrzewania budovky, zastane wodę gresowca z zewnytrzych źródeł ciepła.

3. Producent:  
**VERANO**  
VERANO GLOBAL Sp. z o.o.  
ul. Vetterow 7A, 20-277 Lublin  
www.v-k.pl info@v-k.pl

4. Upowazniony przedstawiciel:  
nie dotyczy

5. System oceny i weryfikacji stabilności własności użytkowych:  
System 3

6a. Norma zharmonizowana:  
EN 442-1:2014  
Jednostka notyfikowana:  
HEATEST, s.r.o.

6b. Europejski dokument oceny:  
nie dotyczy  
Jednostka ds. oceny technicznej:  
nie dotyczy  
Jednostka notyfikowana:  
nie dotyczy

VERANO GLOBAL Sp. z o.o.  
20-277 Lublin, ul. Vetterow 7A  
tel. +48 81 41 02 330, fax 81 41 02 333  
NIP 1415032017, v-kg@v-k.pl

Strona 1 z 6

**HEATEST, s. r. o.**  
Býkev č. p. 84, PSC 276 01, Česká republika  
oznamovaná laboratoř 2693  
notified laboratory 2693

**PROTOKOL  
O POSOUZENÍ VLASTNOSTÍ VÝROBKŮ  
PRODUCT PERFORMANCE ASSESSMENT  
REPORT**

podle nařízení Evropského parlamentu a Rady (EU) č. 305/2011 ze dne 9. března 2011, (nařízení o stavebních výrobcích – CPR), příloha V, čl. 1.4 (system 3) v platném znění  
in accordance with regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 (construction product regulation – CPR), annex V, par. 1.4 (System 3), as amended

č. / No. **2693-CPR-003-2020**

Základ č. / Application No.: 001/2020

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Otopná tělesa  
Connectors **N-C22-2314,7; N-G23-2321,0;  
N-C22-3014,7; N-G23-3021,0;  
N-C22-4014,7; N-G23-4021,0;  
N-C22-4014,7; N-G23-4021,0** pro použití v budovách  
for the use in buildings

dle / in accordance with  
EN 442-1:2014

kteřá byla vyrobena výrobcem nebo pro výrobce / manufactured by or manufactured for  
**VERANO GLOBAL Sp. z o.o.**  
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20-277 Lublin, Poland

ve výrobě / at manufacturing site  
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20-277 Lublin, Poland

Protokol zhotovili / Edited by  
Zástupce oznamované laboratoře 2693  
Representative of the notified laboratory 2693  
Ing. Jiří Brzd, Ph.D., hodnostář  
Ing. Tomáš Langer, vedoucí ZL, jednatel

15-04-2020

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**VERANO**

**DEKLARACE VLASTNOSTÍ UŽITKOVÝCH**  
nr 001-2020-04-15

1. Nejvýznamnější kód identifikující typ výrobku:  
Konektor nastavný z nr odebíraných (zgodine z nrs. G:R):  
N-C22-2314,7; N-G23-2321,0  
N-C22-3014,7; N-G23-3021,0  
N-C22-4014,7; N-G23-4021,0  
N-C22-6014,7; N-G23-6021,0

2. Zamýšlené zastošovanie lub zastošovanie:  
Poznamenané priroz producenta zamýšlené zastošovanie výrobu budovného zgodine z normy EN 442-1:2014. V inštaláciách gresových v budovkách. Gresový konektor zmontované na státo v inštaláciách centrálného ogrzewania budovky, zastane wodę gresowca z zewnytrzych źródeł ciepła.

3. Producent:  
**VERANO**  
VERANO GLOBAL Sp. z o.o.  
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www.v-k.pl info@v-k.pl

4. Upowazniony przedstawiciel:  
nie dotyczy

5. System oceny i weryfikacji stabilności własności użytkowych:  
System 3

6a. Norma zharmonizowana:  
EN 442-1:2014  
Jednostka notyfikowana:  
HEATEST, s.r.o.

6b. Europejski dokument oceny:  
nie dotyczy  
Jednostka ds. oceny technicznej:  
nie dotyczy  
Jednostka notyfikowana:  
nie dotyczy

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Strona 1 z 6

# VERANO

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**VERANO**  
GLOBAL

**VK15**  
NATURAL CONVECTION  
TRENCH HEATERS

2020/06

**VK15**  
Natural convection  
trench heaters



**VERANO**  
GLOBAL

**VKN**  
FAN ASSISTED  
TRENCH HEATERS

2020/06

**VKN**  
Fan assisted  
trench heaters



**VERANO**  
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**COMODO  
CALIENTE  
STANDARD**  
WALL-MOUNTED AND FLOOR-MOUNTED CONVECTORS

2022/11

**COMODO CALIENTE STANDARD**  
Wall mounted and  
Floor mounted convectors



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**CVK**  
TRENCH HEATING AND COOLING  
UNITS

**CVK climaconvectors**  
Trench heating  
and cooling units

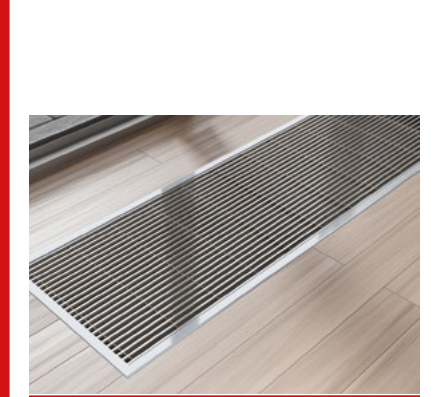


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Trench heaters, trench heating and cooling  
units, LST heaters, controls

**VERANO GLOBAL Sp. z o.o.**

Vetterów 7a Street, 20-277 Lublin, POLAND  
phone: +48 533 009 415

**WWW.VERANO-GLOBAL.COM**

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