
ISAN
TERMO
ECO& SAFE
VOLTAGE 24
New Practic
Trench heaters
www.isan.cz

About the Company

Trademark ISAN represents a traditional Czech manufacturer of heating bodies with a history and experience stretching back more than 60 years. ISAN Radiátory s.r.o. has been developing and manufacturing trench heaters for more than 15 years. Top-notch technological procedures and the progressive thinking of our designers and developers always guarantee high technical and aesthetic parameters of the products, thanks to which the products have become popular on the Czech and foreign market. We export 90% of our production into the countries of the European Union.

Our prime objective is the satisfaction on the customer's part and service. Ecological processing with maximal consideration for the environment goes without saying. The production is controlled by ISO 9001:2015 system. Moreover, all heating bodies comply with certification requirements applicable for current legislative regulations of individual states in a way that corresponds to the strictest standards. The certification process for the Czech Republic took place in Testing Institute for Mechanical Engineering in Brno, notified body ES1015.

The complete ISAN portfolio consists of a wide range of radiant trench heaters and lamella-fitted radiators ISAN EXACT, trench heaters with a lamellar heat exchanger ISAN ECOLITE, trench heaters ISAN TERMO, column radiators ISAN ATOL, ribbed-tube radiators ISAN SPIRAL, glass radiators ISAN JOY and, last but not least, bathroom radiators ISAN MELODY, in which case the company was the first manufacturer of this type in the Czech Republic.

A speciality of ISAN Radiátory s.r.o. is creating made-to-measure radiators based on the requirements of our customers.

Clues

ECO& SAFE VOLTAGE 24 — marking of an environmentally friendly product with low consumption, economical operation, working on the basis of safe direct current voltage of 24 V DC

trench heater with fan, increased output with forced convection

heating, a trench heater for hot water heating system with forced circulation

acoustic pressure parameters of trench heaters with fan

power input for trench heaters with fan

We reserve the right to changes and misprints.

Basic Information about New Practic

Use

Trench heaters are suitable for places with large glass walls. They are installed in commercial and administrative buildings, commercial centres, entrance halls and other public spaces. They are also common in residential buildings, in which they are used to heat living rooms, corridors, halls and indoor gardens.

Placement

Trench heaters are installed in the floor and therefore do not occupy any space suitable for furniture and do not interfere with the interior the way traditional heating bodies do. The final look of the trench heater depends on the upper design grille. Available grilles are made of anodized aluminium, wood and stainless steel.

Operation

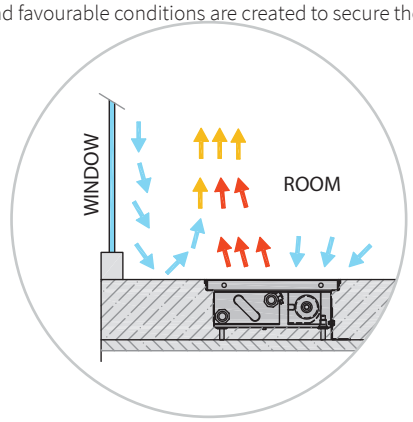
The trench heaters with fan are controlled with a digital thermostat with continuous control. This secures comfortable and economical operation at optimal thermal comfort and low noise level. All parts of the trench heaters work on the basis of safe direct voltage of 24 V DC.

The low volume of water in heat exchangers secures fast warming up to operating temperature. The trench heaters provide heating at the moment when it is necessary without a delay during start-up and without inertia when the requirement is cancelled.

Function

A “thermal screen” is created in front of a glazed surface, which separates the cold surface from the indoor environment. At the same time air flow prevents condensation of air humidity on the surface. The trench heaters are installed in the floor with the heat exchanger nearer to the window. The vertical and horizontal distribution of temperatures in the heated space is even and favourable conditions are created to secure thermal comfort.

Air flow is comparable with heat transmission provided by traditional heating bodies located on the wall under the window. The reversed arrangement in the floor is possible (the heat exchanger towards the room’s centre, the ventilator at the window).

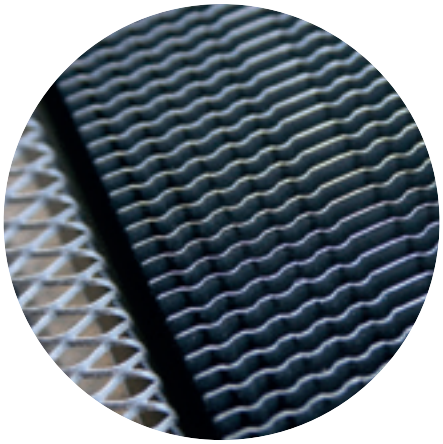


Low temperature heating systems

High performance models with modern tangential ventilators 24 V DC EC allow for the implementation into low temperature heating systems making use of thermal pumps and other ecological heating sources.

BMS

Trench heaters with the EC fans technology combined with a modern digital thermostat can easily be incorporated into building management systems (BMS). Communication with the superior system either directly or through a thermostat with an output for communication with the KNX protocol. For other systems it is possible to use protocol converters.



EC technology

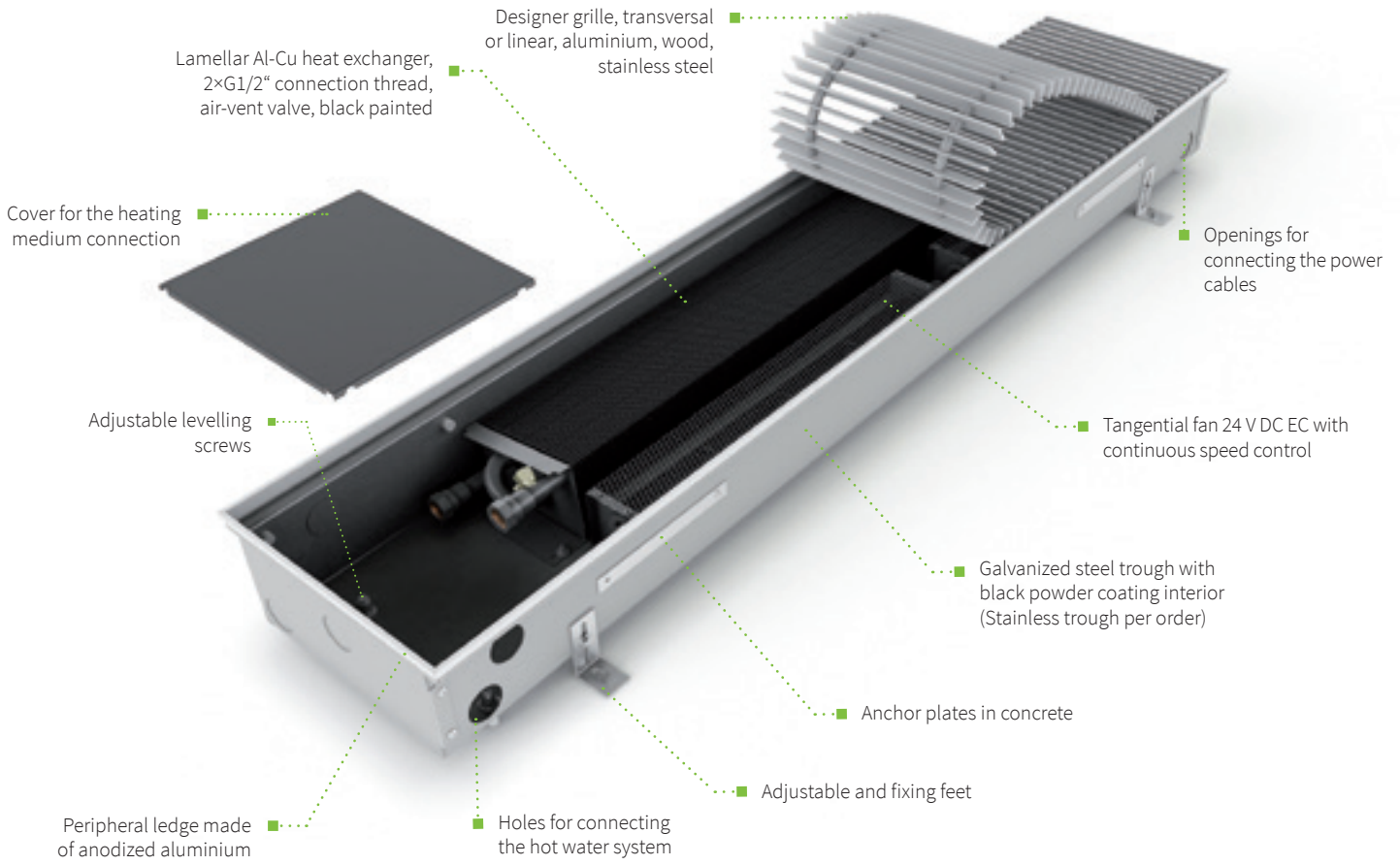
This technical advancement affects all areas of human activity and enables the requirements for low energy consumption and safety of devices to be met. Modern 24 V DC fans with electronically commutated (EC) motors are among the most important elements of the trench heaters.

Properties of 24 V DC EC FANS

- Safe voltage of 24 V DC
- Remarkably low energy consumption, calculated in units of watts
- Comfortable continuous speed control using a voltage of 0...10 V DC
- Pulse to start the motor at low speeds
- Protection function when the rotor is stopped by an outside influence
- Synchronization of fan speeds
- Long service life of the motor with electronic control
- Simple implementation into complex control systems

The fans in New Practic trench heaters with their rotors cover the entire length of the exchanger. Even at low speeds they achieve optimum performance and a quiet operation.

Trench heater design



FRT overview of trench heaters with fan

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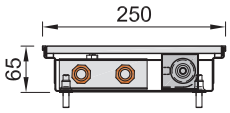
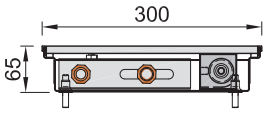
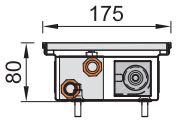
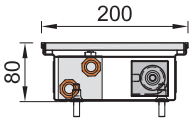
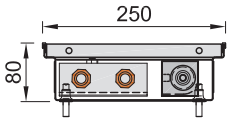
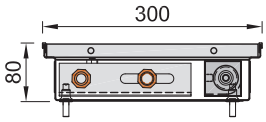
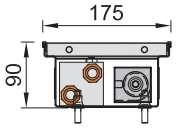
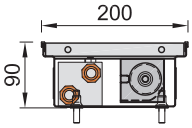
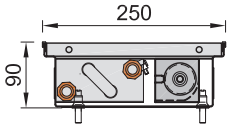
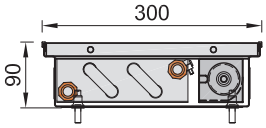
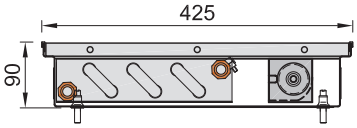
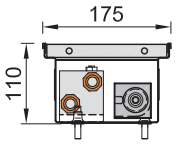
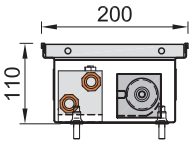
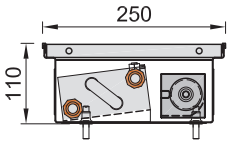
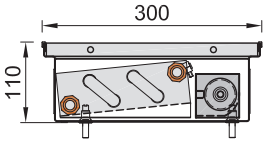
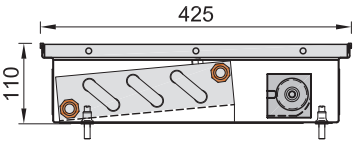
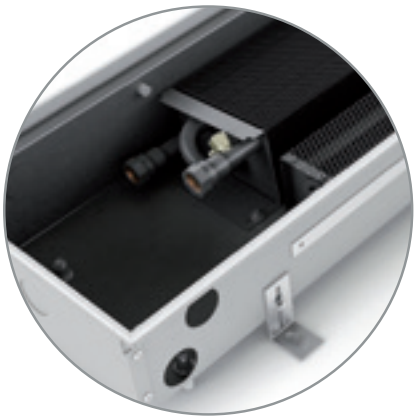
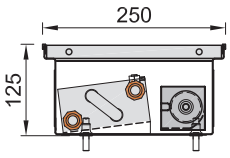
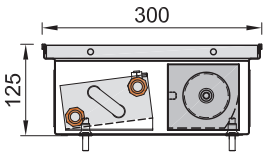
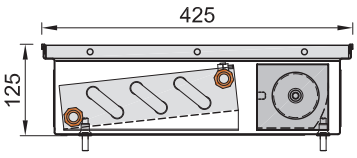
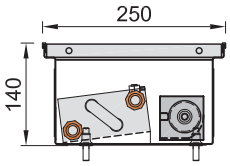
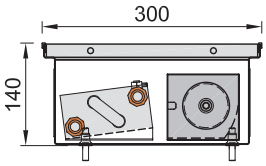
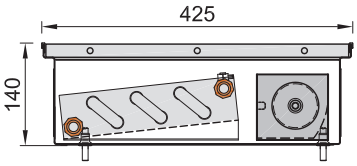
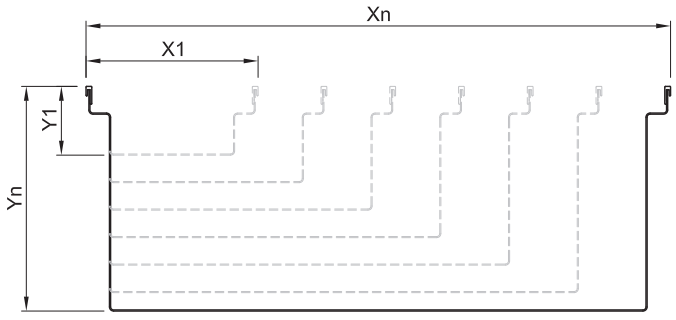
		 FRT 0065 0250 page 16	 FRT 0065 0300 page 18	
 FRT 0080 0175 page 20	 FRT 0080 0200 page 22	 FRT 0080 0250 page 24	 FRT 0080 0300 page 26	
 FRT 0090 0175 page 28	 FRT 0090 0200 page 30	 FRT 0090 0250 page 32	 FRT 0090 0300 page 34	 FRT 0090 0425 page 36
 FRT 0110 0175 page 38	 FRT 0110 0200 page 40	 FRT 0110 0250 page 42	 FRT 0110 0300 page 44	 FRT 0110 0425 page 46
	 FRT 0125 0250 page 48	 FRT 0125 0300 page 50	 FRT 0125 0425 page 52	
	 FRT 0140 0250 page 54	 FRT 0140 0300 page 56	 FRT 0140 0425 page 58	

Trench heaters according to the customer's requirements

For the needs of large projects we may adjust the dimensions, structure and internal arrangement. A solution for humid spaces, the connection of an air handling system with modified air. Thermal output measurements will be supplied with the project.



FRK an overview of trench heaters with natural convection

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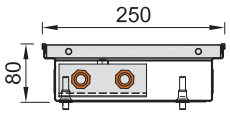

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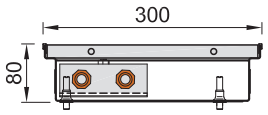

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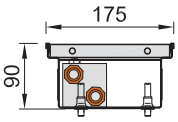

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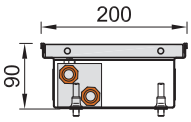

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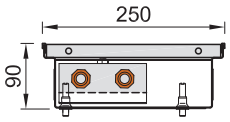

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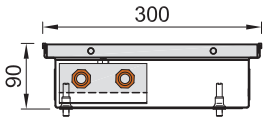

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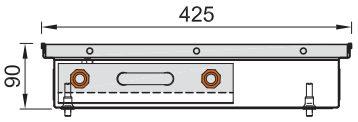

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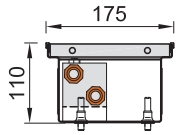

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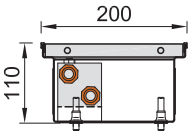

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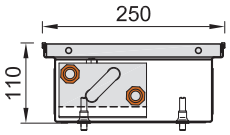

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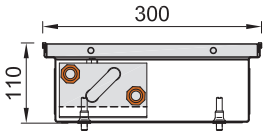

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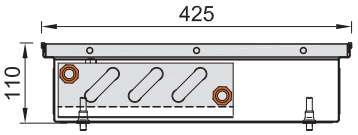

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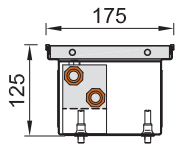

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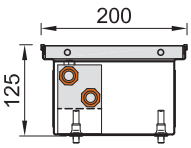

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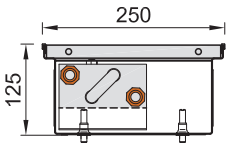

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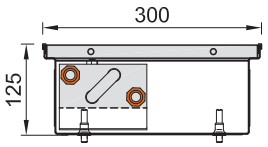

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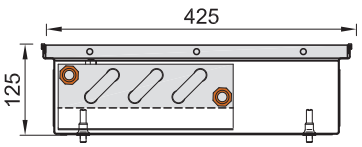

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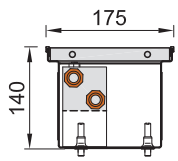

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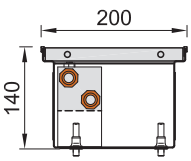

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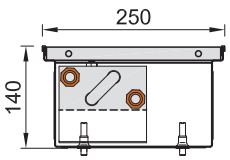

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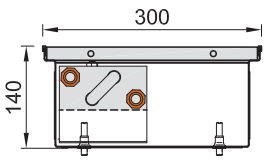

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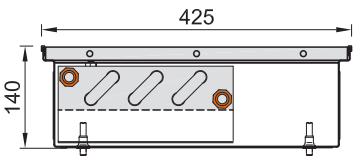

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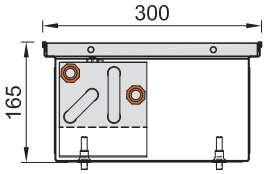

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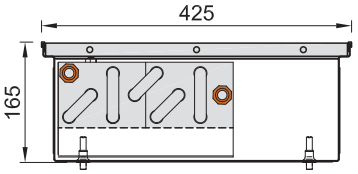
page 76



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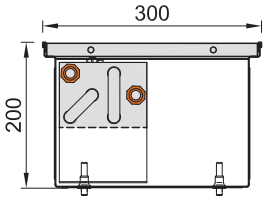
page 76



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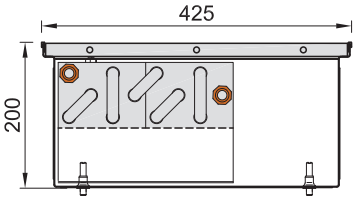
page 78



FRK 0200 0425
page 78

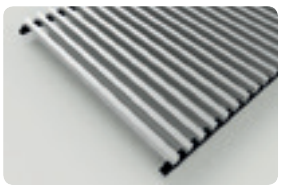
Grilles

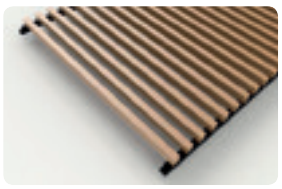
The lamellas in grilles are made of anodized aluminium. The surface is durable and resistant to abrasion and its colours are stable.
The lamellas are supplied in the following colours: NATUR, BRONZE, BLACK and STAINLESS STEEL.

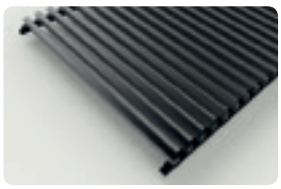
Aluminium low transverse grilles

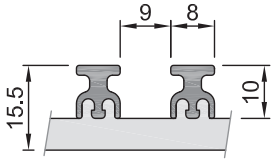
Pro modely FRT 0065 0250, FRT 0065 0300, FRT 0080 0175, FRT 0080 0200

The grille of the low trench heater type. It allows for installation into floor configuration with the heights of 65 and 80 mm. The aluminium lamellas are pressed into plastic longitudinal strips of black colour. The grille comes in 520 mm sections and an additional piece joined together at the installation site to form the required length.


NATUR - marking 15


BRONZE - marking 25


BLACK – marking 35

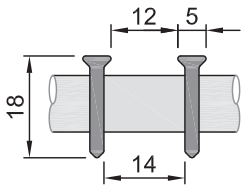


Grille‘s cross section

Low grilles can also be used for other types of convectors. Please, consult the ISAN Technical Department about this alternative.

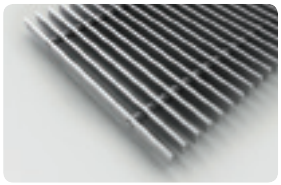
Aluminium roll-up transverse grilles

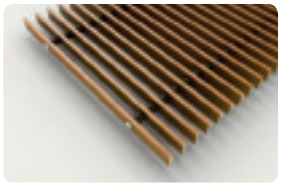
Transverse lamellas are linked with a loaded spring and their limits are defined with distance rolls of hardened plastic. The rolling of the grille facilitates handling in the course of the installation and cleaning of the trench heater. The plastic rolls are assigned as follows based on the colour of the lamellas: NATUR – silver, BRONZE – black, BLACK – black. Aluminum grilles anodized to form a STAINLESS finish are fitted with stainless steel spacers. The lamellas may be provided with a surface finish of sprayed powder colour according to the RAL sample list.

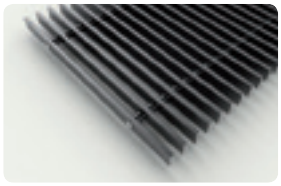


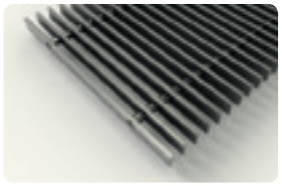
Grille‘s cross section

The maximal length of the grille in one piece is **6 500 mm**.


NATUR - marking 11


BRONZE - marking 21

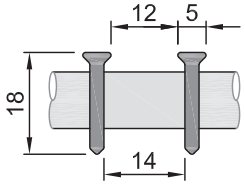

BLACK - marking 31


STAINLESS - marking 41

Note: the grilles cannot be used for trench heaters **FRT 0065 0250, FRT 0065 0300, FRT 0080 0175, FRT 0080 0200**.

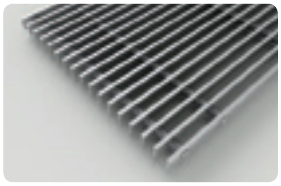
Aluminium linear non-rolling grilles

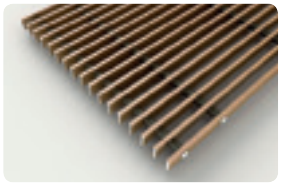
Aluminium lamellas provided with holes along their length and joined with a steel supporting bar. The grille is divided into more pieces for easy handling. The span between the lamellas is defined by distance rolls of hardened plastic. The plastic rolls are assigned as follows based on the colour of the lamellas: NATUR – silver, BRONZE – black, BLACK – black. Aluminum grilles anodized to form a STAINLESS finish are fitted with stainless steel spacers. The lamellas may be provided with a surface fi nish of sprayed powder colour according to the RAL sample list.

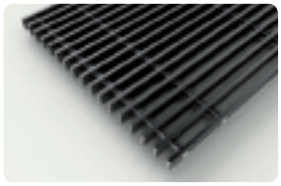


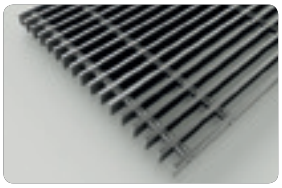
Grille‘s cross section

The maximal length of a single piece is **3 000 mm**. Greater lengths can be achieved by linking more pieces together.


NATUR - marking 12


BRONZE - marking 22

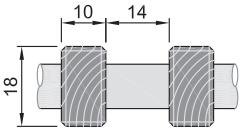

BLACK - marking 32


STAINLESS - marking 42

Note: the grilles cannot be used for trench heaters **FRT 0065 0250, FRT 0065 0300, FRT 0080 0175, FRT 0080 0200**.

Wooden roll-up grilles

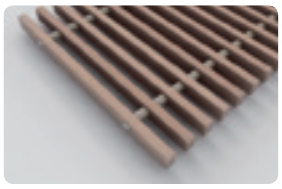
The grilles are manufactured as a roll-up version, i.e. a transverse roll-up grille. The material used is beech and oak. It is possible to order grilles made of wood in natural state or of stained wood. The grilles are a suitable complement of interiors and can be harmonized with a wooden or floating floor. Additional surface modification may be used to increase the resistance and durability of the grille's material.



Grille's cross section

Surface finish NATUR – natural wood

Processed wood without an additional surface finish. The wood can be left in the raw state or provided with a surface finish to protect the wood. Based on the type of protection required and the external look (harmonizing with the interior) use staining, oil impregnation, waxing or varnish. The plastic rolls for the NATUR version are in beige.


BEECH NATUR - marking 61


OAK NATUR - marking 63

Surface finish STAINED – stained wood

The wooden lamellas of the grille are stained with a penetrating dyestuff to secure a darker brown colour. This brings out the wood grain and provides a basic surface protection. The plastic rolls are in black.


STAINED BEECH - marking 62

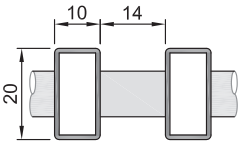

STAINED OAK - marking 64

The maximal length of the wooden grille in one piece is **6 500 mm**.

Note: the grilles cannot be used for trench heaters **FRT 0065 0250, FRT 0065 0300, FRT 0080 0175, FRT 0080 0200**.

Transverse stainless steel grille

The grilles are made of 20 × 10 mm stainless steel profiles. This model features robust design, strength and rigidity. Individual grille lamellas have a brushed steel finish running lengthwise.

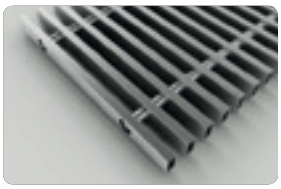


Grille's cross section

Car showroom

A fixed non roll-up grille with a rigid structure designed primarily for use in car showrooms. The grille lamellas are linked by steel rods and held apart by stainless steel spacers. A solid layer of concrete must be poured below the trench heater casing where the grille is to be placed.

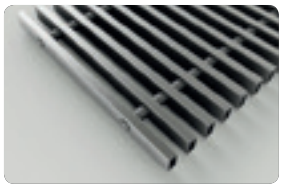
The maximum length of 1 section of the stainless steel grille (51) is **2 000 mm**.


STAINLESS Car showroom - marking 51

Design construction, roll up grilles

Interior design with spring-joined grille lamellas separated by gray hardened plastic spacers.

The maximum length of 1 section of the stainless steel grille (52) is **3 000 mm**.


STAINLESS - marking 52

Highly resistant grille

A special grille made of thick-walled stainless steel. Robust construction resistant to mechanical stress and wear. Ideal for installation in frequented areas (restaurants, cafés, entrance halls, business centers). Its rigid and compact design also ensures hight resistance to concentrated loading (high heels). While the vents provide adequate air permeability, a 10% reduction in the trench heater output should still be expected.

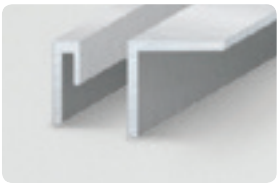
The maximum length of one section is **1 000 mm**. The grille is composed of several sections of equal size to achieve the required length. The maximum width of the convector heater is **300 mm**.

Note: The grilles are not suitable for convector heaters with a standard low grille: **FRT0065 0175, FRT 0065 0200, FRT 0065 0250, FRT 0065 0300, FRT 0080 0175, FRT 0080 0200.**


STAINLESS Solid - marking 95

Peripheral ledge

It forms the architectural and functional borders of the trench heater after its installation in the floor. The ledge of anodized aluminium is available in colours „NATUR“, „BRONZE“ and „BLACK“. The peripheral ledges may be provided with a surface finish of sprayed powder colour according to the RAL sample list.
A trench heater without the peripheral ledge can be supplied for the hidden installation of the trench heater in the floor. In such case this should be written down in the form of a note (a different width of the grille)



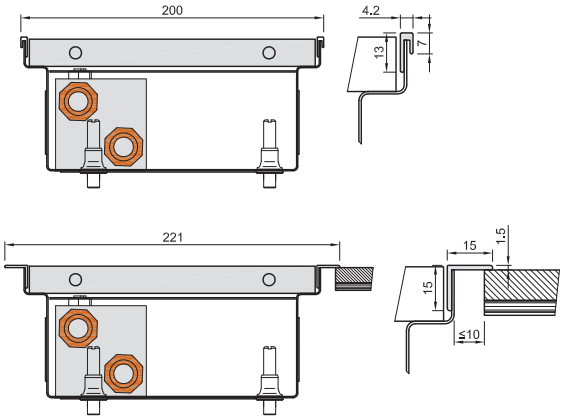
The ledge of anodized aluminium

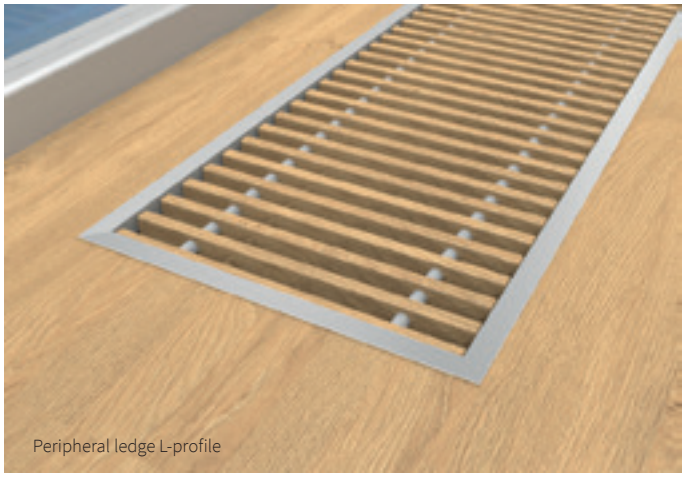
Ledge „J“

A standard ledge that forms an architectural frame alongside the perimeter of the trench heater. Used for installation into floors that fit closely to the trench heater's body. Suitable for paving, architectural concrete, polished concrete floors, stone floors, lino, cork, ...
The ledge is permanently installed during the manufacture of the trench heater.

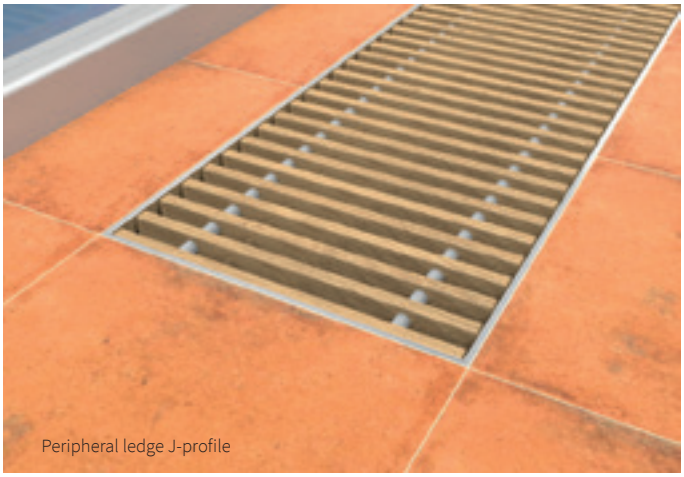
Ledge “L“

A peripheral ledge with an overlap. The L cross section 15×15×1.5 enables the covering of the expansion gap with the width of up to 10 mm. The ledge is put besides the trench heater. It is installed after the final floor is completed. It is glued onto the inner edge of the trench heater. When installing the trench heater should be installed in a way so it does not exceed the level of the final floor. Suitable for wooden floors, plywood floors, laminate flooring, vinyl. It can be used in cases when the technology of the floor laying requires an expansion gap.
The length and width of the trench heater is greater by 21 mm than the dimensions presented in the catalogue.

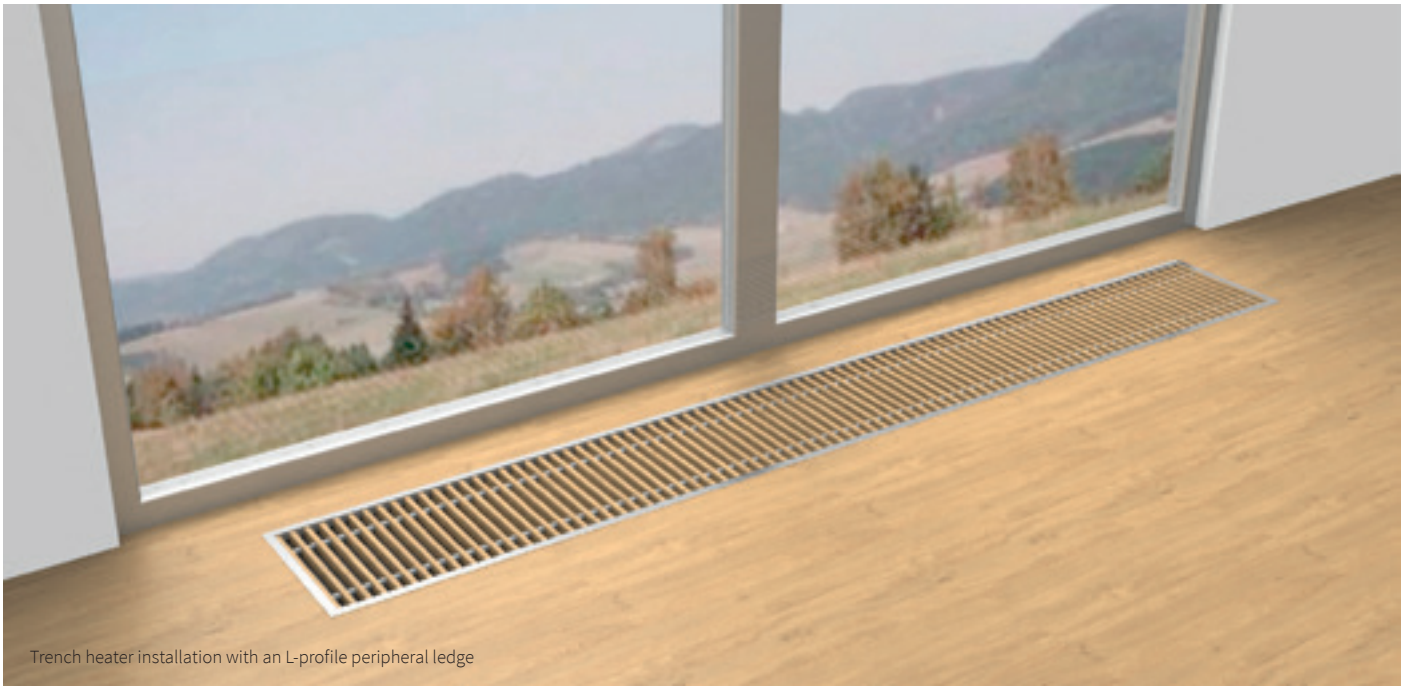




Peripheral ledge L-profile



Peripheral ledge J-profile



Trench heater installation with an L-profile peripheral ledge

New Practic – FRT
trench heaters with a fan

Trench heaters FRT with forced convection via a fan provide a very good thermal output. This is achieved via installed fans with longitudinal tangential rotors, which force air into a heat exchanger with lamellas. The fans are fitted with effective electrically commuted (EC) motors functioning on the basis of safe voltage of 24 V DC. The motors have very small consumption of electric power. The speeds of fans are controlled continuously with a controlling voltage of 0...10 V DC. The room thermostat secures the correct function of all installed FRT trench heaters, compares the set and actual temperature in the room, opens the flowing of heating medium in the heat exchanger and controls the fan's revs according to the difference in the temperatures and the set mode of operation.

The use of new technologies secures the optimal heating of the interior, which results in energy savings, the economical operation of the trench heater, the high efficiency and flexibility of heating. The trench heater is powered with safe voltage only, all components are powered with direct current of 24 V.

The substantial range of the heights and widths of trench heaters gives the designer a lot of options for selecting a model with the required output for the composition of the floor in question. The necessary data are presented in data sheets of individual products, including the acoustic parameters of the trench heaters.

The range of FRT models with a fan 24 V DC

Height	65 mm	80 mm	90 mm	110 mm	125 mm	140 mm
Width	-	175 mm	175 mm	175 mm	-	-
	-	200 mm	200 mm	200 mm	--	-
	250 mm	250 mm	250 mm	250 mm	250 mm	250 mm
	300 mm	300 mm	300 mm	300 mm	300 mm	300 mm
	-	-	425 mm	425 mm	425 mm	425 mm

Trench heater „made to measure“

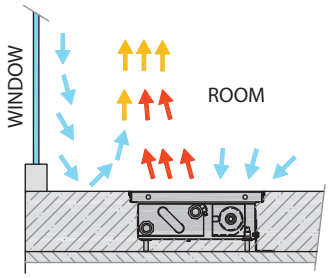
Based on the requirements of larger projects it is possible to supply a „made to measure“ trench heater with adjusted height and width. Having approved the structure we will submit a protocol from a test room presenting output parameters. We also offer modifications of the trench heater for the use in humid environment, the connection of air handling piping and others. The technical documentation is first consulted with the customer and only then the production of the trench heater starts.

Operating conditions

- Installation in a hot water heating system with forced circulation
- Maximal operating temperature of heating medium 110 °C
- Maximal operating overpressure 1 MPa
- Electric parts with IP20 cover protection, use in dry environment
- Operating voltage 24 V DC
- Ambient temperature +2 to +40 °C
- Relative humidity of environment 20 to 70%

Placement in the floor

The trench heaters are laid in the floor so that the heat exchanger is closer to the window side, while fans are placed deeper into the room. The vertical and horizontal distribution of temperatures in the heated room is uniform and conditions are created to provide thermal comfort. Air flow is comparable to the heat transfer with classical heating bodies placed on the wall below windows.

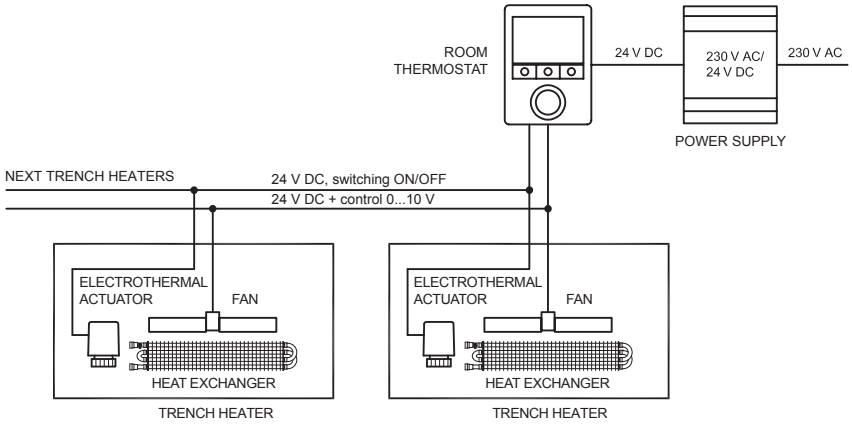


Connecting in the heating system

Lamellar Al-Cu heat exchangers have aluminium lamellas pressed onto a copper pipe through which the heating medium flows. The pipe's outlet and inlet are equipped with a connecting end with internal thread G1/2“. Normally the water connection of the exchanger is on the left side (when the exchanger is placed nearer the window). We install a thermostatic valve fitted with an electrothermal actuator on the inlet of the lamellar heat exchanger. The actuator works in the opened/closed mode and controls the flow of the heating medium. It is not necessary to use a thermostatic valve if the temperature of the heating medium is controlled by the heating system (e.g. equithermal system). The way of regulation is to be determined by the designer of the heating and this shall be specified in the project documentation.
A return regulating screw connection shall be used for the outlet. This enables the incorporation of the trench heater into the heating system from the viewpoint of the hydraulic balancing. Based on the parameters of the screw connection used the designer determines the setting (corresponding to pressure loss at the fitting) and this value shall be specified in the project documentation.
Each exchanger is fitted with an air vent valve. When the heating system is connected and filled air bubbles remain caught in the upper part of the exchanger. These shall be let out through the air vent valve.

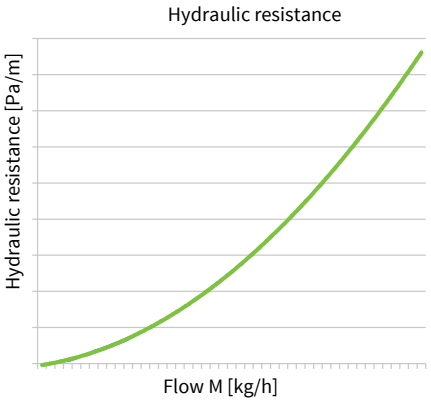
Connecting to the mains

The connection into the electric circuit is done according to the scheme. The entire circuit is powered with a switched power supply (placed in the switchboard), which provides the voltage of 24 V DC. All trench heaters and the room thermostat are connected to this voltage. The cabling shall be sized to ensure that the voltage in distribution lines never drops below 22 V DC in any individual device. More details concerning the sizing of the electric circuit are presented on page 85.



Hydraulics

- Tables with hydraulic resistance are presented on page 82.
- Some trench heaters have a too high output at thermal gradient of 75/65/20°C, during the calculation of the required flow and hydraulic resistance we will exceed the recommended limitations.
- We design such trench heaters for low-temperature systems or systems with a high difference between inlet and outlet, in which the output and thus also the flow of the heating medium are at acceptable level. Let us consider the flow rate of the heating medium to be up to 300 kg/hour. The designer may increase the flow in the trench heater's exchanger being aware of the fact that this will increase hydraulic resistance and flow rate in the piping (correct sizing of overpressure and the pump), the table with hydraulic parameters is presented on page 82.
- If the output is too high, it is possible to use a trench heater with a reduced number of fans; it is best to consult our technical department ISAN Radiátory s.r.o. if this variant is to be selected.



HOW TO SIZE THE TRENCH HEATER

What room the trench heater is to be placed in

We always consider output and acoustic parameters of the trench heater taking into account the room's nature – residential rooms, bedrooms, corridors, offices, theatres, hospital rooms, halls, presentation rooms and others. The trench heater shall comply with the requirement for thermal output at a selected temperature gradient, however at the same time the operation shall not disturb the user with excessive noise. The noise issue is regulated by the applicable standard, which defined permitted limits for individual types of rooms. (more info on page 11).

The output of the trench heater

The tables contain output data for thermal gradient 75/65/20°C, standardized output according to standard ČSN EN 16 430-2. This standard also defines the procedure for conversion to other thermal gradients. The second table presents a converted thermal gradient of 55/45/20°C and a fast approximate conversion for gradients of 90/70/20°C and 70/55/20°C.

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

Warranty conditions

The warranty provided by the seller applies to tightness, surface finish, specified values of thermal outputs and pressure losses of heating bodies professionally installed in the closed hot water system according to applicable standards and regulations, including corrosive properties of the heat transferring medium, which shall be used exclusively for heating and never for other utility purposes. Bodies with power input shall be installed professionally according to applicable standards and regulations specifying the placement of appliances. FRT trench heaters with the fan with IP20 protection cover – dry environment.

Warranty periods

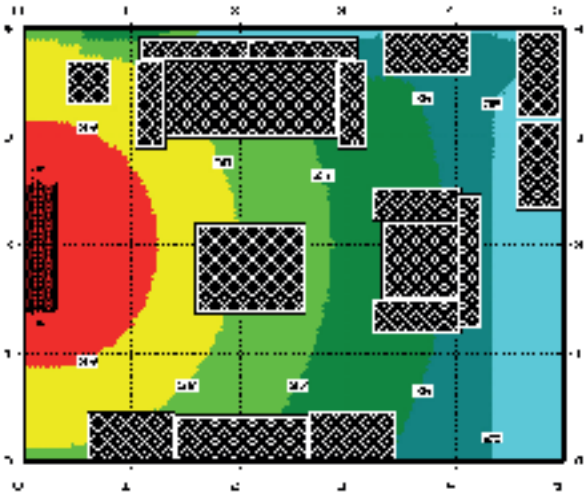
The warranty period for the tightness of connections is 5 years, 10 years applies to the heat exchanger and 2 years to the electric installation and galvanized steel trough.

Fan-assisted trench heating acoustics

When planning trench heaters FRT fan for residential rooms it is necessary to take into account the acoustic characteristics of the trench heater and the environment in which it will be used. It is necessary to design a trench heater complying with the applicable standard, which defines acoustic limits for individual environments. The values are prescribed by a national directive, which shall be observed – there may be differences in individual EU states. In general one can say that the upper limit for a daily room is 40 dB(A), the limit for rooms with night or relaxation regime is lowered to 30 dB(A), the limit for offices is 50 dB(A) and so on.

Different requirements for different rooms

- entrance halls, corridors, waiting rooms, foyers
- office space, administrative rooms
- residential rooms, public buildings, car showrooms, shops
- rooms for relaxation and rest (residential rooms, bedrooms)



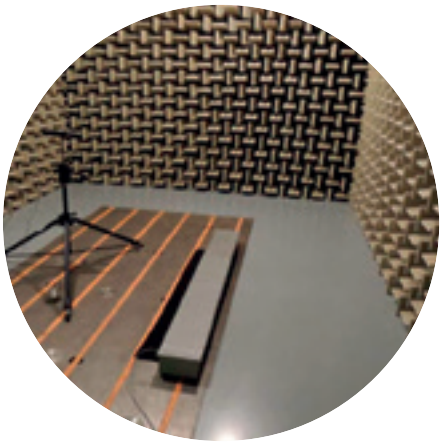
Acoustic parameters in the catalogue

The acoustic parameters specified in the New Practic catalogue for individual products are valid for residential space “with standard equipment“. This means that the room is equipped in the standard way. Curtains, drapes, possibly Venetian blinds are fitted at windows, the floor or a part thereof is covered with a carpet, furniture is present. All these elements absorb or dissipate acoustic waves in the room.

Changes and the influence on acoustic pressure

The type of space for which we design the New Practic trench heater has fundamental influence on the total noise level of the environment connected with its operation. Reverberation occurs, resounding waves take relatively long time to die down (they are not absorbed), they mutually influence and magnify each other. The total level of acoustic pressure can be increased by as much as 3-6 dB(A).

- The undesirable effect of acoustic pressure is increased by trench heaters installed near corners or under ceiling without cover.
- rooms with minimalistic equipment without dampening elements and with a resounding floor without any cover have significant impact on the worsening of the total acoustics of the space. From the viewpoint of the assessment of the acoustic limit the influence of the room (with or without equipment) is not taken into consideration, the regulation assesses the fitness of the room in its current condition (at the time of measuring). In practice an empty room may be measured. Therefore the designer of the heating system shall take into account all possible variants of installation into a given space or he/she may draw the investor’s attention to available solutions using an alternative (more powerful, less noisy) trench heater in atypical cases.
- it is important to take into consideration acoustic parameters when installing more trench heater in a single room. Acoustic pressures of individual trench heaters mutually influence one another, resulting in an increase of the total noise level. It all depends on the type of the room, the characteristics of the trench heater and the distance between individual bodies. It is necessary to design heating bodies with a sufficiently low level of acoustic pressure at the selected output and the revs of the fan.



View of the testing acoustic chamber

The designer shall take into account all aspects of the room in which the trench heater is to be installed.
(i.e. the equipment, dampening elements, floating or double-layer floor etc.)

Measuring the acoustic pressure

The measuring took place in semi-anechoic chamber. The acoustic chamber complies with ISO 3745 standard in terms of frequency range 100 Hz to 20 kHZ. An accurate Brüel and Kjaer phonometer was used for measuring which complies with 1st category of measuring accuracy. The measuring methodology is based on the recommendations specified in the Methodology manual for noise measuring and assessment in non-working environment. Sensing device was placed diagonally one meter above the trench heater and 1 meter from the trench heater into the room. The values were adjusted to the conditions of a room with „standard equipment“ with standard reverberation and reflectance.

FRT - accessories

Controls and a power supply need to be added to trench heaters to secure their correct function. The temperature in the room is assessed by a room thermostat (RTD201, RTM201), which controls the fan's revs and the flow of heating medium through the heat exchanger. The flow is controlled via an electrothermal actuator (Z-TS24), which opens or closes a thermostatic valve (Z-TD001, Z-TE001). We install the thermostatic valve at the inlet of the heat exchanger. In order to adjust the flow of the heating medium it is necessary to install and set a screw joint (Z-RD001, Z-RE001) at the exchanger's outlet. The entire circuit functions on the basis of safe voltage of 24 V DC, which is provided by a power supply 24 V DC (DR, DRP), which shall be sized according to the number of installed trench heaters.

RTD201 DIGITAL ROOM THERMOSTAT

For controlling of trench heaters with fans 24 V DC EC and electrothermal actuators 24 V DC

Description

- Digital room thermostat with backlit LCD display
- 2 and 4 pipe heating circuits
- Week program, 8 time blocks/day
- Manual or automatic switching of speeds
- Operating modes: Comfort, Economy and Protection
- Colour of front cover: white RAL9003

Parameters

- Temperature range 5-40 °C (Comfort mode)
- Rated voltage 24 V DC
- Power consumption max. 2 VA/1 W
- Control of fans 24 V DC EC 0...10 V DC EC, max. ±5 mA
- Max. connecting of 10 pieces of electrothermal actuators Z-TS24
- Degree of protection IP30
- Ambient temperature 0-50 °C
- Relative humidity <95%
- Dimensions: 128×93×31 mm

Setting the thermostat

When putting into operation it is necessary to switch over the DIP switch and set the thermostat's internal parameters, for more see the page 85.

Optional accessories

- External temperature sensor TE40
- Sensor of exchanger's temperature TE30
- Remote infrared control RC10
- Possibility to connect open window sensor

RTD201KN KNX ROOM THERMOSTAT

A digital **RTD201KN** thermostat to facilitate trench heating integration into the BMS system. Preset for KNX protocols and adapted via ETC and ACS (Synco) design software. Compatible with communication objects in **S-mode** and **LTE mode**.

Description

- Digital room thermostat with backlit LCD display
- KNX bus communication (S-mode and LTE-mode)
- Manual or automatic switching of speeds
- Operating modes: Comfort, Economy and Protection
- Colour of front cover: white RAL9003

Parameters

- Temperature range 5-40 °C (Comfort mode)
- Rated voltage 24 V DC
- Power consumption max. 2 VA/1 W
- Control of fans 24 V DC EC 0...10 V DC EC, max. ±5 mA
- Max. connecting of 10 pieces of electrothermal actuators Z-TS24
- Degree of protection IP30
- Ambient temperature 0-50 °C
- Relative humidity <95%
- Dimensions: 128×93×31 mm

Optional accessories

- External temperature sensor TE40
- Remote infrared control RC10
- Possibility to connect open window sensor

BMS integration

- commissioning via the ACS790 software, ETS configuration software or control elements
- integrated with Synco controllers
- integrated into the DESIGO system via group (ETS) or individual addresses
- integrated into external systems via group addresses (ETS)

RTM201 ROOM THERMOSTAT

A mechanical thermostat for 3-stage control of trench heaters fitted with 24 V DC EC fans and 24 V DC electrothermal actuators.
May be used as a primary reference thermostat; however, its more common application is that of a secondary thermostat for trench heating control in other rooms, shops, warehouses, entrance halls or industrial premises.
The use of a TE30 temperature sensor (accessories) allows for heating water temperature monitoring and fan operation blocking in case of insufficient heat-transfer fluid temperature. It also provides the heating system with anti-freeze protection by activating the Z-TS24 electrothermal actuator once the temperature drops below 4 °C to prevent the heat exchanger from freezing*.

Description

- mechanical thermostat for trench heating control
- 2-pipe heating system
- manual 3-speed fan switch
- front cover color - RAL9003 White

Parameters

- Temperature range 8...30°C
- Rated voltage 24 V DC
- Input: 2mA (without external loading)
- 24 V DC EC fan control, max. 10 mA
- Max. connecting of 4 pieces of electrothermal actuators Z-TS24
- fan operation blocking in the event of low heating medium temperature
- anti-freeze protection
- IP30 protection rating
- Ambient temperature 0-50 °C
- Relative humidity <95%
- Dimensions: 110×96x36 mm

Optional accessories

- Sensor of exchanger's temperature TE30

* The heat-transfer circuit must be in operation in order for this function to work properly.

DR60-24 / DR100-24 / DRP240-24 / DRP480-24 POWER SUPPLY

Converts the mains voltage of 230 V AC to safe voltage of 24 V DC, power supply made ready for installation on DIN bar.

Description

- For the placement of the source provide sufficient space in the switchboard
- Size the output to fit the input of installed bodies and cabling, provide 5% output reserve on the source against calculated consumption
- DR60-24 and DR100-24 may be installed in a box for wall installation

DR60-24, 60 W
24 V DC, 78×93×56 mm

DR100-24, 100 W
24 V DC, 100×93×56 mm

DRP240-24, 240 W
24 V DC, 126×126×100 mm

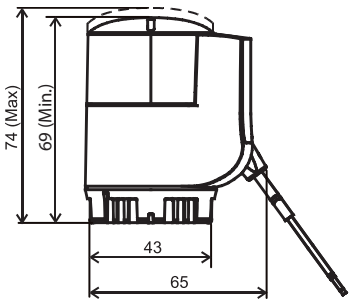
DRP480-24, 480 W
24 V DC, 227×126×100 mm

Z-TS24 / Z-TS24-5m ELECTROTHERMAL ACTUATOR 24 V DC

Opened/closed function (without voltage closed).

Parameters

- Input voltage: 24 V DC
- Power consumption: at switch-on 6 VA, input at operation: 2,5 W
- Opening/closing time: 270 s
- Degree of protection: IP54 cover of the casing
- Connection to valve: M30×1,5 mm
- Total height at max. lift: 74 mm
- Colour of actuator and cabel: black RAL9005



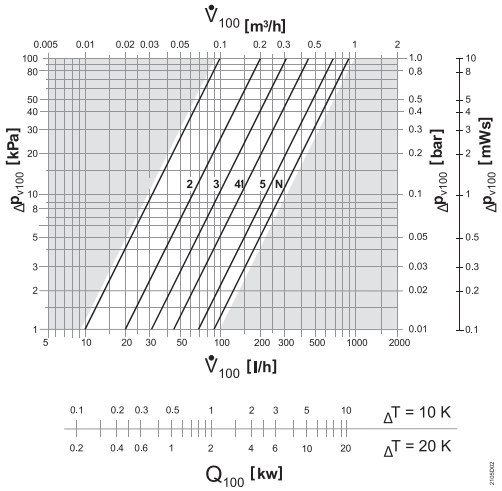
Z-TS24 cable length 3 m
Z-TS24-5m cable length 5 m

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

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

Parameters

- Size: DN15, NF standard
- Connecting thread: M30×1,5 mm
- Max. operating temperature 120 °C
- Max. operating pressure PN10
- Option to change pre-setting of kv-value
- kv value (m³/h) range 0.10-0.89
- kv value (m³/h) for zone 2K 0.52



Z-TD001
direct thermostatic valve

Z-TE001
corner thermostatic valve

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

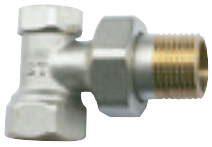
Direct and corner closing and regulation screw connection, flow setting, installation on the exchanger's outlet pipe.

Parameters

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

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

Z-RD001
direct screw connection



Z-RE001
corner screw connection

RL10 RELAY

The thermostat RTD201 allows for the connection of 10 pieces of electrothermal actuators at most, if the number of installed actuators is higher use RL10 according to the electric scheme.

Parameters

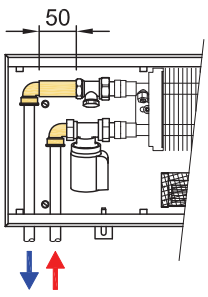
- voltage in winding 24 V DC
- Degree of protection IP20
- Max. switching current 12 A
- Without voltage: disconnection
- 37×20×39 mm
- Max. operating temperature 60 °C

PR40, PR50 EXTENSION PIECES WITH ELBOWS

For easy connection of the trench heater to the heating system in the direction towards the room centre. The length of the extension piece and the types of elbows will set the connection points opposite the openings in the trench heater's trough.

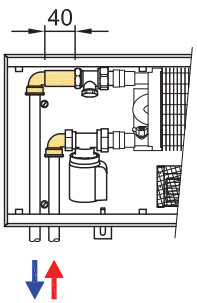
PR50 extension piece 50 mm, 2×elbow 90°

Use for models
- FRT 0065 0250
- FRT 0065 0300
- FRT 0080 0250
- FRT 0080 0300



PR40 – extension piece 40 mm, 2×elbow 90°

All other models FRT, except for the ones stated with PR50



2×

1×

KP10 BOX FOR POWER SUPPLY

Box to place under plaster, for the installation of the power supply.

Parameters

- Option of installation of DR60-24 and DR100-24
- Attachment to DIN bar
- Installation under plaster, hidden in the wall
- 234×176×79 mm
- For the case when more supplies need to be installed
- When the space in the switchboard is not sufficient

TE30 SEPARATED TEMPERATURE SENSOR (BLOCKING OF REVS) / for thermostat RTD201

Parameters

- Separated temperature sensor monitors temperature of heat exchanger, when the heat exchanger is cold it will not switch on fans
- Connection to thermostat RTD201
- Measuring range 0-40 °C
- Measuring sensor NTC, 3 kΩ at 25 °C
- Measuring accuracy at 25 °C: ±0.3 K
- Cable length ca. 2.5 m, can be adjusted, max. total length 80 m
- Temperature range 0-49°C

TE40 EXTERNAL SPATIAL SENSOR FOR TEMPERATURE / for thermostat RTD201

Parameters

- Measures room temperature on a different spot than the spot where the thermostat is installed
- Connection to thermostat RTD201
- Measuring range 0-40 °C
- Measuring sensor NTC, 3 kΩ at 25 °C
- Measuring accuracy at 25 °C: ±0.3 K
- Degree of protection IP30
- Operating temperature 0-50 °C
- Relative humidity <85 %
- White colour RAL9003
- 97×100×36mm

RC10 REMOTE CONTROL / for thermostat RTD201, Infrared

IRA211 is an infrared control for use with room thermostat RTD201. Communication between the remote control and the spatial regulator is one way. Current setting is shown on the display. Any change carried out directly on the spatial regulator will not be synchronized with the remote control.

Parameters

- Operating mode selection: Comfort, Automatic with a time mode or Protective mode
- Change of the setting of required spatial temperature in the Comfort mode
- Selection of the fan's operating mode: Automatic or manual selection of the fan's speed
- Operating distance (infrared transceiver), distance ≤ 7.5 m, angle ≤ ± 30 °

FRT 0065 0250

TRENCH HEATER WITH FAN

ECO & SAFE | VOLTAGE 24

- Flats, detached houses, offices, administrative buildings
- The lowest and the most narrow fan assisted trench heater
- High heating output
- Continuous speed control
- Quiet operation
- Common electricity consumption **2 W/m**
- Using in dry environment

Technical data

Trench heater

Height	H = **65** mm
Width	W = **250** mm
Length	L = **700–4 800** mm in step **100** mm

Heat exchanger

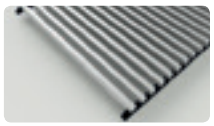
Type	**Al-Cu** lamellar
Length	L–**295** mm
Connection thread	**2×G1/2"** inner

Working conditions

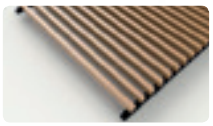
Max. temperature	**110** °C
Max. overpressure	**1** MPa (**10** bar)
Protection	IP **20**
Ambient conditions	Temp. T = **+2** to **+40** °C Humidity Rh = **20** to **70**%

Variants

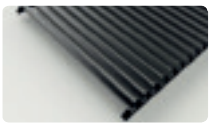
Transverse grilles - rigid



natur - anod. aluminium



bronze - anod. aluminium



black - anod. aluminium

Peripheral ledge

(more on page 8)

- Low trench heaters are equipped with a non-rolling grille segment
- Only transverse grilles are delivered
- Colours natural, bronze, black

More possibilities and variants → page 6

Trench heater standard equipment

Trough	Galvanized steel trough with surface finish and black spray layer inside, black cover plates of connection
Heat exchanger	Al-Cu lamellar exchanger with air vent valve, black painted
Grille	Design walkable grille according the customer's choice
Ledge	Made of anodized aluminium, type and colour according the customer's choice
Fan	Modern tangential fan with 24 V DC EC motor with high efficiency
Assembly elements	Leveling screws for setting up the trough, mounting brackets
Manual	Manual for the progress of work during installation and user manual
Wiring	Electrical wiring diagram of the trench heaters
Mounting board	Cover and the spacer particle board for easy installation
Package	Transport package for protection against damage during transportation and handling

Accessories per order

Room thermostat

Power supply

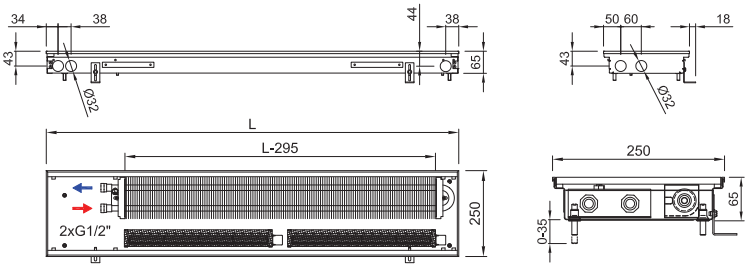
Electrothermal actuator

Thermostatic valve

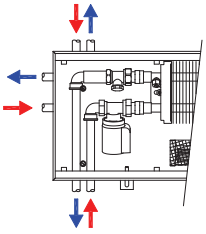
Lockshield valve

Accessories details → page 12

Technical drawing



Connection to heating system



The hydraulic parameters of the heat exchanger → page 82

Code example: FRT 0065 0250 1600 C 15 J1 L - 5
Trench heater **FRT** H=**65** mm, W=**250** mm, L=**1 600** mm, „**C**" Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**15**" Low natural anodized aluminium grille, transverse, rigid, „**J1**" peripheral ledge „J", natur anodized aluminium, „**L**" water connection at the left side (when installing the heat exchanger closer to the window, fans to the room), „**5**" 24 V DC fans without controller (controller is not needed)

Trench heater heating output FRT 0065 0250

Q[W] 75/65/20 °C (ΔT=50 °C) Temperature exponent 1,1

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	149 W	312 W	401 W	469 W
800	198 W	416 W	535 W	625 W
900	238 W	499 W	642 W	750 W
1000	337 W	707 W	909 W	1 062 W
1100	337 W	707 W	909 W	1 062 W
1200	396 W	832 W	1 069 W	1 249 W
1300	436 W	915 W	1 176 W	1 374 W
1400	486 W	1 019 W	1 310 W	1 531 W
1500	535 W	1 123 W	1 444 W	1 687 W
1600	586 W	1 229 W	1 580 W	1 846 W
1700	586 W	1 229 W	1 580 W	1 846 W
1800	674 W	1 414 W	1 818 W	2 124 W
1900	734 W	1 541 W	1 981 W	2 315 W
2000	784 W	1 645 W	2 115 W	2 471 W
2100	824 W	1 728 W	2 222 W	2 596 W
2200	824 W	1 728 W	2 222 W	2 596 W
2300	923 W	1 936 W	2 489 W	2 908 W
2400	923 W	1 936 W	2 489 W	2 908 W
2500	982 W	2 061 W	2 649 W	3 095 W
2600	1 022 W	2 144 W	2 756 W	3 220 W
2700	1 062 W	2 228 W	2 863 W	3 345 W
2800	1 121 W	2 352 W	3 024 W	3 533 W
2900	1 172 W	2 458 W	3 160 W	3 692 W
3000	1 172 W	2 458 W	3 160 W	3 692 W
3200	1 320 W	2 770 W	3 561 W	4 161 W
3400	1 370 W	2 874 W	3 695 W	4 317 W
3600	1 509 W	3 166 W	4 069 W	4 754 W
3800	1 558 W	3 270 W	4 203 W	4 910 W
4000	1 647 W	3 457 W	4 443 W	5 191 W
4200	1 757 W	3 688 W	4 740 W	5 538 W
4400	1 846 W	3 873 W	4 978 W	5 816 W
4600	1 956 W	4 104 W	5 275 W	6 163 W
4800	1 995 W	4 187 W	5 382 W	6 288 W

Q[W] 55/45/20 °C (ΔT=30 °C)

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	85 W	178 W	229 W	267 W
800	113 W	237 W	305 W	356 W
900	136 W	284 W	366 W	428 W
1000	192 W	403 W	518 W	605 W
1100	192 W	403 W	518 W	605 W
1200	226 W	474 W	609 W	712 W
1300	249 W	522 W	670 W	783 W
1400	277 W	581 W	747 W	873 W
1500	305 W	640 W	823 W	962 W
1600	334 W	701 W	901 W	1 052 W
1700	334 W	701 W	901 W	1 052 W
1800	384 W	806 W	1 036 W	1 211 W
1900	418 W	879 W	1 129 W	1 320 W
2000	447 W	938 W	1 206 W	1 409 W
2100	470 W	985 W	1 267 W	1 480 W
2200	470 W	985 W	1 267 W	1 480 W
2300	526 W	1 104 W	1 419 W	1 658 W
2400	526 W	1 104 W	1 419 W	1 658 W
2500	560 W	1 175 W	1 510 W	1 765 W
2600	583 W	1 222 W	1 571 W	1 836 W
2700	605 W	1 270 W	1 632 W	1 907 W
2800	639 W	1 341 W	1 724 W	2 014 W
2900	668 W	1 401 W	1 802 W	2 105 W
3000	668 W	1 401 W	1 802 W	2 105 W
3200	753 W	1 579 W	2 030 W	2 372 W
3400	781 W	1 639 W	2 107 W	2 461 W
3600	860 W	1 805 W	2 320 W	2 710 W
3800	888 W	1 864 W	2 396 W	2 799 W
4000	939 W	1 971 W	2 533 W	2 959 W
4200	1 002 W	2 103 W	2 702 W	3 157 W
4400	1 052 W	2 208 W	2 838 W	3 316 W
4600	1 115 W	2 340 W	3 007 W	3 514 W
4800	1 137 W	2 387 W	3 068 W	3 585 W

75/65/20 °C → 75°C inlet temperature, 65°C outlet temp., 20 °C room temp. / **Output 90/70/20 °C** = ~ 1,22 x 75/65/20 °C / **Output 70/55/20 °C** = ~ 0,84 x 75/65/20 °C / Heating outputs in accordance with EN 16430 / Not listed heating outpus for lengths per 100 mm steps calculate linearly. Exact values can be found at www.isan.cz

Acoustic pressure [dB(A)]

Length L [mm]	Speed [-] / Acoustic pressure [dB(A)]			
	1	2	3	4 max.
700	< 20 dB(A)	20 dB(A)	25 dB(A)	29 dB(A)
800		21 dB(A)	26 dB(A)	30 dB(A)
900				
1000				31 dB(A)
1100				
1200		22 dB(A)	27 dB(A)	32 dB(A)
1300				
1400				33 dB(A)
1500				
1600		23 dB(A)	28 dB(A)	
1700				34 dB(A)
1800				
1900				
2000		24 dB(A)	29 dB(A)	
2100				35 dB(A)
2200				
2300				
2400				
2500		25 dB(A)	30 dB(A)	
2600				36 dB(A)
2700				
2800				
2900		26 dB(A)	31 dB(A)	
3000				
3200				37 dB(A)
3400		27 dB(A)	32 dB(A)	
3600				
3800		28 dB(A)	33 dB(A)	
4000				38 dB(A)
4200		29 dB(A)	34 dB(A)	
4400				
4600		30 dB(A)	35 dB(A)	
4800				

Acoustic pressure level choose according to specific environment. More details on page 10

Fans input power [W]*

Length L [mm]	Speed [-] / Fans input power [W]*			
	1	2	3	4 max.
700	1 W	1 W	2 W	2 W
800	1 W	1 W	2 W	2 W
900	1 W	1 W	2 W	2 W
1000	2 W	2 W	2 W	3 W
1100	2 W	2 W	2 W	3 W
1200	2 W	3 W	3 W	4 W
1300	2 W	3 W	3 W	4 W
1400	3 W	3 W	4 W	5 W
1500	3 W	3 W	4 W	5 W
1600	3 W	3 W	4 W	5 W
1700	3 W	3 W	4 W	5 W
1800	3 W	3 W	4 W	5 W
1900	3 W	4 W	5 W	6 W
2000	4 W	5 W	6 W	7 W
2100	4 W	5 W	6 W	7 W
2200	4 W	5 W	6 W	7 W
2300	4 W	5 W	6 W	7 W
2400	4 W	5 W	6 W	7 W
2500	5 W	6 W	7 W	9 W
2600	5 W	6 W	7 W	9 W
2700	5 W	6 W	7 W	9 W
2800	5 W	6 W	7 W	9 W
2900	5 W	6 W	7 W	9 W
3000	5 W	6 W	7 W	9 W
3200	6 W	8 W	9 W	11 W
3400	6 W	8 W	9 W	11 W
3600	7 W	8 W	10 W	12 W
3800	7 W	9 W	11 W	13 W
4000	7 W	9 W	11 W	13 W
4200	7 W	9 W	11 W	13 W
4400	8 W	10 W	12 W	14 W
4600	8 W	10 W	12 W	15 W
4800	8 W	10 W	12 W	15 W

* Approximate fan input powers / **When using electrothermal actuator add in the trench heater's power 3 W** / Wiring of the trench heater → page 85

FRT 0065 0300

TRENCH HEATER WITH FAN

ECO & SAFE | VOLTAGE 24

- Flats, detached houses, offices, administrative buildings
- Low construction of the trench heater
- High heating output
- Continuous speed control
- Quiet operation
- Common electricity consumption **2 W/m**
- Using in dry environment

Technical data

Trench heater

Height	H = **65** mm
Width	W = **300** mm
Length	L = **700–4 800** mm in step **100** mm

Heat exchanger

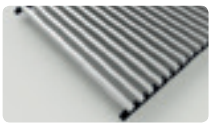
Type	**Al-Cu** lamellar
Length	L–**295** mm
Connection thread	**2×G1/2"** inner

Working conditions

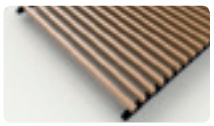
Max. temperature	**110** °C
Max. overpressure	**1** MPa (**10** bar)
Protection	IP **20**
Ambient conditions	Temp. T = **+2** to **+40** °C Humidity Rh = **20** to **70**%

Variants

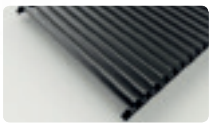
Transverse grilles - rigid



natur - anod. aluminium



bronze - anod. aluminium



black - anod. aluminium

Peripheral ledge

(more on page 8)

- Low trench heaters are equipped with a non-rolling grille segment
- Only transverse grilles are delivered
- Colours natural, bronze, black

More possibilities and variants → page 6

Trench heater standard equipment

Trough	Galvanized steel trough with surface finish and black spray layer inside, black cover plates of connection
Heat exchanger	Al-Cu lamellar exchanger with air vent valve, black painted
Grille	Design walkable grille according the customer's choice
Ledge	Made of anodized aluminium, type and colour according the customer's choice
Fan	Modern tangential fan with 24 V DC EC motor with high efficiency
Assembly elements	Leveling screws for setting up the trough, mounting brackets
Manual	Manual for the progress of work during installation and user manual
Wiring	Electrical wiring diagram of the trench heaters
Mounting board	Cover and the spacer particle board for easy installation
Package	Transport package for protection against damage during transportation and handling

Accessories per order

Room thermostat

Power supply

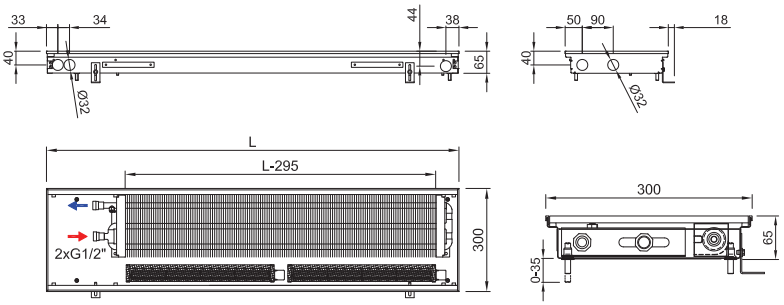
Electrothermal actuator

Thermostatic valve

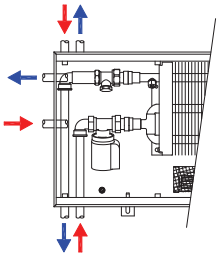
Lockshield valve

Accessories details → page 12

Technical drawing



Connection to heating system



The hydraulic parameters of the heat exchanger → page 82

Code example: FRT 0065 0300 2000 C 25 J2 R - 5

Trench heater **FRT** H = **65** mm, W = **300** mm, L = **2 000** mm, „**C**" Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**25**" Low bronze anodized aluminium grille, transverse, rigid, „**J2**" peripheral ledge „J", bronze anodized aluminium, „**R**" water connection at the right side (when installing the heat exchanger closer to the window, fans to the room), „**5**" 24 V DC fans without controller (controller is not needed)

Trench heater heating output FRT 0065 0300

Q[W] 75/65/20 °C (ΔT=50 °C) Temperature exponent 1,1

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	179 W	388 W	495 W	559 W
800	239 W	517 W	660 W	745 W
900	287 W	621 W	792 W	894 W
1000	406 W	880 W	1 122 W	1 267 W
1100	406 W	880 W	1 122 W	1 267 W
1200	478 W	1 035 W	1 320 W	1 491 W
1300	525 W	1 138 W	1 452 W	1 640 W
1400	585 W	1 268 W	1 617 W	1 826 W
1500	645 W	1 397 W	1 782 W	2 012 W
1600	706 W	1 529 W	1 950 W	2 202 W
1700	706 W	1 529 W	1 950 W	2 202 W
1800	812 W	1 759 W	2 244 W	2 534 W
1900	885 W	1 917 W	2 445 W	2 761 W
2000	945 W	2 046 W	2 610 W	2 948 W
2100	992 W	2 150 W	2 742 W	3 097 W
2200	992 W	2 150 W	2 742 W	3 097 W
2300	1 112 W	2 409 W	3 072 W	3 469 W
2400	1 112 W	2 409 W	3 072 W	3 469 W
2500	1 183 W	2 564 W	3 270 W	3 693 W
2600	1 231 W	2 667 W	3 402 W	3 842 W
2700	1 279 W	2 771 W	3 534 W	3 991 W
2800	1 351 W	2 926 W	3 732 W	4 215 W
2900	1 411 W	3 058 W	3 901 W	4 405 W
3000	1 411 W	3 058 W	3 901 W	4 405 W
3200	1 591 W	3 446 W	4 396 W	4 964 W
3400	1 650 W	3 576 W	4 561 W	5 150 W
3600	1 817 W	3 938 W	5 023 W	5 672 W
3800	1 877 W	4 067 W	5 188 W	5 858 W
4000	1 985 W	4 300 W	5 485 W	6 193 W
4200	2 117 W	4 587 W	5 851 W	6 607 W
4400	2 223 W	4 817 W	6 145 W	6 939 W
4600	2 356 W	5 105 W	6 511 W	7 352 W
4800	2 404 W	5 208 W	6 643 W	7 501 W

Q[W] 55/45/20 °C (ΔT=30 °C)

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	102 W	221 W	282 W	319 W
800	136 W	295 W	376 W	425 W
900	164 W	354 W	452 W	510 W
1000	231 W	502 W	640 W	722 W
1100	231 W	502 W	640 W	722 W
1200	273 W	590 W	753 W	850 W
1300	299 W	649 W	828 W	935 W
1400	334 W	723 W	922 W	1 041 W
1500	368 W	796 W	1 016 W	1 147 W
1600	403 W	872 W	1 112 W	1 255 W
1700	403 W	872 W	1 112 W	1 255 W
1800	463 W	1 003 W	1 279 W	1 445 W
1900	505 W	1 093 W	1 394 W	1 574 W
2000	539 W	1 166 W	1 488 W	1 681 W
2100	566 W	1 226 W	1 563 W	1 766 W
2200	566 W	1 226 W	1 563 W	1 766 W
2300	634 W	1 373 W	1 751 W	1 978 W
2400	634 W	1 373 W	1 751 W	1 978 W
2500	674 W	1 462 W	1 864 W	2 105 W
2600	702 W	1 521 W	1 940 W	2 190 W
2700	729 W	1 580 W	2 015 W	2 275 W
2800	770 W	1 668 W	2 128 W	2 403 W
2900	804 W	1 743 W	2 224 W	2 511 W
3000	804 W	1 743 W	2 224 W	2 511 W
3200	907 W	1 965 W	2 506 W	2 830 W
3400	941 W	2 039 W	2 600 W	2 936 W
3600	1 036 W	2 245 W	2 864 W	3 234 W
3800	1 070 W	2 319 W	2 958 W	3 340 W
4000	1 132 W	2 452 W	3 127 W	3 531 W
4200	1 207 W	2 615 W	3 336 W	3 767 W
4400	1 267 W	2 746 W	3 503 W	3 956 W
4600	1 343 W	2 910 W	3 712 W	4 192 W
4800	1 371 W	2 969 W	3 787 W	4 276 W

75/65/20 °C → 75°C inlet temperature, 65°C outlet temp., 20 °C room temp. / **Output 90/70/20 °C** = ~ 1,22 x 75/65/20 °C / **Output 70/55/20 °C** = ~ 0,84 x 75/65/20 °C / Heating outputs in accordance with EN 16430 / Not listed heating outpus for lengths per 100 mm steps calculate linearly. Exact values can be found at www.isan.cz

Acoustic pressure [dB(A)]

Length L [mm]	Speed [-] / Acoustic pressure [dB(A)]			
	1	2	3	4 max.
700	< 20 dB(A)	20 dB(A)	25 dB(A)	29 dB(A)
800		21 dB(A)	26 dB(A)	30 dB(A)
900				
1000				31 dB(A)
1100				
1200		22 dB(A)	27 dB(A)	32 dB(A)
1300				
1400				33 dB(A)
1500				
1600		23 dB(A)	28 dB(A)	
1700				34 dB(A)
1800				
1900				
2000		24 dB(A)	29 dB(A)	
2100				35 dB(A)
2200				
2300				
2400				
2500		25 dB(A)	30 dB(A)	
2600				36 dB(A)
2700				
2800				
2900		26 dB(A)	31 dB(A)	
3000				
3200				37 dB(A)
3400		27 dB(A)	32 dB(A)	
3600				
3800		28 dB(A)	33 dB(A)	
4000				38 dB(A)
4200		29 dB(A)	34 dB(A)	
4400				
4600		30 dB(A)	35 dB(A)	
4800				

Acoustic pressure level choose according to specific environment. More details on page 10

Fans input power [W]*

Length L [mm]	Speed [-] / Fans input power [W]*			
	1	2	3	4 max.
700	1 W	1 W	2 W	2 W
800	1 W	1 W	2 W	2 W
900	1 W	1 W	2 W	2 W
1000	2 W	2 W	2 W	3 W
1100	2 W	2 W	2 W	3 W
1200	2 W	3 W	3 W	4 W
1300	2 W	3 W	3 W	4 W
1400	3 W	3 W	4 W	5 W
1500	3 W	3 W	4 W	5 W
1600	3 W	3 W	4 W	5 W
1700	3 W	3 W	4 W	5 W
1800	3 W	3 W	4 W	5 W
1900	3 W	4 W	5 W	6 W
2000	4 W	5 W	6 W	7 W
2100	4 W	5 W	6 W	7 W
2200	4 W	5 W	6 W	7 W
2300	4 W	5 W	6 W	7 W
2400	4 W	5 W	6 W	7 W
2500	5 W	6 W	7 W	9 W
2600	5 W	6 W	7 W	9 W
2700	5 W	6 W	7 W	9 W
2800	5 W	6 W	7 W	9 W
2900	5 W	6 W	7 W	9 W
3000	5 W	6 W	7 W	9 W
3200	6 W	8 W	9 W	11 W
3400	6 W	8 W	9 W	11 W
3600	7 W	8 W	10 W	12 W
3800	7 W	9 W	11 W	13 W
4000	7 W	9 W	11 W	13 W
4200	7 W	9 W	11 W	13 W
4400	8 W	10 W	12 W	14 W
4600	8 W	10 W	12 W	15 W
4800	8 W	10 W	12 W	15 W

* Approximate fan input powers / **When using electrothermal actuator add in the trench heater's power 3 W** / Wiring of the trench heater → page 85

FRT 0080 0175

TRENCH HEATER WITH FAN

ECO & SAFE | VOLTAGE 24

- Flats, detached houses, offices, administrative buildings
- Narrow and low trench heater
- High heating output
- Continuous speed control
- Quiet operation
- Common electricity consumption **2 W/m**
- Using in dry environment

Technical data

Trench heater

Height	H = **80** mm
Width	W = **175** mm
Length	L = **700–4 800** mm in step **100** mm

Heat exchanger

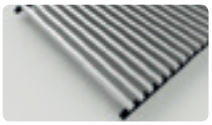
Type	**Al-Cu** lamellar
Length	L–**295** mm
Connection thread	**2×G1/2"** inner

Working conditions

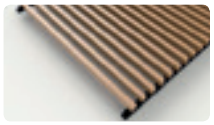
Max. temperature	**110** °C
Max. overpressure	**1** MPa (**10** bar)
Protection	IP **20**
Ambient conditions	Temp. T = **+2** to **+40** °C Humidity Rh = **20** to **70**%

Variants

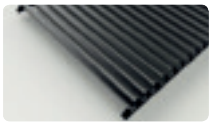
Transverse grilles - rigid



natur - anod. aluminium



bronze - anod. aluminium



black - anod. aluminium

Peripheral ledge

(more on page 8)

- Low trench heaters are equipped with a non-rolling grille segment
- Only transverse grilles are delivered
- Colours natural, bronze, black

More possibilities and variants → page 6

Trench heater standard equipment

Trough	Galvanized steel trough with surface finish and black spray layer inside, black cover plates of connection
Heat exchanger	Al-Cu lamellar exchanger with air vent valve, black painted
Grille	Design walkable grille according the customer's choice
Ledge	Made of anodized aluminium, type and colour according the customer's choice
Fan	Modern tangential fan with 24 V DC EC motor with high efficiency, rotors protection
Assembly elements	Leveling screws for setting up the trough, mounting brackets
Manual	Manual for the progress of work during installation and user manual
Wiring	Electrical wiring diagram of the trench heaters
Mounting board	Cover and the spacer particle board for easy installation
Package	Transport package for protection against damage during transportation and handling

Accessories per order

Room thermostat

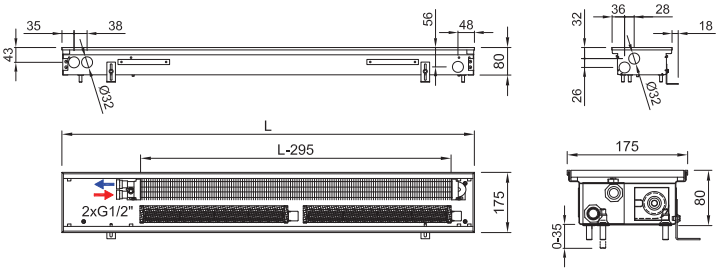
Power supply

Lockshield valve

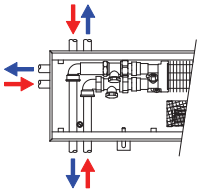
Thermostatic valve

Accessories details → page 12

Technical drawing



Connection to heating system



Electrothermal actuator can't be installed in the body of the trench heater due to limited internal space.

The hydraulic parameters of the heat exchanger → page 82

Code example: FRT 0080 0175 1700 C 35 J3 L - 5

Trench heater **FRT** H = **80** mm, W = **175** mm, L = **1 700** mm, „**C**" Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**35**" low black anodized aluminium grille, transverse, rigid, „**J3**" peripheral ledge „J", black anodized aluminium „**L**" water connection at the left side (when installing the heat exchanger closer to the window, fans to the room), „**5**" 24 V DC fans without controller (controller is not needed)

Trench heater heating output FRT 0080 0175

Q[W] 75/65/20 °C (ΔT=50 °C) Temperature exponent 1,1

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	94 W	235 W	291 W	347 W
800	126 W	313 W	388 W	463 W
900	151 W	375 W	466 W	556 W
1000	213 W	532 W	660 W	788 W
1100	213 W	532 W	660 W	788 W
1200	251 W	625 W	776 W	927 W
1300	276 W	688 W	854 W	1 019 W
1400	308 W	766 W	951 W	1 135 W
1500	339 W	844 W	1 048 W	1 251 W
1600	371 W	924 W	1 147 W	1 369 W
1700	371 W	924 W	1 147 W	1 369 W
1800	427 W	1 063 W	1 320 W	1 575 W
1900	465 W	1 159 W	1 438 W	1 716 W
2000	497 W	1 237 W	1 535 W	1 832 W
2100	522 W	1 299 W	1 613 W	1 925 W
2200	522 W	1 299 W	1 613 W	1 925 W
2300	584 W	1 456 W	1 807 W	2 157 W
2400	584 W	1 456 W	1 807 W	2 157 W
2500	622 W	1 549 W	1 923 W	2 296 W
2600	647 W	1 612 W	2 001 W	2 388 W
2700	672 W	1 674 W	2 079 W	2 481 W
2800	710 W	1 768 W	2 195 W	2 620 W
2900	742 W	1 848 W	2 294 W	2 738 W
3000	742 W	1 848 W	2 294 W	2 738 W
3200	836 W	2 083 W	2 585 W	3 085 W
3400	868 W	2 161 W	2 682 W	3 201 W
3600	955 W	2 380 W	2 954 W	3 526 W
3800	987 W	2 458 W	3 051 W	3 641 W
4000	1 043 W	2 598 W	3 226 W	3 850 W
4200	1 113 W	2 772 W	3 441 W	4 107 W
4400	1 169 W	2 911 W	3 614 W	4 313 W
4600	1 239 W	3 085 W	3 829 W	4 570 W
4800	1 264 W	3 147 W	3 907 W	4 663 W

Q[W] 55/45/20 °C (ΔT=30 °C)

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	54 W	134 W	166 W	198 W
800	72 W	178 W	221 W	264 W
900	86 W	214 W	266 W	317 W
1000	121 W	303 W	376 W	449 W
1100	121 W	303 W	376 W	449 W
1200	143 W	356 W	442 W	529 W
1300	157 W	392 W	487 W	581 W
1400	176 W	437 W	542 W	647 W
1500	193 W	481 W	597 W	713 W
1600	212 W	527 W	654 W	780 W
1700	212 W	527 W	654 W	780 W
1800	243 W	606 W	753 W	898 W
1900	265 W	661 W	820 W	978 W
2000	283 W	705 W	875 W	1 044 W
2100	298 W	741 W	920 W	1 097 W
2200	298 W	741 W	920 W	1 097 W
2300	333 W	830 W	1 030 W	1 230 W
2400	333 W	830 W	1 030 W	1 230 W
2500	355 W	883 W	1 096 W	1 309 W
2600	369 W	919 W	1 141 W	1 361 W
2700	383 W	954 W	1 185 W	1 414 W
2800	405 W	1 008 W	1 251 W	1 494 W
2900	423 W	1 054 W	1 308 W	1 561 W
3000	423 W	1 054 W	1 308 W	1 561 W
3200	477 W	1 188 W	1 474 W	1 759 W
3400	495 W	1 232 W	1 529 W	1 825 W
3600	544 W	1 357 W	1 684 W	2 010 W
3800	563 W	1 401 W	1 739 W	2 076 W
4000	595 W	1 481 W	1 839 W	2 195 W
4200	635 W	1 580 W	1 962 W	2 341 W
4400	666 W	1 660 W	2 060 W	2 459 W
4600	706 W	1 759 W	2 183 W	2 605 W
4800	721 W	1 794 W	2 227 W	2 658 W

75/65/20 °C → 75°C inlet temperature, 65°C outlet temp., 20 °C room temp. / **Output 90/70/20 °C** = ~ 1,22 x 75/65/20 °C / **Output 70/55/20 °C** = ~ 0,84 x 75/65/20 °C / Heating outputs in accordance with EN 16430 / Not listed heating outpus for lengths per 100 mm steps calculate linearly. Exact values can be found at www.isan.cz

Acoustic pressure [dB(A)]

Length L [mm]	Speed [-] / Acoustic pressure [dB(A)]			
	1	2	3	4 max.
700	< 20 dB(A)	20 dB(A)	25 dB(A)	29 dB(A)
800		21 dB(A)	26 dB(A)	30 dB(A)
900				
1000				31 dB(A)
1100				
1200		22 dB(A)	27 dB(A)	
1300				32 dB(A)
1400				
1500				33 dB(A)
1600		23 dB(A)	28 dB(A)	
1700				
1800				34 dB(A)
1900				
2000		24 dB(A)	29 dB(A)	
2100				35 dB(A)
2200				
2300				
2400				
2500		25 dB(A)	30 dB(A)	
2600				36 dB(A)
2700				
2800				
2900		26 dB(A)	31 dB(A)	
3000				
3200				37 dB(A)
3400		27 dB(A)	32 dB(A)	
3600				
3800		28 dB(A)	33 dB(A)	
4000				38 dB(A)
4200		29 dB(A)	34 dB(A)	
4400				
4600		30 dB(A)	35 dB(A)	
4800				

Acoustic pressure level choose according to specific environment. More details on page 10

Fans input power [W]*

Length L [mm]	Speed [-] / Fans input power [W]*			
	1	2	3	4 max.
700	1 W	1 W	2 W	2 W
800	1 W	1 W	2 W	2 W
900	1 W	1 W	2 W	2 W
1000	2 W	2 W	2 W	3 W
1100	2 W	2 W	2 W	3 W
1200	2 W	3 W	3 W	4 W
1300	2 W	3 W	3 W	4 W
1400	3 W	3 W	4 W	5 W
1500	3 W	3 W	4 W	5 W
1600	3 W	3 W	4 W	5 W
1700	3 W	3 W	4 W	5 W
1800	3 W	3 W	4 W	5 W
1900	3 W	4 W	5 W	6 W
2000	4 W	5 W	6 W	7 W
2100	4 W	5 W	6 W	7 W
2200	4 W	5 W	6 W	7 W
2300	4 W	5 W	6 W	7 W
2400	4 W	5 W	6 W	7 W
2500	5 W	6 W	7 W	9 W
2600	5 W	6 W	7 W	9 W
2700	5 W	6 W	7 W	9 W
2800	5 W	6 W	7 W	9 W
2900	5 W	6 W	7 W	9 W
3000	5 W	6 W	7 W	9 W
3200	6 W	8 W	9 W	11 W
3400	6 W	8 W	9 W	11 W
3600	7 W	8 W	10 W	12 W
3800	7 W	9 W	11 W	13 W
4000	7 W	9 W	11 W	13 W
4200	7 W	9 W	11 W	13 W
4400	8 W	10 W	12 W	14 W
4600	8 W	10 W	12 W	15 W
4800	8 W	10 W	12 W	15 W

* Approximate fan input powers / **When using electrothermal actuator add in the trench heater's power 3 W** / Wiring of the trench heater → page 85

FRT 0080 0200

TRENCH HEATER WITH FAN

ECO & SAFE | VOLTAGE 24

- Flats, detached houses, offices, administrative buildings
- Small universal trench heater
- High heating output
- Continuous speed control
- Quiet operation
- Common electricity consumption **2 W/m**
- Using in dry environment

Technical data

Trench heater

Height	H = **80** mm
Width	W = **200** mm
Length	L = **700–4 800** mm in step **100** mm

Heat exchanger

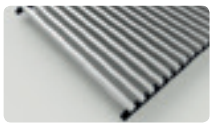
Type	**Al-Cu** lamellar
Length	L–**295** mm
Connection thread	**2×G1/2"** inner

Working conditions

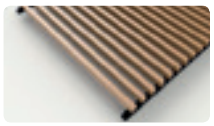
Max. temperature	**110** °C
Max. overpressure	**1** MPa (**10** bar)
Protection	IP **20**
Ambient conditions	Temp. T = **+2** to **+40** °C Humidity Rh = **20** to **70**%

Variants

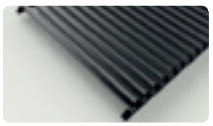
Transverse grilles - rigid



natur - anod. aluminium



bronze - anod. aluminium



black - anod. aluminium

Peripheral ledge

(more on page 8)

- Low trench heaters are equipped with a non-rolling grille segment
- Only transverse grilles are delivered
- Colours natural, bronze, black

More possibilities and variants → page 6

Trench heater standard equipment

Trough	Galvanized steel trough with surface finish and black spray layer inside, black cover plates of connection
Heat exchanger	Al-Cu lamellar exchanger with air vent valve, black painted
Grille	Design walkable grille according the customer's choice
Ledge	Made of anodized aluminium, type and colour according the customer's choice
Fan	Modern tangential fan with 24 V DC EC motor with high efficiency, rotors protection
Assembly elements	Leveling screws for setting up the trough, mounting brackets
Manual	Manual for the progress of work during installation and user manual
Wiring	Electrical wiring diagram of the trench heaters
Mounting board	Cover and the spacer particle board for easy installation
Package	Transport package for protection against damage during transportation and handling

Accessories per order

Room thermostat

Power supply

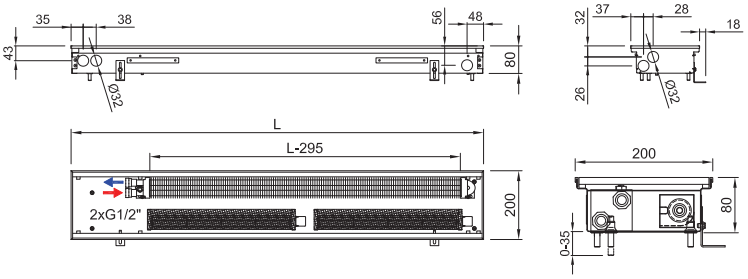
Electrothermal actuator

Thermostatic valve

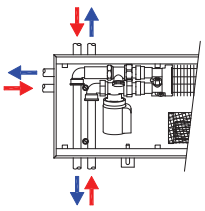
Lockshield valve

Accessories details → page 12

Technical drawing



Connection to heating system



The hydraulic parameters of the heat exchanger → page 82

Code example: FRT 0080 0200 1900 C 15 L1 L - 5

Trench heater **FRT** H = **80** mm, W = **200** mm, L = **1 900** mm, „**C**" Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**15**" Low natural anodized aluminium grille, transverse, rigid, „**L1**" peripheral ledge „L" with an overlap, natur anodized aluminium „**L**" water connection at the left side (when installing the heat exchanger closer to the window, fans to the room), „**5**" 24 V DC fans without controller (controller is not needed)

Trench heater heating output FRT 0080 0200

Q[W] 75/65/20 °C (ΔT=50 °C) Temperature exponent 1,1

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	154 W	250 W	310 W	371 W
800	205 W	334 W	414 W	494 W
900	246 W	400 W	496 W	593 W
1000	349 W	567 W	703 W	840 W
1100	349 W	567 W	703 W	840 W
1200	410 W	667 W	827 W	988 W
1300	451 W	734 W	910 W	1 087 W
1400	502 W	817 W	1 013 W	1 210 W
1500	554 W	901 W	1 117 W	1 334 W
1600	606 W	986 W	1 222 W	1 460 W
1700	606 W	986 W	1 222 W	1 460 W
1800	697 W	1 134 W	1 406 W	1 680 W
1900	760 W	1 236 W	1 532 W	1 831 W
2000	811 W	1 320 W	1 636 W	1 954 W
2100	852 W	1 386 W	1 718 W	2 053 W
2200	852 W	1 386 W	1 718 W	2 053 W
2300	955 W	1 553 W	1 925 W	2 300 W
2400	955 W	1 553 W	1 925 W	2 300 W
2500	1 016 W	1 653 W	2 049 W	2 448 W
2600	1 057 W	1 720 W	2 132 W	2 547 W
2700	1 098 W	1 787 W	2 214 W	2 646 W
2800	1 160 W	1 887 W	2 339 W	2 794 W
2900	1 212 W	1 972 W	2 444 W	2 920 W
3000	1 212 W	1 972 W	2 444 W	2 920 W
3200	1 366 W	2 222 W	2 754 W	3 291 W
3400	1 417 W	2 306 W	2 858 W	3 414 W
3600	1 561 W	2 539 W	3 147 W	3 760 W
3800	1 612 W	2 623 W	3 250 W	3 883 W
4000	1 704 W	2 773 W	3 436 W	4 106 W
4200	1 818 W	2 958 W	3 666 W	4 380 W
4400	1 909 W	3 106 W	3 850 W	4 600 W
4600	2 023 W	3 292 W	4 080 W	4 874 W
4800	2 064 W	3 358 W	4 162 W	4 973 W

Q[W] 55/45/20 °C (ΔT=30 °C)

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	88 W	143 W	177 W	212 W
800	117 W	190 W	236 W	282 W
900	140 W	228 W	283 W	338 W
1000	199 W	323 W	401 W	479 W
1100	199 W	323 W	401 W	479 W
1200	234 W	380 W	471 W	563 W
1300	257 W	418 W	519 W	620 W
1400	286 W	466 W	578 W	690 W
1500	316 W	514 W	637 W	761 W
1600	345 W	562 W	697 W	832 W
1700	345 W	562 W	697 W	832 W
1800	397 W	647 W	802 W	958 W
1900	433 W	705 W	873 W	1 044 W
2000	462 W	753 W	933 W	1 114 W
2100	486 W	790 W	979 W	1 170 W
2200	486 W	790 W	979 W	1 170 W
2300	544 W	885 W	1 097 W	1 311 W
2400	544 W	885 W	1 097 W	1 311 W
2500	579 W	942 W	1 168 W	1 396 W
2600	603 W	981 W	1 215 W	1 452 W
2700	626 W	1 019 W	1 262 W	1 509 W
2800	661 W	1 076 W	1 334 W	1 593 W
2900	691 W	1 124 W	1 393 W	1 665 W
3000	691 W	1 124 W	1 393 W	1 665 W
3200	779 W	1 267 W	1 570 W	1 876 W
3400	808 W	1 315 W	1 629 W	1 946 W
3600	890 W	1 448 W	1 794 W	2 144 W
3800	919 W	1 495 W	1 853 W	2 214 W
4000	971 W	1 581 W	1 959 W	2 341 W
4200	1 036 W	1 686 W	2 090 W	2 497 W
4400	1 088 W	1 771 W	2 195 W	2 623 W
4600	1 153 W	1 877 W	2 326 W	2 779 W
4800	1 177 W	1 914 W	2 373 W	2 835 W

75/65/20 °C → 75°C inlet temperature, 65°C outlet temp., 20 °C room temp. / **Output 90/70/20 °C** = ~ 1,22 x 75/65/20 °C / **Output 70/55/20 °C** = ~ 0,84 x 75/65/20 °C / Heating outputs in accordance with EN 16430 / Not listed heating outpus for lengths per 100 mm steps calculate linearly. Exact values can be found at www.isan.cz

Acoustic pressure [dB(A)]

Length L [mm]	Speed [-] / Acoustic pressure [dB(A)]			
	1	2	3	4 max.
700	< 20 dB(A)	20 dB(A)	25 dB(A)	29 dB(A)
800		21 dB(A)	26 dB(A)	30 dB(A)
900				
1000				31 dB(A)
1100				
1200		22 dB(A)	27 dB(A)	
1300				32 dB(A)
1400				
1500				33 dB(A)
1600		23 dB(A)	28 dB(A)	
1700				
1800				34 dB(A)
1900				
2000		24 dB(A)	29 dB(A)	
2100				35 dB(A)
2200				
2300				
2400				
2500		25 dB(A)	30 dB(A)	
2600				36 dB(A)
2700				
2800				
2900		26 dB(A)	31 dB(A)	
3000				
3200				37 dB(A)
3400		27 dB(A)	32 dB(A)	
3600				
3800		28 dB(A)	33 dB(A)	
4000				
4200		29 dB(A)	34 dB(A)	38 dB(A)
4400				
4600		30 dB(A)	35 dB(A)	
4800				

Acoustic pressure level choose according to specific environment. More details on page 10

Fans input power [W]*

Length L [mm]	Speed [-] / Fans input power [W]*			
	1	2	3	4 max.
700	1 W	1 W	2 W	2 W
800	1 W	1 W	2 W	2 W
900	1 W	1 W	2 W	2 W
1000	2 W	2 W	2 W	3 W
1100	2 W	2 W	2 W	3 W
1200	2 W	3 W	3 W	4 W
1300	2 W	3 W	3 W	4 W
1400	3 W	3 W	4 W	5 W
1500	3 W	3 W	4 W	5 W
1600	3 W	3 W	4 W	5 W
1700	3 W	3 W	4 W	5 W
1800	3 W	3 W	4 W	5 W
1900	3 W	4 W	5 W	6 W
2000	4 W	5 W	6 W	7 W
2100	4 W	5 W	6 W	7 W
2200	4 W	5 W	6 W	7 W
2300	4 W	5 W	6 W	7 W
2400	4 W	5 W	6 W	7 W
2500	5 W	6 W	7 W	9 W
2600	5 W	6 W	7 W	9 W
2700	5 W	6 W	7 W	9 W
2800	5 W	6 W	7 W	9 W
2900	5 W	6 W	7 W	9 W
3000	5 W	6 W	7 W	9 W
3200	6 W	8 W	9 W	11 W
3400	6 W	8 W	9 W	11 W
3600	7 W	8 W	10 W	12 W
3800	7 W	9 W	11 W	13 W
4000	7 W	9 W	11 W	13 W
4200	7 W	9 W	11 W	13 W
4400	8 W	10 W	12 W	14 W
4600	8 W	10 W	12 W	15 W
4800	8 W	10 W	12 W	15 W

* Approximate fan input powers / **When using electrothermal actuator add in the trench heater's power 3 W** / Wiring of the trench heater → page 85

FRT 0080 0250

TRENCH HEATER WITH FAN

ECO & SAFE | VOLTAGE 24

- Flats, detached houses, offices, administrative buildings
- Small universal trench heater
- High heating output
- Continuous speed control
- Quiet operation
- Common electricity consumption **2 W/m**
- Using in dry environment

Technical data

Trench heater

Height	H = **80** mm
Width	W = **250** mm
Length	L = **700–4 800** mm in step **100** mm

Heat exchanger

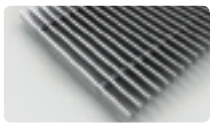
Type	**Al-Cu** lamellar
Length	L–**295** mm
Connection thread	**2× G1/2"** inner

Working conditions

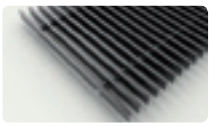
Max. temperature	**110** °C
Max. overpressure	**1** MPa (**10** bar)
Protection	IP **20**
Ambient conditions	Temp. T = **+2** to **+40** °C Humidity Rh = **20** to **70**%

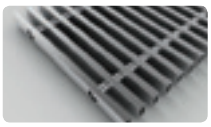
Variants

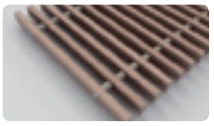
Transverse roll-up grilles


natur - anod. aluminium

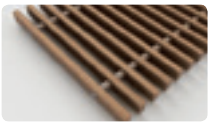

bronze - anod. aluminium


black - anod. aluminium


stainless*

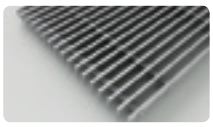

natur beech - wooden


stained beech - wooden


natur oak - wooden


stained oak - wooden

Linear non-rolling grilles


natur - anod. aluminium


bronze - anod. aluminium


black - anod. aluminium

Peripheral ledges


(more on page 8)

More possibilities and variants → page 6 / *stainless grilles surcharge

Trench heater standard equipment

Trough	Galvanized steel trough with surface finish and black spray layer inside, black cover plates of connection
Heat exchanger	Al-Cu lamellar exchanger with air vent valve, black painted
Grille	Design walkable grille according the customer's choice*
Ledge	Made of anodized aluminium, type and colour according the customer's choice
Fan	Modern tangential fan with 24 V DC EC motor with high efficiency, rotors protection
Assembly elements	Leveling screws for setting up the trough, mounting brackets
Manual	Manual for the progress of work during installation and user manual
Wiring	Electrical wiring diagram of the trench heaters
Mounting board	Cover and the spacer particle board for easy installation
Package	Transport package for protection against damage during transportation and handling

* stainless grille surcharge

Accessories per order


Room thermostat


Power supply

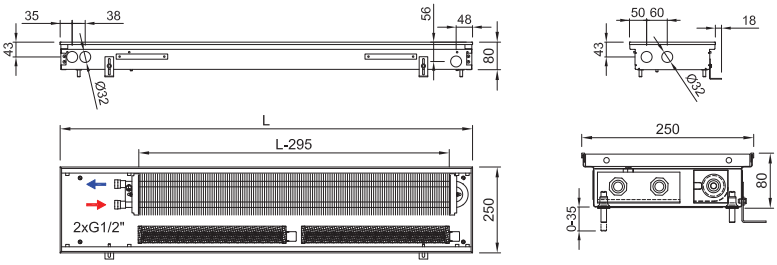

Electrothermal actuator


Thermostatic valve

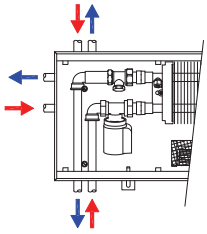

Lockshield valve

Accessories details → page 12

Technical drawing



Connection to heating system



The hydraulic parameters of the heat exchanger → page 82

Code example: FRT 0080 0250 0900 C 12 J1 L - 5

Trench heater **FRT** H = **80** mm, W = **250** mm, L = **900** mm, „**C**" Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**12**" natur anodized aluminium grille, linear, rigid „**J1**" peripheral ledge „J", natur anodized aluminium, „**L**" water connection at the left side (when installing the heat exchanger closer to the window, fans to the room), „**5**" 24 V DC fans without controller (controller is not needed)

Trench heater heating output FRT 0080 0250

Q[W] 75/65/20 °C (ΔT=50 °C) Temperature exponent 1,1

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	163 W	363 W	479 W	535 W
800	218 W	483 W	639 W	714 W
900	262 W	580 W	766 W	857 W
1000	371 W	822 W	1 086 W	1 213 W
1100	371 W	822 W	1 086 W	1 213 W
1200	436 W	967 W	1 277 W	1 428 W
1300	479 W	1 064 W	1 405 W	1 570 W
1400	534 W	1 184 W	1 565 W	1 749 W
1500	588 W	1 305 W	1 724 W	1 927 W
1600	644 W	1 429 W	1 887 W	2 109 W
1700	644 W	1 429 W	1 887 W	2 109 W
1800	741 W	1 644 W	2 172 W	2 427 W
1900	808 W	1 791 W	2 366 W	2 645 W
2000	862 W	1 912 W	2 526 W	2 823 W
2100	906 W	2 009 W	2 654 W	2 966 W
2200	906 W	2 009 W	2 654 W	2 966 W
2300	1 015 W	2 251 W	2 973 W	3 323 W
2400	1 015 W	2 251 W	2 973 W	3 323 W
2500	1 080 W	2 396 W	3 165 W	3 537 W
2600	1 124 W	2 492 W	3 292 W	3 680 W
2700	1 167 W	2 589 W	3 420 W	3 822 W
2800	1 233 W	2 734 W	3 612 W	4 036 W
2900	1 288 W	2 857 W	3 775 W	4 218 W
3000	1 288 W	2 857 W	3 775 W	4 218 W
3200	1 452 W	3 220 W	4 254 W	4 754 W
3400	1 506 W	3 341 W	4 413 W	4 932 W
3600	1 659 W	3 679 W	4 860 W	5 432 W
3800	1 713 W	3 800 W	5 020 W	5 610 W
4000	1 811 W	4 018 W	5 307 W	5 932 W
4200	1 932 W	4 286 W	5 662 W	6 328 W
4400	2 029 W	4 501 W	5 946 W	6 645 W
4600	2 150 W	4 769 W	6 301 W	7 041 W
4800	2 194 W	4 866 W	6 428 W	7 184 W

Q[W] 55/45/20 °C (ΔT=30 °C)

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	93 W	207 W	273 W	305 W
800	124 W	275 W	364 W	407 W
900	149 W	331 W	437 W	489 W
1000	212 W	469 W	619 W	692 W
1100	212 W	469 W	619 W	692 W
1200	249 W	551 W	728 W	814 W
1300	273 W	607 W	801 W	895 W
1400	304 W	675 W	892 W	997 W
1500	335 W	744 W	983 W	1 099 W
1600	367 W	815 W	1 076 W	1 202 W
1700	367 W	815 W	1 076 W	1 202 W
1800	422 W	937 W	1 238 W	1 384 W
1900	461 W	1 021 W	1 349 W	1 508 W
2000	491 W	1 090 W	1 440 W	1 609 W
2100	517 W	1 145 W	1 513 W	1 691 W
2200	517 W	1 145 W	1 513 W	1 691 W
2300	579 W	1 283 W	1 695 W	1 895 W
2400	579 W	1 283 W	1 695 W	1 895 W
2500	616 W	1 366 W	1 804 W	2 017 W
2600	641 W	1 421 W	1 877 W	2 098 W
2700	665 W	1 476 W	1 950 W	2 179 W
2800	703 W	1 559 W	2 059 W	2 301 W
2900	734 W	1 629 W	2 152 W	2 405 W
3000	734 W	1 629 W	2 152 W	2 405 W
3200	828 W	1 836 W	2 425 W	2 710 W
3400	859 W	1 905 W	2 516 W	2 812 W
3600	946 W	2 097 W	2 771 W	3 097 W
3800	977 W	2 166 W	2 862 W	3 198 W
4000	1 032 W	2 291 W	3 026 W	3 382 W
4200	1 101 W	2 444 W	3 228 W	3 608 W
4400	1 157 W	2 566 W	3 390 W	3 788 W
4600	1 226 W	2 719 W	3 592 W	4 014 W
4800	1 251 W	2 774 W	3 665 W	4 096 W

75/65/20 °C → 75°C inlet temperature, 65°C outlet temp., 20 °C room temp. / **Output 90/70/20 °C** = ~ 1,22 x 75/65/20 °C / **Output 70/55/20 °C** = ~ 0,84 x 75/65/20 °C / Heating outputs in accordance with EN 16430 / Not listed heating outpus for lengths per 100 mm steps calculate linearly. Exact values can be found at www.isan.cz

Acoustic pressure [dB(A)]

Length L [mm]	Speed [-] / Acoustic pressure [dB(A)]			
	1	2	3	4 max.
700	< 20 dB(A)	20 dB(A)	25 dB(A)	29 dB(A)
800		21 dB(A)	26 dB(A)	30 dB(A)
900				
1000				31 dB(A)
1100				
1200		22 dB(A)	27 dB(A)	32 dB(A)
1300				
1400				33 dB(A)
1500				
1600		23 dB(A)	28 dB(A)	
1700				34 dB(A)
1800				
1900				
2000		24 dB(A)	29 dB(A)	
2100				35 dB(A)
2200				
2300				
2400				
2500		25 dB(A)	30 dB(A)	
2600				36 dB(A)
2700				
2800				
2900		26 dB(A)	31 dB(A)	
3000				
3200				37 dB(A)
3400		27 dB(A)	32 dB(A)	
3600				
3800		28 dB(A)	33 dB(A)	
4000				
4200		29 dB(A)	34 dB(A)	38 dB(A)
4400				
4600		30 dB(A)	35 dB(A)	
4800				

Acoustic pressure level choose according to specific environment. More details on page 10

Fans input power [W]*

Length L [mm]	Speed [-] / Fans input power [W]*			
	1	2	3	4 max.
700	1 W	1 W	2 W	2 W
800	1 W	1 W	2 W	2 W
900	1 W	1 W	2 W	2 W
1000	2 W	2 W	2 W	3 W
1100	2 W	2 W	2 W	3 W
1200	2 W	3 W	3 W	4 W
1300	2 W	3 W	3 W	4 W
1400	3 W	3 W	4 W	5 W
1500	3 W	3 W	4 W	5 W
1600	3 W	3 W	4 W	5 W
1700	3 W	3 W	4 W	5 W
1800	3 W	3 W	4 W	5 W
1900	3 W	4 W	5 W	6 W
2000	4 W	5 W	6 W	7 W
2100	4 W	5 W	6 W	7 W
2200	4 W	5 W	6 W	7 W
2300	4 W	5 W	6 W	7 W
2400	4 W	5 W	6 W	7 W
2500	5 W	6 W	7 W	9 W
2600	5 W	6 W	7 W	9 W
2700	5 W	6 W	7 W	9 W
2800	5 W	6 W	7 W	9 W
2900	5 W	6 W	7 W	9 W
3000	5 W	6 W	7 W	9 W
3200	6 W	8 W	9 W	11 W
3400	6 W	8 W	9 W	11 W
3600	7 W	8 W	10 W	12 W
3800	7 W	9 W	11 W	13 W
4000	7 W	9 W	11 W	13 W
4200	7 W	9 W	11 W	13 W
4400	8 W	10 W	12 W	14 W
4600	8 W	10 W	12 W	15 W
4800	8 W	10 W	12 W	15 W

* Approximate fan input powers / **When using electrothermal actuator add in the trench heater's power 3 W** / Wiring of the trench heater → page 85

FRT 0080 0300

TRENCH HEATER WITH FAN

ECO & SAFE | VOLTAGE 24

- Flats, detached houses, offices, administrative buildings
- Low trench heater with a good heating output
- High heating output
- Continuous speed control
- Quiet operation
- Common electricity consumption **2 W/m**
- Using in dry environment

Technical data

Trench heater

Height	H = **80** mm
Width	W = **300** mm
Length	L = **700–4 800** mm in step **100** mm

Heat exchanger

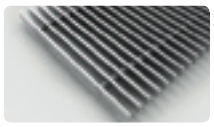
Type	**Al-Cu** lamellar
Length	L–**295** mm
Connection thread	**2×G1/2"** inner

Working conditions

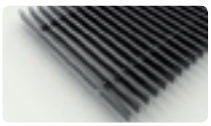
Max. temperature	**110** °C
Max. overpressure	**1** MPa (**10** bar)
Protection	IP **20**
Ambient conditions	Temp. T = **+2** to **+40** °C Humidity Rh = **20** to **70**%

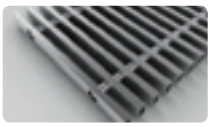
Variants

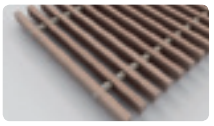
Transverse roll-up grilles


natur - anod. aluminium

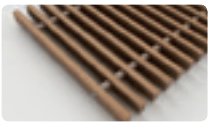

bronze - anod. aluminium


black - anod. aluminium


stainless

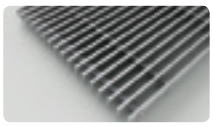

natur beech - wooden


stained beech - wooden


natur oak - wooden


stained oak - wooden

Linear non-rolling grilles


natur - anod. aluminium


bronze - anod. aluminium


black - anod. aluminium

Peripheral ledges


(more on page 8)

More possibilities and variants → page 6

Trench heater standard equipment

Trough	Galvanized steel trough with surface finish and black spray layer inside, black cover plates of connection
Heat exchanger	Al-Cu lamellar exchanger with air vent valve, black painted
Grille	Design walkable grille according the customer's choice*
Ledge	Made of anodized aluminium, type and colour according the customer's choice
Fan	Modern tangential fan with 24 V DC EC motor with high efficiency, rotors protection
Assembly elements	Leveling screws for setting up the trough, mounting brackets
Manual	Manual for the progress of work during installation and user manual
Wiring	Electrical wiring diagram of the trench heaters
Mounting board	Cover and the spacer particle board for easy installation
Package	Transport package for protection against damage during transportation and handling

*stainless grilles surcharge

Accessories per order


Room thermostat


Power supply

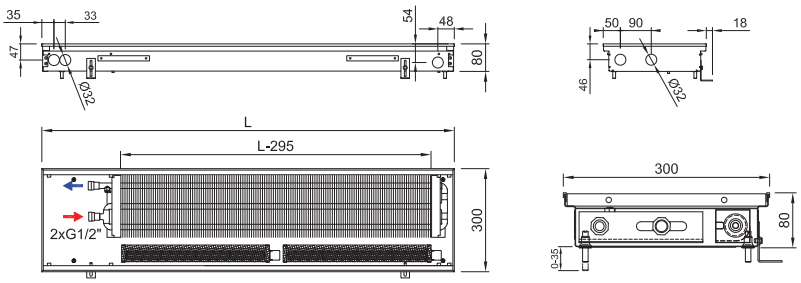

Electrothermal actuator


Thermostatic valve

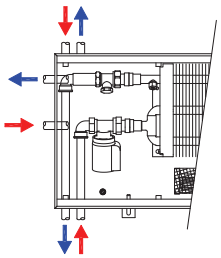

Lockshield valve

Accessories details → page 12

Technical drawing



Connection to heating system



The hydraulic parameters of the heat exchanger → page 82

Code example: FRT 0080 0300 2200 C 21 J2 R - 5

Trench heater **FRT** H = **80** mm, W = **300** mm, L = **2 200** mm, „**C**" Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**21**" bronze anodized aluminium grille, transverse, roll-up „**J2**" peripheral ledge „J", bronze anodized aluminium, „**R**" water connection at the right side (when installing the heat exchanger closer to the window, fans to the room), „**5**" 24 V DC fans without controller (controller is not needed)

Trench heater heating output FRT 0080 0300

Q[W] 75/65/20 °C (ΔT=50 °C) Temperature exponent 1,1

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	190 W	416 W	532 W	612 W
800	253 W	555 W	709 W	816 W
900	304 W	666 W	851 W	979 W
1000	430 W	943 W	1 206 W	1 387 W
1100	430 W	943 W	1 206 W	1 387 W
1200	506 W	1 110 W	1 419 W	1 632 W
1300	556 W	1 221 W	1 561 W	1 795 W
1400	620 W	1 360 W	1 738 W	1 999 W
1500	683 W	1 498 W	1 915 W	2 203 W
1600	747 W	1 640 W	2 096 W	2 411 W
1700	747 W	1 640 W	2 096 W	2 411 W
1800	860 W	1 887 W	2 412 W	2 774 W
1900	937 W	2 056 W	2 628 W	3 023 W
2000	1 000 W	2 195 W	2 806 W	3 227 W
2100	1 051 W	2 306 W	2 948 W	3 390 W
2200	1 051 W	2 306 W	2 948 W	3 390 W
2300	1 177 W	2 583 W	3 302 W	3 798 W
2400	1 177 W	2 583 W	3 302 W	3 798 W
2500	1 253 W	2 750 W	3 515 W	4 043 W
2600	1 304 W	2 861 W	3 657 W	4 206 W
2700	1 355 W	2 972 W	3 799 W	4 369 W
2800	1 430 W	3 138 W	4 012 W	4 614 W
2900	1 495 W	3 280 W	4 193 W	4 822 W
3000	1 495 W	3 280 W	4 193 W	4 822 W
3200	1 685 W	3 696 W	4 725 W	5 434 W
3400	1 748 W	3 835 W	4 902 W	5 638 W
3600	1 925 W	4 223 W	5 399 W	6 209 W
3800	1 988 W	4 362 W	5 576 W	6 413 W
4000	2 102 W	4 611 W	5 895 W	6 780 W
4200	2 242 W	4 919 W	6 289 W	7 233 W
4400	2 355 W	5 166 W	6 605 W	7 596 W
4600	2 495 W	5 474 W	6 998 W	8 049 W
4800	2 546 W	5 585 W	7 140 W	8 212 W

Q[W] 55/45/20 °C (ΔT=30 °C)

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	108 W	237 W	303 W	349 W
800	144 W	316 W	404 W	465 W
900	173 W	380 W	485 W	558 W
1000	245 W	538 W	688 W	791 W
1100	245 W	538 W	688 W	791 W
1200	288 W	633 W	809 W	930 W
1300	317 W	696 W	890 W	1 023 W
1400	353 W	775 W	991 W	1 140 W
1500	389 W	854 W	1 092 W	1 256 W
1600	426 W	935 W	1 195 W	1 375 W
1700	426 W	935 W	1 195 W	1 375 W
1800	490 W	1 076 W	1 375 W	1 582 W
1900	534 W	1 172 W	1 498 W	1 723 W
2000	570 W	1 251 W	1 600 W	1 840 W
2100	599 W	1 315 W	1 681 W	1 933 W
2200	599 W	1 315 W	1 681 W	1 933 W
2300	671 W	1 473 W	1 883 W	2 165 W
2400	671 W	1 473 W	1 883 W	2 165 W
2500	714 W	1 568 W	2 004 W	2 305 W
2600	743 W	1 631 W	2 085 W	2 398 W
2700	773 W	1 694 W	2 166 W	2 491 W
2800	815 W	1 789 W	2 287 W	2 631 W
2900	852 W	1 870 W	2 391 W	2 749 W
3000	852 W	1 870 W	2 391 W	2 749 W
3200	961 W	2 107 W	2 694 W	3 098 W
3400	997 W	2 186 W	2 795 W	3 214 W
3600	1 097 W	2 408 W	3 078 W	3 540 W
3800	1 133 W	2 487 W	3 179 W	3 656 W
4000	1 198 W	2 629 W	3 361 W	3 865 W
4200	1 278 W	2 804 W	3 585 W	4 124 W
4400	1 343 W	2 945 W	3 766 W	4 331 W
4600	1 422 W	3 121 W	3 990 W	4 589 W
4800	1 452 W	3 184 W	4 071 W	4 682 W

75/65/20 °C → 75°C inlet temperature, 65°C outlet temp., 20 °C room temp. / **Output 90/70/20 °C** = ~ 1,22 x 75/65/20 °C / **Output 70/55/20 °C** = ~ 0,84 x 75/65/20 °C / Heating outputs in accordance with EN 16430 / Not listed heating outpus for lengths per 100 mm steps calculate linearly. Exact values can be found at www.isan.cz

Acoustic pressure [dB(A)]

Length L [mm]	Speed [-] / Acoustic pressure [dB(A)]			
	1	2	3	4 max.
700	< 20 dB(A)	20 dB(A)	25 dB(A)	29 dB(A)
800		21 dB(A)	26 dB(A)	30 dB(A)
900				
1000				31 dB(A)
1100				
1200		22 dB(A)	27 dB(A)	
1300				32 dB(A)
1400				
1500				33 dB(A)
1600		23 dB(A)	28 dB(A)	
1700				
1800				34 dB(A)
1900				
2000		24 dB(A)	29 dB(A)	
2100				35 dB(A)
2200				
2300				
2400				
2500		25 dB(A)	30 dB(A)	
2600				36 dB(A)
2700				
2800				
2900		26 dB(A)	31 dB(A)	
3000				
3200				37 dB(A)
3400		27 dB(A)	32 dB(A)	
3600				
3800		28 dB(A)	33 dB(A)	
4000				38 dB(A)
4200		29 dB(A)	34 dB(A)	
4400				
4600		30 dB(A)	35 dB(A)	
4800				

Acoustic pressure level choose according to specific environment. More details on page 10

Fans input power [W]*

Length L [mm]	Speed [-] / Fans input power [W]*			
	1	2	3	4 max.
700	1 W	1 W	2 W	2 W
800	1 W	1 W	2 W	2 W
900	1 W	1 W	2 W	2 W
1000	2 W	2 W	2 W	3 W
1100	2 W	2 W	2 W	3 W
1200	2 W	3 W	3 W	4 W
1300	2 W	3 W	3 W	4 W
1400	3 W	3 W	4 W	5 W
1500	3 W	3 W	4 W	5 W
1600	3 W	3 W	4 W	5 W
1700	3 W	3 W	4 W	5 W
1800	3 W	3 W	4 W	5 W
1900	3 W	4 W	5 W	6 W
2000	4 W	5 W	6 W	7 W
2100	4 W	5 W	6 W	7 W
2200	4 W	5 W	6 W	7 W
2300	4 W	5 W	6 W	7 W
2400	4 W	5 W	6 W	7 W
2500	5 W	6 W	7 W	9 W
2600	5 W	6 W	7 W	9 W
2700	5 W	6 W	7 W	9 W
2800	5 W	6 W	7 W	9 W
2900	5 W	6 W	7 W	9 W
3000	5 W	6 W	7 W	9 W
3200	6 W	8 W	9 W	11 W
3400	6 W	8 W	9 W	11 W
3600	7 W	8 W	10 W	12 W
3800	7 W	9 W	11 W	13 W
4000	7 W	9 W	11 W	13 W
4200	7 W	9 W	11 W	13 W
4400	8 W	10 W	12 W	14 W
4600	8 W	10 W	12 W	15 W
4800	8 W	10 W	12 W	15 W

* Approximate fan input powers / **When using electrothermal actuator add in the trench heater's power 3 W** / Wiring of the trench heater → page 85

FRT 0090 0175

TRENCH HEATER WITH FAN

- Flats, detached houses, offices, administrative buildings
- Small narrow trench heater
- High heating output
- Continuous speed control
- Quiet operation
- Common electricity consumption **2 W/m**
- Using in dry environment

Technical data

Trench heater

Height	H = **90** mm
Width	W = **175** mm
Length	L = **700–4 800** mm in step **100** mm

Heat exchanger

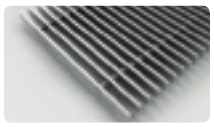
Type	**Al-Cu** lamellar
Length	L–**295** mm
Connection thread	**2×G1/2"** inner

Working conditions

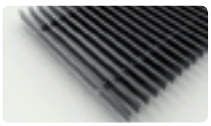
Max. temperature	**110** °C
Max. overpressure	**1** MPa (**10** bar)
Protection	IP **20**
Ambient conditions	Temp. T = **+2** to **+40** °C Humidity Rh = **20** to **70**%

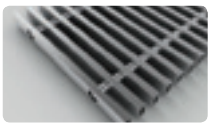
Variants

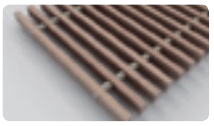
Transverse roll-up grilles


natur - anod. aluminium

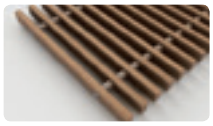

bronze - anod. aluminium


black - anod. aluminium


stainless

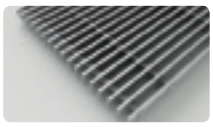

natur beech - wooden


stained beech - wooden


natur oak - wooden


stained oak - wooden

Linear non-rolling grilles


natur - anod. aluminium


bronze - anod. aluminium


black - anod. aluminium

Peripheral ledges


(more on page 8)

More possibilities and variants → page 6

Trench heater standard equipment

Trough	Galvanized steel trough with surface finish and black spray layer inside, black cover plates of connection
Heat exchanger	Al-Cu lamellar exchanger with air vent valve, black painted
Grille	Design walkable grille according the customer's choice*
Ledge	Made of anodized aluminium, type and colour according the customer's choice
Fan	Modern tangential fan with 24 V DC EC motor with high efficiency, rotors protection
Assembly elements	Leveling screws for setting up the trough, mounting brackets
Manual	Manual for the progress of work during installation and user manual
Wiring	Electrical wiring diagram of the trench heaters
Mounting board	Cover and the spacer particle board for easy installation
Package	Transport package for protection against damage during transportation and handling

*stainless grilles surcharge

Accessories per order


Room thermostat

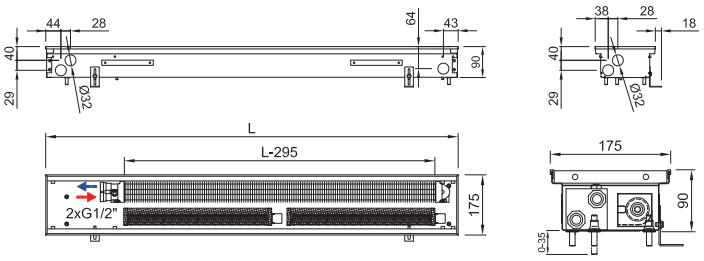

Power supply


Lockshield valve

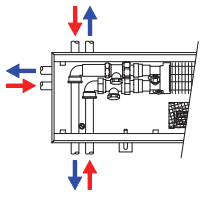

Thermostatic valve

Accessories details → page 12

Technical drawing



Connection to heating system



Electrothermal actuator can't be installed in the body of the trench heater due to limited internal space.

The hydraulic parameters of the heat exchanger → page 82

Code example: FRT 0090 0175 1400 C 63 L1 L - 5

Trench heater **FRT** H = **90** mm, W = **175** mm, L = **1 400** mm, „**C**" Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**63**" natural oak grille, transverse, roll-up „**L1**" peripheral ledge „L" with an overlap, natur anodized aluminium „**L**" water connection at the left side (when installing the heat exchanger closer to the window, fans to the room) „**5**" 24 V DC fans without controller (controller is not needed)

Trench heater heating output FRT 0090 0175

Q[W] 75/65/20 °C (ΔT=50 °C) Temperature exponent 1,1

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	102 W	251 W	324 W	390 W
800	136 W	334 W	432 W	520 W
900	163 W	401 W	519 W	624 W
1000	231 W	568 W	735 W	884 W
1100	231 W	568 W	735 W	884 W
1200	272 W	668 W	865 W	1 040 W
1300	299 W	735 W	951 W	1 144 W
1400	333 W	818 W	1 060 W	1 274 W
1500	367 W	902 W	1 168 W	1 403 W
1600	402 W	987 W	1 278 W	1 536 W
1700	402 W	987 W	1 278 W	1 536 W
1800	463 W	1 136 W	1 470 W	1 767 W
1900	504 W	1 238 W	1 602 W	1 926 W
2000	538 W	1 321 W	1 710 W	2 056 W
2100	565 W	1 388 W	1 797 W	2 160 W
2200	565 W	1 388 W	1 797 W	2 160 W
2300	633 W	1 555 W	2 013 W	2 420 W
2400	633 W	1 555 W	2 013 W	2 420 W
2500	674 W	1 655 W	2 143 W	2 576 W
2600	701 W	1 722 W	2 229 W	2 680 W
2700	728 W	1 789 W	2 316 W	2 784 W
2800	769 W	1 889 W	2 446 W	2 939 W
2900	804 W	1 974 W	2 556 W	3 072 W
3000	804 W	1 974 W	2 556 W	3 072 W
3200	906 W	2 225 W	2 880 W	3 462 W
3400	940 W	2 308 W	2 988 W	3 592 W
3600	1 035 W	2 542 W	3 291 W	3 956 W
3800	1 069 W	2 625 W	3 399 W	4 086 W
4000	1 130 W	2 776 W	3 594 W	4 320 W
4200	1 206 W	2 961 W	3 834 W	4 608 W
4400	1 267 W	3 110 W	4 026 W	4 839 W
4600	1 342 W	3 295 W	4 266 W	5 128 W
4800	1 369 W	3 362 W	4 353 W	5 232 W

Q[W] 55/45/20 °C (ΔT=30 °C)

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	58 W	143 W	185 W	222 W
800	78 W	190 W	246 W	296 W
900	93 W	229 W	296 W	356 W
1000	132 W	324 W	419 W	504 W
1100	132 W	324 W	419 W	504 W
1200	155 W	381 W	493 W	593 W
1300	170 W	419 W	542 W	652 W
1400	190 W	466 W	604 W	726 W
1500	209 W	514 W	666 W	800 W
1600	229 W	563 W	729 W	876 W
1700	229 W	563 W	729 W	876 W
1800	264 W	648 W	838 W	1 007 W
1900	287 W	706 W	913 W	1 098 W
2000	307 W	753 W	975 W	1 172 W
2100	322 W	791 W	1 025 W	1 231 W
2200	322 W	791 W	1 025 W	1 231 W
2300	361 W	887 W	1 148 W	1 380 W
2400	361 W	887 W	1 148 W	1 380 W
2500	384 W	944 W	1 222 W	1 469 W
2600	400 W	982 W	1 271 W	1 528 W
2700	415 W	1 020 W	1 320 W	1 587 W
2800	438 W	1 077 W	1 395 W	1 676 W
2900	458 W	1 125 W	1 457 W	1 751 W
3000	458 W	1 125 W	1 457 W	1 751 W
3200	517 W	1 269 W	1 642 W	1 974 W
3400	536 W	1 316 W	1 704 W	2 048 W
3600	590 W	1 449 W	1 876 W	2 255 W
3800	609 W	1 497 W	1 938 W	2 330 W
4000	644 W	1 583 W	2 049 W	2 463 W
4200	688 W	1 688 W	2 186 W	2 627 W
4400	722 W	1 773 W	2 295 W	2 759 W
4600	765 W	1 879 W	2 432 W	2 924 W
4800	780 W	1 917 W	2 482 W	2 983 W

75/65/20 °C → 75°C inlet temperature, 65°C outlet temp., 20 °C room temp. / **Output 90/70/20 °C** = ~ 1,22 x 75/65/20 °C / **Output 70/55/20 °C** = ~ 0,84 x 75/65/20 °C / Heating outputs in accordance with EN 16430 / Not listed heating outpus for lengths per 100 mm steps calculate linearly. Exact values can be found at www.isan.cz

Acoustic pressure [dB(A)]

Length L [mm]	Speed [-] / Acoustic pressure [dB(A)]			
	1	2	3	4 max.
700	< 20 dB(A)	20 dB(A)	25 dB(A)	29 dB(A)
800		21 dB(A)	26 dB(A)	30 dB(A)
900				
1000				31 dB(A)
1100				
1200		22 dB(A)	27 dB(A)	32 dB(A)
1300				
1400				33 dB(A)
1500				
1600		23 dB(A)	28 dB(A)	
1700				34 dB(A)
1800				
1900				
2000		24 dB(A)	29 dB(A)	
2100				35 dB(A)
2200				
2300				
2400				
2500		25 dB(A)	30 dB(A)	
2600				36 dB(A)
2700				
2800				
2900		26 dB(A)	31 dB(A)	
3000				
3200				37 dB(A)
3400		27 dB(A)	32 dB(A)	
3600				
3800		28 dB(A)	33 dB(A)	
4000				
4200		29 dB(A)	34 dB(A)	38 dB(A)
4400				
4600		30 dB(A)	35 dB(A)	
4800				

Acoustic pressure level choose according to specific environment. More details on page 10

Fans input power [W]*

Length L [mm]	Speed [-] / Fans input power [W]*			
	1	2	3	4 max.
700	1 W	1 W	2 W	2 W
800	1 W	1 W	2 W	2 W
900	1 W	1 W	2 W	2 W
1000	2 W	2 W	2 W	3 W
1100	2 W	2 W	2 W	3 W
1200	2 W	3 W	3 W	4 W
1300	2 W	3 W	3 W	4 W
1400	3 W	3 W	4 W	5 W
1500	3 W	3 W	4 W	5 W
1600	3 W	3 W	4 W	5 W
1700	3 W	3 W	4 W	5 W
1800	3 W	3 W	4 W	5 W
1900	3 W	4 W	5 W	6 W
2000	4 W	5 W	6 W	7 W
2100	4 W	5 W	6 W	7 W
2200	4 W	5 W	6 W	7 W
2300	4 W	5 W	6 W	7 W
2400	4 W	5 W	6 W	7 W
2500	5 W	6 W	7 W	9 W
2600	5 W	6 W	7 W	9 W
2700	5 W	6 W	7 W	9 W
2800	5 W	6 W	7 W	9 W
2900	5 W	6 W	7 W	9 W
3000	5 W	6 W	7 W	9 W
3200	6 W	8 W	9 W	11 W
3400	6 W	8 W	9 W	11 W
3600	7 W	8 W	10 W	12 W
3800	7 W	9 W	11 W	13 W
4000	7 W	9 W	11 W	13 W
4200	7 W	9 W	11 W	13 W
4400	8 W	10 W	12 W	14 W
4600	8 W	10 W	12 W	15 W
4800	8 W	10 W	12 W	15 W

* Approximate fan input powers / **When using electrothermal actuator add in the trench heater's power 3 W** / Wiring of the trench heater → page 85

FRT 0090 0200

TRENCH HEATER WITH FAN

ECO & SAFE | VOLTAGE 24

- Flats, detached houses, offices, administrative buildings
- Small universal trench heater
- High heating output
- Continuous speed control
- Quiet operation
- Common electricity consumption **3 W/m**
- Using in dry environment

Technical data

Trench heater

Height	H = **90** mm
Width	W = **200** mm
Length	L = **700–4 800** mm in step **100** mm

Heat exchanger

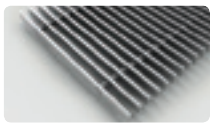
Type	**Al-Cu** lamellar
Length	L–**295** mm
Connection thread	**2×G1/2"** inner

Working conditions

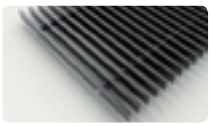
Max. temperature	**110** °C
Max. overpressure	**1** MPa (**10** bar)
Protection	IP **20**
Ambient conditions	Temp. T = **+2** to **+40** °C Humidity Rh = **20** to **70**%

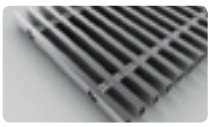
Variants

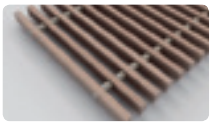
Transverse roll-up grilles


natur - anod. aluminium

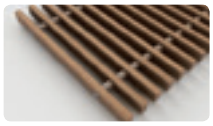

bronze - anod. aluminium


black - anod. aluminium


stainless

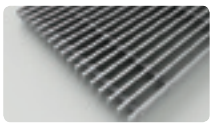

natur beech - wooden


stained beech - wooden


natur oak - wooden


stained oak - wooden

Linear non-rolling grilles


natur - anod. aluminium


bronze - anod. aluminium


black - anod. aluminium

Peripheral ledges


(more on page 8)

More possibilities and variants → page 6

Trench heater standard equipment

Trough	Galvanized steel trough with surface finish and black spray layer inside, black cover plates of connection
Heat exchanger	Al-Cu lamellar exchanger with air vent valve, black painted
Grille	Design walkable grille according the customer's choice*
Ledge	Made of anodized aluminium, type and colour according the customer's choice
Fan	Modern tangential fan with 24 V DC EC motor with high efficiency, rotors protection
Assembly elements	Leveling screws for setting up the trough, mounting brackets
Manual	Manual for the progress of work during installation and user manual
Wiring	Electrical wiring diagram of the trench heaters
Mounting board	Cover and the spacer particle board for easy installation
Package	Transport package for protection against damage during transportation and handling

*stainless grilles surcharge

Accessories per order


Room thermostat


Power supply

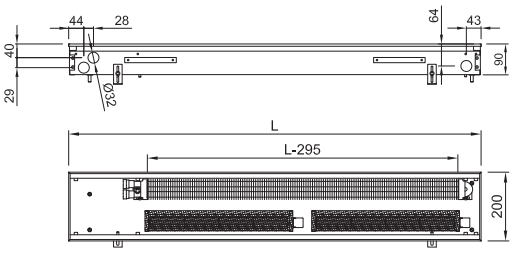

Electrothermal actuator

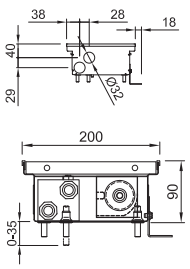

Thermostatic valve


Lockshield valve

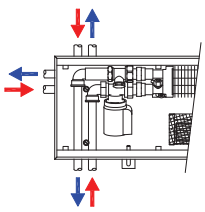
Accessories details → page 12

Technical drawing





Connection to heating system



The hydraulic parameters of the heat exchanger → page 82

Code example: FRT 0090 0200 1900 C 52 J1 R - 5

Trench heater **FRT** H = **90** mm, W = **200** mm, L = **1 900** mm, „**C**" Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**52**" stainless grille, transverse, roll-up, „**J1**" peripheral ledge „J", natur anodized aluminium, „**R**" water connection at the right side (when installing the heat exchanger closer to the window, fans to the room), „**5**" 24 V DC fans without controller (controller is not needed)

Trench heater heating output FRT 0090 0200

Q[W] 75/65/20 °C (ΔT=50 °C) Temperature exponent 1,1

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	168 W	313 W	432 W	460 W
800	223 W	417 W	576 W	613 W
900	268 W	500 W	691 W	736 W
1000	380 W	708 W	978 W	1 043 W
1100	380 W	708 W	978 W	1 043 W
1200	447 W	833 W	1 151 W	1 227 W
1300	492 W	917 W	1 266 W	1 349 W
1400	548 W	1 021 W	1 410 W	1 503 W
1500	603 W	1 125 W	1 554 W	1 656 W
1600	657 W	1 225 W	1 692 W	1 803 W
1700	657 W	1 225 W	1 692 W	1 803 W
1800	760 W	1 417 W	1 957 W	2 085 W
1900	825 W	1 538 W	2 124 W	2 263 W
2000	880 W	1 642 W	2 268 W	2 416 W
2100	925 W	1 725 W	2 383 W	2 539 W
2200	925 W	1 725 W	2 383 W	2 539 W
2300	1 037 W	1 933 W	2 670 W	2 846 W
2400	1 037 W	1 933 W	2 670 W	2 846 W
2500	1 104 W	2 058 W	2 843 W	3 030 W
2600	1 149 W	2 142 W	2 958 W	3 152 W
2700	1 193 W	2 225 W	3 073 W	3 275 W
2800	1 260 W	2 350 W	3 246 W	3 459 W
2900	1 314 W	2 450 W	3 384 W	3 606 W
3000	1 314 W	2 450 W	3 384 W	3 606 W
3200	1 482 W	2 763 W	3 816 W	4 066 W
3400	1 537 W	2 867 W	3 960 W	4 219 W
3600	1 694 W	3 158 W	4 362 W	4 649 W
3800	1 750 W	3 263 W	4 506 W	4 802 W
4000	1 850 W	3 450 W	4 765 W	5 078 W
4200	1 971 W	3 675 W	5 076 W	5 409 W
4400	2 074 W	3 867 W	5 341 W	5 691 W
4600	2 194 W	4 092 W	5 652 W	6 022 W
4800	2 239 W	4 175 W	5 767 W	6 145 W

Q[W] 55/45/20 °C (ΔT=30 °C)

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	96 W	178 W	246 W	262 W
800	127 W	238 W	328 W	349 W
900	153 W	285 W	394 W	420 W
1000	217 W	404 W	558 W	595 W
1100	217 W	404 W	558 W	595 W
1200	255 W	475 W	656 W	700 W
1300	280 W	523 W	722 W	769 W
1400	312 W	582 W	804 W	857 W
1500	344 W	641 W	886 W	944 W
1600	375 W	698 W	965 W	1 028 W
1700	375 W	698 W	965 W	1 028 W
1800	433 W	808 W	1 116 W	1 189 W
1900	470 W	877 W	1 211 W	1 290 W
2000	502 W	936 W	1 293 W	1 377 W
2100	527 W	983 W	1 359 W	1 448 W
2200	527 W	983 W	1 359 W	1 448 W
2300	591 W	1 102 W	1 522 W	1 623 W
2400	591 W	1 102 W	1 522 W	1 623 W
2500	629 W	1 173 W	1 621 W	1 727 W
2600	655 W	1 221 W	1 686 W	1 797 W
2700	680 W	1 269 W	1 752 W	1 867 W
2800	718 W	1 340 W	1 851 W	1 972 W
2900	749 W	1 397 W	1 929 W	2 056 W
3000	749 W	1 397 W	1 929 W	2 056 W
3200	845 W	1 575 W	2 176 W	2 318 W
3400	876 W	1 635 W	2 258 W	2 405 W
3600	966 W	1 800 W	2 487 W	2 650 W
3800	998 W	1 860 W	2 569 W	2 738 W
4000	1 055 W	1 967 W	2 717 W	2 895 W
4200	1 124 W	2 095 W	2 894 W	3 084 W
4400	1 182 W	2 205 W	3 045 W	3 245 W
4600	1 251 W	2 333 W	3 222 W	3 433 W
4800	1 276 W	2 380 W	3 288 W	3 503 W

75/65/20 °C → 75°C inlet temperature, 65°C outlet temp., 20 °C room temp. / **Output 90/70/20 °C** = ~ 1,22 x 75/65/20 °C / **Output 70/55/20 °C** = ~ 0,84 x 75/65/20 °C / Heating outputs in accordance with EN 16430 / Not listed heating outpus for lengths per 100 mm steps calculate linearly. Exact values can be found at www.isan.cz

Acoustic pressure [dB(A)]

Length L [mm]	Speed [-] / Acoustic pressure [dB(A)]			
	1	2	3	4 max.
700	< 20 dB(A)	26 dB(A)	34 dB(A)	37 dB(A)
800		27 dB(A)	35 dB(A)	38 dB(A)
900				
1000			36 dB(A)	39 dB(A)
1100				
1200		28 dB(A)		
1300			37 dB(A)	40 dB(A)
1400				
1500				
1600		29 dB(A)	38 dB(A)	41 dB(A)
1700				
1800				
1900	20 dB(A)		39 dB(A)	42 dB(A)
2000		30 dB(A)		
2100				
2200				
2300	21 dB(A)		40 dB(A)	43 dB(A)
2400				
2500		31 dB(A)		
2600				
2700	22 dB(A)		41 dB(A)	
2800				44 dB(A)
2900		32 dB(A)		
3000				
3200	23 dB(A)		42 dB(A)	
3400		33 dB(A)		45 dB(A)
3600	24 dB(A)			
3800		34 dB(A)		
4000			43 dB(A)	
4200	25 dB(A)	35 dB(A)		46 dB(A)
4400				
4600		36 dB(A)	44 dB(A)	47 dB(A)
4800	26 dB(A)			

Acoustic pressure level choose according to specific environment. More details on page 10

Fans input power [W]*

Length L [mm]	Speed [-] / Fans input power [W]*			
	1	2	3	4 max.
700	1 W	2 W	2 W	3 W
800	2 W	2 W	3 W	4 W
900	2 W	3 W	4 W	5 W
1000	2 W	3 W	5 W	6 W
1100	2 W	3 W	5 W	6 W
1200	3 W	4 W	6 W	8 W
1300	3 W	5 W	7 W	9 W
1400	3 W	5 W	7 W	9 W
1500	4 W	6 W	8 W	10 W
1600	4 W	6 W	8 W	10 W
1700	4 W	6 W	9 W	11 W
1800	5 W	7 W	10 W	12 W
1900	5 W	7 W	10 W	12 W
2000	5 W	7 W	10 W	13 W
2100	5 W	8 W	11 W	14 W
2200	5 W	8 W	11 W	14 W
2300	6 W	9 W	13 W	16 W
2400	6 W	9 W	13 W	16 W
2500	6 W	9 W	14 W	17 W
2600	7 W	10 W	14 W	18 W
2700	7 W	11 W	15 W	19 W
2800	7 W	11 W	15 W	19 W
2900	7 W	11 W	15 W	19 W
3000	8 W	11 W	16 W	20 W
3200	8 W	12 W	18 W	22 W
3400	9 W	13 W	18 W	23 W
3600	9 W	14 W	20 W	25 W
3800	10 W	14 W	21 W	26 W
4000	11 W	16 W	23 W	28 W
4200	11 W	16 W	23 W	28 W
4400	12 W	17 W	25 W	31 W
4600	12 W	18 W	26 W	32 W
4800	12 W	18 W	27 W	33 W

* Approximate fan input powers / **When using electrothermal actuator add in the trench heater's power 3 W** / Wiring of the trench heater → page 85

FRT 0090 0250

TRENCH HEATER WITH FAN

ECO & SAFE | VOLTAGE 24

- Flats, detached houses, offices, administrative buildings
- Small universal trench heater
- High heating output
- Continuous speed control
- Quiet operation
- Common electricity consumption **3 W/m**
- Using in dry environment

Technical data

Trench heater

Height	H = **90** mm
Width	W = **250** mm
Length	L = **700–4 800** mm in step **100** mm

Heat exchanger

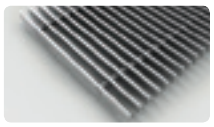
Type	**Al-Cu** lamellar
Length	L–**295** mm
Connection thread	**2×G1/2"** inner

Working conditions

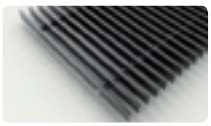
Max. temperature	**110** °C
Max. overpressure	**1** MPa (**10** bar)
Protection	IP **20**
Ambient conditions	Temp. T = **+2** to **+40** °C Humidity Rh = **20** to **70**%

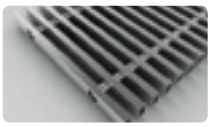
Variants

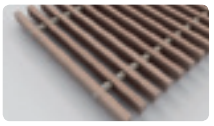
Transverse roll-up grilles


natur - anod. aluminium

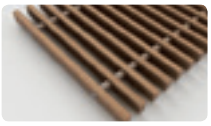

bronze - anod. aluminium


black - anod. aluminium


stainless

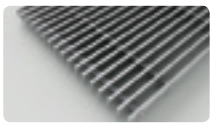

natur beech - wooden


stained beech - wooden


natur oak - wooden


stained oak - wooden

Linear non-rolling grilles


natur - anod. aluminium


bronze - anod. aluminium


black - anod. aluminium

More possibilities and variants → page 6

Peripheral ledges


(more on page 8)

Trench heater standard equipment

Trough	Galvanized steel trough with surface finish and black spray layer inside, black cover plates of connection
Heat exchanger	Al-Cu lamellar exchanger with air vent valve, black painted
Grille	Design walkable grille according the customer's choice*
Ledge	Made of anodized aluminium, type and colour according the customer's choice
Fan	Modern tangential fan with 24 V DC EC motor with high efficiency, rotors protection
Assembly elements	Leveling screws for setting up the trough, mounting brackets
Manual	Manual for the progress of work during installation and user manual
Wiring	Electrical wiring diagram of the trench heaters
Mounting board	Cover and the spacer particle board for easy installation
Package	Transport package for protection against damage during transportation and handling

*stainless grilles surcharge

Accessories per order


Room thermostat


Power supply

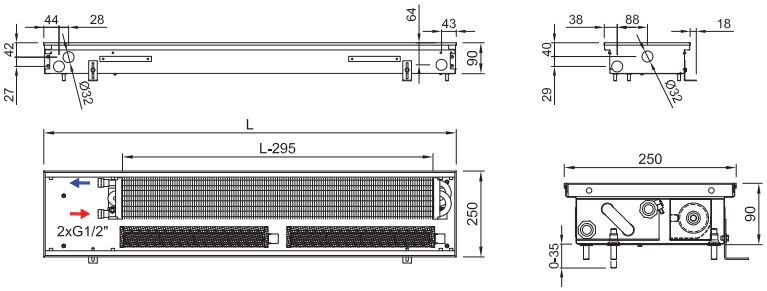

Electrothermal actuator


Thermostatic valve

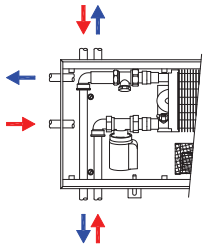

Lockshield valve

Accessories details → page 12

Technical drawing



Connection to heating system



The hydraulic parameters of the heat exchanger → page 82

Code example: FRT 0090 0250 1500 C 62 L2 L - 5

Trench heater **FRT** H = **90** mm, W = **250** mm, L = **1 500** mm, „**C**" Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**62**" stained beech grille, transverse, roll-up „**L2**" peripheral ledge „L" with an overlap, bronze anodized aluminium, „**L**" water connection at the left side (when installing the heat exchanger closer to the window, fans to the room) „**5**" 24 V DC fans without controller (controller is not needed)

Trench heater heating output FRT 0090 0250

Q[W] 75/65/20 °C (ΔT=50 °C) Temperature exponent 1,1

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	253 W	535 W	705 W	752 W
800	337 W	714 W	939 W	1 003 W
900	404 W	856 W	1 127 W	1 204 W
1000	573 W	1 213 W	1 597 W	1 705 W
1100	573 W	1 213 W	1 597 W	1 705 W
1200	674 W	1 427 W	1 879 W	2 006 W
1300	742 W	1 570 W	2 067 W	2 206 W
1400	826 W	1 748 W	2 302 W	2 457 W
1500	910 W	1 927 W	2 536 W	2 708 W
1600	991 W	2 098 W	2 762 W	2 949 W
1700	991 W	2 098 W	2 762 W	2 949 W
1800	1 146 W	2 426 W	3 194 W	3 410 W
1900	1 244 W	2 633 W	3 466 W	3 701 W
2000	1 328 W	2 811 W	3 701 W	3 952 W
2100	1 395 W	2 954 W	3 889 W	4 152 W
2200	1 395 W	2 954 W	3 889 W	4 152 W
2300	1 564 W	3 311 W	4 359 W	4 654 W
2400	1 564 W	3 311 W	4 359 W	4 654 W
2500	1 665 W	3 525 W	4 641 W	4 955 W
2600	1 732 W	3 668 W	4 829 W	5 155 W
2700	1 800 W	3 810 W	5 016 W	5 356 W
2800	1 901 W	4 024 W	5 298 W	5 657 W
2900	1 982 W	4 196 W	5 524 W	5 897 W
3000	1 982 W	4 196 W	5 524 W	5 897 W
3200	2 235 W	4 731 W	6 228 W	6 650 W
3400	2 319 W	4 909 W	6 463 W	6 900 W
3600	2 555 W	5 409 W	7 121 W	7 602 W
3800	2 639 W	5 587 W	7 356 W	7 853 W
4000	2 791 W	5 908 W	7 778 W	8 304 W
4200	2 973 W	6 293 W	8 286 W	8 846 W
4400	3 128 W	6 622 W	8 718 W	9 307 W
4600	3 310 W	7 007 W	9 225 W	9 849 W
4800	3 377 W	7 150 W	9 413 W	10 049 W

Q[W] 55/45/20 °C (ΔT=30 °C)

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	144 W	305 W	402 W	429 W
800	192 W	407 W	535 W	572 W
900	230 W	488 W	643 W	686 W
1000	327 W	692 W	910 W	972 W
1100	327 W	692 W	910 W	972 W
1200	384 W	814 W	1 071 W	1 144 W
1300	423 W	895 W	1 178 W	1 258 W
1400	471 W	997 W	1 312 W	1 401 W
1500	519 W	1 099 W	1 446 W	1 544 W
1600	565 W	1 196 W	1 575 W	1 681 W
1700	565 W	1 196 W	1 575 W	1 681 W
1800	653 W	1 383 W	1 821 W	1 944 W
1900	709 W	1 501 W	1 976 W	2 110 W
2000	757 W	1 603 W	2 110 W	2 253 W
2100	795 W	1 684 W	2 217 W	2 367 W
2200	795 W	1 684 W	2 217 W	2 367 W
2300	892 W	1 888 W	2 485 W	2 653 W
2400	892 W	1 888 W	2 485 W	2 653 W
2500	949 W	2 010 W	2 646 W	2 825 W
2600	987 W	2 091 W	2 753 W	2 939 W
2700	1 026 W	2 172 W	2 860 W	3 054 W
2800	1 084 W	2 294 W	3 020 W	3 225 W
2900	1 130 W	2 392 W	3 149 W	3 362 W
3000	1 130 W	2 392 W	3 149 W	3 362 W
3200	1 274 W	2 697 W	3 551 W	3 791 W
3400	1 322 W	2 799 W	3 685 W	3 934 W
3600	1 457 W	3 084 W	4 060 W	4 334 W
3800	1 505 W	3 185 W	4 194 W	4 477 W
4000	1 591 W	3 368 W	4 434 W	4 734 W
4200	1 695 W	3 588 W	4 724 W	5 043 W
4400	1 783 W	3 775 W	4 970 W	5 306 W
4600	1 887 W	3 995 W	5 259 W	5 615 W
4800	1 925 W	4 076 W	5 367 W	5 729 W

75/65/20 °C → 75°C inlet temperature, 65°C outlet temp., 20 °C room temp. / **Output 90/70/20 °C** = ~ 1,22 x 75/65/20 °C / **Output 70/55/20 °C** = ~ 0,84 x 75/65/20 °C / Heating outputs in accordance with EN 16430 / Not listed heating outpus for lengths per 100 mm steps calculate linearly. Exact values can be found at www.isan.cz

Acoustic pressure [dB(A)]

Length L [mm]	Speed [-] / Acoustic pressure [dB(A)]			
	1	2	3	4 max.
700	< 20 dB(A)	26 dB(A)	34 dB(A)	37 dB(A)
800		27 dB(A)	35 dB(A)	38 dB(A)
900				
1000			36 dB(A)	39 dB(A)
1100				
1200		28 dB(A)		
1300			37 dB(A)	40 dB(A)
1400				
1500				
1600		29 dB(A)	38 dB(A)	41 dB(A)
1700				
1800				
1900	20 dB(A)		39 dB(A)	42 dB(A)
2000		30 dB(A)		
2100				
2200				
2300	21 dB(A)		40 dB(A)	43 dB(A)
2400				
2500		31 dB(A)		
2600				
2700	22 dB(A)		41 dB(A)	
2800				44 dB(A)
2900		32 dB(A)		
3000				
3200	23 dB(A)		42 dB(A)	
3400		33 dB(A)		45 dB(A)
3600	24 dB(A)			
3800		34 dB(A)		
4000			43 dB(A)	
4200	25 dB(A)	35 dB(A)		46 dB(A)
4400				
4600		36 dB(A)	44 dB(A)	47 dB(A)
4800	26 dB(A)			

Acoustic pressure level choose according to specific environment. More details on page 10

Fans input power [W]*

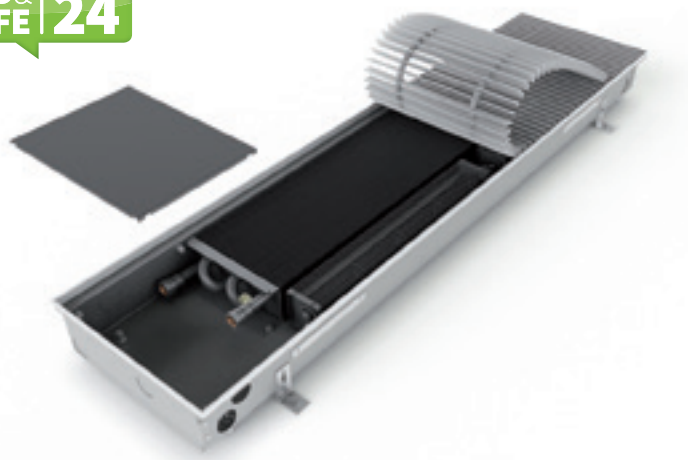
Length L [mm]	Speed [-] / Fans input power [W]*			
	1	2	3	4 max.
700	1 W	2 W	2 W	3 W
800	2 W	2 W	3 W	4 W
900	2 W	3 W	4 W	5 W
1000	2 W	3 W	5 W	6 W
1100	2 W	3 W	5 W	6 W
1200	3 W	4 W	6 W	8 W
1300	3 W	5 W	7 W	9 W
1400	3 W	5 W	7 W	9 W
1500	4 W	6 W	8 W	10 W
1600	4 W	6 W	8 W	10 W
1700	4 W	6 W	9 W	11 W
1800	5 W	7 W	10 W	12 W
1900	5 W	7 W	10 W	12 W
2000	5 W	7 W	10 W	13 W
2100	5 W	8 W	11 W	14 W
2200	5 W	8 W	11 W	14 W
2300	6 W	9 W	13 W	16 W
2400	6 W	9 W	13 W	16 W
2500	6 W	9 W	14 W	17 W
2600	7 W	10 W	14 W	18 W
2700	7 W	11 W	15 W	19 W
2800	7 W	11 W	15 W	19 W
2900	7 W	11 W	15 W	19 W
3000	8 W	11 W	16 W	20 W
3200	8 W	12 W	18 W	22 W
3400	9 W	13 W	18 W	23 W
3600	9 W	14 W	20 W	25 W
3800	10 W	14 W	21 W	26 W
4000	11 W	16 W	23 W	28 W
4200	11 W	16 W	23 W	28 W
4400	12 W	17 W	25 W	31 W
4600	12 W	18 W	26 W	32 W
4800	12 W	18 W	27 W	33 W

* Approximate fan input powers / **When using electrothermal actuator add in the trench heater's power 3 W** / Wiring of the trench heater → page 85

FRT 0090 0300

TRENCH HEATER WITH FAN

ECO & SAFE | VOLTAGE 24



- Flats, detached houses, offices, administrative buildings
- Low trench heater with a good heating output
- High heating output
- Continuous speed control
- Quiet operation
- Common electricity consumption **3 W/m**
- Using in dry environment

Technical data

Trench heater

Height	H = **90** mm
Width	W = **300** mm
Length	L = **700–4 800** mm in step **100** mm

Heat exchanger

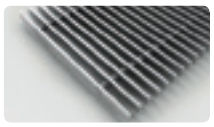
Type	**Al-Cu** lamellar
Length	L–**295** mm
Connection thread	**2×G1/2"** inner

Working conditions

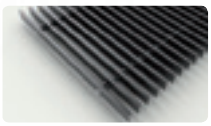
Max. temperature	**110** °C
Max. overpressure	**1** MPa (**10** bar)
Protection	IP **20**
Ambient conditions	Temp. T = **+2** to **+40** °C Humidity Rh = **20** to **70**%

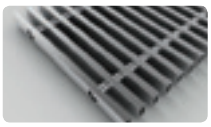
Variants

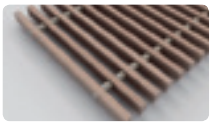
Transverse roll-up grilles


natur - anod. aluminium

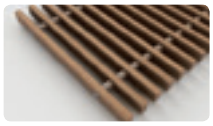

bronze - anod. aluminium


black - anod. aluminium


stainless

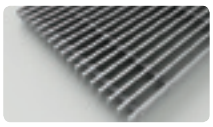

natur beech - wooden


stained beech - wooden


natur oak - wooden


stained oak - wooden

Linear non-rolling grilles


natur - anod. aluminium


bronze - anod. aluminium


black - anod. aluminium

Peripheral ledges


(more on page 8)

More possibilities and variants → page 6

Trench heater standard equipment

Trough	Galvanized steel trough with surface finish and black spray layer inside, black cover plates of connection
Heat exchanger	Al-Cu lamellar exchanger with air vent valve, black painted
Grille	Design walkable grille according the customer's choice*
Ledge	Made of anodized aluminium, type and colour according the customer's choice
Fan	Modern tangential fan with 24 V DC EC motor with high efficiency, rotors protection
Assembly elements	Leveling screws for setting up the trough, mounting brackets
Manual	Manual for the progress of work during installation and user manual
Wiring	Electrical wiring diagram of the trench heaters
Mounting board	Cover and the spacer particle board for easy installation
Package	Transport package for protection against damage during transportation and handling

*stainless grilles surcharge

Accessories per order


Room thermostat


Power supply

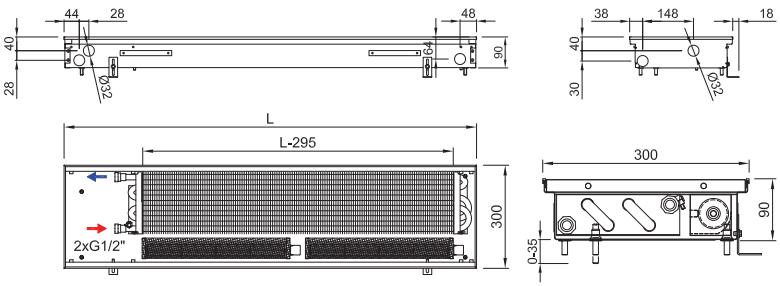

Electrothermal actuator


Thermostatic valve

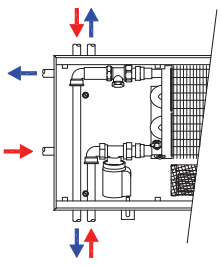

Lockshield valve

Accessories details → page 12

Technical drawing



Connection to heating system



The hydraulic parameters of the heat exchanger → page 82

Code example: FRT 0090 0300 2700 C 32 J3 R - 5

Trench heater **FRT** H = **90** mm, W = **300** mm, L = **2 700** mm, „**C**" Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**32**" black anodized aluminium grille, linear, rigid, „**J3**" peripheral ledge „J", black anodized aluminium „**R**" water connection at the right side (when installing the heat exchanger closer to the window, fans to the room), „**5**" 24 V DC fans without controller (controller is not needed)

Trench heater heating output FRT 0090 0300

Q[W] 75/65/20 °C (ΔT=50 °C) Temperature exponent 1,1

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	270 W	572 W	749 W	803 W
800	361 W	762 W	999 W	1 071 W
900	433 W	915 W	1 199 W	1 285 W
1000	613 W	1 296 W	1 698 W	1 820 W
1100	613 W	1 296 W	1 698 W	1 820 W
1200	721 W	1 525 W	1 998 W	2 141 W
1300	793 W	1 677 W	2 197 W	2 355 W
1400	883 W	1 868 W	2 447 W	2 623 W
1500	974 W	2 058 W	2 697 W	2 891 W
1600	1 060 W	2 241 W	2 937 W	3 148 W
1700	1 060 W	2 241 W	2 937 W	3 148 W
1800	1 226 W	2 592 W	3 396 W	3 640 W
1900	1 331 W	2 813 W	3 686 W	3 950 W
2000	1 421 W	3 004 W	3 935 W	4 218 W
2100	1 493 W	3 156 W	4 135 W	4 432 W
2200	1 493 W	3 156 W	4 135 W	4 432 W
2300	1 673 W	3 537 W	4 635 W	4 968 W
2400	1 673 W	3 537 W	4 635 W	4 968 W
2500	1 781 W	3 766 W	4 934 W	5 289 W
2600	1 853 W	3 918 W	5 134 W	5 503 W
2700	1 926 W	4 071 W	5 334 W	5 717 W
2800	2 034 W	4 300 W	5 633 W	6 038 W
2900	2 120 W	4 483 W	5 873 W	6 295 W
3000	2 120 W	4 483 W	5 873 W	6 295 W
3200	2 391 W	5 054 W	6 622 W	7 098 W
3400	2 481 W	5 245 W	6 872 W	7 366 W
3600	2 733 W	5 779 W	7 571 W	8 115 W
3800	2 823 W	5 969 W	7 821 W	8 383 W
4000	2 986 W	6 312 W	8 270 W	8 864 W
4200	3 180 W	6 724 W	8 810 W	9 443 W
4400	3 346 W	7 075 W	9 269 W	9 935 W
4600	3 541 W	7 486 W	9 808 W	10 513 W
4800	3 613 W	7 639 W	10 008 W	10 727 W

Q[W] 55/45/20 °C (ΔT=30 °C)

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	154 W	326 W	427 W	458 W
800	206 W	434 W	570 W	611 W
900	247 W	522 W	684 W	733 W
1000	349 W	739 W	968 W	1 038 W
1100	349 W	739 W	968 W	1 038 W
1200	411 W	869 W	1 139 W	1 221 W
1300	452 W	956 W	1 253 W	1 343 W
1400	503 W	1 065 W	1 395 W	1 495 W
1500	555 W	1 173 W	1 538 W	1 648 W
1600	604 W	1 278 W	1 674 W	1 795 W
1700	604 W	1 278 W	1 674 W	1 795 W
1800	699 W	1 478 W	1 936 W	2 075 W
1900	759 W	1 604 W	2 101 W	2 252 W
2000	810 W	1 713 W	2 243 W	2 405 W
2100	851 W	1 799 W	2 357 W	2 527 W
2200	851 W	1 799 W	2 357 W	2 527 W
2300	954 W	2 017 W	2 643 W	2 832 W
2400	954 W	2 017 W	2 643 W	2 832 W
2500	1 015 W	2 147 W	2 813 W	3 015 W
2600	1 056 W	2 234 W	2 927 W	3 137 W
2700	1 098 W	2 321 W	3 041 W	3 259 W
2800	1 160 W	2 452 W	3 211 W	3 442 W
2900	1 209 W	2 556 W	3 348 W	3 589 W
3000	1 209 W	2 556 W	3 348 W	3 589 W
3200	1 363 W	2 881 W	3 775 W	4 047 W
3400	1 414 W	2 990 W	3 918 W	4 200 W
3600	1 558 W	3 295 W	4 316 W	4 627 W
3800	1 609 W	3 403 W	4 459 W	4 779 W
4000	1 702 W	3 599 W	4 715 W	5 054 W
4200	1 813 W	3 833 W	5 023 W	5 384 W
4400	1 908 W	4 034 W	5 284 W	5 664 W
4600	2 019 W	4 268 W	5 592 W	5 994 W
4800	2 060 W	4 355 W	5 706 W	6 116 W

75/65/20 °C → 75°C inlet temperature, 65°C outlet temp., 20 °C room temp. / **Output 90/70/20 °C** = ~ 1,22 x 75/65/20 °C / **Output 70/55/20 °C** = ~ 0,84 x 75/65/20 °C / Heating outputs in accordance with EN 16430 / Not listed heating outpus for lengths per 100 mm steps calculate linearly. Exact values can be found at www.isan.cz

Acoustic pressure [dB(A)]

Length L [mm]	Speed [-] / Acoustic pressure [dB(A)]			
	1	2	3	4 max.
700	< 20 dB(A)	26 dB(A)	34 dB(A)	37 dB(A)
800		27 dB(A)	35 dB(A)	38 dB(A)
900				
1000			36 dB(A)	39 dB(A)
1100				
1200		28 dB(A)		
1300			37 dB(A)	40 dB(A)
1400				
1500				
1600		29 dB(A)	38 dB(A)	41 dB(A)
1700				
1800				
1900	20 dB(A)		39 dB(A)	42 dB(A)
2000		30 dB(A)		
2100				
2200				
2300	21 dB(A)		40 dB(A)	43 dB(A)
2400				
2500		31 dB(A)		
2600				
2700	22 dB(A)		41 dB(A)	
2800				44 dB(A)
2900		32 dB(A)		
3000				
3200	23 dB(A)		42 dB(A)	
3400		33 dB(A)		45 dB(A)
3600	24 dB(A)			
3800		34 dB(A)		
4000			43 dB(A)	
4200	25 dB(A)	35 dB(A)		46 dB(A)
4400				
4600		36 dB(A)	44 dB(A)	47 dB(A)
4800	26 dB(A)			

Acoustic pressure level choose according to specific environment. More details on page 10

Fans input power [W]*

Length L [mm]	Speed [-] / Fans input power [W]*			
	1	2	3	4 max.
700	1 W	2 W	2 W	3 W
800	2 W	2 W	3 W	4 W
900	2 W	3 W	4 W	5 W
1000	2 W	3 W	5 W	6 W
1100	2 W	3 W	5 W	6 W
1200	3 W	4 W	6 W	8 W
1300	3 W	5 W	7 W	9 W
1400	3 W	5 W	7 W	9 W
1500	4 W	6 W	8 W	10 W
1600	4 W	6 W	8 W	10 W
1700	4 W	6 W	9 W	11 W
1800	5 W	7 W	10 W	12 W
1900	5 W	7 W	10 W	12 W
2000	5 W	7 W	10 W	13 W
2100	5 W	8 W	11 W	14 W
2200	5 W	8 W	11 W	14 W
2300	6 W	9 W	13 W	16 W
2400	6 W	9 W	13 W	16 W
2500	6 W	9 W	14 W	17 W
2600	7 W	10 W	14 W	18 W
2700	7 W	11 W	15 W	19 W
2800	7 W	11 W	15 W	19 W
2900	7 W	11 W	15 W	19 W
3000	8 W	11 W	16 W	20 W
3200	8 W	12 W	18 W	22 W
3400	9 W	13 W	18 W	23 W
3600	9 W	14 W	20 W	25 W
3800	10 W	14 W	21 W	26 W
4000	11 W	16 W	23 W	28 W
4200	11 W	16 W	23 W	28 W
4400	12 W	17 W	25 W	31 W
4600	12 W	18 W	26 W	32 W
4800	12 W	18 W	27 W	33 W

* Approximate fan input powers / **When using electrothermal actuator add in the trench heater's power 3 W** / Wiring of the trench heater → page 85

FRT 0090 0425

TRENCH HEATER WITH FAN

ECO & SAFE | VOLTAGE 24

- Flats, detached houses, offices, administrative buildings
- High heating output
- Continuous speed control
- Quiet operation
- Common electricity consumption **3 W/m**
- Using in dry environment

Technical data

Trench heater

Height	H = **90** mm
Width	W = **425** mm
Length	L = **700–4 800** mm in step **100** mm

Heat exchanger

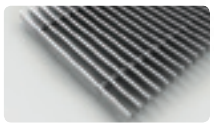
Type	**Al-Cu** lamellar
Length	L–**295** mm
Connection thread	**2×G1/2"** inner

Working conditions

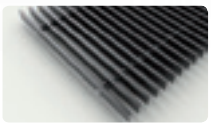
Max. temperature	**110** °C
Max. overpressure	**1** MPa (**10** bar)
Protection	IP **20**
Ambient conditions	Temp. T = **+2** to **+40** °C Humidity Rh = **20** to **70**%

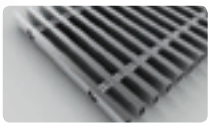
Variants

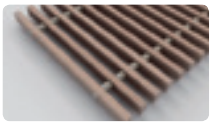
Transverse roll-up grilles


natur - anod. aluminium

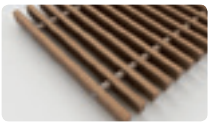

bronze - anod. aluminium


black - anod. aluminium


stainless

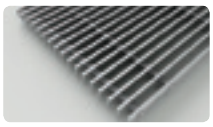

natur beech - wooden


stained beech - wooden


natur oak - wooden


stained oak - wooden

Linear non-rolling grilles


natur - anod. aluminium


bronze - anod. aluminium


black - anod. aluminium

Peripheral ledges


(more on page 8)

More possibilities and variants → page 6

Trench heater standard equipment

Trough	Galvanized steel trough with surface finish and black spray layer inside, black cover plates of connection
Heat exchanger	Al-Cu lamellar exchanger with air vent valve, black painted
Grille	Design walkable grille according the customer's choice*
Ledge	Made of anodized aluminium, type and colour according the customer's choice
Fan	Modern tangential fan with 24 V DC EC motor with high efficiency, rotors protection
Assembly elements	Leveling screws for setting up the trough, mounting brackets
Manual	Manual for the progress of work during installation and user manual
Wiring	Electrical wiring diagram of the trench heaters
Mounting board	Cover and the spacer particle board for easy installation
Package	Transport package for protection against damage during transportation and handling

*stainless grilles surcharge

Accessories per order


Room thermostat


Power supply

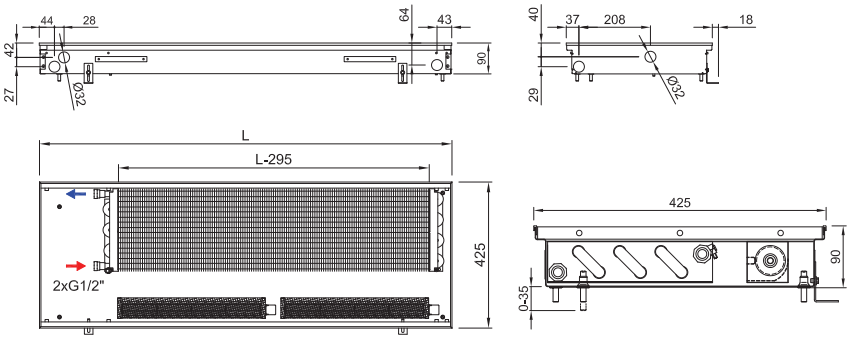

Electrothermal actuator


Thermostatic valve

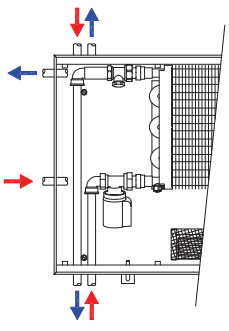

Lockshield valve

Accessories details → page 12

Technical drawing



Connection to heating system



The hydraulic parameters of the heat exchanger → page 82

Code example: FRT 0090 0425 4400 C 64 L2 L - 5

Trench heater **FRT** H = **90** mm, W = **425** mm, L = **4 400** mm, „**C**" Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**64**" stained oak grille, transverse, roll-up, „**L2**" peripheral ledge „L" with an overlap, bronze anodized aluminium, „**L**" water connection at the left side (when installing the heat exchanger closer to the window, fans to the room) „**5**" 24 V DC fans without controller (controller is not needed)

Trench heater heating output FRT 0090 0425

Q[W] 75/65/20 °C (ΔT=50 °C) Temperature exponent 1,1

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	289 W	626 W	839 W	871 W
800	386 W	835 W	1 119 W	1 162 W
900	463 W	1 002 W	1 343 W	1 394 W
1000	656 W	1 420 W	1 903 W	1 975 W
1100	656 W	1 420 W	1 903 W	1 975 W
1200	772 W	1 670 W	2 238 W	2 323 W
1300	849 W	1 837 W	2 462 W	2 556 W
1400	945 W	2 046 W	2 742 W	2 846 W
1500	1 042 W	2 255 W	3 022 W	3 137 W
1600	1 134 W	2 455 W	3 290 W	3 415 W
1700	1 134 W	2 455 W	3 290 W	3 415 W
1800	1 312 W	2 839 W	3 805 W	3 950 W
1900	1 424 W	3 081 W	4 130 W	4 287 W
2000	1 520 W	3 290 W	4 410 W	4 577 W
2100	1 597 W	3 457 W	4 633 W	4 809 W
2200	1 597 W	3 457 W	4 633 W	4 809 W
2300	1 790 W	3 874 W	5 193 W	5 390 W
2400	1 790 W	3 874 W	5 193 W	5 390 W
2500	1 906 W	4 125 W	5 529 W	5 739 W
2600	1 983 W	4 292 W	5 753 W	5 971 W
2700	2 060 W	4 459 W	5 976 W	6 203 W
2800	2 176 W	4 709 W	6 312 W	6 552 W
2900	2 269 W	4 910 W	6 581 W	6 831 W
3000	2 269 W	4 910 W	6 581 W	6 831 W
3200	2 558 W	5 536 W	7 420 W	7 702 W
3400	2 655 W	5 745 W	7 700 W	7 992 W
3600	2 925 W	6 329 W	8 483 W	8 805 W
3800	3 021 W	6 538 W	8 763 W	9 096 W
4000	3 195 W	6 914 W	9 267 W	9 619 W
4200	3 403 W	7 365 W	9 871 W	10 246 W
4400	3 581 W	7 749 W	10 386 W	10 780 W
4600	3 789 W	8 200 W	10 990 W	11 408 W
4800	3 866 W	8 367 W	11 214 W	11 640 W

Q[W] 55/45/20 °C (ΔT=30 °C)

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	165 W	357 W	478 W	497 W
800	220 W	476 W	638 W	662 W
900	264 W	571 W	766 W	795 W
1000	374 W	810 W	1 085 W	1 126 W
1100	374 W	810 W	1 085 W	1 126 W
1200	440 W	952 W	1 276 W	1 324 W
1300	484 W	1 047 W	1 404 W	1 457 W
1400	539 W	1 166 W	1 563 W	1 623 W
1500	594 W	1 286 W	1 723 W	1 788 W
1600	647 W	1 400 W	1 876 W	1 947 W
1700	647 W	1 400 W	1 876 W	1 947 W
1800	748 W	1 619 W	2 169 W	2 252 W
1900	812 W	1 757 W	2 355 W	2 444 W
2000	867 W	1 876 W	2 514 W	2 609 W
2100	910 W	1 971 W	2 641 W	2 742 W
2200	910 W	1 971 W	2 641 W	2 742 W
2300	1 021 W	2 209 W	2 961 W	3 073 W
2400	1 021 W	2 209 W	2 961 W	3 073 W
2500	1 087 W	2 352 W	3 152 W	3 272 W
2600	1 131 W	2 447 W	3 280 W	3 404 W
2700	1 174 W	2 542 W	3 407 W	3 536 W
2800	1 241 W	2 685 W	3 599 W	3 735 W
2900	1 294 W	2 799 W	3 752 W	3 894 W
3000	1 294 W	2 799 W	3 752 W	3 894 W
3200	1 458 W	3 156 W	4 230 W	4 391 W
3400	1 514 W	3 275 W	4 390 W	4 556 W
3600	1 668 W	3 608 W	4 836 W	5 020 W
3800	1 722 W	3 727 W	4 996 W	5 186 W
4000	1 822 W	3 942 W	5 283 W	5 484 W
4200	1 940 W	4 199 W	5 628 W	5 841 W
4400	2 042 W	4 418 W	5 921 W	6 146 W
4600	2 160 W	4 675 W	6 266 W	6 504 W
4800	2 204 W	4 770 W	6 393 W	6 636 W

75/65/20 °C → 75°C inlet temperature, 65°C outlet temp., 20 °C room temp. / **Output 90/70/20 °C** = ~ 1,22 x 75/65/20 °C / **Output 70/55/20 °C** = ~ 0,84 x 75/65/20 °C / Heating outputs in accordance with EN 16430 / Not listed heating outpus for lengths per 100 mm steps calculate linearly. Exact values can be found at www.isan.cz

Acoustic pressure [dB(A)]

Length L [mm]	Speed [-] / Acoustic pressure [dB(A)]			
	1	2	3	4 max.
700	< 20 dB(A)	26 dB(A)	34 dB(A)	37 dB(A)
800		27 dB(A)	35 dB(A)	38 dB(A)
900				
1000			36 dB(A)	39 dB(A)
1100				
1200		28 dB(A)		
1300			37 dB(A)	40 dB(A)
1400				
1500				
1600		29 dB(A)	38 dB(A)	41 dB(A)
1700				
1800				
1900	20 dB(A)		39 dB(A)	42 dB(A)
2000		30 dB(A)		
2100				
2200				
2300	21 dB(A)		40 dB(A)	43 dB(A)
2400				
2500		31 dB(A)		
2600				
2700	22 dB(A)		41 dB(A)	
2800				44 dB(A)
2900		32 dB(A)		
3000				
3200	23 dB(A)		42 dB(A)	
3400		33 dB(A)		45 dB(A)
3600	24 dB(A)			
3800		34 dB(A)		
4000			43 dB(A)	
4200	25 dB(A)	35 dB(A)		46 dB(A)
4400				
4600		36 dB(A)	44 dB(A)	47 dB(A)
4800	26 dB(A)			

Acoustic pressure level choose according to specific environment. More details on page 10

Fans input power [W]*

Length L [mm]	Speed [-] / Fans input power [W]*			
	1	2	3	4 max.
700	1 W	2 W	2 W	3 W
800	2 W	2 W	3 W	4 W
900	2 W	3 W	4 W	5 W
1000	2 W	3 W	5 W	6 W
1100	2 W	3 W	5 W	6 W
1200	3 W	4 W	6 W	8 W
1300	3 W	5 W	7 W	9 W
1400	3 W	5 W	7 W	9 W
1500	4 W	6 W	8 W	10 W
1600	4 W	6 W	8 W	10 W
1700	4 W	6 W	9 W	11 W
1800	5 W	7 W	10 W	12 W
1900	5 W	7 W	10 W	12 W
2000	5 W	7 W	10 W	13 W
2100	5 W	8 W	11 W	14 W
2200	5 W	8 W	11 W	14 W
2300	6 W	9 W	13 W	16 W
2400	6 W	9 W	13 W	16 W
2500	6 W	9 W	14 W	17 W
2600	7 W	10 W	14 W	18 W
2700	7 W	11 W	15 W	19 W
2800	7 W	11 W	15 W	19 W
2900	7 W	11 W	15 W	19 W
3000	8 W	11 W	16 W	20 W
3200	8 W	12 W	18 W	22 W
3400	9 W	13 W	18 W	23 W
3600	9 W	14 W	20 W	25 W
3800	10 W	14 W	21 W	26 W
4000	11 W	16 W	23 W	28 W
4200	11 W	16 W	23 W	28 W
4400	12 W	17 W	25 W	31 W
4600	12 W	18 W	26 W	32 W
4800	12 W	18 W	27 W	33 W

* Approximate fan input powers / **When using electrothermal actuator add in the trench heater's power 3 W** / Wiring of the trench heater → page 85

FRT 0110 0175

TRENCH HEATER WITH FAN

ECO & SAFE | VOLTAGE 24

- Flats, detached houses, offices, administrative buildings
- Narrow trench heater suitable for a standard floor
- High heating output
- Continuous speed control
- Quiet operation
- Common electricity consumption **2 W/m**
- Using in dry environment

Technical data

Trench heater

Height	H = **110** mm
Width	W = **175** mm
Length	L = **700–4 800** mm in step **100** mm

Heat exchanger

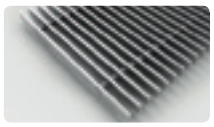
Type	**Al-Cu** lamellar
Length	L–**295** mm
Connection thread	**2×G1/2"** inner

Working conditions

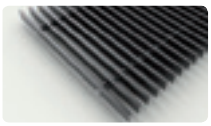
Max. temperature	**110** °C
Max. overpressure	**1** MPa (**10** bar)
Protection	IP **20**
Ambient conditions	Temp. T = **+2** to **+40** °C Humidity Rh = **20** to **70**%

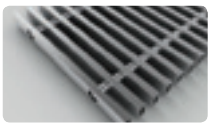
Variants

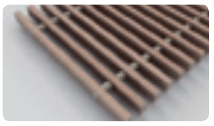
Transverse roll-up grilles


natur - anod. aluminium

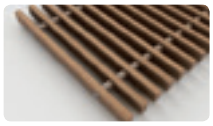

bronze - anod. aluminium


black - anod. aluminium


stainless

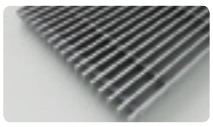

natur beech - wooden


stained beech - wooden


natur oak - wooden


stained oak - wooden

Linear non-rolling grilles


natur - anod. aluminium


bronze - anod. aluminium


black - anod. aluminium

More possibilities and variants → page 6

Peripheral ledges


(more on page 8)

Trench heater standard equipment

Trough	Galvanized steel trough with surface finish and black spray layer inside, black cover plates of connection
Heat exchanger	Al-Cu lamellar exchanger with air vent valve, black painted
Grille	Design walkable grille according the customer's choice*
Ledge	Made of anodized aluminium, type and colour according the customer's choice
Fan	Modern tangential fan with 24 V DC EC motor with high efficiency, rotors protection
Assembly elements	Leveling screws for setting up the trough, mounting brackets
Manual	Manual for the progress of work during installation and user manual
Wiring	Electrical wiring diagram of the trench heaters
Mounting board	Cover and the spacer particle board for easy installation
Package	Transport package for protection against damage during transportation and handling

*stainless grilles surcharge

Accessories per order


Room thermostat

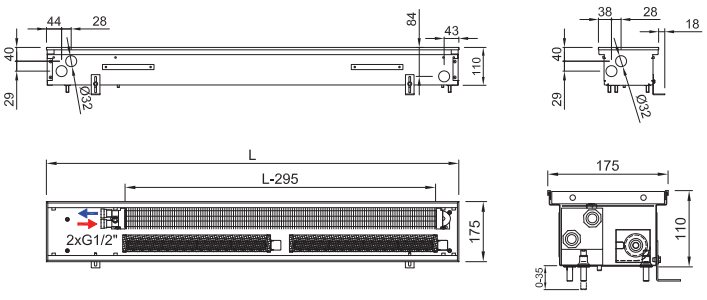

Power supply


Lockshield valve

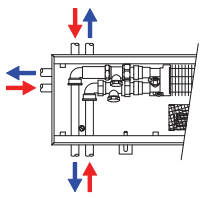

Thermostatic valve

Accessories details → page 12

Technical drawing



Connection to heating system



Electrothermal actuator can't be installed in the body of the trench heater due to limited internal space.

The hydraulic parameters of the heat exchanger → page 82

Code example: FRT 0110 0175 1400 C 63 L1 L - 5

Trench heater FRT H = **110** mm, W = **175** mm, L = **1 400** mm, „**C**" Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**63**" natural oak grille, transverse, roll-up, „**L1**" peripheral ledge „L" with an overlap, natur anodized aluminium, „**L**" water connection at the left side (when installing the heat exchanger closer to the window, fans to the room) „**5**" 24 V DC fans without controller (controller is not needed)

Trench heater heating output FRT 0110 0175

Q[W] 75/65/20 °C (ΔT=50 °C) Temperature exponent 1,1

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	89 W	197 W	255 W	306 W
800	118 W	262 W	340 W	408 W
900	142 W	315 W	409 W	490 W
1000	201 W	446 W	579 W	694 W
1100	201 W	446 W	579 W	694 W
1200	236 W	525 W	681 W	817 W
1300	260 W	577 W	749 W	899 W
1400	289 W	643 W	834 W	1 001 W
1500	319 W	708 W	919 W	1 103 W
1600	349 W	775 W	1 006 W	1 207 W
1700	349 W	775 W	1 006 W	1 207 W
1800	402 W	892 W	1 157 W	1 389 W
1900	438 W	972 W	1 261 W	1 513 W
2000	467 W	1 037 W	1 346 W	1 615 W
2100	491 W	1 090 W	1 415 W	1 697 W
2200	491 W	1 090 W	1 415 W	1 697 W
2300	550 W	1 221 W	1 585 W	1 901 W
2400	550 W	1 221 W	1 585 W	1 901 W
2500	585 W	1 300 W	1 687 W	2 024 W
2600	609 W	1 352 W	1 755 W	2 106 W
2700	632 W	1 404 W	1 823 W	2 187 W
2800	668 W	1 483 W	1 925 W	2 310 W
2900	698 W	1 550 W	2 012 W	2 414 W
3000	698 W	1 550 W	2 012 W	2 414 W
3200	787 W	1 747 W	2 267 W	2 720 W
3400	816 W	1 812 W	2 352 W	2 822 W
3600	899 W	1 996 W	2 591 W	3 108 W
3800	928 W	2 061 W	2 676 W	3 210 W
4000	981 W	2 179 W	2 829 W	3 394 W
4200	1 047 W	2 325 W	3 018 W	3 621 W
4400	1 100 W	2 442 W	3 169 W	3 803 W
4600	1 165 W	2 587 W	3 358 W	4 029 W
4800	1 189 W	2 640 W	3 427 W	4 111 W

Q[W] 55/45/20 °C (ΔT=30 °C)

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	51 W	112 W	145 W	174 W
800	67 W	149 W	194 W	233 W
900	81 W	180 W	233 W	279 W
1000	115 W	254 W	330 W	396 W
1100	115 W	254 W	330 W	396 W
1200	135 W	299 W	388 W	466 W
1300	148 W	329 W	427 W	513 W
1400	165 W	367 W	475 W	571 W
1500	182 W	404 W	524 W	629 W
1600	199 W	442 W	574 W	688 W
1700	199 W	442 W	574 W	688 W
1800	229 W	509 W	660 W	792 W
1900	250 W	554 W	719 W	863 W
2000	266 W	591 W	767 W	921 W
2100	280 W	621 W	807 W	967 W
2200	280 W	621 W	807 W	967 W
2300	314 W	696 W	904 W	1 084 W
2400	314 W	696 W	904 W	1 084 W
2500	334 W	741 W	962 W	1 154 W
2600	347 W	771 W	1 001 W	1 201 W
2700	360 W	800 W	1 039 W	1 247 W
2800	381 W	845 W	1 097 W	1 317 W
2900	398 W	884 W	1 147 W	1 376 W
3000	398 W	884 W	1 147 W	1 376 W
3200	449 W	996 W	1 292 W	1 551 W
3400	465 W	1 033 W	1 341 W	1 609 W
3600	513 W	1 138 W	1 477 W	1 772 W
3800	529 W	1 175 W	1 526 W	1 830 W
4000	559 W	1 242 W	1 613 W	1 935 W
4200	597 W	1 326 W	1 721 W	2 064 W
4400	627 W	1 392 W	1 807 W	2 168 W
4600	664 W	1 475 W	1 914 W	2 297 W
4800	678 W	1 505 W	1 954 W	2 344 W

75/65/20 °C → 75°C inlet temperature, 65°C outlet temp., 20 °C room temp. / **Output 90/70/20 °C** = ~ 1,22 x 75/65/20 °C / **Output 70/55/20 °C** = ~ 0,84 x 75/65/20 °C / Heating outputs in accordance with EN 16430 / Not listed heating outpus for lengths per 100 mm steps calculate linearly. Exact values can be found at www.isan.cz

Acoustic pressure [dB(A)]

Length L [mm]	Speed [-] / Acoustic pressure [dB(A)]			
	1	2	3	4 max.
700	< 20 dB(A)	20 dB(A)	25 dB(A)	29 dB(A)
800		21 dB(A)	26 dB(A)	30 dB(A)
900				
1000				31 dB(A)
1100				
1200		22 dB(A)	27 dB(A)	32 dB(A)
1300				
1400				
1500				33 dB(A)
1600		23 dB(A)	28 dB(A)	
1700				
1800				34 dB(A)
1900				
2000		24 dB(A)	29 dB(A)	
2100				35 dB(A)
2200				
2300				
2400				
2500		25 dB(A)	30 dB(A)	
2600				36 dB(A)
2700				
2800				
2900		26 dB(A)	31 dB(A)	
3000				
3200				37 dB(A)
3400		27 dB(A)	32 dB(A)	
3600				
3800		28 dB(A)	33 dB(A)	
4000				38 dB(A)
4200		29 dB(A)	34 dB(A)	
4400				
4600		30 dB(A)	35 dB(A)	
4800				

Acoustic pressure level choose according to specific environment. More details on page 10

Fans input power [W]*

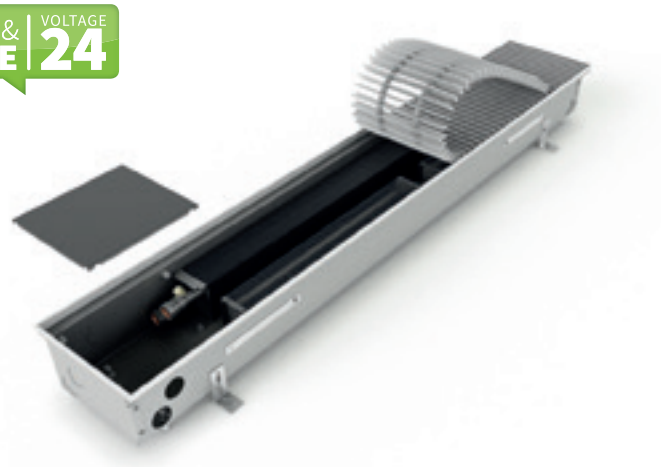
Length L [mm]	Speed [-] / Fans input power [W]*			
	1	2	3	4 max.
700	1 W	1 W	2 W	2 W
800	1 W	1 W	2 W	2 W
900	1 W	1 W	2 W	2 W
1000	2 W	2 W	2 W	3 W
1100	2 W	2 W	2 W	3 W
1200	2 W	3 W	3 W	4 W
1300	2 W	3 W	3 W	4 W
1400	3 W	3 W	4 W	5 W
1500	3 W	3 W	4 W	5 W
1600	3 W	3 W	4 W	5 W
1700	3 W	3 W	4 W	5 W
1800	3 W	3 W	4 W	5 W
1900	3 W	4 W	5 W	6 W
2000	4 W	5 W	6 W	7 W
2100	4 W	5 W	6 W	7 W
2200	4 W	5 W	6 W	7 W
2300	4 W	5 W	6 W	7 W
2400	4 W	5 W	6 W	7 W
2500	5 W	6 W	7 W	9 W
2600	5 W	6 W	7 W	9 W
2700	5 W	6 W	7 W	9 W
2800	5 W	6 W	7 W	9 W
2900	5 W	6 W	7 W	9 W
3000	5 W	6 W	7 W	9 W
3200	6 W	8 W	9 W	11 W
3400	6 W	8 W	9 W	11 W
3600	7 W	8 W	10 W	12 W
3800	7 W	9 W	11 W	13 W
4000	7 W	9 W	11 W	13 W
4200	7 W	9 W	11 W	13 W
4400	8 W	10 W	12 W	14 W
4600	8 W	10 W	12 W	15 W
4800	8 W	10 W	12 W	15 W

* Approximate fan input powers / **When using electrothermal actuator add in the trench heater's power 3 W** / Wiring of the trench heater → page 85

FRT 0110 0200

TRENCH HEATER WITH FAN

ECO & SAFE | VOLTAGE 24



- Flats, detached houses, offices, administrative buildings
- Narrow trench heater suitable for a standard floor
- High heating output
- Continuous speed control
- Quiet operation
- Common electricity consumption **3 W/m**
- Using in dry environment

Technical data

Trench heater

Height	H = **110** mm
Width	W = **200** mm
Length	L = **700–4 800** mm in step **100** mm

Heat exchanger

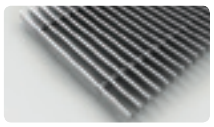
Type	**Al-Cu** lamellar
Length	L–**295** mm
Connection thread	**2×G1/2"** inner

Working conditions

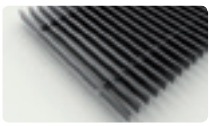
Max. temperature	**110** °C
Max. overpressure	**1** MPa (**10** bar)
Protection	IP **20**
Ambient conditions	Temp. T = **+2** to **+40** °C Humidity Rh = **20** to **70**%

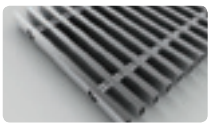
Variants

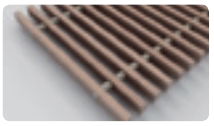
Transverse roll-up grilles


natur - anod. aluminium

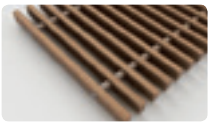

bronze - anod. aluminium


black - anod. aluminium


stainless

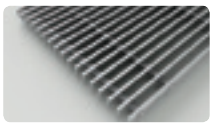

natur beech - wooden


stained beech - wooden


natur oak - wooden


stained oak - wooden

Linear non-rolling grilles


natur - anod. aluminium


bronze - anod. aluminium


black - anod. aluminium

Peripheral ledges


(more on page 8)

More possibilities and variants → page 6

Trench heater standard equipment

Trough	Galvanized steel trough with surface finish and black spray layer inside, black cover plates of connection
Heat exchanger	Al-Cu lamellar exchanger with air vent valve, black painted
Grille	Design walkable grille according the customer's choice*
Ledge	Made of anodized aluminium, type and colour according the customer's choice
Fan	Modern tangential fan with 24 V DC EC motor with high efficiency, rotors protection
Assembly elements	Leveling screws for setting up the trough, mounting brackets
Manual	Manual for the progress of work during installation and user manual
Wiring	Electrical wiring diagram of the trench heaters
Mounting board	Cover and the spacer particle board for easy installation
Package	Transport package for protection against damage during transportation and handling

*stainless grilles surcharge

Accessories per order


Room thermostat


Power supply

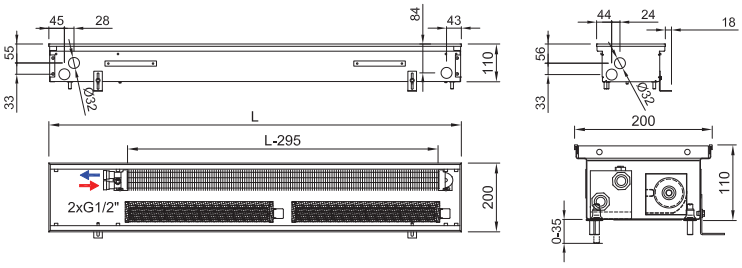

Electrothermal actuator


Thermostatic valve

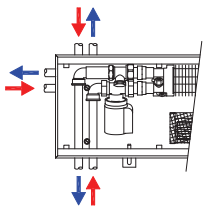

Lockshield valve

Accessories details → page 12

Technical drawing



Connection to heating system



The hydraulic parameters of the heat exchanger → page 82

Code example: FRT 0110 0200 1900 C 52 J1 R - 5

Trench heater **FRT** H = **110** mm, W = **200** mm, L = **1 900** mm, „**C**" Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**52**" stainless grille, transverse, roll-up, „**J1**" peripheral ledge „J", natur anodized aluminium, „**R**" water connection at the right side (when installing the heat exchanger closer to the window, fans to the room), „**5**" 24 V DC fans without controller (controller is not needed)

Trench heater heating output FRT 0110 0200

Q[W] 75/65/20 °C (ΔT=50 °C) Temperature exponent 1,1

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	171 W	376 W	500 W	537 W
800	228 W	502 W	666 W	716 W
900	273 W	602 W	800 W	860 W
1000	387 W	853 W	1 133 W	1 218 W
1100	387 W	853 W	1 133 W	1 218 W
1200	456 W	1 003 W	1 333 W	1 433 W
1300	501 W	1 104 W	1 466 W	1 576 W
1400	558 W	1 229 W	1 633 W	1 755 W
1500	615 W	1 355 W	1 799 W	1 934 W
1600	670 W	1 475 W	1 959 W	2 106 W
1700	670 W	1 475 W	1 959 W	2 106 W
1800	775 W	1 706 W	2 266 W	2 436 W
1900	841 W	1 851 W	2 459 W	2 643 W
2000	898 W	1 977 W	2 625 W	2 822 W
2100	943 W	2 077 W	2 759 W	2 966 W
2200	943 W	2 077 W	2 759 W	2 966 W
2300	1 057 W	2 328 W	3 092 W	3 324 W
2400	1 057 W	2 328 W	3 092 W	3 324 W
2500	1 126 W	2 478 W	3 292 W	3 539 W
2600	1 171 W	2 579 W	3 425 W	3 682 W
2700	1 217 W	2 679 W	3 558 W	3 825 W
2800	1 285 W	2 830 W	3 758 W	4 040 W
2900	1 340 W	2 950 W	3 918 W	4 212 W
3000	1 340 W	2 950 W	3 918 W	4 212 W
3200	1 511 W	3 326 W	4 418 W	4 749 W
3400	1 568 W	3 452 W	4 584 W	4 928 W
3600	1 727 W	3 803 W	5 051 W	5 430 W
3800	1 784 W	3 928 W	5 217 W	5 609 W
4000	1 887 W	4 154 W	5 517 W	5 931 W
4200	2 010 W	4 425 W	5 877 W	6 318 W
4400	2 115 W	4 656 W	6 184 W	6 648 W
4600	2 238 W	4 927 W	6 543 W	7 034 W
4800	2 283 W	5 027 W	6 677 W	7 178 W

Q[W] 55/45/20 °C (ΔT=30 °C)

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	97 W	214 W	285 W	306 W
800	130 W	286 W	380 W	408 W
900	156 W	343 W	456 W	490 W
1000	221 W	486 W	646 W	694 W
1100	221 W	486 W	646 W	694 W
1200	260 W	572 W	760 W	817 W
1300	286 W	629 W	836 W	899 W
1400	318 W	701 W	931 W	1 001 W
1500	351 W	773 W	1 026 W	1 103 W
1600	382 W	841 W	1 117 W	1 201 W
1700	382 W	841 W	1 117 W	1 201 W
1800	442 W	973 W	1 292 W	1 389 W
1900	479 W	1 055 W	1 402 W	1 507 W
2000	512 W	1 127 W	1 497 W	1 609 W
2100	538 W	1 184 W	1 573 W	1 691 W
2200	538 W	1 184 W	1 573 W	1 691 W
2300	603 W	1 327 W	1 763 W	1 895 W
2400	603 W	1 327 W	1 763 W	1 895 W
2500	642 W	1 413 W	1 877 W	2 018 W
2600	668 W	1 470 W	1 953 W	2 099 W
2700	694 W	1 527 W	2 028 W	2 181 W
2800	733 W	1 613 W	2 143 W	2 303 W
2900	764 W	1 682 W	2 234 W	2 401 W
3000	764 W	1 682 W	2 234 W	2 401 W
3200	861 W	1 896 W	2 519 W	2 708 W
3400	894 W	1 968 W	2 613 W	2 810 W
3600	985 W	2 168 W	2 880 W	3 096 W
3800	1 017 W	2 239 W	2 974 W	3 198 W
4000	1 076 W	2 368 W	3 145 W	3 381 W
4200	1 146 W	2 523 W	3 351 W	3 602 W
4400	1 206 W	2 654 W	3 526 W	3 790 W
4600	1 276 W	2 809 W	3 730 W	4 010 W
4800	1 302 W	2 866 W	3 807 W	4 092 W

75/65/20 °C → 75°C inlet temperature, 65°C outlet temp., 20 °C room temp. / **Output 90/70/20 °C** = ~ 1,22 x 75/65/20 °C / **Output 70/55/20 °C** = ~ 0,84 x 75/65/20 °C / Heating outputs in accordance with EN 16430 / Not listed heating outpus for lengths per 100 mm steps calculate linearly. Exact values can be found at www.isan.cz

Acoustic pressure [dB(A)]

Length L [mm]	Speed [-] / Acoustic pressure [dB(A)]			
	1	2	3	4 max.
700	< 20 dB(A)	26 dB(A)	34 dB(A)	37 dB(A)
800		27 dB(A)	35 dB(A)	38 dB(A)
900				
1000			36 dB(A)	39 dB(A)
1100				
1200		28 dB(A)		
1300			37 dB(A)	40 dB(A)
1400				
1500				
1600		29 dB(A)	38 dB(A)	41 dB(A)
1700				
1800				
1900	20 dB(A)		39 dB(A)	42 dB(A)
2000		30 dB(A)		
2100				
2200				
2300	21 dB(A)		40 dB(A)	43 dB(A)
2400				
2500		31 dB(A)		
2600				
2700	22 dB(A)		41 dB(A)	
2800				44 dB(A)
2900		32 dB(A)		
3000				
3200	23 dB(A)		42 dB(A)	
3400		33 dB(A)	42 dB(A)	45 dB(A)
3600	24 dB(A)			
3800		34 dB(A)		
4000			43 dB(A)	
4200	25 dB(A)	35 dB(A)		46 dB(A)
4400				
4600		36 dB(A)	44 dB(A)	47 dB(A)
4800	26 dB(A)			

Acoustic pressure level choose according to specific environment. More details on page 10

Fans input power [W]*

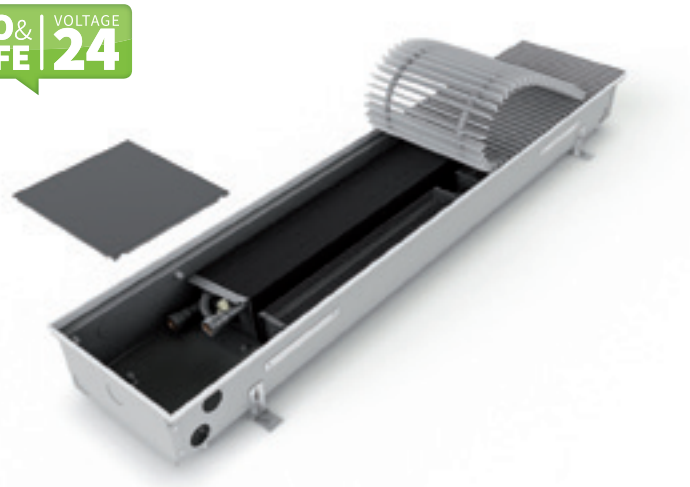
Length L [mm]	Speed [-] / Fans input power [W]*			
	1	2	3	4 max.
700	1 W	2 W	2 W	3 W
800	2 W	2 W	3 W	4 W
900	2 W	3 W	4 W	5 W
1000	2 W	3 W	5 W	6 W
1100	2 W	3 W	5 W	6 W
1200	3 W	4 W	6 W	8 W
1300	3 W	5 W	7 W	9 W
1400	3 W	5 W	7 W	9 W
1500	4 W	6 W	8 W	10 W
1600	4 W	6 W	8 W	10 W
1700	4 W	6 W	9 W	11 W
1800	5 W	7 W	10 W	12 W
1900	5 W	7 W	10 W	12 W
2000	5 W	7 W	10 W	13 W
2100	5 W	8 W	11 W	14 W
2200	5 W	8 W	11 W	14 W
2300	6 W	9 W	13 W	16 W
2400	6 W	9 W	13 W	16 W
2500	6 W	9 W	14 W	17 W
2600	7 W	10 W	14 W	18 W
2700	7 W	11 W	15 W	19 W
2800	7 W	11 W	15 W	19 W
2900	7 W	11 W	15 W	19 W
3000	8 W	11 W	16 W	20 W
3200	8 W	12 W	18 W	22 W
3400	9 W	13 W	18 W	23 W
3600	9 W	14 W	20 W	25 W
3800	10 W	14 W	21 W	26 W
4000	11 W	16 W	23 W	28 W
4200	11 W	16 W	23 W	28 W
4400	12 W	17 W	25 W	31 W
4600	12 W	18 W	26 W	32 W
4800	12 W	18 W	27 W	33 W

* Approximate fan input powers / **When using electrothermal actuator add in the trench heater's power 3 W** / Wiring of the trench heater → page 85

FRT 0110 0250

TRENCH HEATER WITH FAN

ECO & SAFE | VOLTAGE 24



- Flats, detached houses, offices, administrative buildings
- Narrow trench heater suitable for a standard floor
- High heating output
- Continuous speed control
- Quiet operation
- Common electricity consumption **3 W/m**
- Using in dry environment

Technical data

Trench heater

Height	H = **110** mm
Width	W = **250** mm
Length	L = **700–4 800** mm in step **100** mm

Heat exchanger

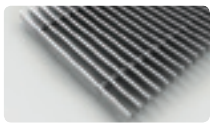
Type	**Al-Cu** lamellar
Length	L–**295** mm
Connection thread	**2×G1/2"** inner

Working conditions

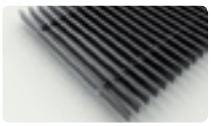
Max. temperature	**110** °C
Max. overpressure	**1** MPa (**10** bar)
Protection	IP **20**
Ambient conditions	Temp. T = **+2** to **+40** °C Humidity Rh = **20** to **70**%

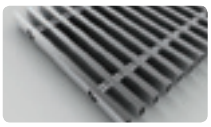
Variants

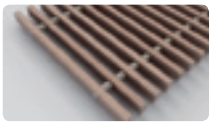
Transverse roll-up grilles


natur - anod. aluminium

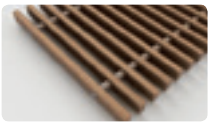

bronze - anod. aluminium


black - anod. aluminium


stainless

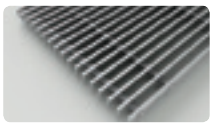

natur beech - wooden


stained beech - wooden


natur oak - wooden


stained oak - wooden

Linear non-rolling grilles


natur - anod. aluminium


bronze - anod. aluminium


black - anod. aluminium

Peripheral ledges


(more on page 8)

More possibilities and variants → page 6

Trench heater standard equipment

Trough	Galvanized steel trough with surface finish and black spray layer inside, black cover plates of connection
Heat exchanger	Al-Cu lamellar exchanger with air vent valve, black painted
Grille	Design walkable grille according the customer's choice*
Ledge	Made of anodized aluminium, type and colour according the customer's choice
Fan	Modern tangential fan with 24 V DC EC motor with high efficiency, rotors protection
Assembly elements	Leveling screws for setting up the trough, mounting brackets
Manual	Manual for the progress of work during installation and user manual
Wiring	Electrical wiring diagram of the trench heaters
Mounting board	Cover and the spacer particle board for easy installation
Package	Transport package for protection against damage during transportation and handling

*stainless grilles surcharge

Accessories per order


Room thermostat


Power supply

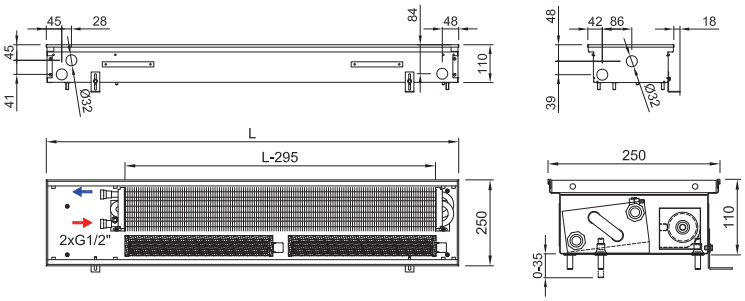

Electrothermal actuator


Thermostatic valve

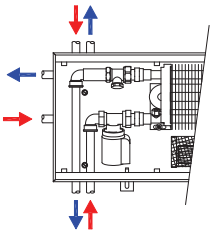

Lockshield valve

Accessories details → page 12

Technical drawing



Connection to heating system



The hydraulic parameters of the heat exchanger → page 82

Code example: FRT 00110 0250 1500 C 62 L2 L - 5

Trench heater **FRT** H = **110** mm, W = **250** mm, L = **1 500** mm, „**C**" Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**62**" stained beech grille, transverse, roll-up, „**L2**" peripheral ledge „L" with an overlap, bronze anodized aluminium, „**L**" water connection at the left side (when installing the heat exchanger closer to the window, fans to the room) „**5**" 24 V DC fans without controller (controller is not needed)

Trench heater heating output FRT 0110 0250

Q[W] 75/65/20 °C (ΔT=50 °C) Temperature exponent 1,1

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	288 W	594 W	790 W	851 W
800	384 W	792 W	1 053 W	1 135 W
900	461 W	950 W	1 264 W	1 362 W
1000	653 W	1 346 W	1 790 W	1 930 W
1100	653 W	1 346 W	1 790 W	1 930 W
1200	768 W	1 584 W	2 106 W	2 271 W
1300	845 W	1 742 W	2 317 W	2 498 W
1400	941 W	1 940 W	2 580 W	2 781 W
1500	1 037 W	2 138 W	2 844 W	3 065 W
1600	1 129 W	2 328 W	3 096 W	3 338 W
1700	1 129 W	2 328 W	3 096 W	3 338 W
1800	1 306 W	2 692 W	3 581 W	3 860 W
1900	1 417 W	2 922 W	3 886 W	4 189 W
2000	1 513 W	3 120 W	4 150 W	4 473 W
2100	1 590 W	3 278 W	4 360 W	4 700 W
2200	1 590 W	3 278 W	4 360 W	4 700 W
2300	1 782 W	3 674 W	4 887 W	5 268 W
2400	1 782 W	3 674 W	4 887 W	5 268 W
2500	1 898 W	3 911 W	5 203 W	5 608 W
2600	1 974 W	4 070 W	5 413 W	5 835 W
2700	2 051 W	4 228 W	5 624 W	6 062 W
2800	2 166 W	4 466 W	5 940 W	6 403 W
2900	2 259 W	4 656 W	6 193 W	6 676 W
3000	2 259 W	4 656 W	6 193 W	6 676 W
3200	2 547 W	5 249 W	6 983 W	7 527 W
3400	2 643 W	5 447 W	7 246 W	7 811 W
3600	2 912 W	6 002 W	7 983 W	8 606 W
3800	3 008 W	6 200 W	8 247 W	8 889 W
4000	3 180 W	6 556 W	8 721 W	9 400 W
4200	3 388 W	6 983 W	9 289 W	10 013 W
4400	3 565 W	7 348 W	9 774 W	10 536 W
4600	3 772 W	7 775 W	10 342 W	11 149 W
4800	3 849 W	7 933 W	10 553 W	11 376 W

Q[W] 55/45/20 °C (ΔT=30 °C)

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	164 W	339 W	450 W	485 W
800	219 W	452 W	600 W	647 W
900	263 W	542 W	721 W	777 W
1000	372 W	767 W	1 021 W	1 100 W
1100	372 W	767 W	1 021 W	1 100 W
1200	438 W	903 W	1 201 W	1 295 W
1300	482 W	993 W	1 321 W	1 424 W
1400	536 W	1 106 W	1 471 W	1 586 W
1500	591 W	1 219 W	1 621 W	1 747 W
1600	644 W	1 327 W	1 765 W	1 903 W
1700	644 W	1 327 W	1 765 W	1 903 W
1800	745 W	1 535 W	2 042 W	2 201 W
1900	808 W	1 666 W	2 215 W	2 388 W
2000	863 W	1 779 W	2 366 W	2 550 W
2100	906 W	1 869 W	2 486 W	2 680 W
2200	906 W	1 869 W	2 486 W	2 680 W
2300	1 016 W	2 095 W	2 786 W	3 003 W
2400	1 016 W	2 095 W	2 786 W	3 003 W
2500	1 082 W	2 230 W	2 966 W	3 197 W
2600	1 125 W	2 320 W	3 086 W	3 327 W
2700	1 169 W	2 410 W	3 206 W	3 456 W
2800	1 235 W	2 546 W	3 387 W	3 650 W
2900	1 288 W	2 654 W	3 531 W	3 806 W
3000	1 288 W	2 654 W	3 531 W	3 806 W
3200	1 452 W	2 993 W	3 981 W	4 291 W
3400	1 507 W	3 105 W	4 131 W	4 453 W
3600	1 660 W	3 422 W	4 551 W	4 906 W
3800	1 715 W	3 535 W	4 702 W	5 068 W
4000	1 813 W	3 738 W	4 972 W	5 359 W
4200	1 932 W	3 981 W	5 296 W	5 709 W
4400	2 032 W	4 189 W	5 572 W	6 007 W
4600	2 150 W	4 433 W	5 896 W	6 356 W
4800	2 194 W	4 523 W	6 016 W	6 486 W

75/65/20 °C → 75°C inlet temperature, 65°C outlet temp., 20 °C room temp. / **Output 90/70/20 °C** = ~ 1,22 x 75/65/20 °C / **Output 70/55/20 °C** = ~ 0,84 x 75/65/20 °C / Heating outputs in accordance with EN 16430 / Not listed heating outpus for lengths per 100 mm steps calculate linearly. Exact values can be found at www.isan.cz

Acoustic pressure [dB(A)]

Length L [mm]	Speed [-] / Acoustic pressure [dB(A)]			
	1	2	3	4 max.
700	< 20 dB(A)	26 dB(A)	34 dB(A)	37 dB(A)
800		27 dB(A)	35 dB(A)	38 dB(A)
900				
1000			36 dB(A)	39 dB(A)
1100				
1200		28 dB(A)		
1300			37 dB(A)	40 dB(A)
1400				
1500				
1600		29 dB(A)	38 dB(A)	41 dB(A)
1700				
1800				
1900	20 dB(A)		39 dB(A)	42 dB(A)
2000		30 dB(A)		
2100				
2200				
2300	21 dB(A)		40 dB(A)	43 dB(A)
2400				
2500		31 dB(A)		
2600				
2700	22 dB(A)		41 dB(A)	
2800				44 dB(A)
2900		32 dB(A)		
3000				
3200	23 dB(A)		42 dB(A)	
3400		33 dB(A)		45 dB(A)
3600	24 dB(A)			
3800		34 dB(A)		
4000			43 dB(A)	
4200	25 dB(A)	35 dB(A)		46 dB(A)
4400				
4600		36 dB(A)	44 dB(A)	47 dB(A)
4800	26 dB(A)			

Acoustic pressure level choose according to specific environment. More details on page 10

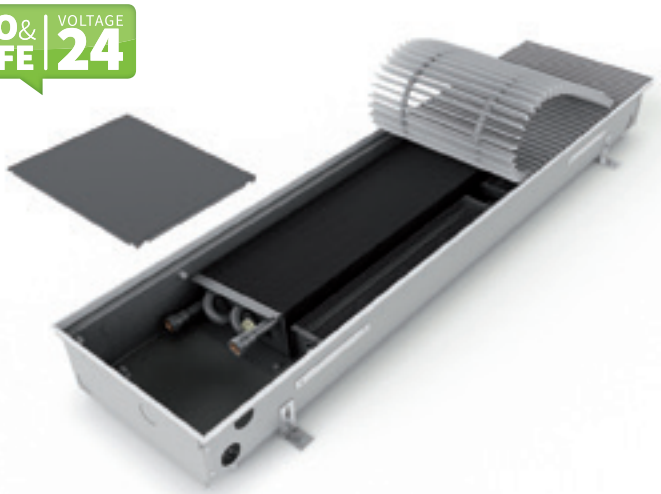
Fans input power [W]*

Length L [mm]	Speed [-] / Fans input power [W]*			
	1	2	3	4 max.
700	1 W	2 W	2 W	3 W
800	2 W	2 W	3 W	4 W
900	2 W	3 W	4 W	5 W
1000	2 W	3 W	5 W	6 W
1100	2 W	3 W	5 W	6 W
1200	3 W	4 W	6 W	8 W
1300	3 W	5 W	7 W	9 W
1400	3 W	5 W	7 W	9 W
1500	4 W	6 W	8 W	10 W
1600	4 W	6 W	8 W	10 W
1700	4 W	6 W	9 W	11 W
1800	5 W	7 W	10 W	12 W
1900	5 W	7 W	10 W	12 W
2000	5 W	7 W	10 W	13 W
2100	5 W	8 W	11 W	14 W
2200	5 W	8 W	11 W	14 W
2300	6 W	9 W	13 W	16 W
2400	6 W	9 W	13 W	16 W
2500	6 W	9 W	14 W	17 W
2600	7 W	10 W	14 W	18 W
2700	7 W	11 W	15 W	19 W
2800	7 W	11 W	15 W	19 W
2900	7 W	11 W	15 W	19 W
3000	8 W	11 W	16 W	20 W
3200	8 W	12 W	18 W	22 W
3400	9 W	13 W	18 W	23 W
3600	9 W	14 W	20 W	25 W
3800	10 W	14 W	21 W	26 W
4000	11 W	16 W	23 W	28 W
4200	11 W	16 W	23 W	28 W
4400	12 W	17 W	25 W	31 W
4600	12 W	18 W	26 W	32 W
4800	12 W	18 W	27 W	33 W

* Approximate fan input powers / **When using electrothermal actuator add in the trench heater's power 3 W** / Wiring of the trench heater → page 85

FRT 0110 0300

TRENCH HEATER WITH FAN



- Flats, detached houses, offices, administrative buildings
- Universal trench heater suitable for a standard floor
- High heating output
- Continuous speed control
- Quiet operation
- Common electricity consumption **3 W/m**
- Using in dry environment

Technical data

Trench heater

Height	H = **110** mm
Width	W = **300** mm
Length	L = **700–4 800** mm in step **100** mm

Heat exchanger

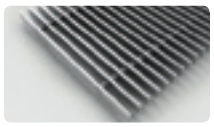
Type	**Al-Cu** lamellar
Length	L–**295** mm
Connection thread	**2×G1/2"** inner

Working conditions

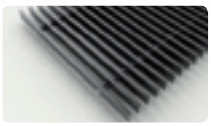
Max. temperature	**110** °C
Max. overpressure	**1** MPa (**10** bar)
Protection	IP **20**
Ambient conditions	Temp. T = **+2** to **+40** °C Humidity Rh = **20** to **70**%

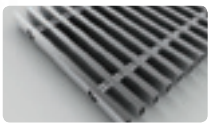
Variants

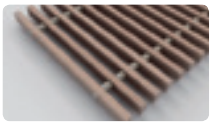
Transverse roll-up grilles


natur - anod. aluminium

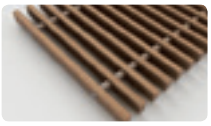

bronze - anod. aluminium


black - anod. aluminium


stainless

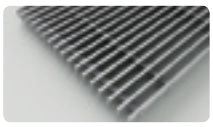

natur beech - wooden


stained beech - wooden


natur oak - wooden


stained oak - wooden

Linear non-rolling grilles


natur - anod. aluminium


bronze - anod. aluminium


black - anod. aluminium

Peripheral ledges


(more on page 8)

More possibilities and variants → page 6

Trench heater standard equipment

Trough	Galvanized steel trough with surface finish and black spray layer inside, black cover plates of connection
Heat exchanger	Al-Cu lamellar exchanger with air vent valve, black painted
Grille	Design walkable grille according the customer's choice*
Ledge	Made of anodized aluminium, type and colour according the customer's choice
Fan	Modern tangential fan with 24 V DC EC motor with high efficiency, rotors protection
Assembly elements	Leveling screws for setting up the trough, mounting brackets
Manual	Manual for the progress of work during installation and user manual
Wiring	Electrical wiring diagram of the trench heaters
Mounting board	Cover and the spacer particle board for easy installation
Package	Transport package for protection against damage during transportation and handling

*stainless grilles surcharge

Accessories per order


Room thermostat


Power supply

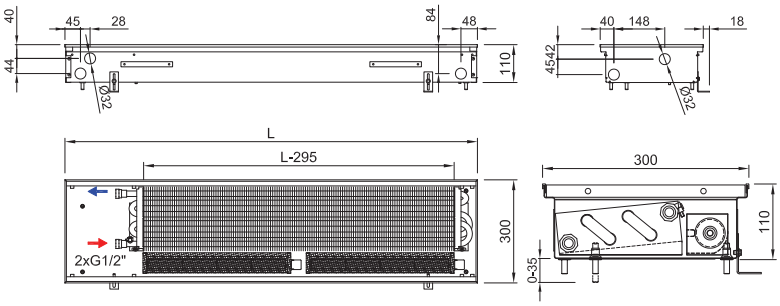

Electrothermal actuator


Thermostatic valve

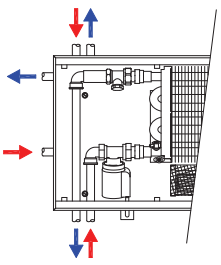

Lockshield valve

Accessories details → page 12

Technical drawing



Connection to heating system



The hydraulic parameters of the heat exchanger → page 82

Code example: FRT 0110 0300 2700 C 32 J3 R - 5

Trench heater **FRT** H = **110** mm, W = **300** mm, L = **2 700** mm, „**C**" Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**32**" black anodized aluminium grille, linear, rigid, „**J3**" peripheral ledge „J", black anodized aluminium „**R**" water connection at the right side (when installing the heat exchanger closer to the window, fans to the room), „**5**" 24 V DC fans without controller (controller is not needed)

Trench heater heating output FRT 0110 0300

Q[W] 75/65/20 °C (ΔT=50 °C) Temperature exponent 1,1

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	307 W	637 W	864 W	933 W
800	409 W	849 W	1 152 W	1 244 W
900	491 W	1 019 W	1 382 W	1 493 W
1000	695 W	1 443 W	1 958 W	2 115 W
1100	695 W	1 443 W	1 958 W	2 115 W
1200	818 W	1 698 W	2 304 W	2 488 W
1300	899 W	1 867 W	2 534 W	2 737 W
1400	1 002 W	2 080 W	2 822 W	3 048 W
1500	1 104 W	2 292 W	3 110 W	3 359 W
1600	1 202 W	2 496 W	3 387 W	3 658 W
1700	1 202 W	2 496 W	3 387 W	3 658 W
1800	1 390 W	2 886 W	3 916 W	4 230 W
1900	1 509 W	3 132 W	4 251 W	4 591 W
2000	1 611 W	3 344 W	4 539 W	4 902 W
2100	1 693 W	3 514 W	4 769 W	5 151 W
2200	1 693 W	3 514 W	4 769 W	5 151 W
2300	1 897 W	3 939 W	5 345 W	5 773 W
2400	1 897 W	3 939 W	5 345 W	5 773 W
2500	2 020 W	4 193 W	5 690 W	6 146 W
2600	2 101 W	4 363 W	5 921 W	6 395 W
2700	2 183 W	4 533 W	6 151 W	6 644 W
2800	2 306 W	4 787 W	6 497 W	7 017 W
2900	2 404 W	4 991 W	6 773 W	7 315 W
3000	2 404 W	4 991 W	6 773 W	7 315 W
3200	2 711 W	5 628 W	7 637 W	8 249 W
3400	2 813 W	5 840 W	7 925 W	8 560 W
3600	3 099 W	6 434 W	8 731 W	9 430 W
3800	3 201 W	6 646 W	9 019 W	9 741 W
4000	3 385 W	7 028 W	9 538 W	10 301 W
4200	3 606 W	7 487 W	10 160 W	10 973 W
4400	3 794 W	7 877 W	10 690 W	11 545 W
4600	4 015 W	8 335 W	11 312 W	12 217 W
4800	4 096 W	8 505 W	11 542 W	12 466 W

Q[W] 55/45/20 °C (ΔT=30 °C)

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	175 W	363 W	493 W	532 W
800	233 W	484 W	657 W	709 W
900	280 W	581 W	788 W	851 W
1000	396 W	823 W	1 116 W	1 206 W
1100	396 W	823 W	1 116 W	1 206 W
1200	466 W	968 W	1 314 W	1 418 W
1300	513 W	1 064 W	1 445 W	1 560 W
1400	571 W	1 186 W	1 609 W	1 738 W
1500	629 W	1 307 W	1 773 W	1 915 W
1600	685 W	1 423 W	1 931 W	2 085 W
1700	685 W	1 423 W	1 931 W	2 085 W
1800	792 W	1 645 W	2 233 W	2 412 W
1900	860 W	1 786 W	2 424 W	2 617 W
2000	918 W	1 906 W	2 588 W	2 795 W
2100	965 W	2 003 W	2 719 W	2 937 W
2200	965 W	2 003 W	2 719 W	2 937 W
2300	1 082 W	2 246 W	3 047 W	3 291 W
2400	1 082 W	2 246 W	3 047 W	3 291 W
2500	1 152 W	2 391 W	3 244 W	3 504 W
2600	1 198 W	2 487 W	3 376 W	3 646 W
2700	1 245 W	2 584 W	3 507 W	3 788 W
2800	1 315 W	2 729 W	3 704 W	4 001 W
2900	1 371 W	2 845 W	3 861 W	4 170 W
3000	1 371 W	2 845 W	3 861 W	4 170 W
3200	1 546 W	3 209 W	4 354 W	4 703 W
3400	1 604 W	3 330 W	4 518 W	4 880 W
3600	1 767 W	3 668 W	4 978 W	5 376 W
3800	1 825 W	3 789 W	5 142 W	5 554 W
4000	1 930 W	4 007 W	5 438 W	5 873 W
4200	2 056 W	4 268 W	5 792 W	6 256 W
4400	2 163 W	4 491 W	6 095 W	6 582 W
4600	2 289 W	4 752 W	6 449 W	6 965 W
4800	2 335 W	4 849 W	6 580 W	7 107 W

75/65/20 °C → 75°C inlet temperature, 65°C outlet temp., 20 °C room temp. / **Output 90/70/20 °C** = ~ 1,22 x 75/65/20 °C / **Output 70/55/20 °C** = ~ 0,84 x 75/65/20 °C / Heating outputs in accordance with EN 16430 / Not listed heating outpus for lengths per 100 mm steps calculate linearly. Exact values can be found at www.isan.cz

Acoustic pressure [dB(A)]

Length L [mm]	Speed [-] / Acoustic pressure [dB(A)]			
	1	2	3	4 max.
700	< 20 dB(A)	26 dB(A)	34 dB(A)	37 dB(A)
800		27 dB(A)	35 dB(A)	38 dB(A)
900				
1000			36 dB(A)	39 dB(A)
1100				
1200		28 dB(A)		
1300			37 dB(A)	40 dB(A)
1400				
1500				
1600		29 dB(A)	38 dB(A)	41 dB(A)
1700				
1800				
1900	20 dB(A)		39 dB(A)	42 dB(A)
2000		30 dB(A)		
2100				
2200				
2300	21 dB(A)		40 dB(A)	43 dB(A)
2400				
2500		31 dB(A)		
2600				
2700	22 dB(A)		41 dB(A)	
2800				44 dB(A)
2900		32 dB(A)		
3000				
3200	23 dB(A)		42 dB(A)	
3400		33 dB(A)		45 dB(A)
3600	24 dB(A)			
3800		34 dB(A)		
4000			43 dB(A)	
4200	25 dB(A)	35 dB(A)		46 dB(A)
4400				
4600		36 dB(A)	44 dB(A)	47 dB(A)
4800	26 dB(A)			

Acoustic pressure level choose according to specific environment. More details on page 10

Fans input power [W]*

Length L [mm]	Speed [-] / Fans input power [W]*			
	1	2	3	4 max.
700	1 W	2 W	2 W	3 W
800	2 W	2 W	3 W	4 W
900	2 W	3 W	4 W	5 W
1000	2 W	3 W	5 W	6 W
1100	2 W	3 W	5 W	6 W
1200	3 W	4 W	6 W	8 W
1300	3 W	5 W	7 W	9 W
1400	3 W	5 W	7 W	9 W
1500	4 W	6 W	8 W	10 W
1600	4 W	6 W	8 W	10 W
1700	4 W	6 W	9 W	11 W
1800	5 W	7 W	10 W	12 W
1900	5 W	7 W	10 W	12 W
2000	5 W	7 W	10 W	13 W
2100	5 W	8 W	11 W	14 W
2200	5 W	8 W	11 W	14 W
2300	6 W	9 W	13 W	16 W
2400	6 W	9 W	13 W	16 W
2500	6 W	9 W	14 W	17 W
2600	7 W	10 W	14 W	18 W
2700	7 W	11 W	15 W	19 W
2800	7 W	11 W	15 W	19 W
2900	7 W	11 W	15 W	19 W
3000	8 W	11 W	16 W	20 W
3200	8 W	12 W	18 W	22 W
3400	9 W	13 W	18 W	23 W
3600	9 W	14 W	20 W	25 W
3800	10 W	14 W	21 W	26 W
4000	11 W	16 W	23 W	28 W
4200	11 W	16 W	23 W	28 W
4400	12 W	17 W	25 W	31 W
4600	12 W	18 W	26 W	32 W
4800	12 W	18 W	27 W	33 W

* Approximate fan input powers / **When using electrothermal actuator add in the trench heater's power 3 W** / Wiring of the trench heater → page 85

FRT 0110 0425

TRENCH HEATER WITH FAN

ECO & SAFE | VOLTAGE 24

- Flats, detached houses, offices, administrative buildings
- Suitable for low-temperature systems
- High heating output
- Continuous speed control
- Quiet operation
- Common electricity consumption **3 W/m**
- Using in dry environment

Technical data

Trench heater

Height	H = **110** mm
Width	W = **425** mm
Length	L = **700–4 800** mm in step **100** mm

Heat exchanger

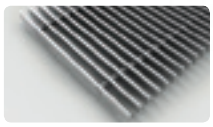
Type	**Al-Cu** lamellar
Length	L–**295** mm
Connection thread	**2×G1/2"** inner

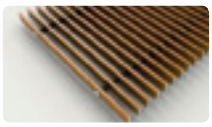
Working conditions

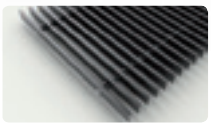
Max. temperature	**110** °C
Max. overpressure	**1** MPa (**10** bar)
Protection	IP **20**
Ambient conditions	Temp. T = **+2** to **+40** °C Humidity Rh = **20** to **70**%

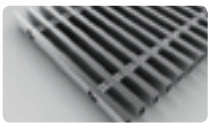
Variants

Transverse roll-up grilles


natur - anod. aluminium

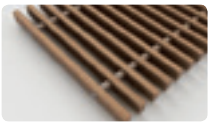

bronze - anod. aluminium


black - anod. aluminium


stainless

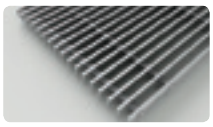

natur beech - wooden


stained beech - wooden


natur oak - wooden


stained oak - wooden

Linear non-rolling grilles


natur - anod. aluminium


bronze - anod. aluminium


black - anod. aluminium

More possibilities and variants → page 6

Peripheral ledges


(more on page 8)

Trench heater standard equipment

Trough	Galvanized steel trough with surface finish and black spray layer inside, black cover plates of connection
Heat exchanger	Al-Cu lamellar exchanger with air vent valve, black painted
Grille	Design walkable grille according the customer's choice*
Ledge	Made of anodized aluminium, type and colour according the customer's choice
Fan	Modern tangential fan with 24 V DC EC motor with high efficiency, rotors protection
Assembly elements	Leveling screws for setting up the trough, mounting brackets
Manual	Manual for the progress of work during installation and user manual
Wiring	Electrical wiring diagram of the trench heaters
Mounting board	Cover and the spacer particle board for easy installation
Package	Transport package for protection against damage during transportation and handling

*stainless grilles surcharge

Accessories per order


Room thermostat


Power supply

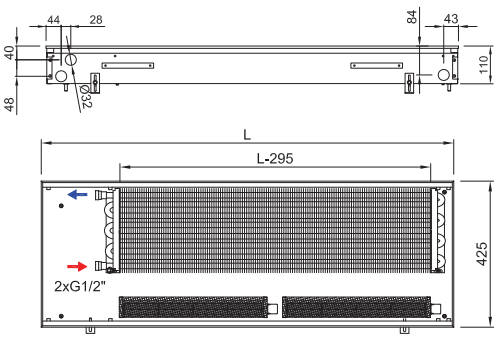

Electrothermal actuator

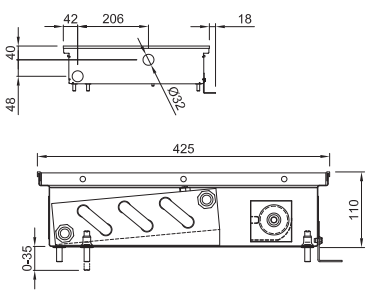

Thermostatic valve


Lockshield valve

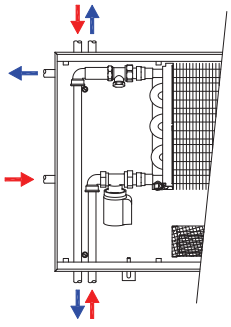
Accessories details → page 12

Technical drawing





Connection to heating system



The hydraulic parameters of the heat exchanger → page 82

Code example: FRT 0110 0425 4400 C 64 L2 L - 5

Trench heater **FRT** H = **110** mm, W = **425** mm, L = **4 400** mm, „**C**" Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**64**" stained oak grille, transverse, roll-up, „**L2**" peripheral ledge „L" with an overlap, bronze anodized aluminium, „**L**" water connection at the left side (when installing the heat exchanger closer to the window, fans to the room) „**5**" 24 V DC fans without controller (controller is not needed)

Trench heater heating output FRT 0110 0425

Q[W] 75/65/20 °C (ΔT=50 °C) Temperature exponent 1,1

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	409 W	776 W	1 027 W	1 106 W
800	546 W	1 034 W	1 369 W	1 474 W
900	655 W	1 241 W	1 643 W	1 769 W
1000	928 W	1 758 W	2 328 W	2 506 W
1100	928 W	1 758 W	2 328 W	2 506 W
1200	1 092 W	2 068 W	2 738 W	2 948 W
1300	1 201 W	2 275 W	3 012 W	3 243 W
1400	1 337 W	2 534 W	3 354 W	3 612 W
1500	1 474 W	2 792 W	3 697 W	3 980 W
1600	1 605 W	3 040 W	4 025 W	4 334 W
1700	1 605 W	3 040 W	4 025 W	4 334 W
1800	1 856 W	3 516 W	4 655 W	5 012 W
1900	2 014 W	3 816 W	5 052 W	5 440 W
2000	2 151 W	4 075 W	5 394 W	5 808 W
2100	2 260 W	4 281 W	5 668 W	6 103 W
2200	2 260 W	4 281 W	5 668 W	6 103 W
2300	2 533 W	4 799 W	6 353 W	6 840 W
2400	2 533 W	4 799 W	6 353 W	6 840 W
2500	2 696 W	5 109 W	6 764 W	7 282 W
2600	2 806 W	5 316 W	7 037 W	7 577 W
2700	2 915 W	5 522 W	7 311 W	7 872 W
2800	3 079 W	5 833 W	7 722 W	8 314 W
2900	3 210 W	6 081 W	8 051 W	8 668 W
3000	3 210 W	6 081 W	8 051 W	8 668 W
3200	3 619 W	6 857 W	9 077 W	9 774 W
3400	3 755 W	7 115 W	9 420 W	10 142 W
3600	4 137 W	7 839 W	10 378 W	11 174 W
3800	4 274 W	8 098 W	10 720 W	11 543 W
4000	4 520 W	8 563 W	11 336 W	12 206 W
4200	4 814 W	9 121 W	12 076 W	13 002 W
4400	5 065 W	9 597 W	12 706 W	13 680 W
4600	5 360 W	10 156 W	13 445 W	14 476 W
4800	5 469 W	10 362 W	13 719 W	14 771 W

Q[W] 55/45/20 °C (ΔT=30 °C)

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	233 W	442 W	586 W	631 W
800	311 W	590 W	780 W	840 W
900	373 W	708 W	937 W	1 009 W
1000	529 W	1 002 W	1 327 W	1 429 W
1100	529 W	1 002 W	1 327 W	1 429 W
1200	623 W	1 179 W	1 561 W	1 681 W
1300	685 W	1 297 W	1 717 W	1 849 W
1400	762 W	1 445 W	1 912 W	2 059 W
1500	840 W	1 592 W	2 108 W	2 269 W
1600	915 W	1 733 W	2 295 W	2 471 W
1700	915 W	1 733 W	2 295 W	2 471 W
1800	1 058 W	2 005 W	2 654 W	2 857 W
1900	1 148 W	2 176 W	2 880 W	3 101 W
2000	1 226 W	2 323 W	3 075 W	3 311 W
2100	1 288 W	2 441 W	3 231 W	3 479 W
2200	1 288 W	2 441 W	3 231 W	3 479 W
2300	1 444 W	2 736 W	3 622 W	3 900 W
2400	1 444 W	2 736 W	3 622 W	3 900 W
2500	1 537 W	2 913 W	3 856 W	4 152 W
2600	1 600 W	3 031 W	4 012 W	4 320 W
2700	1 662 W	3 148 W	4 168 W	4 488 W
2800	1 755 W	3 326 W	4 402 W	4 740 W
2900	1 830 W	3 467 W	4 590 W	4 942 W
3000	1 830 W	3 467 W	4 590 W	4 942 W
3200	2 063 W	3 909 W	5 175 W	5 572 W
3400	2 141 W	4 056 W	5 371 W	5 782 W
3600	2 359 W	4 469 W	5 917 W	6 371 W
3800	2 437 W	4 617 W	6 112 W	6 581 W
4000	2 577 W	4 882 W	6 463 W	6 959 W
4200	2 745 W	5 200 W	6 885 W	7 413 W
4400	2 888 W	5 471 W	7 244 W	7 799 W
4600	3 056 W	5 790 W	7 665 W	8 253 W
4800	3 118 W	5 908 W	7 821 W	8 421 W

75/65/20 °C → 75°C inlet temperature, 65°C outlet temp., 20 °C room temp. / **Output 90/70/20 °C** = ~ 1,22 x 75/65/20 °C / **Output 70/55/20 °C** = ~ 0,84 x 75/65/20 °C / Heating outputs in accordance with EN 16430 / Not listed heating outpus for lengths per 100 mm steps calculate linearly. Exact values can be found at www.isan.cz

Acoustic pressure [dB(A)]

Length L [mm]	Speed [-] / Acoustic pressure [dB(A)]			
	1	2	3	4 max.
700	< 20 dB(A)	26 dB(A)	34 dB(A)	37 dB(A)
800		27 dB(A)	35 dB(A)	38 dB(A)
900				
1000			36 dB(A)	39 dB(A)
1100				
1200		28 dB(A)		
1300			37 dB(A)	40 dB(A)
1400				
1500				
1600		29 dB(A)	38 dB(A)	41 dB(A)
1700				
1800				
1900	20 dB(A)		39 dB(A)	42 dB(A)
2000		30 dB(A)		
2100				
2200				
2300	21 dB(A)		40 dB(A)	43 dB(A)
2400				
2500		31 dB(A)		
2600				
2700	22 dB(A)		41 dB(A)	
2800				44 dB(A)
2900		32 dB(A)		
3000				
3200	23 dB(A)		42 dB(A)	
3400		33 dB(A)		45 dB(A)
3600	24 dB(A)			
3800		34 dB(A)		
4000			43 dB(A)	
4200	25 dB(A)	35 dB(A)		46 dB(A)
4400				
4600		36 dB(A)	44 dB(A)	47 dB(A)
4800	26 dB(A)			

Acoustic pressure level choose according to specific environment. More details on page 10

Fans input power [W]*

Length L [mm]	Speed [-] / Fans input power [W]*			
	1	2	3	4 max.
700	1 W	2 W	2 W	3 W
800	2 W	2 W	3 W	4 W
900	2 W	3 W	4 W	5 W
1000	2 W	3 W	5 W	6 W
1100	2 W	3 W	5 W	6 W
1200	3 W	4 W	6 W	8 W
1300	3 W	5 W	7 W	9 W
1400	3 W	5 W	7 W	9 W
1500	4 W	6 W	8 W	10 W
1600	4 W	6 W	8 W	10 W
1700	4 W	6 W	9 W	11 W
1800	5 W	7 W	10 W	12 W
1900	5 W	7 W	10 W	12 W
2000	5 W	7 W	10 W	13 W
2100	5 W	8 W	11 W	14 W
2200	5 W	8 W	11 W	14 W
2300	6 W	9 W	13 W	16 W
2400	6 W	9 W	13 W	16 W
2500	6 W	9 W	14 W	17 W
2600	7 W	10 W	14 W	18 W
2700	7 W	11 W	15 W	19 W
2800	7 W	11 W	15 W	19 W
2900	7 W	11 W	15 W	19 W
3000	8 W	11 W	16 W	20 W
3200	8 W	12 W	18 W	22 W
3400	9 W	13 W	18 W	23 W
3600	9 W	14 W	20 W	25 W
3800	10 W	14 W	21 W	26 W
4000	11 W	16 W	23 W	28 W
4200	11 W	16 W	23 W	28 W
4400	12 W	17 W	25 W	31 W
4600	12 W	18 W	26 W	32 W
4800	12 W	18 W	27 W	33 W

* Approximate fan input powers / **When using electrothermal actuator add in the trench heater's power 3 W** / Wiring of the trench heater → page 85

FRT 0125 0250

TRENCH HEATER WITH FAN

ECO & SAFE | VOLTAGE 24

- Flats, detached houses, offices, administrative buildings
- Good balance of heating output and size
- High heating output
- Continuous speed control
- Quiet operation
- Common electricity consumption **3 W/m**
- Using in dry environment

Technical data

Trench heater

Height	H = **125** mm
Width	W = **250** mm
Length	L = **700–4 800** mm in step **100** mm

Heat exchanger

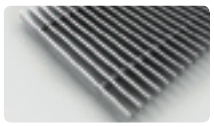
Type	**Al-Cu** lamellar
Length	L–**295** m**m**
Connection thread	**2×G1/2"** inner

Working conditions

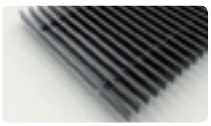
Max. temperature	**110** °C
Max. overpressure	**1** MPa (**10** bar)
Protection	IP **20**
Ambient conditions	Temp. T = **+2** to **+40** °C Humidity Rh = **20** to **70**%

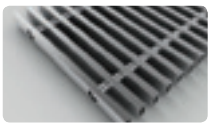
Variants

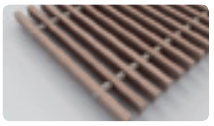
Transverse roll-up grilles


natur - anod. aluminium

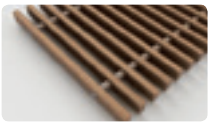

bronze - anod. aluminium


black - anod. aluminium


stainless

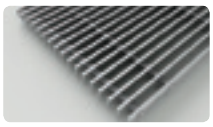

natur beech - wooden


stained beech - wooden


natur oak - wooden


stained oak - wooden

Linear non-rolling grilles


natur - anod. aluminium


bronze - anod. aluminium


black - anod. aluminium

More possibilities and variants → page 6

Peripheral ledges


(more on page 8)

Trench heater standard equipment

Trough	Galvanized steel trough with surface finish and black spray layer inside, black cover plates of connection
Heat exchanger	Al-Cu lamellar exchanger with air vent valve, black painted
Grille	Design walkable grille according the customer's choice*
Ledge	Made of anodized aluminium, type and colour according the customer's choice
Fan	Modern tangential fan with 24 V DC EC motor with high efficiency, rotors protection
Assembly elements	Leveling screws for setting up the trough, mounting brackets
Manual	Manual for the progress of work during installation and user manual
Wiring	Electrical wiring diagram of the trench heaters
Mounting board	Cover and the spacer particle board for easy installation
Package	Transport package for protection against damage during transportation and handling

*stainless grilles surcharge

Accessories per order


Room thermostat


Power supply

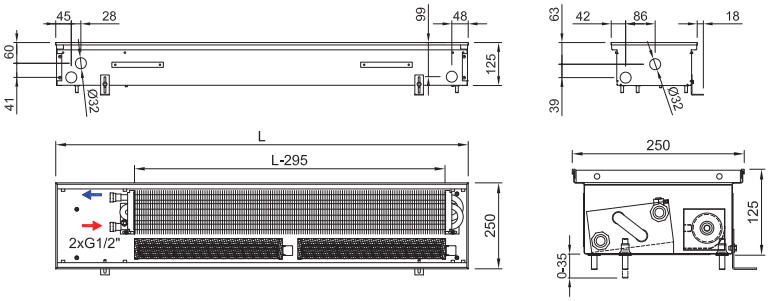

Electrothermal actuator


Thermostatic valve

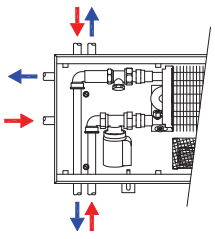

Lockshield valve

Accessories details → page 12

Technical drawing



Connection to heating system



The hydraulic parameters of the heat exchanger → page 82

Code example: FRT 00125 0250 1500 C 62 L2 L - 5

Trench heater **FRT** H = **125** mm, W = **250** mm, L = **1 500** mm, „**C**" Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**62**" stained beech grille, transverse, roll-up „**L2**" peripheral ledge „L" with an overlap, bronze anodized aluminium, „**L**" water connection at the left side (when installing the heat exchanger closer to the window, fans to the room) „**5**" 24 V DC fans without controller (controller is not needed)

Trench heater heating output FRT 0125 0250

Q[W] 75/65/20 °C (ΔT=50 °C) Temperature exponent 1,1

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	298 W	619 W	822 W	886 W
800	397 W	825 W	1 096 W	1 181 W
900	476 W	990 W	1 315 W	1 417 W
1000	675 W	1 403 W	1 864 W	2 008 W
1100	675 W	1 403 W	1 864 W	2 008 W
1200	794 W	1 651 W	2 192 W	2 362 W
1300	874 W	1 816 W	2 412 W	2 599 W
1400	973 W	2 022 W	2 686 W	2 894 W
1500	1 072 W	2 228 W	2 960 W	3 189 W
1600	1 167 W	2 426 W	3 223 W	3 473 W
1700	1 167 W	2 426 W	3 223 W	3 473 W
1800	1 350 W	2 806 W	3 727 W	4 016 W
1900	1 465 W	3 045 W	4 045 W	4 359 W
2000	1 564 W	3 252 W	4 319 W	4 654 W
2100	1 644 W	3 417 W	4 538 W	4 890 W
2200	1 644 W	3 417 W	4 538 W	4 890 W
2300	1 842 W	3 829 W	5 086 W	5 481 W
2400	1 842 W	3 829 W	5 086 W	5 481 W
2500	1 961 W	4 077 W	5 415 W	5 835 W
2600	2 041 W	4 242 W	5 634 W	6 071 W
2700	2 120 W	4 407 W	5 854 W	6 307 W
2800	2 239 W	4 655 W	6 182 W	6 662 W
2900	2 335 W	4 853 W	6 446 W	6 945 W
3000	2 335 W	4 853 W	6 446 W	6 945 W
3200	2 633 W	5 472 W	7 268 W	7 831 W
3400	2 732 W	5 678 W	7 542 W	8 126 W
3600	3 010 W	6 256 W	8 309 W	8 953 W
3800	3 109 W	6 462 W	8 583 W	9 249 W
4000	3 288 W	6 833 W	9 076 W	9 780 W
4200	3 502 W	7 279 W	9 668 W	10 418 W
4400	3 685 W	7 659 W	10 173 W	10 961 W
4600	3 899 W	8 104 W	10 764 W	11 599 W
4800	3 979 W	8 269 W	10 984 W	11 835 W

Q[W] 55/45/20 °C (ΔT=30 °C)

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	170 W	353 W	469 W	505 W
800	226 W	470 W	625 W	673 W
900	271 W	564 W	750 W	808 W
1000	385 W	800 W	1 063 W	1 145 W
1100	385 W	800 W	1 063 W	1 145 W
1200	453 W	941 W	1 250 W	1 347 W
1300	498 W	1 035 W	1 375 W	1 482 W
1400	555 W	1 153 W	1 531 W	1 650 W
1500	611 W	1 270 W	1 688 W	1 818 W
1600	665 W	1 383 W	1 837 W	1 980 W
1700	665 W	1 383 W	1 837 W	1 980 W
1800	770 W	1 600 W	2 125 W	2 290 W
1900	835 W	1 736 W	2 306 W	2 485 W
2000	892 W	1 854 W	2 462 W	2 653 W
2100	937 W	1 948 W	2 587 W	2 788 W
2200	937 W	1 948 W	2 587 W	2 788 W
2300	1 050 W	2 183 W	2 900 W	3 125 W
2400	1 050 W	2 183 W	2 900 W	3 125 W
2500	1 118 W	2 324 W	3 087 W	3 327 W
2600	1 164 W	2 418 W	3 212 W	3 461 W
2700	1 209 W	2 513 W	3 337 W	3 596 W
2800	1 276 W	2 654 W	3 524 W	3 798 W
2900	1 331 W	2 767 W	3 675 W	3 959 W
3000	1 331 W	2 767 W	3 675 W	3 959 W
3200	1 501 W	3 120 W	4 144 W	4 465 W
3400	1 558 W	3 237 W	4 300 W	4 633 W
3600	1 716 W	3 567 W	4 737 W	5 104 W
3800	1 773 W	3 684 W	4 893 W	5 273 W
4000	1 875 W	3 896 W	5 174 W	5 576 W
4200	1 997 W	4 150 W	5 512 W	5 940 W
4400	2 101 W	4 367 W	5 800 W	6 249 W
4600	2 223 W	4 620 W	6 137 W	6 613 W
4800	2 269 W	4 714 W	6 262 W	6 747 W

75/65/20 °C → 75°C inlet temperature, 65°C outlet temp., 20 °C room temp. / **Output 90/70/20 °C** = ~ 1,22 x 75/65/20 °C / **Output 70/55/20 °C** = ~ 0,84 x 75/65/20 °C / Heating outputs in accordance with EN 16430 / Not listed heating outpus for lengths per 100 mm steps calculate linearly. Exact values can be found at www.isan.cz

Acoustic pressure [dB(A)]

Length L [mm]	Speed [-] / Acoustic pressure [dB(A)]			
	1	2	3	4 max.
700	< 20 dB(A)	26 dB(A)	34 dB(A)	37 dB(A)
800		27 dB(A)	35 dB(A)	38 dB(A)
900				
1000			36 dB(A)	39 dB(A)
1100				
1200		28 dB(A)		
1300			37 dB(A)	40 dB(A)
1400				
1500				
1600		29 dB(A)	38 dB(A)	41 dB(A)
1700				
1800				
1900	20 dB(A)		39 dB(A)	42 dB(A)
2000		30 dB(A)		
2100				
2200				
2300	21 dB(A)		40 dB(A)	43 dB(A)
2400				
2500		31 dB(A)		
2600				
2700	22 dB(A)		41 dB(A)	
2800				44 dB(A)
2900		32 dB(A)		
3000				
3200	23 dB(A)		42 dB(A)	
3400		33 dB(A)		45 dB(A)
3600	24 dB(A)			
3800		34 dB(A)		
4000			43 dB(A)	
4200	25 dB(A)	35 dB(A)		46 dB(A)
4400				
4600		36 dB(A)	44 dB(A)	47 dB(A)
4800	26 dB(A)			

Acoustic pressure level choose according to specific environment. More details on page 10

Fans input power [W]*

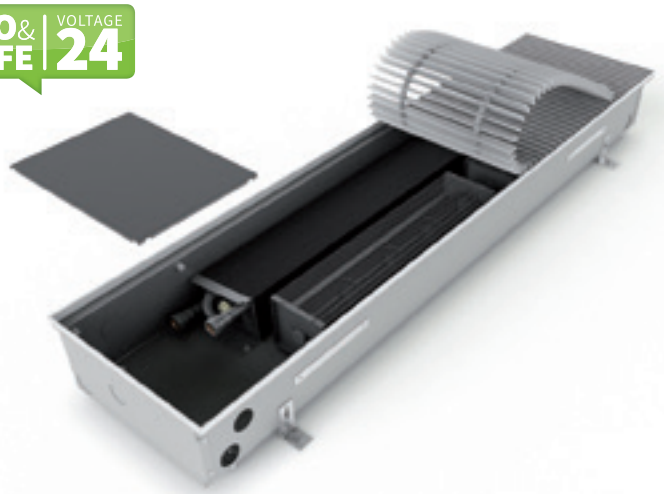
Length L [mm]	Speed [-] / Fans input power [W]*			
	1	2	3	4 max.
700	1 W	2 W	2 W	3 W
800	2 W	2 W	3 W	4 W
900	2 W	3 W	4 W	5 W
1000	2 W	3 W	5 W	6 W
1100	2 W	3 W	5 W	6 W
1200	3 W	4 W	6 W	8 W
1300	3 W	5 W	7 W	9 W
1400	3 W	5 W	7 W	9 W
1500	4 W	6 W	8 W	10 W
1600	4 W	6 W	8 W	10 W
1700	4 W	6 W	9 W	11 W
1800	5 W	7 W	10 W	12 W
1900	5 W	7 W	10 W	12 W
2000	5 W	7 W	10 W	13 W
2100	5 W	8 W	11 W	14 W
2200	5 W	8 W	11 W	14 W
2300	6 W	9 W	13 W	16 W
2400	6 W	9 W	13 W	16 W
2500	6 W	9 W	14 W	17 W
2600	7 W	10 W	14 W	18 W
2700	7 W	11 W	15 W	19 W
2800	7 W	11 W	15 W	19 W
2900	7 W	11 W	15 W	19 W
3000	8 W	11 W	16 W	20 W
3200	8 W	12 W	18 W	22 W
3400	9 W	13 W	18 W	23 W
3600	9 W	14 W	20 W	25 W
3800	10 W	14 W	21 W	26 W
4000	11 W	16 W	23 W	28 W
4200	11 W	16 W	23 W	28 W
4400	12 W	17 W	25 W	31 W
4600	12 W	18 W	26 W	32 W
4800	12 W	18 W	27 W	33 W

* Approximate fan input powers / **When using electrothermal actuator add in the trench heater's power 3 W** / Wiring of the trench heater → page 85

FRT 0125 0300

TRENCH HEATER WITH FAN

ECO & SAFE | VOLTAGE 24



- Flats, detached houses, offices, administrative buildings
- Suitable for low-temperature systems
- High heating output
- Continuous speed control
- Quiet operation
- Common electricity consumption **2 W/m**
- Using in dry environment

Technical data

Trench heater

Height	H = **125** mm
Width	W = **300** mm
Length	L = **700–4 800** mm in step **100** mm

Heat exchanger

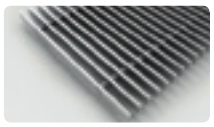
Type	**Al-Cu** lamellar
Length	L–**295** mm
Connection thread	**2×G1/2"** inner

Working conditions

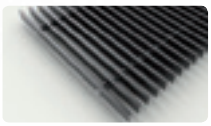
Max. temperature	**110** °C
Max. overpressure	**1** MPa (**10** bar)
Protection	IP **20**
Ambient conditions	Temp. T = **+2** to **+40** °C Humidity Rh = **20** to **70**%

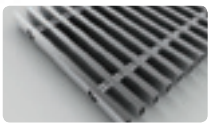
Variants

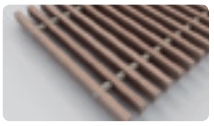
Transverse roll-up grilles


natur - anod. aluminium

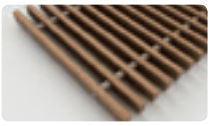

bronze - anod. aluminium


black - anod. aluminium


stainless

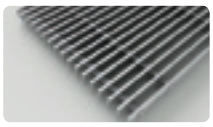

natur beech - wooden


stained beech - wooden


natur oak - wooden


stained oak - wooden

Linear non-rolling grilles


natur - anod. aluminium


bronze - anod. aluminium


black - anod. aluminium

Peripheral ledges


(more on page 8)

More possibilities and variants → page 6

Trench heater standard equipment

Trough	Galvanized steel trough with surface finish and black spray layer inside, black cover plates of connection
Heat exchanger	Al-Cu lamellar exchanger with air vent valve, black painted
Grille	Design walkable grille according the customer's choice*
Ledge	Made of anodized aluminium, type and colour according the customer's choice
Fan	Modern tangential fan with 24 V DC EC motor with high efficiency, rotors protection
Assembly elements	Leveling screws for setting up the trough, mounting brackets
Manual	Manual for the progress of work during installation and user manual
Wiring	Electrical wiring diagram of the trench heaters
Mounting board	Cover and the spacer particle board for easy installation
Package	Transport package for protection against damage during transportation and handling

*stainless grilles surcharge

Accessories per order


Room thermostat


Power supply

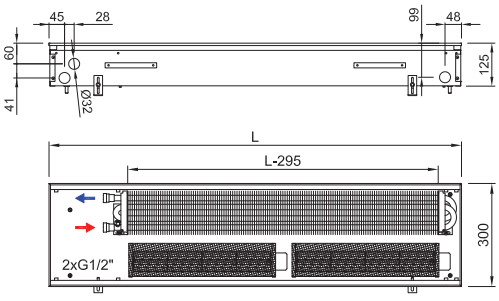

Electrothermal actuator

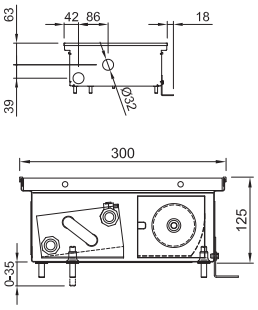

Thermostatic valve


Lockshield valve

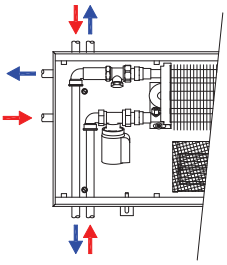
Accessories details → page 12

Technical drawing





Connection to heating system



The hydraulic parameters of the heat exchanger → page 82

Code example: FRT 0125 0300 2700 C 32 J3 R - 5

Trench heater **FRT** H = **125** mm, W = **300** mm, L = **2 700** mm, „**C**" Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**32**" black anodized aluminium grille, linear, rigid, „**J3**" peripheral ledge „J", black anodized aluminium „**R**" water connection at the right side (when installing the heat exchanger closer to the window, fans to the room), „**5**" 24 V DC fans without controller (controller is not needed)

Trench heater heating output FRT 0125 0300

Q[W] 75/65/20 °C (ΔT=50 °C) Temperature exponent 1,1

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	343 W	664 W	884 W	1 114 W
800	459 W	887 W	1 182 W	1 489 W
900	574 W	1 111 W	1 480 W	1 864 W
1000	751 W	1 453 W	1 935 W	2 438 W
1100	751 W	1 453 W	1 935 W	2 438 W
1200	917 W	1 775 W	2 364 W	2 978 W
1300	1 033 W	1 998 W	2 661 W	3 353 W
1400	1 094 W	2 117 W	2 819 W	3 552 W
1500	1 210 W	2 340 W	3 117 W	3 927 W
1600	1 333 W	2 580 W	3 435 W	4 328 W
1700	1 333 W	2 580 W	3 435 W	4 328 W
1800	1 502 W	2 906 W	3 870 W	4 876 W
1900	1 676 W	3 244 W	4 320 W	5 442 W
2000	1 792 W	3 467 W	4 617 W	5 817 W
2100	1 908 W	3 691 W	4 915 W	6 193 W
2200	1 908 W	3 691 W	4 915 W	6 193 W
2300	2 084 W	4 033 W	5 370 W	6 766 W
2400	2 084 W	4 033 W	5 370 W	6 766 W
2500	2 251 W	4 355 W	5 799 W	7 306 W
2600	2 366 W	4 578 W	6 097 W	7 682 W
2700	2 482 W	4 802 W	6 394 W	8 057 W
2800	2 543 W	4 920 W	6 552 W	8 255 W
2900	2 667 W	5 159 W	6 871 W	8 657 W
3000	2 667 W	5 159 W	6 871 W	8 657 W
3200	3 010 W	5 823 W	7 755 W	9 771 W
3400	3 125 W	6 047 W	8 053 W	10 146 W
3600	3 418 W	6 612 W	8 806 W	11 095 W
3800	3 584 W	6 934 W	9 234 W	11 635 W
4000	3 815 W	7 381 W	9 830 W	12 385 W
4200	4 000 W	7 739 W	10 306 W	12 985 W
4400	4 169 W	8 065 W	10 741 W	13 533 W
4600	4 459 W	8 626 W	11 488 W	14 474 W
4800	4 574 W	8 850 W	11 786 W	14 849 W

Q[W] 55/45/20 °C (ΔT=30 °C)

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	196 W	379 W	504 W	635 W
800	262 W	506 W	674 W	849 W
900	327 W	633 W	844 W	1 063 W
1000	428 W	828 W	1 103 W	1 390 W
1100	428 W	828 W	1 103 W	1 390 W
1200	523 W	1 012 W	1 348 W	1 698 W
1300	589 W	1 139 W	1 517 W	1 912 W
1400	624 W	1 207 W	1 607 W	2 025 W
1500	690 W	1 334 W	1 777 W	2 239 W
1600	760 W	1 471 W	1 958 W	2 467 W
1700	760 W	1 471 W	1 958 W	2 467 W
1800	856 W	1 657 W	2 206 W	2 780 W
1900	956 W	1 849 W	2 463 W	3 103 W
2000	1 022 W	1 977 W	2 632 W	3 316 W
2100	1 088 W	2 104 W	2 802 W	3 531 W
2200	1 088 W	2 104 W	2 802 W	3 531 W
2300	1 188 W	2 299 W	3 062 W	3 857 W
2400	1 188 W	2 299 W	3 062 W	3 857 W
2500	1 283 W	2 483 W	3 306 W	4 165 W
2600	1 349 W	2 610 W	3 476 W	4 380 W
2700	1 415 W	2 738 W	3 645 W	4 593 W
2800	1 450 W	2 805 W	3 735 W	4 706 W
2900	1 521 W	2 941 W	3 917 W	4 936 W
3000	1 521 W	2 941 W	3 917 W	4 936 W
3200	1 716 W	3 320 W	4 421 W	5 571 W
3400	1 782 W	3 448 W	4 591 W	5 784 W
3600	1 949 W	3 770 W	5 020 W	6 325 W
3800	2 043 W	3 953 W	5 264 W	6 633 W
4000	2 175 W	4 208 W	5 604 W	7 061 W
4200	2 280 W	4 412 W	5 876 W	7 403 W
4400	2 377 W	4 598 W	6 124 W	7 715 W
4600	2 542 W	4 918 W	6 550 W	8 252 W
4800	2 608 W	5 046 W	6 719 W	8 466 W

75/65/20 °C → 75°C inlet temperature, 65°C outlet temp., 20 °C room temp. / **Output 90/70/20 °C** = ~ 1,22 x 75/65/20 °C / **Output 70/55/20 °C** = ~ 0,84 x 75/65/20 °C / Heating outputs in accordance with EN 16430 / Not listed heating outpus for lengths per 100 mm steps calculate linearly. Exact values can be found at www.isan.cz

Acoustic pressure [dB(A)]

Length L [mm]	Speed [-] / Acoustic pressure [dB(A)]			
	1	2	3	4 max.
700	20 dB(A)	26 dB(A)	36 dB(A)	47 dB(A)
800		27 dB(A)		
900	21 dB(A)			48 dB(A)
1000	22 dB(A)		37 dB(A)	
1100				
1200		28 dB(A)	38 dB(A)	49 dB(A)
1300	23 dB(A)			
1400				
1500				50 dB(A)
1600	24 dB(A)	29 dB(A)		
1700				
1800			39 dB(A)	
1900	25 dB(A)			51 dB(A)
2000		30 dB(A)	40 dB(A)	
2100				
2200				
2300	26 dB(A)			52 dB(A)
2400				
2500		31 dB(A)	41 dB(A)	
2600				
2700	27 dB(A)			53 dB(A)
2800				
2900				
3000				
3200	28 dB(A)	32 dB(A)	42 dB(A)	54 dB(A)
3400				
3600		33 dB(A)	43 dB(A)	
3800				55 dB(A)
4000		34 dB(A)		
4200			44 dB(A)	
4400		35 dB(A)		
4600				56 dB(A)
4800			45 dB(A)	

Acoustic pressure level choose according to specific environment. More details on page 10

Fans input power [W]*

Length L [mm]	Speed [-] / Fans input power [W]*			
	1	2	3	4 max.
700	1 W	1 W	3 W	8 W
800	1 W	1 W	4 W	10 W
900	1 W	2 W	6 W	15 W
1000	1 W	2 W	7 W	17 W
1100	1 W	2 W	7 W	17 W
1200	1 W	3 W	8 W	20 W
1300	2 W	3 W	10 W	24 W
1400	2 W	3 W	10 W	24 W
1500	2 W	3 W	11 W	27 W
1600	2 W	4 W	12 W	29 W
1700	2 W	4 W	13 W	32 W
1800	2 W	4 W	14 W	34 W
1900	2 W	5 W	15 W	36 W
2000	2 W	5 W	16 W	39 W
2100	3 W	6 W	18 W	44 W
2200	3 W	6 W	18 W	44 W
2300	3 W	6 W	19 W	46 W
2400	3 W	6 W	19 W	46 W
2500	3 W	6 W	20 W	48 W
2600	3 W	7 W	22 W	53 W
2700	4 W	7 W	24 W	58 W
2800	4 W	7 W	23 W	56 W
2900	4 W	7 W	24 W	58 W
3000	4 W	8 W	24 W	60 W
3200	4 W	8 W	26 W	65 W
3400	4 W	9 W	28 W	68 W
3600	5 W	9 W	30 W	75 W
3800	5 W	10 W	33 W	80 W
4000	5 W	11 W	35 W	87 W
4200	5 W	11 W	35 W	87 W
4400	6 W	12 W	37 W	92 W
4600	6 W	12 W	39 W	96 W
4800	6 W	13 W	41 W	101 W

* Approximate fan input powers / **When using electrothermal actuator add in the trench heater's power 3 W** / Wiring of the trench heater → page 85

FRT 0125 0425

TRENCH HEATER WITH FAN

ECO & SAFE | VOLTAGE 24

- Flats, detached houses, offices, administrative buildings
- Suitable for low-temperature systems
- High heating output
- Continuous speed control
- Quiet operation
- Common electricity consumption **2 W/m**
- Using in dry environment

Technical data

Trench heater

Height	H = **125** mm
Width	W = **425** mm
Length	L = **700–4 800** mm in step **100** mm

Heat exchanger

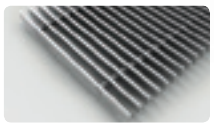
Type	**Al-Cu** lamellar
Length	L–**295** mm
Connection thread	**2×G1/2"** inner

Working conditions

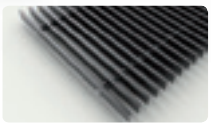
Max. temperature	**110** °C
Max. overpressure	**1** MPa (**10** bar)
Protection	IP **20**
Ambient conditions	Temp. T = **+2** to **+40** °C Humidity Rh = **20** to **70**%

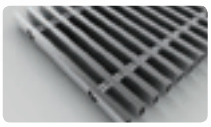
Variants

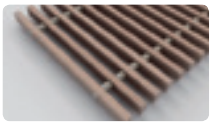
Transverse roll-up grilles


natur - anod. aluminium

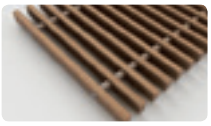

bronze - anod. aluminium


black - anod. aluminium


stainless

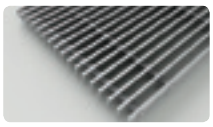

natur beech - wooden


stained beech - wooden


natur oak - wooden


stained oak - wooden

Linear non-rolling grilles


natur - anod. aluminium


bronze - anod. aluminium


black - anod. aluminium

Peripheral ledges


(more on page 8)

More possibilities and variants → page 6

Trench heater standard equipment

Trough	Galvanized steel trough with surface finish and black spray layer inside, black cover plates of connection
Heat exchanger	Al-Cu lamellar exchanger with air vent valve, black painted
Grille	Design walkable grille according the customer's choice*
Ledge	Made of anodized aluminium, type and colour according the customer's choice
Fan	Modern tangential fan with 24 V DC EC motor with high efficiency, rotors protection
Assembly elements	Leveling screws for setting up the trough, mounting brackets
Manual	Manual for the progress of work during installation and user manual
Wiring	Electrical wiring diagram of the trench heaters
Mounting board	Cover and the spacer particle board for easy installation
Package	Transport package for protection against damage during transportation and handling

*stainless grilles surcharge

Accessories per order


Room thermostat


Power supply

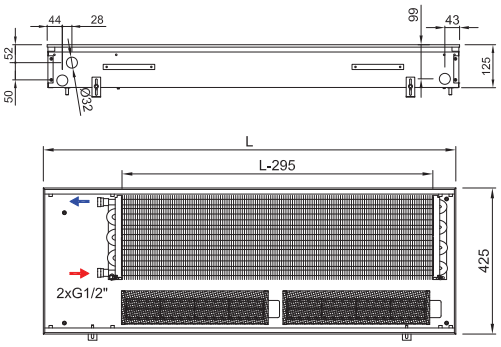

Electrothermal actuator


Thermostatic valve

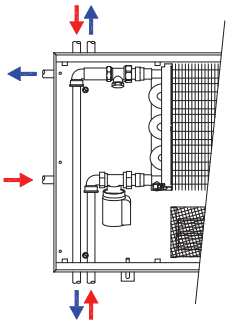

Lockshield valve

Accessories details → page 12

Technical drawing



Connection to heating system



The hydraulic parameters of the heat exchanger → page 82

Code example: FRT 0125 0425 4400 C 64 L2 L - 5

Trench heater **FRT** H = **125** mm, W = **425** mm, L = **4 400** mm, „**C**" Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**64**" stained oak grille, transverse, roll-up, „**L2**" peripheral ledge „L" with an overlap, bronze anodized aluminium, „**L**" water connection at the left side (when installing the heat exchanger closer to the window, fans to the room) „**5**" 24 V DC fans without controller (controller is not needed)

Trench heater heating output FRT 0125 0425

Q[W] 75/65/20 °C (ΔT=50 °C) Temperature exponent 1,1

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	709 W	1 006 W	1 310 W	1 616 W
800	947 W	1 345 W	1 751 W	2 160 W
900	1 186 W	1 684 W	2 192 W	2 704 W
1000	1 551 W	2 202 W	2 867 W	3 536 W
1100	1 551 W	2 202 W	2 867 W	3 536 W
1200	1 895 W	2 690 W	3 502 W	4 320 W
1300	2 133 W	3 029 W	3 943 W	4 864 W
1400	2 260 W	3 209 W	4 177 W	5 152 W
1500	2 498 W	3 548 W	4 618 W	5 696 W
1600	2 754 W	3 910 W	5 090 W	6 279 W
1700	2 754 W	3 910 W	5 090 W	6 279 W
1800	3 102 W	4 405 W	5 734 W	7 073 W
1900	3 463 W	4 916 W	6 400 W	7 894 W
2000	3 701 W	5 255 W	6 841 W	8 438 W
2100	3 940 W	5 594 W	7 282 W	8 983 W
2200	3 940 W	5 594 W	7 282 W	8 983 W
2300	4 305 W	6 113 W	7 956 W	9 815 W
2400	4 305 W	6 113 W	7 956 W	9 815 W
2500	4 649 W	6 600 W	8 592 W	10 598 W
2600	4 887 W	6 939 W	9 033 W	11 142 W
2700	5 126 W	7 278 W	9 474 W	11 687 W
2800	5 252 W	7 458 W	9 707 W	11 975 W
2900	5 508 W	7 820 W	10 179 W	12 557 W
3000	5 508 W	7 820 W	10 179 W	12 557 W
3200	6 216 W	8 827 W	11 489 W	14 173 W
3400	6 455 W	9 165 W	11 930 W	14 717 W
3600	7 059 W	10 023 W	13 046 W	16 093 W
3800	7 402 W	10 511 W	13 681 W	16 877 W
4000	7 880 W	11 188 W	14 563 W	17 965 W
4200	8 261 W	11 730 W	15 269 W	18 836 W
4400	8 610 W	12 225 W	15 913 W	19 630 W
4600	9 209 W	13 076 W	17 020 W	20 995 W
4800	9 447 W	13 414 W	17 461 W	21 540 W

Q[W] 55/45/20 °C (ΔT=30 °C)

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	404 W	574 W	747 W	921 W
800	540 W	767 W	998 W	1 231 W
900	676 W	960 W	1 250 W	1 542 W
1000	884 W	1 255 W	1 635 W	2 016 W
1100	884 W	1 255 W	1 635 W	2 016 W
1200	1 080 W	1 534 W	1 997 W	2 463 W
1300	1 216 W	1 727 W	2 248 W	2 773 W
1400	1 288 W	1 830 W	2 381 W	2 937 W
1500	1 424 W	2 023 W	2 633 W	3 247 W
1600	1 570 W	2 229 W	2 902 W	3 580 W
1700	1 570 W	2 229 W	2 902 W	3 580 W
1800	1 769 W	2 511 W	3 269 W	4 032 W
1900	1 974 W	2 803 W	3 649 W	4 501 W
2000	2 110 W	2 996 W	3 900 W	4 811 W
2100	2 246 W	3 189 W	4 152 W	5 121 W
2200	2 246 W	3 189 W	4 152 W	5 121 W
2300	2 454 W	3 485 W	4 536 W	5 596 W
2400	2 454 W	3 485 W	4 536 W	5 596 W
2500	2 650 W	3 763 W	4 898 W	6 042 W
2600	2 786 W	3 956 W	5 150 W	6 352 W
2700	2 922 W	4 149 W	5 401 W	6 663 W
2800	2 994 W	4 252 W	5 534 W	6 827 W
2900	3 140 W	4 458 W	5 803 W	7 159 W
3000	3 140 W	4 458 W	5 803 W	7 159 W
3200	3 544 W	5 032 W	6 550 W	8 080 W
3400	3 680 W	5 225 W	6 802 W	8 390 W
3600	4 024 W	5 714 W	7 438 W	9 175 W
3800	4 220 W	5 993 W	7 800 W	9 622 W
4000	4 493 W	6 379 W	8 303 W	10 242 W
4200	4 710 W	6 688 W	8 705 W	10 739 W
4400	4 909 W	6 970 W	9 072 W	11 191 W
4600	5 250 W	7 455 W	9 703 W	11 970 W
4800	5 386 W	7 648 W	9 955 W	12 280 W

75/65/20 °C → 75°C inlet temperature, 65°C outlet temp., 20 °C room temp. / **Output 90/70/20 °C** = ~ 1,22 x 75/65/20 °C / **Output 70/55/20 °C** = ~ 0,84 x 75/65/20 °C / Heating outputs in accordance with EN 16430 / Not listed heating outpus for lengths per 100 mm steps calculate linearly. Exact values can be found at www.isan.cz

Acoustic pressure [dB(A)]

Length L [mm]	Speed [-] / Acoustic pressure [dB(A)]			
	1	2	3	4 max.
700	20 dB(A)	26 dB(A)	36 dB(A)	47 dB(A)
800		27 dB(A)		
900	21 dB(A)			48 dB(A)
1000	22 dB(A)		37 dB(A)	
1100				
1200		28 dB(A)	38 dB(A)	49 dB(A)
1300	23 dB(A)			
1400				
1500				50 dB(A)
1600	24 dB(A)	29 dB(A)		
1700				
1800			39 dB(A)	
1900	25 dB(A)			51 dB(A)
2000		30 dB(A)	40 dB(A)	
2100				
2200				
2300	26 dB(A)			52 dB(A)
2400				
2500		31 dB(A)	41 dB(A)	
2600				
2700	27 dB(A)			53 dB(A)
2800				
2900				
3000				
3200	28 dB(A)	32 dB(A)	42 dB(A)	54 dB(A)
3400				
3600		33 dB(A)	43 dB(A)	
3800				55 dB(A)
4000		34 dB(A)		
4200			44 dB(A)	
4400		35 dB(A)		
4600				56 dB(A)
4800			45 dB(A)	

Acoustic pressure level choose according to specific environment. More details on page 10

Fans input power [W]*

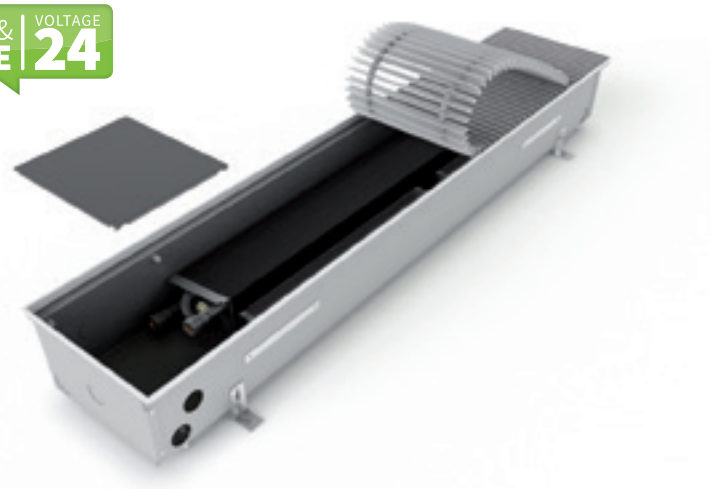
Length L [mm]	Speed [-] / Fans input power [W]*			
	1	2	3	4 max.
700	1 W	1 W	3 W	8 W
800	1 W	1 W	4 W	10 W
900	1 W	2 W	6 W	15 W
1000	1 W	2 W	7 W	17 W
1100	1 W	2 W	7 W	17 W
1200	1 W	3 W	8 W	20 W
1300	2 W	3 W	10 W	24 W
1400	2 W	3 W	10 W	24 W
1500	2 W	3 W	11 W	27 W
1600	2 W	4 W	12 W	29 W
1700	2 W	4 W	13 W	32 W
1800	2 W	4 W	14 W	34 W
1900	2 W	5 W	15 W	36 W
2000	2 W	5 W	16 W	39 W
2100	3 W	6 W	18 W	44 W
2200	3 W	6 W	18 W	44 W
2300	3 W	6 W	19 W	46 W
2400	3 W	6 W	19 W	46 W
2500	3 W	6 W	20 W	48 W
2600	3 W	7 W	22 W	53 W
2700	4 W	7 W	24 W	58 W
2800	4 W	7 W	23 W	56 W
2900	4 W	7 W	24 W	58 W
3000	4 W	8 W	24 W	60 W
3200	4 W	8 W	26 W	65 W
3400	4 W	9 W	28 W	68 W
3600	5 W	9 W	30 W	75 W
3800	5 W	10 W	33 W	80 W
4000	5 W	11 W	35 W	87 W
4200	5 W	11 W	35 W	87 W
4400	6 W	12 W	37 W	92 W
4600	6 W	12 W	39 W	96 W
4800	6 W	13 W	41 W	101 W

* Approximate fan input powers / **When using electrothermal actuator add in the trench heater's power 3 W** / Wiring of the trench heater → page 85

FRT 0140 0250

TRENCH HEATER WITH FAN

ECO & SAFE | VOLTAGE 24



- Flats, detached houses, offices, administrative buildings
- Narrow trench heater suitable for deeper floor
- High heating output
- Continuous speed control
- Quiet operation
- Common electricity consumption **3 W/m**
- Using in dry environment

Technical data

Trench heater

Height	H = **140** mm
Width	W = **250** mm
Length	L = **700–4 800** mm in step **100** mm

Heat exchanger

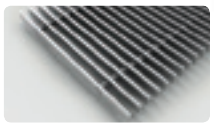
Type	**Al-Cu** lamellar
Length	L–**295** mm
Connection thread	**2×G1/2"** inner

Working conditions

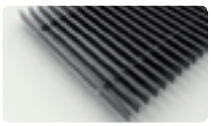
Max. temperature	**110** °C
Max. overpressure	**1** MPa (**10** bar)
Protection	IP **20**
Ambient conditions	Temp. T = **+2** to **+40** °C Humidity Rh = **20** to **70**%

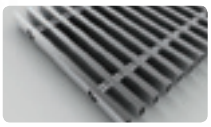
Variants

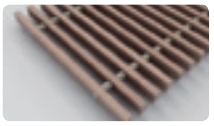
Transverse roll-up grilles


natur - anod. aluminium

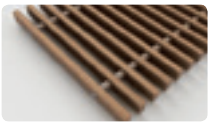

bronze - anod. aluminium


black - anod. aluminium


stainless

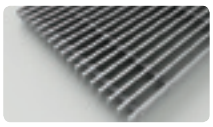

natur beech - wooden


stained beech - wooden


natur oak - wooden


stained oak - wooden

Linear non-rolling grilles


natur - anod. aluminium


bronze - anod. aluminium


black - anod. aluminium

Peripheral ledges


(more on page 8)

More possibilities and variants → page 6

Trench heater standard equipment

Trough	Galvanized steel trough with surface finish and black spray layer inside, black cover plates of connection
Heat exchanger	Al-Cu lamellar exchanger with air vent valve, black painted
Grille	Design walkable grille according the customer's choice*
Ledge	Made of anodized aluminium, type and colour according the customer's choice
Fan	Modern tangential fan with 24 V DC EC motor with high efficiency, rotors protection
Assembly elements	Leveling screws for setting up the trough, mounting brackets
Manual	Manual for the progress of work during installation and user manual
Wiring	Electrical wiring diagram of the trench heaters
Mounting board	Cover and the spacer particle board for easy installation
Package	Transport package for protection against damage during transportation and handling

*stainless grilles surcharge

Accessories per order


Room thermostat


Power supply

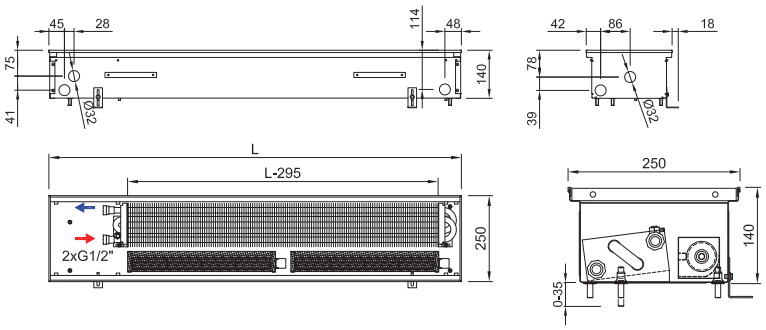

Electrothermal actuator


Thermostatic valve

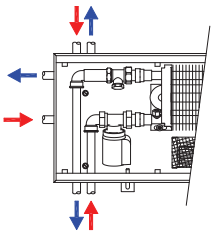

Lockshield valve

Accessories details → page 12

Technical drawing



Connection to heating system



The hydraulic parameters of the heat exchanger → page 82

Code example: FRT 00140 0250 1500 C 62 L2 L - 5

Trench heater **FRT** H = **140** mm, W = **250** mm, L = **1 500** mm, „**C**" Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**62**" stained beech grille, transverse, roll-up, „**L2**" peripheral ledge „L" with an overlap, bronze anodized aluminium, „**L**" water connection at the left side (when installing the heat exchanger closer to the window, fans to the room) „**5**" 24 V DC fans without controller (controller is not needed)

Trench heater heating output FRT 0140 0250

Q[W] 75/65/20 °C (ΔT=50 °C) Temperature exponent 1,1

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	311 W	645 W	894 W	928 W
800	414 W	859 W	1 192 W	1 237 W
900	497 W	1 031 W	1 430 W	1 484 W
1000	704 W	1 461 W	2 026 W	2 103 W
1100	704 W	1 461 W	2 026 W	2 103 W
1200	828 W	1 719 W	2 384 W	2 474 W
1300	911 W	1 891 W	2 622 W	2 722 W
1400	1 015 W	2 106 W	2 920 W	3 031 W
1500	1 118 W	2 320 W	3 218 W	3 340 W
1600	1 218 W	2 527 W	3 504 W	3 637 W
1700	1 218 W	2 527 W	3 504 W	3 637 W
1800	1 408 W	2 922 W	4 053 W	4 206 W
1900	1 528 W	3 171 W	4 398 W	4 565 W
2000	1 632 W	3 386 W	4 696 W	4 874 W
2100	1 714 W	3 558 W	4 935 W	5 121 W
2200	1 714 W	3 558 W	4 935 W	5 121 W
2300	1 922 W	3 988 W	5 531 W	5 740 W
2400	1 922 W	3 988 W	5 531 W	5 740 W
2500	2 046 W	4 245 W	5 888 W	6 111 W
2600	2 129 W	4 417 W	6 127 W	6 358 W
2700	2 211 W	4 589 W	6 365 W	6 606 W
2800	2 336 W	4 847 W	6 723 W	6 977 W
2900	2 435 W	5 053 W	7 009 W	7 274 W
3000	2 435 W	5 053 W	7 009 W	7 274 W
3200	2 746 W	5 698 W	7 903 W	8 202 W
3400	2 849 W	5 913 W	8 201 W	8 511 W
3600	3 139 W	6 514 W	9 035 W	9 377 W
3800	3 243 W	6 729 W	9 333 W	9 686 W
4000	3 429 W	7 116 W	9 869 W	10 243 W
4200	3 653 W	7 580 W	10 513 W	10 911 W
4400	3 843 W	7 975 W	11 061 W	11 480 W
4600	4 067 W	8 439 W	11 705 W	12 148 W
4800	4 149 W	8 611 W	11 943 W	12 395 W

Q[W] 55/45/20 °C (ΔT=30 °C)

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	177 W	368 W	510 W	529 W
800	236 W	490 W	680 W	705 W
900	283 W	588 W	815 W	846 W
1000	401 W	833 W	1 155 W	1 199 W
1100	401 W	833 W	1 155 W	1 199 W
1200	472 W	980 W	1 359 W	1 410 W
1300	519 W	1 078 W	1 495 W	1 552 W
1400	579 W	1 201 W	1 665 W	1 728 W
1500	637 W	1 323 W	1 835 W	1 904 W
1600	694 W	1 441 W	1 998 W	2 074 W
1700	694 W	1 441 W	1 998 W	2 074 W
1800	803 W	1 666 W	2 311 W	2 398 W
1900	871 W	1 808 W	2 507 W	2 603 W
2000	930 W	1 930 W	2 677 W	2 779 W
2100	977 W	2 028 W	2 814 W	2 920 W
2200	977 W	2 028 W	2 814 W	2 920 W
2300	1 096 W	2 274 W	3 153 W	3 272 W
2400	1 096 W	2 274 W	3 153 W	3 272 W
2500	1 166 W	2 420 W	3 357 W	3 484 W
2600	1 214 W	2 518 W	3 493 W	3 625 W
2700	1 261 W	2 616 W	3 629 W	3 766 W
2800	1 332 W	2 763 W	3 833 W	3 978 W
2900	1 388 W	2 881 W	3 996 W	4 147 W
3000	1 388 W	2 881 W	3 996 W	4 147 W
3200	1 566 W	3 249 W	4 506 W	4 676 W
3400	1 624 W	3 371 W	4 676 W	4 852 W
3600	1 790 W	3 714 W	5 151 W	5 346 W
3800	1 849 W	3 836 W	5 321 W	5 522 W
4000	1 955 W	4 057 W	5 627 W	5 840 W
4200	2 083 W	4 322 W	5 994 W	6 221 W
4400	2 191 W	4 547 W	6 306 W	6 545 W
4600	2 319 W	4 811 W	6 673 W	6 926 W
4800	2 365 W	4 909 W	6 809 W	7 067 W

75/65/20 °C → 75°C inlet temperature, 65°C outlet temp., 20 °C room temp. / **Output 90/70/20 °C** = ~ 1,22 x 75/65/20 °C / **Output 70/55/20 °C** = ~ 0,84 x 75/65/20 °C / Heating outputs in accordance with EN 16430 / Not listed heating outpus for lengths per 100 mm steps calculate linearly. Exact values can be found at www.isan.cz

Acoustic pressure [dB(A)]

Length L [mm]	Speed [-] / Acoustic pressure [dB(A)]			
	1	2	3	4 max.
700	< 20 dB(A)	26 dB(A)	34 dB(A)	37 dB(A)
800		27 dB(A)	35 dB(A)	38 dB(A)
900				
1000			36 dB(A)	39 dB(A)
1100				
1200		28 dB(A)		
1300			37 dB(A)	40 dB(A)
1400				
1500				
1600		29 dB(A)	38 dB(A)	41 dB(A)
1700				
1800				
1900	20 dB(A)		39 dB(A)	42 dB(A)
2000		30 dB(A)		
2100				
2200				
2300	21 dB(A)		40 dB(A)	43 dB(A)
2400				
2500		31 dB(A)		
2600				
2700	22 dB(A)		41 dB(A)	
2800				44 dB(A)
2900		32 dB(A)		
3000				
3200	23 dB(A)		42 dB(A)	
3400		33 dB(A)		45 dB(A)
3600	24 dB(A)			
3800		34 dB(A)		
4000			43 dB(A)	
4200	25 dB(A)	35 dB(A)		46 dB(A)
4400				
4600		36 dB(A)	44 dB(A)	47 dB(A)
4800	26 dB(A)			

Acoustic pressure level choose according to specific environment. More details on page 10

Fans input power [W]*

Length L [mm]	Speed [-] / Fans input power [W]*			
	1	2	3	4 max.
700	1 W	2 W	2 W	3 W
800	2 W	2 W	3 W	4 W
900	2 W	3 W	4 W	5 W
1000	2 W	3 W	5 W	6 W
1100	2 W	3 W	5 W	6 W
1200	3 W	4 W	6 W	8 W
1300	3 W	5 W	7 W	9 W
1400	3 W	5 W	7 W	9 W
1500	4 W	6 W	8 W	10 W
1600	4 W	6 W	8 W	10 W
1700	4 W	6 W	9 W	11 W
1800	5 W	7 W	10 W	12 W
1900	5 W	7 W	10 W	12 W
2000	5 W	7 W	10 W	13 W
2100	5 W	8 W	11 W	14 W
2200	5 W	8 W	11 W	14 W
2300	6 W	9 W	13 W	16 W
2400	6 W	9 W	13 W	16 W
2500	6 W	9 W	14 W	17 W
2600	7 W	10 W	14 W	18 W
2700	7 W	11 W	15 W	19 W
2800	7 W	11 W	15 W	19 W
2900	7 W	11 W	15 W	19 W
3000	8 W	11 W	16 W	20 W
3200	8 W	12 W	18 W	22 W
3400	9 W	13 W	18 W	23 W
3600	9 W	14 W	20 W	25 W
3800	10 W	14 W	21 W	26 W
4000	11 W	16 W	23 W	28 W
4200	11 W	16 W	23 W	28 W
4400	12 W	17 W	25 W	31 W
4600	12 W	18 W	26 W	32 W
4800	12 W	18 W	27 W	33 W

* Approximate fan input powers / **When using electrothermal actuator add in the trench heater's power 3 W** / Wiring of the trench heater → page 85

FRT 0140 0300

TRENCH HEATER WITH FAN

ECO & SAFE | VOLTAGE 24

- Flats, detached houses, offices, administrative buildings
- Suitable for low-temperature systems
- High heating output
- Continuous speed control
- Quiet operation
- Common electricity consumption **2 W/m**
- Using in dry environment

Technical data

Trench heater

Height	H = **140** mm
Width	W = **300** mm
Length	L = **700–4 800** mm in step **100** mm

Heat exchanger

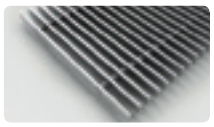
Type	**Al-Cu** lamellar
Length	L–**295** mm
Connection thread	**2×G1/2"** inner

Working conditions

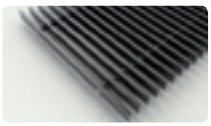
Max. temperature	**110** °C
Max. overpressure	**1** MPa (**10** bar)
Protection	IP **20**
Ambient conditions	Temp. T = **+2** to **+40** °C Humidity Rh = **20** to **70**%

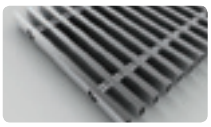
Variants

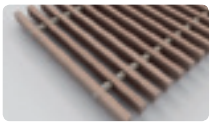
Transverse roll-up grilles


natur - anod. aluminium

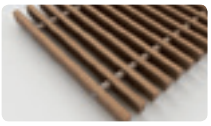

bronze - anod. aluminium


black - anod. aluminium


stainless

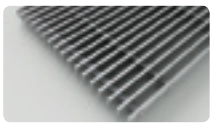

natur beech - wooden


stained beech - wooden


natur oak - wooden


stained oak - wooden

Linear non-rolling grilles


natur - anod. aluminium


bronze - anod. aluminium


black - anod. aluminium

Peripheral ledges


(more on page 8)

More possibilities and variants → page 6

Trench heater standard equipment

Trough	Galvanized steel trough with surface finish and black spray layer inside, black cover plates of connection
Heat exchanger	Al-Cu lamellar exchanger with air vent valve, black painted
Grille	Design walkable grille according the customer's choice*
Ledge	Made of anodized aluminium, type and colour according the customer's choice
Fan	Modern tangential fan with 24 V DC EC motor with high efficiency, rotors protection
Assembly elements	Leveling screws for setting up the trough, mounting brackets
Manual	Manual for the progress of work during installation and user manual
Wiring	Electrical wiring diagram of the trench heaters
Mounting board	Cover and the spacer particle board for easy installation
Package	Transport package for protection against damage during transportation and handling

*stainless grilles surcharge

Accessories per order


Room thermostat


Power supply

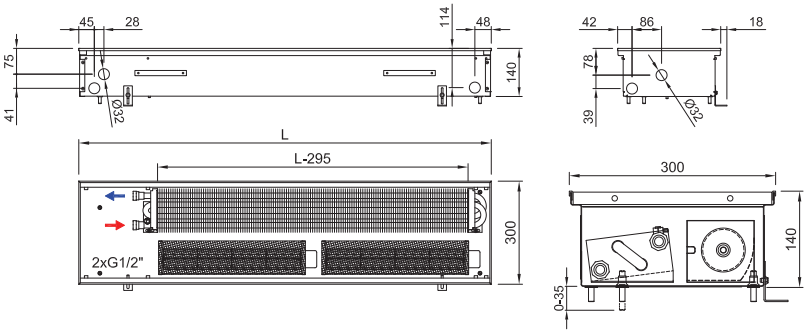

Electrothermal actuator


Thermostatic valve

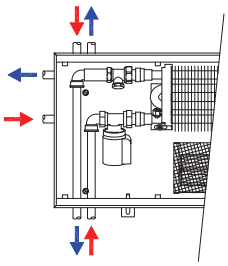

Lockshield valve

Accessories details → page 12

Technical drawing



Connection to heating system



The hydraulic parameters of the heat exchanger → page 82

Code example: FRT 0140 0300 2700 C 32 J3 R - 5

Trench heater **FRT** H = **140** mm, W = **300** mm, L = **2 700** mm, „**C**" Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**32**" black anodized aluminium grille, linear, rigid, „**J3**" peripheral ledge „J", black anodized aluminium „**R**" water connection at the right side (when installing the heat exchanger closer to the window, fans to the room), „**5**" 24 V DC fans without controller (controller is not needed)

Trench heater heating output FRT 0140 0300

Q[W] 75/65/20 °C (ΔT=50 °C) Temperature exponent 1,1

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	446 W	706 W	930 W	1 201 W
800	597 W	944 W	1 244 W	1 605 W
900	747 W	1 182 W	1 557 W	2 009 W
1000	977 W	1 546 W	2 036 W	2 628 W
1100	977 W	1 546 W	2 036 W	2 628 W
1200	1 193 W	1 888 W	2 487 W	3 210 W
1300	1 344 W	2 126 W	2 800 W	3 615 W
1400	1 423 W	2 252 W	2 966 W	3 829 W
1500	1 574 W	2 490 W	3 280 W	4 233 W
1600	1 735 W	2 745 W	3 615 W	4 666 W
1700	1 735 W	2 745 W	3 615 W	4 666 W
1800	1 954 W	3 092 W	4 072 W	5 256 W
1900	2 181 W	3 451 W	4 545 W	5 867 W
2000	2 331 W	3 689 W	4 858 W	6 271 W
2100	2 482 W	3 927 W	5 171 W	6 675 W
2200	2 482 W	3 927 W	5 171 W	6 675 W
2300	2 712 W	4 291 W	5 651 W	7 294 W
2400	2 712 W	4 291 W	5 651 W	7 294 W
2500	2 928 W	4 633 W	6 102 W	7 876 W
2600	3 078 W	4 871 W	6 415 W	8 280 W
2700	3 229 W	5 109 W	6 728 W	8 685 W
2800	3 308 W	5 235 W	6 894 W	8 899 W
2900	3 469 W	5 489 W	7 229 W	9 331 W
3000	3 469 W	5 489 W	7 229 W	9 331 W
3200	3 916 W	6 196 W	8 160 W	10 532 W
3400	4 066 W	6 434 W	8 473 W	10 937 W
3600	4 446 W	7 035 W	9 265 W	11 959 W
3800	4 663 W	7 378 W	9 716 W	12 542 W
4000	4 963 W	7 854 W	10 343 W	13 350 W
4200	5 204 W	8 234 W	10 844 W	13 997 W
4400	5 423 W	8 581 W	11 301 W	14 587 W
4600	5 800 W	9 178 W	12 088 W	15 602 W
4800	5 951 W	9 416 W	12 401 W	16 007 W

Q[W] 55/45/20 °C (ΔT=30 °C)

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	254 W	403 W	530 W	685 W
800	340 W	538 W	709 W	915 W
900	426 W	674 W	888 W	1 145 W
1000	557 W	881 W	1 161 W	1 498 W
1100	557 W	881 W	1 161 W	1 498 W
1200	680 W	1 076 W	1 418 W	1 830 W
1300	766 W	1 212 W	1 596 W	2 061 W
1400	811 W	1 284 W	1 691 W	2 183 W
1500	897 W	1 420 W	1 870 W	2 413 W
1600	989 W	1 565 W	2 061 W	2 660 W
1700	989 W	1 565 W	2 061 W	2 660 W
1800	1 114 W	1 763 W	2 322 W	2 997 W
1900	1 243 W	1 967 W	2 591 W	3 345 W
2000	1 329 W	2 103 W	2 770 W	3 575 W
2100	1 415 W	2 239 W	2 948 W	3 806 W
2200	1 415 W	2 239 W	2 948 W	3 806 W
2300	1 546 W	2 446 W	3 222 W	4 158 W
2400	1 546 W	2 446 W	3 222 W	4 158 W
2500	1 669 W	2 641 W	3 479 W	4 490 W
2600	1 755 W	2 777 W	3 657 W	4 721 W
2700	1 841 W	2 913 W	3 836 W	4 951 W
2800	1 886 W	2 985 W	3 930 W	5 073 W
2900	1 978 W	3 129 W	4 121 W	5 320 W
3000	1 978 W	3 129 W	4 121 W	5 320 W
3200	2 233 W	3 532 W	4 652 W	6 005 W
3400	2 318 W	3 668 W	4 831 W	6 235 W
3600	2 535 W	4 011 W	5 282 W	6 818 W
3800	2 658 W	4 206 W	5 539 W	7 150 W
4000	2 830 W	4 478 W	5 897 W	7 611 W
4200	2 967 W	4 694 W	6 182 W	7 980 W
4400	3 092 W	4 892 W	6 443 W	8 316 W
4600	3 307 W	5 233 W	6 892 W	8 895 W
4800	3 393 W	5 368 W	7 070 W	9 126 W

75/65/20 °C → 75°C inlet temperature, 65°C outlet temp., 20 °C room temp. / **Output 90/70/20 °C** = ~ 1,22 x 75/65/20 °C / **Output 70/55/20 °C** = ~ 0,84 x 75/65/20 °C / Heating outputs in accordance with EN 16430 / Not listed heating outpus for lengths per 100 mm steps calculate linearly. Exact values can be found at www.isan.cz

Acoustic pressure [dB(A)]

Length L [mm]	Speed [-] / Acoustic pressure [dB(A)]			
	1	2	3	4 max.
700	20 dB(A)	26 dB(A)	36 dB(A)	47 dB(A)
800		27 dB(A)		
900	21 dB(A)			48 dB(A)
1000	22 dB(A)		37 dB(A)	
1100				
1200		28 dB(A)	38 dB(A)	49 dB(A)
1300	23 dB(A)			
1400				
1500				50 dB(A)
1600	24 dB(A)	29 dB(A)		
1700				
1800			39 dB(A)	
1900	25 dB(A)			51 dB(A)
2000		30 dB(A)	40 dB(A)	
2100				
2200				
2300	26 dB(A)			52 dB(A)
2400				
2500		31 dB(A)	41 dB(A)	
2600				
2700	27 dB(A)			53 dB(A)
2800				
2900				
3000				
3200	28 dB(A)	32 dB(A)	42 dB(A)	54 dB(A)
3400				
3600		33 dB(A)	43 dB(A)	
3800				55 dB(A)
4000		34 dB(A)		
4200				
4400		35 dB(A)	44 dB(A)	
4600				56 dB(A)
4800			45 dB(A)	

Acoustic pressure level choose according to specific environment. More details on page 10

Fans input power [W]*

Length L [mm]	Speed [-] / Fans input power [W]*			
	1	2	3	4 max.
700	1 W	1 W	3 W	8 W
800	1 W	1 W	4 W	10 W
900	1 W	2 W	6 W	15 W
1000	1 W	2 W	7 W	17 W
1100	1 W	2 W	7 W	17 W
1200	1 W	3 W	8 W	20 W
1300	2 W	3 W	10 W	24 W
1400	2 W	3 W	10 W	24 W
1500	2 W	3 W	11 W	27 W
1600	2 W	4 W	12 W	29 W
1700	2 W	4 W	13 W	32 W
1800	2 W	4 W	14 W	34 W
1900	2 W	5 W	15 W	36 W
2000	2 W	5 W	16 W	39 W
2100	3 W	6 W	18 W	44 W
2200	3 W	6 W	18 W	44 W
2300	3 W	6 W	19 W	46 W
2400	3 W	6 W	19 W	46 W
2500	3 W	6 W	20 W	48 W
2600	3 W	7 W	22 W	53 W
2700	4 W	7 W	24 W	58 W
2800	4 W	7 W	23 W	56 W
2900	4 W	7 W	24 W	58 W
3000	4 W	8 W	24 W	60 W
3200	4 W	8 W	26 W	65 W
3400	4 W	9 W	28 W	68 W
3600	5 W	9 W	30 W	75 W
3800	5 W	10 W	33 W	80 W
4000	5 W	11 W	35 W	87 W
4200	5 W	11 W	35 W	87 W
4400	6 W	12 W	37 W	92 W
4600	6 W	12 W	39 W	96 W
4800	6 W	13 W	41 W	101 W

* Approximate fan input powers / **When using electrothermal actuator add in the trench heater's power 3 W** / Wiring of the trench heater → page 85

FRT 0140 0425

TRENCH HEATER WITH FAN

ECO & SAFE | VOLTAGE 24

- Flats, detached houses, offices, administrative buildings
- Suitable for low-temperature systems
- High heating output
- Continuous speed control
- Quiet operation
- Common electricity consumption **2 W/m**
- Using in dry environment

Technical data

Trench heater

Height	H = **140** mm
Width	W = **425** mm
Length	L = **700–4 800** mm in step **100** mm

Heat exchanger

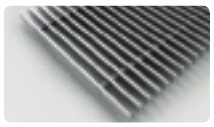
Type	**Al-Cu** lamellar
Length	L–**295** mm
Connection thread	**2×G1/2"** inner

Working conditions

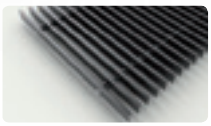
Max. temperature	**110** °C
Max. overpressure	**1** MPa (**10** bar)
Protection	IP **20**
Ambient conditions	Temp. T = **+2** to **+40** °C Humidity Rh = **20** to **70**%

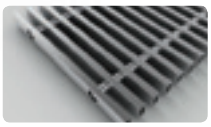
Variants

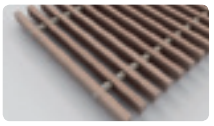
Transverse roll-up grilles


natur - anod. aluminium

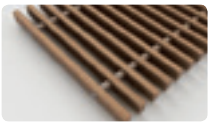

bronze - anod. aluminium


black - anod. aluminium


stainless

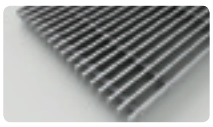

natur beech - wooden


stained beech - wooden


natur oak - wooden


stained oak - wooden

Linear non-rolling grilles


natur - anod. aluminium


bronze - anod. aluminium


black - anod. aluminium

Peripheral ledges


(more on page 8)

More possibilities and variants → page 6

Trench heater standard equipment

Trough	Galvanized steel trough with surface finish and black spray layer inside, black cover plates of connection
Heat exchanger	Al-Cu lamellar exchanger with air vent valve, black painted
Grille	Design walkable grille according the customer's choice*
Ledge	Made of anodized aluminium, type and colour according the customer's choice
Fan	Modern tangential fan with 24 V DC EC motor with high efficiency, rotors protection
Assembly elements	Leveling screws for setting up the trough, mounting brackets
Manual	Manual for the progress of work during installation and user manual
Wiring	Electrical wiring diagram of the trench heaters
Mounting board	Cover and the spacer particle board for easy installation
Package	Transport package for protection against damage during transportation and handling

*stainless grilles surcharge

Accessories per order


Room thermostat


Power supply

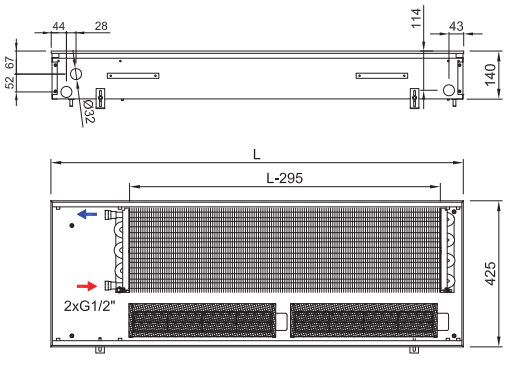

Electrothermal actuator

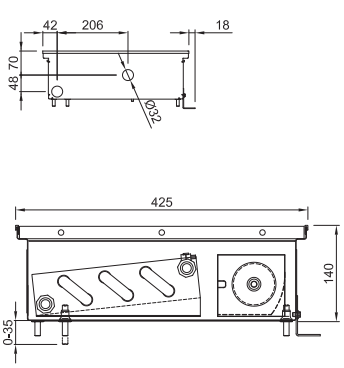

Thermostatic valve


Lockshield valve

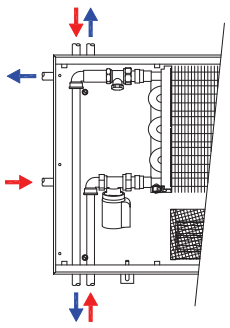
Accessories details → page 12

Technical drawing





Connection to heating system



The hydraulic parameters of the heat exchanger → page 82

Code example: FRT 0140 0425 4400 C 64 L2 L - 5

Trench heater FRT H = **140** mm, W = **425** mm, L = **4 400** mm, „**C**" Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**64**" stained oak grille, transverse, roll-up, „**L2**" peripheral ledge „L" with an overlap, bronze anodized aluminium, „**L**" water connection at the left side (when installing the heat exchanger closer to the window, fans to the room) „**5**" 24 V DC fans without controller (controller is not needed)

Trench heater heating output FRT 0140 0425

Q[W] 75/65/20 °C (ΔT=50 °C) Temperature exponent 1,1

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	757 W	1 046 W	1 373 W	1 726 W
800	1 012 W	1 399 W	1 835 W	2 307 W
900	1 267 W	1 751 W	2 297 W	2 888 W
1000	1 657 W	2 290 W	3 004 W	3 777 W
1100	1 657 W	2 290 W	3 004 W	3 777 W
1200	2 024 W	2 797 W	3 670 W	4 614 W
1300	2 279 W	3 150 W	4 132 W	5 195 W
1400	2 414 W	3 336 W	4 377 W	5 503 W
1500	2 669 W	3 689 W	4 839 W	6 084 W
1600	2 942 W	4 066 W	5 333 W	6 706 W
1700	2 942 W	4 066 W	5 333 W	6 706 W
1800	3 314 W	4 580 W	6 008 W	7 554 W
1900	3 699 W	5 112 W	6 706 W	8 432 W
2000	3 954 W	5 464 W	7 168 W	9 013 W
2100	4 209 W	5 817 W	7 630 W	9 594 W
2200	4 209 W	5 817 W	7 630 W	9 594 W
2300	4 599 W	6 356 W	8 338 W	10 483 W
2400	4 599 W	6 356 W	8 338 W	10 483 W
2500	4 966 W	6 863 W	9 003 W	11 320 W
2600	5 221 W	7 215 W	9 465 W	11 901 W
2700	5 476 W	7 568 W	9 927 W	12 482 W
2800	5 611 W	7 754 W	10 172 W	12 790 W
2900	5 884 W	8 131 W	10 667 W	13 411 W
3000	5 884 W	8 131 W	10 667 W	13 411 W
3200	6 641 W	9 178 W	12 040 W	15 137 W
3400	6 896 W	9 530 W	12 502 W	15 718 W
3600	7 541 W	10 421 W	13 671 W	17 189 W
3800	7 908 W	10 929 W	14 337 W	18 025 W
4000	8 418 W	11 633 W	15 261 W	19 187 W
4200	8 826 W	12 197 W	16 000 W	20 117 W
4400	9 198 W	12 711 W	16 675 W	20 966 W
4600	9 838 W	13 596 W	17 835 W	22 424 W
4800	10 093 W	13 948 W	18 297 W	23 005 W

Q[W] 55/45/20 °C (ΔT=30 °C)

Length L [mm]	Speed [-] / Heating output [W]			
	1	2	3	4 max.
700	432 W	596 W	783 W	984 W
800	577 W	798 W	1 046 W	1 315 W
900	722 W	998 W	1 310 W	1 647 W
1000	945 W	1 306 W	1 713 W	2 153 W
1100	945 W	1 306 W	1 713 W	2 153 W
1200	1 154 W	1 595 W	2 092 W	2 631 W
1300	1 299 W	1 796 W	2 356 W	2 962 W
1400	1 376 W	1 902 W	2 495 W	3 137 W
1500	1 522 W	2 103 W	2 759 W	3 469 W
1600	1 677 W	2 318 W	3 040 W	3 823 W
1700	1 677 W	2 318 W	3 040 W	3 823 W
1800	1 889 W	2 611 W	3 425 W	4 307 W
1900	2 109 W	2 914 W	3 823 W	4 807 W
2000	2 254 W	3 115 W	4 087 W	5 138 W
2100	2 400 W	3 316 W	4 350 W	5 470 W
2200	2 400 W	3 316 W	4 350 W	5 470 W
2300	2 622 W	3 624 W	4 754 W	5 977 W
2400	2 622 W	3 624 W	4 754 W	5 977 W
2500	2 831 W	3 913 W	5 133 W	6 454 W
2600	2 977 W	4 113 W	5 396 W	6 785 W
2700	3 122 W	4 315 W	5 660 W	7 116 W
2800	3 199 W	4 421 W	5 799 W	7 292 W
2900	3 355 W	4 636 W	6 081 W	7 646 W
3000	3 355 W	4 636 W	6 081 W	7 646 W
3200	3 786 W	5 233 W	6 864 W	8 630 W
3400	3 932 W	5 433 W	7 128 W	8 961 W
3600	4 299 W	5 941 W	7 794 W	9 800 W
3800	4 509 W	6 231 W	8 174 W	10 276 W
4000	4 799 W	6 632 W	8 701 W	10 939 W
4200	5 032 W	6 954 W	9 122 W	11 469 W
4400	5 244 W	7 247 W	9 507 W	11 953 W
4600	5 609 W	7 751 W	10 168 W	12 784 W
4800	5 754 W	7 952 W	10 431 W	13 116 W

75/65/20 °C → 75°C inlet temperature, 65°C outlet temp., 20 °C room temp. / **Output 90/70/20 °C** = ~ 1,22 x 75/65/20 °C / **Output 70/55/20 °C** = ~ 0,84 x 75/65/20 °C / Heating outputs in accordance with EN 16430 / Not listed heating outpus for lengths per 100 mm steps calculate linearly. Exact values can be found at www.isan.cz

Acoustic pressure [dB(A)]

Length L [mm]	Speed [-] / Acoustic pressure [dB(A)]			
	1	2	3	4 max.
700	20 dB(A)	26 dB(A)	36 dB(A)	47 dB(A)
800		27 dB(A)		
900	21 dB(A)			48 dB(A)
1000	22 dB(A)		37 dB(A)	
1100				
1200		28 dB(A)	38 dB(A)	49 dB(A)
1300	23 dB(A)			
1400				
1500				50 dB(A)
1600	24 dB(A)	29 dB(A)		
1700				
1800			39 dB(A)	
1900	25 dB(A)			51 dB(A)
2000		30 dB(A)	40 dB(A)	
2100				
2200				
2300	26 dB(A)			52 dB(A)
2400				
2500		31 dB(A)	41 dB(A)	
2600				
2700	27 dB(A)			53 dB(A)
2800				
2900				
3000				
3200	28 dB(A)	32 dB(A)	42 dB(A)	54 dB(A)
3400				
3600		33 dB(A)	43 dB(A)	
3800				55 dB(A)
4000		34 dB(A)		
4200				
4400		35 dB(A)	44 dB(A)	
4600				56 dB(A)
4800			45 dB(A)	56 dB(A)

Acoustic pressure level choose according to specific environment. More details on page 10

Fans input power [W]*

Length L [mm]	Speed [-] / Fans input power [W]*			
	1	2	3	4 max.
700	1 W	1 W	3 W	8 W
800	1 W	1 W	4 W	10 W
900	1 W	2 W	6 W	15 W
1000	1 W	2 W	7 W	17 W
1100	1 W	2 W	7 W	17 W
1200	1 W	3 W	8 W	20 W
1300	2 W	3 W	10 W	24 W
1400	2 W	3 W	10 W	24 W
1500	2 W	3 W	11 W	27 W
1600	2 W	4 W	12 W	29 W
1700	2 W	4 W	13 W	32 W
1800	2 W	4 W	14 W	34 W
1900	2 W	5 W	15 W	36 W
2000	2 W	5 W	16 W	39 W
2100	3 W	6 W	18 W	44 W
2200	3 W	6 W	18 W	44 W
2300	3 W	6 W	19 W	46 W
2400	3 W	6 W	19 W	46 W
2500	3 W	6 W	20 W	48 W
2600	3 W	7 W	22 W	53 W
2700	4 W	7 W	24 W	58 W
2800	4 W	7 W	23 W	56 W
2900	4 W	7 W	24 W	58 W
3000	4 W	8 W	24 W	60 W
3200	4 W	8 W	26 W	65 W
3400	4 W	9 W	28 W	68 W
3600	5 W	9 W	30 W	75 W
3800	5 W	10 W	33 W	80 W
4000	5 W	11 W	35 W	87 W
4200	5 W	11 W	35 W	87 W
4400	6 W	12 W	37 W	92 W
4600	6 W	12 W	39 W	96 W
4800	6 W	13 W	41 W	101 W

* Approximate fan input powers / **When using electrothermal actuator add in the trench heater's power 3 W** / Wiring of the trench heater → page 85

New Practic - FRZ

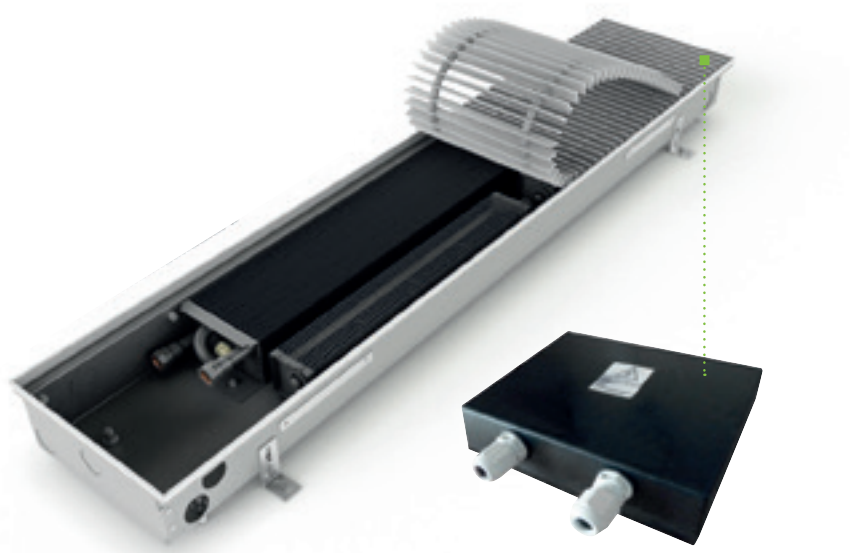
Trench heaters with fan and integrated power supply

It is advantageous to design an FRZ trench heater with an installed power supply in larger projects, where a large number of trench heaters are controlled at the same time and the cabling distances are in the tens of meters.

There is no need to size the network according to the electric energy consumption. The trench heaters are supplied by their own installed power supply. It also makes things easier in projects where it is not clear how many trench heaters will be in the individual rooms until the last moment (e.g. depending on the lease of retail space in shopping centres). Wiring can be fl exibly modifi ed, and individual units can be easily detached and complemented with a room thermostat.

Benefits

- Easy to connect a large number of trench heaters
- Connection over long distances
- Connection with IP67 electrical protection
- Negligible voltage drops on lines
- Easy integration into intelligent buildings
- Model range the same as for FRT trench heaters
- Length 900-4 800 mm in 100 mm steps



Application

- shopping centres, off ice buildings
- recreational and sports complexes, gyms, wellness centres
- conference and meeting halls
- restaurants, cafés, hotels

The range of FRZ models

Height	65 mm	80 mm	90 mm	110 mm	125 mm	140 mm
Width	-	175 mm	175 mm	175 mm	-	-
	-	200 mm	200 mm	200 mm	-	-
	250 mm	250 mm	250 mm	250 mm	250 mm	250 mm
	300 mm	300 mm	300 mm	300 mm	300 mm	300 mm
	-	-	425 mm	425 mm	425 mm	425 mm

Design

A power supply is placed in the trench heater, which converts the mains voltage of 230 V AC to a low DC voltage of 24 V DC. Connection safety is ensured by using components with IP67 electrical protection, which can even withstand submersion in water. All elements inside the trench heater - the tangential fan and electrothermal actuator – work on a safe DC voltage. It is the same for the room thermostats RTD201 and RTM201.

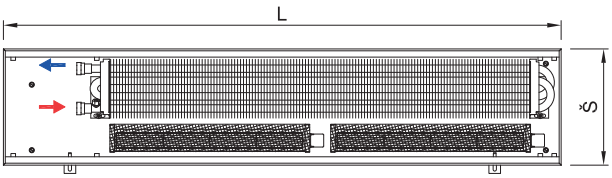
Code example: FRZ 0090 0250 2400 C 64 L2 L - 5
Trench heater with integrated power supply FRZ H = **90** mm, W = **250** mm, L = **2 400** mm, „**C**“ Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**64**“ stained oak grille, transverse, roll-up „**L2**“ peripheral ledge „L“ with an overlap, bronze anodized aluminium, „**L**“ water connection at the left side (when installing the heat exchanger closer to the window, fans to the room) „**5**“ 24 V DC fans without controller (controller is not needed)

Assembly

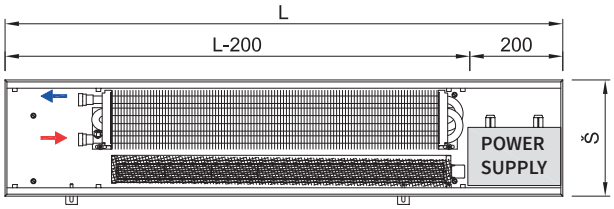
The space required for the installed power supply is 200 mm. For the same trench heater length, the installed elements are therefore identical to the 200 mm shorter FRT trench heater. The installation of the trench heater and its connection to the heating system are the same as with the standard trench heater.

The difference in the installation of interior elements in standard trench heaters and trench heaters with an installed power supply.

STANDARD TRENCH HEATER DESIGN (FRT designation)



TRENCH HEATER WITH INSTALLED POWER SUPPLY (FRZ designation)



Output

In the output tables of the New Practic FRT trench heater, consider the parameters of the 200 mm shorter trough. Because of the high coverage of the exchanger by the fans in each length, the change in performance is generally not significant. The trench heater achieves initial performance with a slight increase in the fan speed, which is enabled by the stepless thermostat.

Example of output determination for FRZ 0090 0250 trench heater, temperature gradient 75/65/20°C →

Length L [mm]	Speed [-] / Heating output [W]				
	1	2	3	4 max.	
1400	826 W	1 748 W	2 302 W	2 457 W	
1500	910 W	1 927 W	2 536 W	2 708 W	
1600	991 W	2 098 W	2 762 W	2 949 W	FRZ
1700	991 W	2 098 W	2 762 W	2 949 W	
1800	1 146 W	2 426 W	3 194 W	3 410 W	FRT
1900	1 244 W	2 633 W	3 466 W	3 701 W	
2000	1 328 W	2 811 W	3 701 W	3 952 W	

Regulation

For the proper function of the trench heaters, control and regulatory elements should be added. The room temperature is assessed by the room thermostat (RTD201, RTM201, which controls the fan speed and the flow of the heating medium through the exchanger. The flow is regulated using the electrothermal actuator Z-TS24, which opens or closes the thermostatic valve Z-TD001. The thermostatic valve is installed at the input to the heat exchanger. For the proper adjustment of the flow volume of the heating medium, it is necessary to install and set the lockshield Z-RD001 at the output of the exchanger. If more than 10 trench heaters are installed, we incorporate the relay RL10 for opening additional actuators.

Fans with EC technology are controlled by a voltage of 0 ... 10 V DC, and electrothermal actuators are controlled with a switching voltage of 24 V DC. Such control allows easy integration into buildings with BMS (Building Management System) central control. When European standard KNX is used, it is appropriate to control trench heaters with the thermostat RTD201KN, which implements KNX communication.

Regulatory elements of FRZ trench heaters

Digital thermostat **RTD201**

Manual thermostat **RTM201**

Electrothermal actuator **Z-TS24**

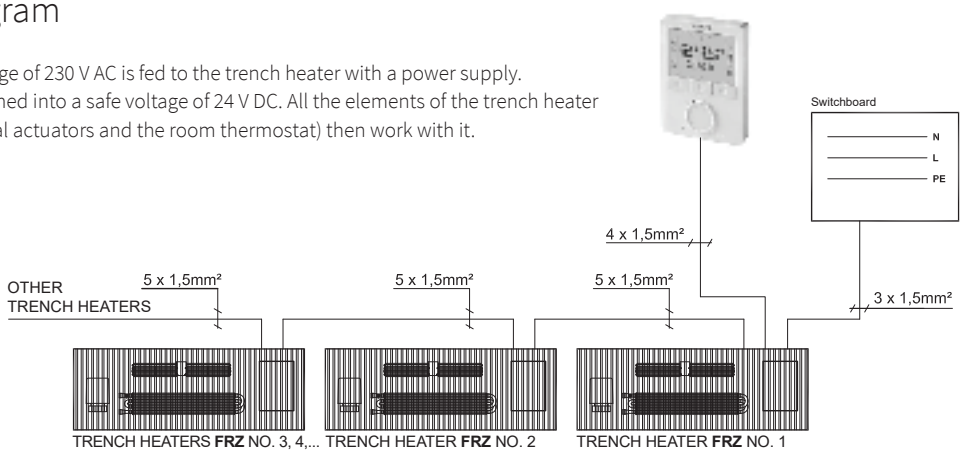
Thermostatic valve **Z-TD001**

LockShield valve **Z-RD001**

Further information about accessories may be found in FRT assortment at page 12.

Circuit diagram

An alternating voltage of 230 V AC is fed to the trench heater with a power supply. There, it is transformed into a safe voltage of 24 V DC. All the elements of the trench heater (fans, electrothermal actuators and the room thermostat) then work with it.



New Practic - FRK

trench heaters with natural convection

FRK trench heaters with natural convection are installed under glazing covering the entire area of buildings. Trench heaters form a thermal barrier to keep the flow of cold air from the window surface. A part of warm air is directed inwards and heats residential spaces. The trench heaters are normally used as additional heating combined with other types of heating. If the heat output of the trench heater is sufficient the trench heater may also be used as the main heating system. These trench heaters are also suitable to adjust temperatures in entrance halls, commercial areas and long corridors.

A great range of the heights and widths of the trench heaters gives the designer many options how to fit the model with the required output in the configuration of the floor. Necessary data are presented in data sheets for individual products.

The range of FRK models with natural convection

Height	80 mm	90 mm	110 mm	125 mm	140 mm	165 mm	200 mm
Width	-	175 mm	175 mm	175 mm	175 mm	-	-
	-	200 mm	200 mm	200 mm	200 mm	-	-
	250 mm	250 mm	250 mm	250 mm	250 mm	-	-
	300 mm	300 mm	300 mm	300 mm	300 mm	300 mm	300 mm
	-	425 mm	425 mm	425 mm	425 mm	425 mm	425 mm

Trench heater „made to measure“

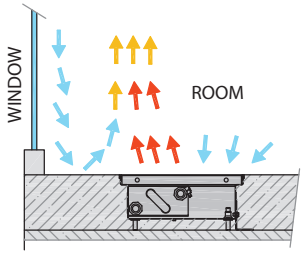
Based on the requirements of larger projects it is possible to supply a “made to measure” trench heater with adjusted height and width. Having approved the structure we will submit a protocol from a test room presenting output parameters. We also offer modifications of the trench heater for the use in humid environment, the connection of air handling piping and others. The technical documentation is first consulted with the customer and only then the production of the trench heater starts.

Working conditions

- Installation in a hot water heating system with forced circulation
- Maximal operating temperature of heating medium 110 °C
- Maximal operating overpressure 1 MPa
- Ambient temperature +2 to +40 °C
- Relative humidity of environment 20 to 70%

Placement in the floor

The trench heaters are laid in the floor so that the exchanger is closer to the window side. The vertical and horizontal distribution of temperatures in the heated room is uniform and conditions are created to provide thermal comfort.
Air flow is comparable to the heat transfer with classical heating bodies placed on the wall below windows.



Connecting the heating system

The lamellar Al-Cu heat exchangers have aluminium lamellas pressed onto a copper pipe. The heating medium flows through this pipe. The inlet and outlet of the pipe is provided with a connecting end with internal thread G1/2“. Normally the water connection of the heat exchanger is on the left side (when the heat exchanger is placed nearer the window).

We install a thermostatic valve fitted with an electrothermal actuator on the inlet of the lamellar heat exchanger. The actuator works in the opened/closed mode and controls the flow of the heating medium.

The second option is to use a mechanical thermostat with a capillary. The regulation is proportional, no electric power is necessary. However each trench heater shall be fitted with its own thermostat with a capillary. Suitable for single long heating bodies.

It is not necessary to use a thermostatic valve if the temperature of the heating medium is controlled by the heating system (e.g. equithermal system). The way of regulation is to be determined by the designer of the heating and this shall be specified in the project documentation.

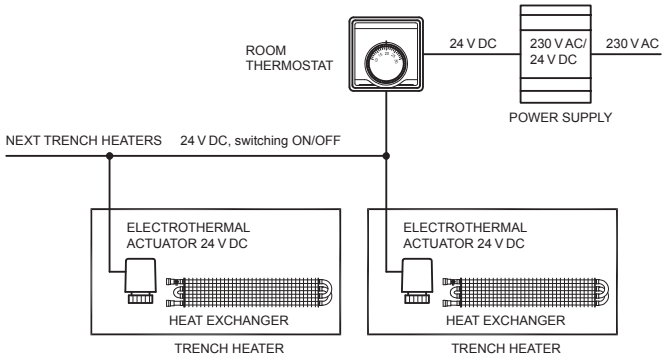
A return regulating screw connection shall be used for the outlet. This enables the incorporation of the trench heater into the heating system from the viewpoint of the hydraulic balancing. Based on the parameters of the screw connection used the designer determines the setting (corresponding to pressure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

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

Connection with an electrothermal actuator

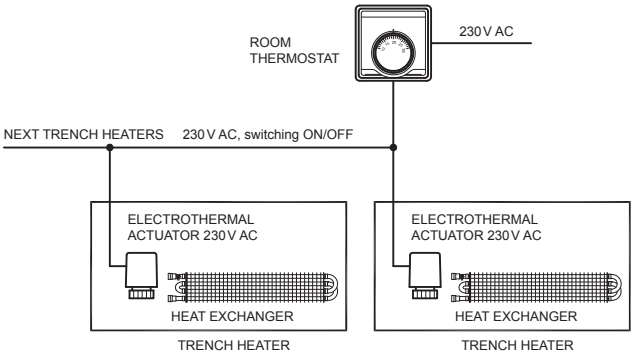
Connection of the electrothermal actuator 24 V DC

The thermostat opens and closes the flow of heating medium through the heat exchanger in dependence on temperature changes in the room. The flow is controlled with an electrothermal actuator 24 V DC. The connection will be used if there is the requirement for safe voltage of 24 V DC in the trench heater or if the trench heaters are combined with the FRT ventilator in a single room. In such case the trench heater is connected to a shared thermostat. Regulation takes place in the opened/closed mode (ON/OFF).



Connection of the electrothermal actuator 230 V AC

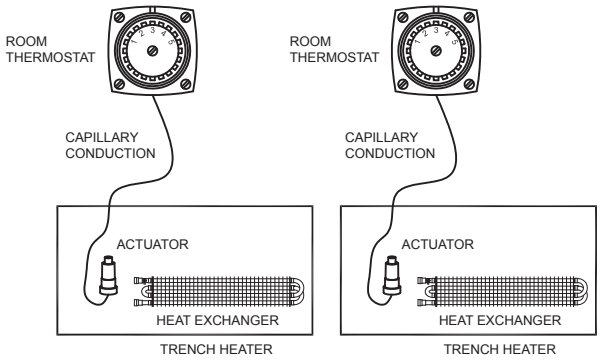
Simplified connection using the voltage of 230 V AC for trench heaters with natural convection FRK. Simple cabling, a thermal actuator with IP54 protection. Regulation takes place in the opened/closed mode (ON/OFF).



Connection with the capillary thermostat

The capillary thermostat automatically maintains a preset temperature in the room. The temperature is regulated in dependence on the user's requirements without the need for other energy sources. Maintaining the preset temperature is secured by air flowing around the thermal sensor.

The thermostatic valve will release only such amount of water into the heating body that is needed to maintain the set temperature in the room. The capillary thermostat is installed to each trench heater.



The output of the trench heater

The tables contain output data for thermal gradient 75/65/20°C, standardized output according to standard ČSN EN 16 430-2. This standard also defines the procedure for conversion to other thermal gradients. The second table presents a converted thermal gradient of 55/45/20°C and a fast approximate conversion for gradients of 90/70/20°C and 70/55/20°C.

Hydraulics

The table with hydraulic resistance is presented on page 82.

Warranty conditions

The Seller's warranty covers joint tightness, surface treatment, proclaimed values of heating capacity and loss in pressure relating to heating bodies professionally installed in a closed and sealed system in accordance with applicable standards and decrees, this all under the aspect that the used medium must only serve as the heat carrier. Other usage is excluded.
Electric heating bodies shall be professionally installed in accordance with the applicable standards. FRT trench heaters with fans, IP 20 – dry environs.

Periods of risk

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

FRK - accessories

Controls and possibly a power supply need to be added to trench heaters to secure their correct function. The temperature in the room is assessed by a special thermostat (RTD301, Z-RT001, Z-TF001), which controls the flow of heating medium through the exchanger. The thermostat Z-RT001 controls the flow via an electro-thermal actuator (Z-TS24, Z-TS230), which opens or closes a thermostatic valve (Z-TD001, Z-TE001) in the opened/closed mode. The thermostat Z-TF001 controls the thermostatic valve continuously without the need to connect it to a power supply. We install the thermostatic valve at the inlet into the exchanger.
In order to adjust the flow of the heating medium it is necessary to install and set a lockshield valve (Z-RD001, Z-RE001) at the exchanger's outlet. The entire circuit functions on the basis of safe voltage of 24 V DC, which is provided by a switched power supply 24 V DC (DR, DRP). This type of connection will especially be used in rooms with the combination of trench heaters with a fan and trench heaters without a fan – this all is connected to thermostat RTD201. The second option is the connection of Z-TS230 without the use of a power source – only for rooms with trench heaters without fans.

RTD301 PROGRAMMABLE ROOM TEMPERATURE THERMOSTAT

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

Description

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

Parameters

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

Optional accessories

- External TE40 temperature sensor
- Optional open-window sensor

Z-RT001 ROOM THERMOSTAT for flow control in trench heaters without fan

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

Parameters

- Temperature range: 10 to 30 °C
- Operating voltage: 24 V DC or 230 V AC
- The number of controlled electrothermal actuators:
  24 V DC - 10×Z-TS24
  230 V AC - 30×Z-TS230
- Protection: IP30
- Colour: white
- Dimension: 83×83×40 mm

Z-TF001 ROOM THERMOSTAT with a thermostatic head with a capillary

For the flow control in trench heaters without fan FRK

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

Parameters

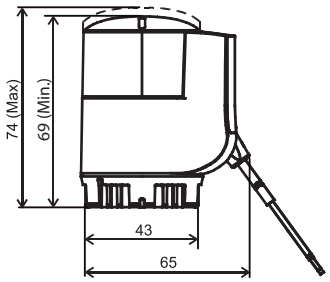
- Thermostatic radiator valve head with remote liquid-filled sensing element
- Temperature range: 9 to 26 °C, antifreeze temperature 9°C
- Mode: proportional control
- Operating temperature: without additional energy, liquid-filled sensing
- Capillara tube length: 5 m
- Body-head connection: M30×1,5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

Z-TS24/Z-TS24-5m ELECTROTHERMAL ACTUATOR 24 V DC / opened/closed function (without voltage closed)

Parameters

- Input voltage: 24 V DC
- Power consumption: at switch-on 6 VA, input at operation: 2,5 W
- Opening/closing time: 270 s
- Degree of protection: IP54 cover of the casing
- Connection to valve: M30×1,5 mm
- Total height at max. lift: 74 mm
- Colour of actuator and cabel: black RAL9005

Z-TS24 cable length 3 m
Z-TS24-5m cable length 5 m

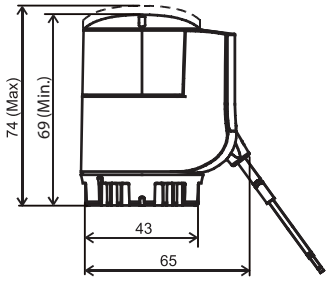


Z-TS230/Z-TS230-5m ELECTROTHERMAL ACTUATOR 230 V AC / opened/closed function (without voltage closed)

Parameters

- Input voltage: 230 V AC
- Power consumption: at switch-on 58 VA, input at operation: 2,5 W
- Opening/closing time: 210 s
- Degree of protection: IP54 cover of the casing
- Connection to valve: M30×1,5 mm
- Total height at max. lift: 74 mm
- Colour of actuator and cabel: black RAL9005

Z-TS230 cable length 3 m
Z-TS230-5m cable length 5 m



DR60-24 / DR100-24 POWER SUPPLY

It converts the voltage from 230 V AC mains to safe voltage of 24 V DC, sources with the preparation for installation on the DIN bar.

Description

- For the placement of the source provide sufficient space in the switchboard
- DR60-24 a DR100-24 may be installed in a box for wall installation
- Size the output to fit the input of installed bodies and cabling, provide 5% output reserve on the source against calculated consumption

DR60-24, 60 W
24 V DC, 78×93×56 mm

DR100-24, 100 W
24 V DC, 100×93×56 mm

KP10 BOX FOR POWER SUPPLY

Box to place under plaster, for the installation of the power supply

Parameters

- Option of installation of DR60-24 and DR100-24
- Attachment to DIN bar
- Installation under plaster
- 234×176×79 mm
- For the case when more supplies need to be installed
- When the space in the switchboard is not sufficient

Thermostatic valve direct and corner

viz příslušenství pro konvektory s přirozenou konvekcí str. 14

PR40, PR50

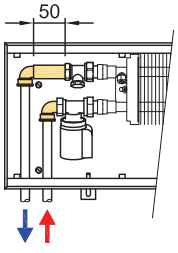
EXTENSION PIECES WITH ELBOWS

For easy connection of the trench heater to the heating system in the direction towards the room centre. The length of the extension piece and the types of elbows will set the connection points opposite the openings in the trench heater's trough.

PR50 extension piece 50 mm, 2×elbow 90°

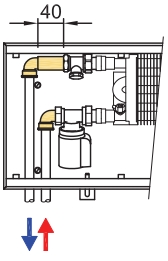
Use for models

- FRK 0080 0250
- FRK 0080 0300
- FRK 0090 0250
- FRK 0090 0300
- FRK 0090 0425



PR40 – extension piece 40 mm, 2×elbow 90°

All other models FRK, except for the ones stated with PR50



PR50
2×

PR40
1×

FRK 0080 0250/0300

TRENCH HEATERS WITH NATURAL CONVECTION

- Offices, corridors, halls, flats, winter garden
- High heating output of natural convection
- Suitable for combining with other heating systems
- Using in dry environment
- 2pipe system

Technical data

Trench heater

Height	H = **80** mm
Width	W = **250, 300** mm
Length	L = **700–4 800** mm in step **100** mm

Heat exchanger

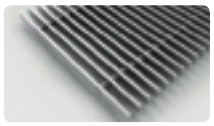
Type	**Al-Cu** lamellar
Length	L–**295** mm
Connection thread	**2×G1/2"** inner

Working conditions

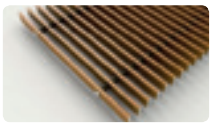
Max. temperature	**110** °C
Max. overpressure	**1** MPa (**10** bar)
Protection	IP **20**
Ambient conditions	Temp. T = **+2** to **+40** °C Humidity Rh = **20** to **70**%

Variants

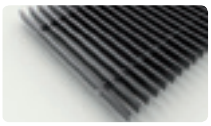
Transverse roll-up grilles



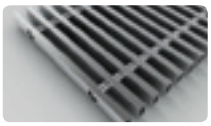
natur - anod. aluminium



bronze - anod. aluminium



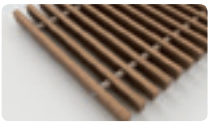
black - anod. aluminium



stainless

natur beech - wooden

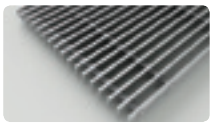
stained beech - wooden



natur oak - wooden

stained oak - wooden

Linear non-rolling grilles



natur - anod. aluminium

bronze - anod. aluminium

black - anod. aluminium

Peripheral ledges

(more on page 8)

More possibilities and variants → page 6

Trench heater heating output FRK 0080 0250/0300

Q[W] 75/65/20 °C (ΔT=50 °C)

H×W [mm]	0080 0250	0080 0300
L [mm]	n=1,369	n=1,376
700	115 W	119 W
800	144 W	148 W
900	172 W	177 W
1000	200 W	206 W
1100	229 W	236 W
1200	257 W	265 W
1300	286 W	294 W
1400	314 W	324 W
1500	343 W	353 W
1600	371 W	382 W
1700	399 W	411 W
1800	428 W	441 W
1900	456 W	470 W
2000	485 W	499 W
2100	513 W	528 W
2200	542 W	558 W
2300	570 W	587 W
2400	598 W	616 W
2500	627 W	646 W
2600	655 W	675 W
2700	684 W	704 W
2800	712 W	733 W
2900	741 W	763 W
3000	769 W	792 W
3200	826 W	850 W
3400	883 W	909 W
3600	940 W	968 W
3800	996 W	1026 W
4000	1053 W	1085 W
4200	1110 W	1143 W
4400	1167 W	1202 W
4600	1224 W	1260 W
4800	1281 W	1319 W

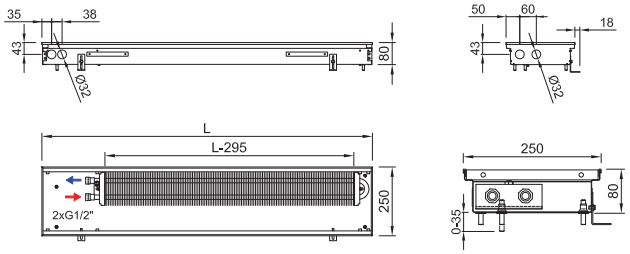
Q[W] 55/45/20 °C (ΔT=30 °C)

H×W [mm]	0080 0250	0080 0300
L [mm]	n=1,369	n=1,376
700	57 W	59 W
800	72 W	73 W
900	85 W	88 W
1000	99 W	102 W
1100	114 W	117 W
1200	128 W	131 W
1300	142 W	146 W
1400	156 W	160 W
1500	170 W	175 W
1600	184 W	189 W
1700	198 W	204 W
1800	213 W	218 W
1900	227 W	233 W
2000	241 W	247 W
2100	255 W	262 W
2200	269 W	276 W
2300	283 W	291 W
2400	297 W	305 W
2500	312 W	320 W
2600	326 W	334 W
2700	340 W	349 W
2800	354 W	363 W
2900	368 W	378 W
3000	382 W	392 W
3200	410 W	421 W
3400	439 W	450 W
3600	467 W	479 W
3800	495 W	508 W
4000	523 W	537 W
4200	552 W	566 W
4400	580 W	595 W
4600	608 W	624 W
4800	637 W	653 W

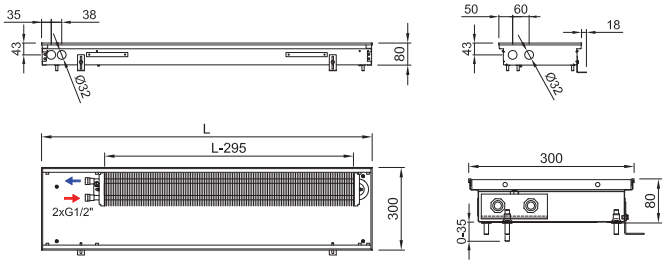
75/65/20 °C → 75°C inlet temperature, 65°C outlet temp., 20 °C room temp. / **Output 90/70/20 °C** = ~ 1,29 x 75/65/20 °C / **Output 70/55/20 °C** = ~ 0,80 x 75/65/20 °C / Heating outputs in accordance with EN 16430 / Not listed heating outpus for lengths per 100 mm steps calculate linearly. Exact values can be found at www.isan.cz

Technical drawing

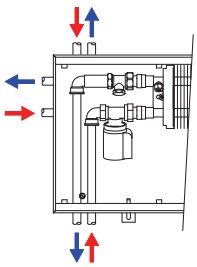
FRK 0080 0250



FRK 0080 0300



Connection to heating system



The hydraulic parameters of the heat exchanger → page 82

Trench heater standard equipment

Trough	Galvanized steel trough with surface finish and black spray layer inside, black cover plates of connection
Heat exchanger	Al-Cu lamellar exchanger with air vent valve, black painted
Grille	Design walkable grille according the customer's choice*
Ledge	Made of anodized aluminium, type and colour according the customer's choice
Assembly elements	Leveling screws for setting up the trough, mounting brackets
Manual	Manual for the progress of work during installation and user manual
Wiring	Electrical wiring diagram of the trench heaters
Mounting board	Cover and the spacer particle board for easy installation
Package	Transport package for protection against damage during transportation and handling

*stainless grilles surcharge

Accessories per order


Manual hermostat


Room thermostat with a capillary


Electrothermal actuator


Power supply


Lockshield valve


Thermostatic valve

Accessories details → page 64

Code example: FRK 0080 0250 1900 C 11 L1 L - 0
Trench heater **FRK** H = **80** mm, W = **250** mm, L = **1 900** mm, „**C**" Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**15**„ Low natural anodized aluminium grille, transverse, rigid, „**L1**" peripheral ledge „L" with an overlap, natur anodized aluminium „**L**" water connection at the left side (when installing the heat exchanger closer to the window, fans to the room), „**0**" trench heater with natural convection

FRK 0090 0175/0200/0250/0300/0425

TRENCH HEATERS WITH NATURAL CONVECTION

FRK 0090 0175

- Offices, corridors, halls, flats, winter garden
- High heating output of natural convection
- Suitable for combining with other heating systems
- Using in dry environment
- 2pipe system

Technical data

Trench heater

Height	H = **90** mm
Width	W = **175, 200, 250, 300, 425** mm
Length	L = **700–4 800** mm in step **100** mm

Heat exchanger

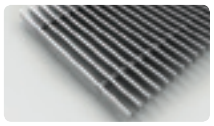
Type	**Al-Cu** lamellar
Length	L–**295** mm
Connection thread	**2×G1/2"** inner

Working conditions

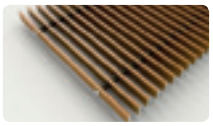
Max. temperature	**110** °C
Max. overpressure	**1** MPa (**10** bar)
Protection	IP **20**
Ambient conditions	Temp. T = **+2** to **+40** °C Humidity Rh = **20** to **70**%

Variants

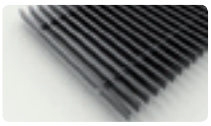
Transverse roll-up grilles



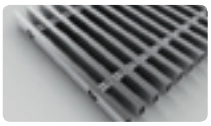
natur - anod. aluminium



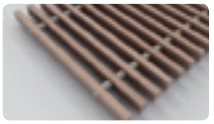
bronze - anod. aluminium



black - anod. aluminium

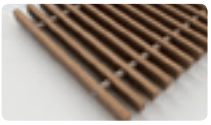


stainless



natur beech - wooden

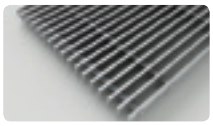
stained beech - wooden



natur oak - wooden

stained oak - wooden

Linear non-rolling grilles



natur - anod. aluminium

bronze - anod. aluminium

black - anod. aluminium

Peripheral ledges

(more on page 8)

More possibilities and variants → page 6

Trench heater heating output FRK 0090 0175/0200/0250/0300/0425

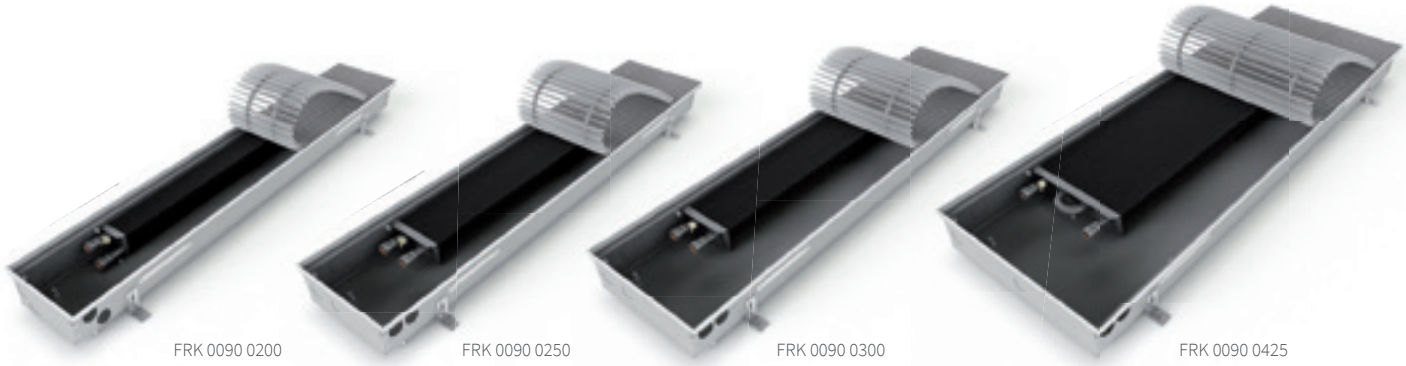
Q[W] 75/65/20 °C (ΔT=50 °C)

H×W [mm]	0090 0175	0090 0200	0090 0250	0090 0300	0090 0425
L [mm]	n=1,46	n=1,463	n=1,375	n=1,369	n=1,389
700	79 W	94 W	137 W	146 W	209 W
800	98 W	117 W	171 W	182 W	261 W
900	118 W	140 W	205 W	218 W	313 W
1000	137 W	164 W	239 W	254 W	365 W
1100	157 W	187 W	273 W	290 W	416 W
1200	176 W	210 W	306 W	326 W	468 W
1300	196 W	233 W	340 W	362 W	520 W
1400	215 W	256 W	374 W	398 W	572 W
1500	235 W	279 W	408 W	434 W	623 W
1600	254 W	303 W	442 W	470 W	675 W
1700	274 W	326 W	476 W	506 W	727 W
1800	293 W	349 W	510 W	542 W	778 W
1900	313 W	372 W	544 W	578 W	830 W
2000	332 W	395 W	577 W	614 W	882 W
2100	352 W	419 W	611 W	650 W	934 W
2200	371 W	442 W	645 W	686 W	985 W
2300	391 W	465 W	679 W	722 W	1037 W
2400	411 W	488 W	713 W	758 W	1089 W
2500	430 W	511 W	747 W	794 W	1140 W
2600	450 W	535 W	781 W	830 W	1192 W
2700	469 W	558 W	814 W	866 W	1244 W
2800	489 W	581 W	848 W	902 W	1296 W
2900	508 W	604 W	882 W	938 W	1347 W
3000	528 W	627 W	916 W	974 W	1399 W
3200	567 W	674 W	984 W	1046 W	1502 W
3400	606 W	720 W	1052 W	1118 W	1606 W
3600	645 W	766 W	1119 W	1190 W	1709 W
3800	684 W	813 W	1187 W	1262 W	1813 W
4000	723 W	859 W	1255 W	1334 W	1916 W
4200	762 W	906 W	1322 W	1406 W	2020 W
4400	801 W	952 W	1390 W	1478 W	2123 W
4600	840 W	998 W	1458 W	1550 W	2227 W
4800	879 W	1045 W	1526 W	1622 W	2330 W

Q[W] 55/45/20 °C (ΔT=30 °C)

H×W [mm]	0090 0175	0090 0200	0090 0250	0090 0300	0090 0425
L [mm]	n=1,46	n=1,463	n=1,375	n=1,369	n=1,389
700	37 W	45 W	68 W	73 W	103 W
800	46 W	55 W	85 W	90 W	128 W
900	56 W	66 W	102 W	108 W	154 W
1000	65 W	78 W	118 W	126 W	180 W
1100	74 W	89 W	135 W	144 W	205 W
1200	83 W	99 W	152 W	162 W	230 W
1300	93 W	110 W	168 W	180 W	256 W
1400	102 W	121 W	185 W	198 W	281 W
1500	111 W	132 W	202 W	216 W	306 W
1600	120 W	144 W	219 W	234 W	332 W
1700	130 W	154 W	236 W	251 W	358 W
1800	139 W	165 W	253 W	269 W	383 W
1900	148 W	176 W	270 W	287 W	408 W
2000	157 W	187 W	286 W	305 W	434 W
2100	167 W	198 W	303 W	323 W	459 W
2200	176 W	209 W	320 W	341 W	484 W
2300	185 W	220 W	336 W	359 W	510 W
2400	195 W	231 W	353 W	377 W	536 W
2500	204 W	242 W	370 W	395 W	561 W
2600	213 W	253 W	387 W	412 W	586 W
2700	222 W	264 W	403 W	430 W	612 W
2800	232 W	275 W	420 W	448 W	637 W
2900	241 W	286 W	437 W	466 W	662 W
3000	250 W	297 W	454 W	484 W	688 W
3200	269 W	319 W	488 W	520 W	739 W
3400	287 W	341 W	521 W	556 W	790 W
3600	306 W	363 W	554 W	591 W	841 W
3800	324 W	385 W	588 W	627 W	892 W
4000	343 W	407 W	622 W	663 W	942 W
4200	361 W	429 W	655 W	699 W	993 W
4400	380 W	451 W	689 W	734 W	1 044 W
4600	398 W	473 W	722 W	770 W	1 095 W
4800	417 W	495 W	756 W	806 W	1 146 W

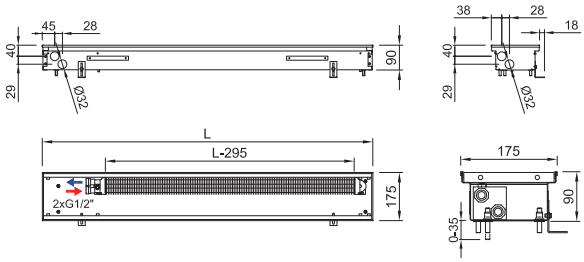
75/65/20 °C → 75°C inlet temperature, 65°C outlet temp., 20 °C room temp. / **Output 90/70/20 °C** = ~ 1,29 x 75/65/20 °C / **Output 70/55/20 °C** = ~ 0,80 x 75/65/20 °C / Heating outputs in accordance with EN 16430 / Not listed heating outpus for lengths per 100 mm steps calculate linearly. Exact values can be found at www.isan.cz



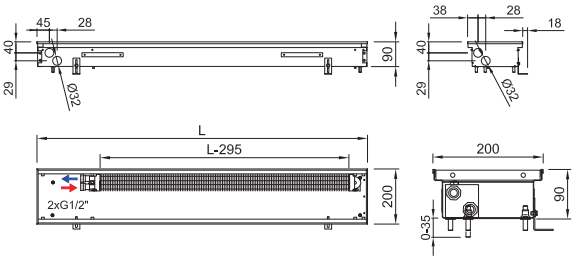
FRK 0090 0200 FRK 0090 0250 FRK 0090 0300 FRK 0090 0425

Technical drawing

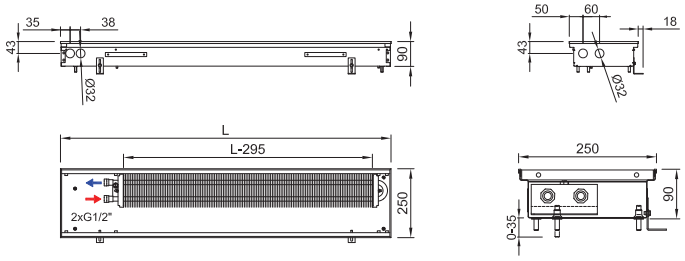
FRK 0090 0175



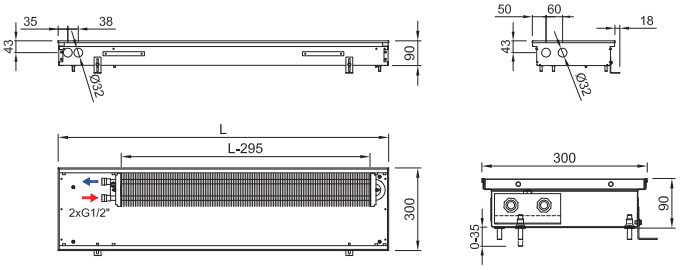
FRK 0090 0200



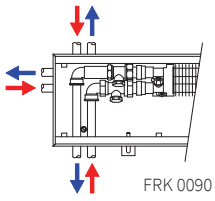
FRK 0090 0250



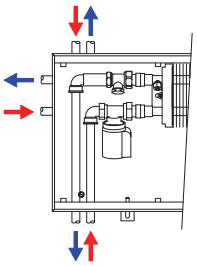
FRK 0090 0300



Connection to heating system



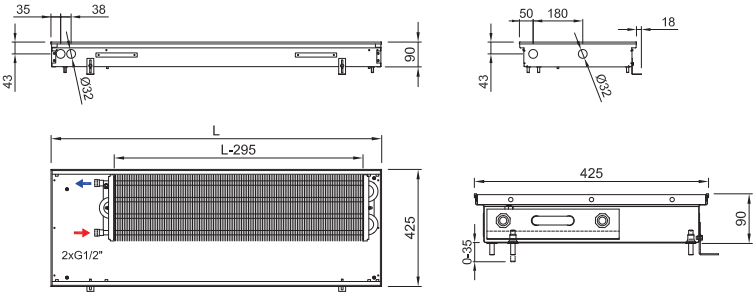
FRK 0090 0175



Electrothermal actuator can't be installed in the body of the trench heater due to limited internal space.

The hydraulic parameters of the heat exchanger → page 82

FRK 0090 0425



Trench heater standard equipment

Trough	Galvanized steel trough with surface finish and black spray layer inside, black cover plates of connection
Heat exchanger	Al-Cu lamellar exchanger with air vent valve, black painted
Grille	Design walkable grille according the customer's choice*
Ledge	Made of anodized aluminium, type and colour according the customer's choice
Assembly elements	Leveling screws for setting up the trough, mounting brackets
Manual	Manual for the progress of work during installation and user manual
Wiring	Electrical wiring diagram of the trench heaters
Mounting board	Cover and the spacer particle board for easy installation
Package	Transport package for protection against damage during transportation and handling

*stainless grilles surcharge

Accessories per order


Manual hermostat


Room thermostat with a capillary


Electrothermal actuator


Power supply


Lockshield valve


Thermostatic valve

Accessories details → page 64

Code example: FRK 0090 0300 0900 C 12 J1 L - 0
Trench heater **FRK** H = **90** mm, W = **300** mm, L = **900** mm, „**C**" Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**12**" natur anodized aluminium grille, linear, rigid „**J1**" peripheral ledge „J", natur anodized aluminium, „**L**" water connection at the left side (when installing the heat exchanger closer to the window, fans to the room), „**0**" trench heater with natural convection

FRK 0110 0175/0200/0250/0300/0425

TRENCH HEATERS WITH NATURAL CONVECTION


FRK 0110 0175

- Offices, corridors, halls, flats, winter garden
- High heating output of natural convection
- Suitable for combining with other heating systems
- Using in dry environment
- 2pipe system

Technical data

Trench heater

Height	H = **110** mm
Width	W = **175, 200, 250, 300, 425** mm
Length	L = **700–4 800** mm in step **100** mm

Heat exchanger

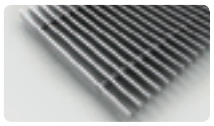
Type	**Al-Cu** lamellar
Length	L–**295** mm
Connection thread	**2×G1/2"** inner

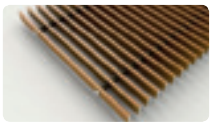
Working conditions

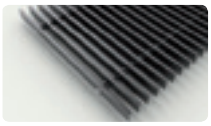
Max. temperature	**110** °C
Max. overpressure	**1** MPa (**10** bar)
Protection	IP **20**
Ambient conditions	Temp. T = **+2** to **+40** °C Humidity Rh = **20** to **70**%

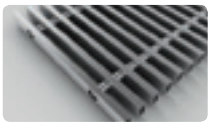
Variants

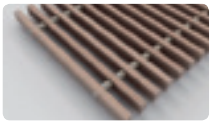
Transverse roll-up grilles


natur - anod. aluminium

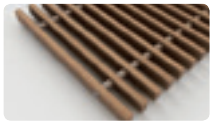

bronze - anod. aluminium


black - anod. aluminium


stainless

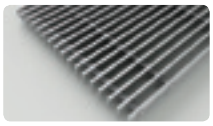

natur beech - wooden


stained beech - wooden


natur oak - wooden


stained oak - wooden

Linear non-rolling grilles


natur - anod. aluminium


bronze - anod. aluminium


black - anod. aluminium

Peripheral ledges


(more on page 8)

More possibilities and variants → page 6

Trench heater heating output FRK 0110 0175/0200/0250/0300/0425

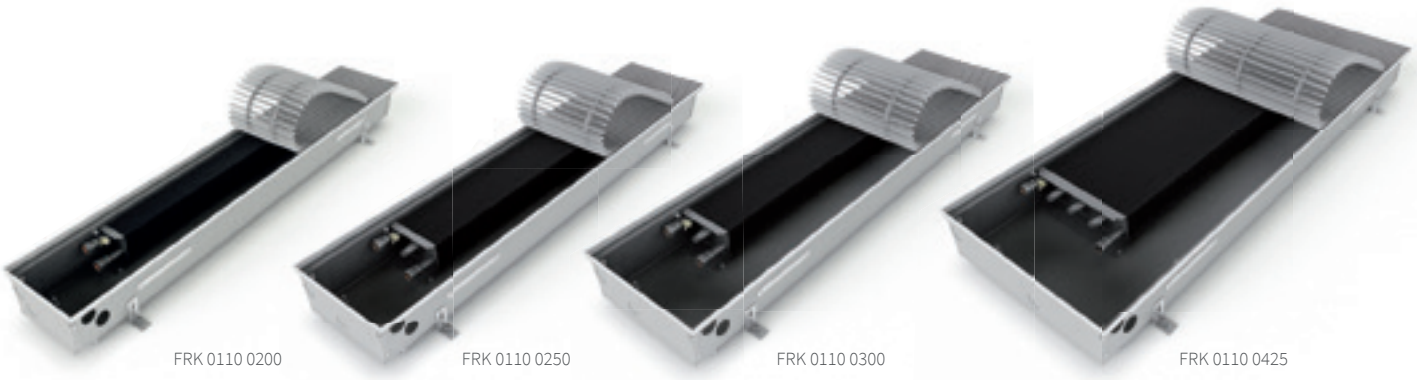
Q[W] 75/65/20 °C (ΔT=50 °C)

H×W [mm]	0110 0175	0110 0200	0110 0250	0110 0300	0110 0425
L [mm]	n=1,479	n=1,479	n=1,46	n=1,468	n=1,403
700	103 W	110 W	166 W	182 W	245 W
800	129 W	137 W	207 W	227 W	305 W
900	155 W	164 W	248 W	272 W	365 W
1000	180 W	191 W	289 W	316 W	425 W
1100	206 W	218 W	330 W	361 W	486 W
1200	232 W	246 W	371 W	406 W	546 W
1300	257 W	273 W	413 W	451 W	607 W
1400	283 W	300 W	454 W	496 W	667 W
1500	308 W	327 W	495 W	541 W	727 W
1600	334 W	354 W	536 W	586 W	788 W
1700	359 W	381 W	577 W	631 W	848 W
1800	385 W	408 W	618 W	676 W	908 W
1900	411 W	435 W	659 W	720 W	969 W
2000	436 W	463 W	700 W	765 W	1 029 W
2100	462 W	490 W	741 W	810 W	1 089 W
2200	487 W	517 W	782 W	855 W	1 150 W
2300	513 W	544 W	823 W	900 W	1 210 W
2400	539 W	571 W	864 W	945 W	1 270 W
2500	564 W	598 W	905 W	990 W	1 331 W
2600	590 W	625 W	946 W	1 035 W	1 391 W
2700	615 W	653 W	987 W	1 080 W	1 451 W
2800	641 W	680 W	1 028 W	1 124 W	1 512 W
2900	667 W	707 W	1 069 W	1 169 W	1 572 W
3000	692 W	734 W	1 110 W	1 214 W	1 632 W
3200	743 W	788 W	1 192 W	1 304 W	1 753 W
3400	794 W	842 W	1 275 W	1 394 W	1 874 W
3600	846 W	897 W	1 357 W	1 484 W	1 995 W
3800	897 W	951 W	1 439 W	1 573 W	2 115 W
4000	948 W	1 005 W	1 521 W	1 663 W	2 236 W
4200	999 W	1 060 W	1 603 W	1 753 W	2 357 W
4400	1 050 W	1 114 W	1 685 W	1 843 W	2 477 W
4600	1 101 W	1 168 W	1 767 W	1 932 W	2 598 W
4800	1 153 W	1 222 W	1 849 W	2 022 W	2 719 W

Q[W] 55/45/20 °C (ΔT=30 °C)

H×W [mm]	0110 0175	0110 0200	0110 0250	0110 0300	0110 0425
L [mm]	n=1,479	n=1,479	n=1,46	n=1,468	n=1,403
700	48 W	52 W	79 W	86 W	120 W
800	61 W	64 W	98 W	107 W	149 W
900	73 W	77 W	118 W	129 W	178 W
1000	85 W	90 W	137 W	149 W	208 W
1100	97 W	102 W	157 W	171 W	237 W
1200	109 W	116 W	176 W	192 W	267 W
1300	121 W	128 W	196 W	213 W	297 W
1400	133 W	141 W	215 W	234 W	326 W
1500	145 W	154 W	235 W	256 W	355 W
1600	157 W	166 W	254 W	277 W	385 W
1700	169 W	179 W	274 W	298 W	414 W
1800	181 W	192 W	293 W	319 W	444 W
1900	193 W	204 W	313 W	340 W	473 W
2000	205 W	217 W	332 W	361 W	503 W
2100	217 W	230 W	351 W	383 W	532 W
2200	229 W	243 W	371 W	404 W	562 W
2300	241 W	256 W	390 W	425 W	591 W
2400	253 W	268 W	410 W	446 W	620 W
2500	265 W	281 W	429 W	468 W	650 W
2600	277 W	294 W	449 W	489 W	679 W
2700	289 W	307 W	468 W	510 W	709 W
2800	301 W	319 W	488 W	531 W	739 W
2900	313 W	332 W	507 W	552 W	768 W
3000	325 W	345 W	526 W	574 W	797 W
3200	349 W	370 W	565 W	616 W	856 W
3400	373 W	395 W	605 W	659 W	915 W
3600	398 W	421 W	644 W	701 W	975 W
3800	421 W	447 W	683 W	743 W	1 033 W
4000	445 W	472 W	721 W	786 W	1 092 W
4200	469 W	498 W	760 W	828 W	1 151 W
4400	493 W	523 W	799 W	871 W	1 210 W
4600	517 W	549 W	838 W	913 W	1 269 W
4800	542 W	574 W	877 W	955 W	1 328 W

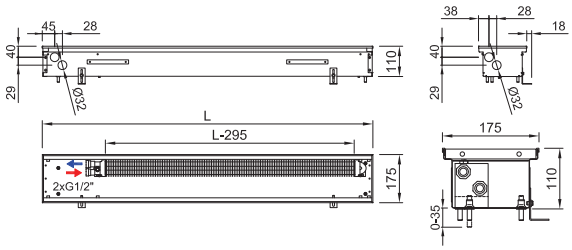
75/65/20 °C → 75°C inlet temperature, 65°C outlet temp., 20 °C room temp. / **Output 90/70/20 °C** = ~ 1,29 x 75/65/20 °C / **Output 70/55/20 °C** = ~ 0,80 x 75/65/20 °C / Heating outputs in accordance with EN 16430 / Not listed heating outpus for lengths per 100 mm steps calculate linearly. Exact values can be found at www.isan.cz



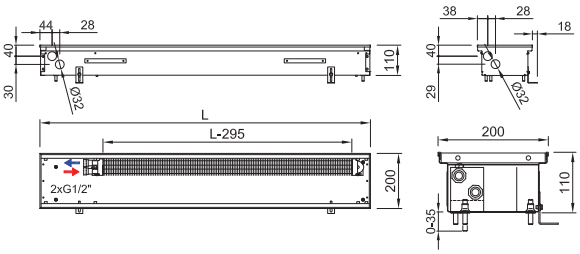
FRK 0110 0200 FRK 0110 0250 FRK 0110 0300 FRK 0110 0425

Technical drawing

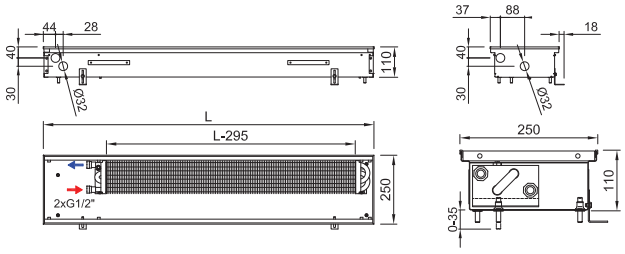
FRK 0110 0175



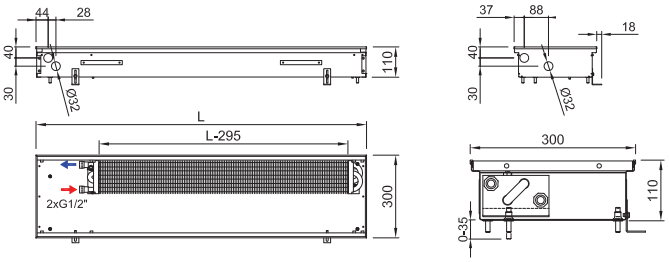
FRK 0110 0200



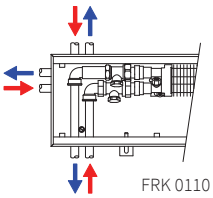
FRK 0110 0250



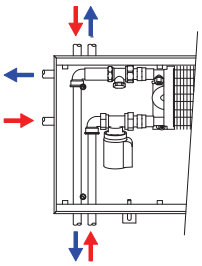
FRK 0110 0300



Connection to heating system



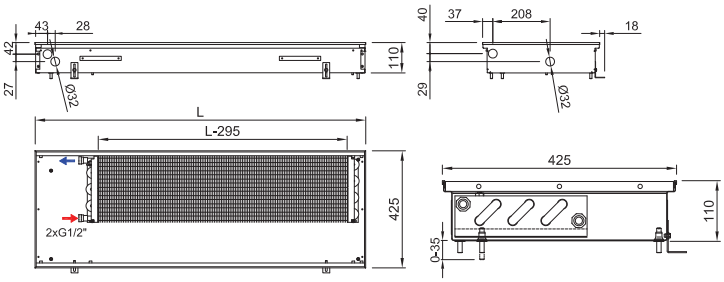
FRK 0110 0175



Electrothermal actuator can't be installed in the body of the trench heater due to limited internal space.

The hydraulic parameters of the heat exchanger → page 82

FRK 0110 0425



Trench heater standard equipment

Trough	Galvanized steel trough with surface finish and black spray layer inside, black cover plates of connection
Heat exchanger	Al-Cu lamellar exchanger with air vent valve, black painted
Grille	Design walkable grille according the customer's choice*
Ledge	Made of anodized aluminium, type and colour according the customer's choice
Assembly elements	Leveling screws for setting up the trough, mounting brackets
Manual	Manual for the progress of work during installation and user manual
Wiring	Electrical wiring diagram of the trench heaters
Mounting board	Cover and the spacer particle board for easy installation
Package	Transport package for protection against damage during transportation and handling

*stainless grilles surcharge

Accessories per order

Manual hermostat

Room thermostat with a capillary

Electrothermal actuator

Power supply

Lockshield valve

Thermostatic valve

Accessories details → page 64

Code example: FRK 0110 0175 2200 C 21 J2 R - 0
Trench heater **FRK** H = **110** mm, W = **175** mm, L = **2 200** mm, „**C**" Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**21**" bronze anodized aluminium grille, transverse, roll-up, „**J2**" peripheral ledge „J", bronze anodized aluminium, „**R**" water connection at the right side (when installing the heat exchanger closer to the window, fans to the room), „**0**" trench heater with natural convection

FRK 0125 0175/0200/0250/0300/0425

TRENCH HEATERS WITH NATURAL CONVECTION

- Offices, corridors, halls, flats, winter garden
- High heating output of natural convection
- Suitable for combining with other heating systems
- Using in dry environment
- 2pipe system

FRK 0125 0175

Technical data

Trench heater

Height	H = **125** mm
Width	W = **175, 200, 250, 300, 425** mm
Length	L = **700–4 800** mm in step **100** mm

Heat exchanger

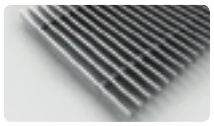
Type	**Al-Cu** lamellar
Length	L–**295** mm
Connection thread	**2×G1/2"** inner

Working conditions

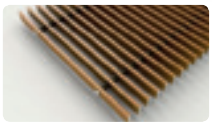
Max. temperature	**110** °C
Max. overpressure	**1** MPa (**10** bar)
Protection	IP **20**
Ambient conditions	Temp. T = **+2** to **+40** °C Humidity Rh = **20** to **70**%

Variants

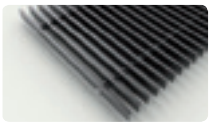
Transverse roll-up grilles



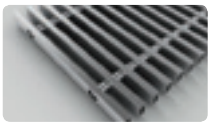
natur - anod. aluminium



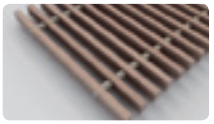
bronze - anod. aluminium



black - anod. aluminium

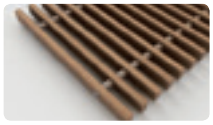


stainless



natur beech - wooden

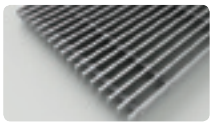
stained beech - wooden



natur oak - wooden

stained oak - wooden

Linear non-rolling grilles



natur - anod. aluminium

bronze - anod. aluminium

black - anod. aluminium

Peripheral ledges

(more on page 8)

More possibilities and variants → page 6

Trench heater heating output FRK 0125 0175/0200/0250/0300/0425

Q[W] 75/65/20 °C (ΔT=50 °C)

H×W [mm]	0125 0175	0125 0200	0125 0250	0125 0300	0125 0425
L [mm]	n=1,483	n=1,485	n=1,457	n=1,369	n=1,403
700	107 W	112 W	188 W	213 W	319 W
800	134 W	140 W	235 W	266 W	398 W
900	161 W	168 W	281 W	319 W	477 W
1000	187 W	196 W	328 W	372 W	556 W
1100	214 W	224 W	374 W	424 W	635 W
1200	240 W	251 W	421 W	477 W	714 W
1300	267 W	279 W	467 W	530 W	793 W
1400	293 W	307 W	514 W	583 W	872 W
1500	320 W	335 W	560 W	635 W	951 W
1600	346 W	363 W	607 W	688 W	1 030 W
1700	373 W	390 W	653 W	741 W	1 109 W
1800	399 W	418 W	700 W	793 W	1 187 W
1900	426 W	446 W	746 W	846 W	1 266 W
2000	452 W	474 W	793 W	899 W	1 345 W
2100	479 W	501 W	839 W	952 W	1 424 W
2200	505 W	529 W	886 W	1 004 W	1 503 W
2300	532 W	557 W	932 W	1 057 W	1 582 W
2400	559 W	585 W	978 W	1 110 W	1 661 W
2500	585 W	613 W	1 025 W	1 162 W	1 740 W
2600	612 W	640 W	1 071 W	1 215 W	1 819 W
2700	638 W	668 W	1 118 W	1 268 W	1 898 W
2800	665 W	696 W	1 164 W	1 321 W	1 977 W
2900	691 W	724 W	1 211 W	1 373 W	2 055 W
3000	718 W	751 W	1 257 W	1 426 W	2 134 W
3200	771 W	807 W	1 350 W	1 531 W	2 292 W
3400	824 W	863 W	1 443 W	1 637 W	2 450 W
3600	877 W	918 W	1 536 W	1 742 W	2 608 W
3800	930 W	974 W	1 629 W	1 848 W	2 766 W
4000	983 W	1 029 W	1 722 W	1 953 W	2 923 W
4200	1 036 W	1 085 W	1 815 W	2 059 W	3 081 W
4400	1 089 W	1 140 W	1 908 W	2 164 W	3 239 W
4600	1 142 W	1 196 W	2 001 W	2 270 W	3 397 W
4800	1 195 W	1 252 W	2 094 W	2 375 W	3 555 W

Q[W] 55/45/20 °C (ΔT=30 °C)

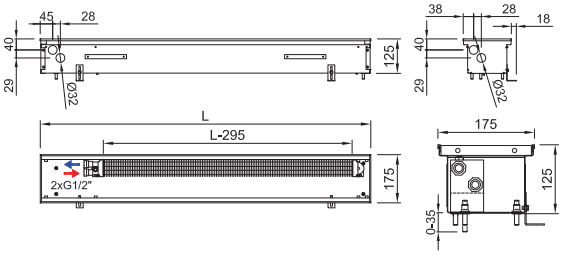
H×W [mm]	0125 0175	0125 0200	0125 0250	0125 0300	0125 0425
L [mm]	n=1,483	n=1,485	n=1,457	n=1,369	n=1,403
700	50 W	52 W	89 W	106 W	156 W
800	63 W	66 W	112 W	132 W	194 W
900	75 W	79 W	134 W	159 W	233 W
1000	88 W	92 W	156 W	185 W	272 W
1100	100 W	105 W	178 W	211 W	310 W
1200	112 W	118 W	200 W	237 W	349 W
1300	125 W	131 W	222 W	263 W	387 W
1400	137 W	144 W	244 W	290 W	426 W
1500	150 W	157 W	266 W	316 W	464 W
1600	162 W	170 W	288 W	342 W	503 W
1700	175 W	183 W	310 W	368 W	542 W
1800	187 W	196 W	333 W	394 W	580 W
1900	200 W	209 W	354 W	420 W	618 W
2000	212 W	222 W	377 W	447 W	657 W
2100	225 W	235 W	399 W	473 W	695 W
2200	237 W	248 W	421 W	499 W	734 W
2300	249 W	261 W	443 W	525 W	773 W
2400	262 W	274 W	465 W	552 W	811 W
2500	274 W	287 W	487 W	577 W	850 W
2600	287 W	300 W	509 W	604 W	888 W
2700	299 W	313 W	531 W	630 W	927 W
2800	312 W	326 W	553 W	656 W	966 W
2900	324 W	339 W	575 W	682 W	1 004 W
3000	337 W	352 W	597 W	709 W	1 042 W
3200	361 W	378 W	641 W	761 W	1 119 W
3400	386 W	404 W	686 W	814 W	1 197 W
3600	411 W	430 W	730 W	866 W	1 274 W
3800	436 W	456 W	774 W	918 W	1 351 W
4000	461 W	482 W	818 W	971 W	1 428 W
4200	486 W	508 W	862 W	1 023 W	1 505 W
4400	510 W	534 W	907 W	1 075 W	1 582 W
4600	535 W	560 W	951 W	1 128 W	1 659 W
4800	560 W	586 W	995 W	1 180 W	1 736 W

75/65/20 °C → 75°C inlet temperature, 65°C outlet temp., 20 °C room temp. / **Output 90/70/20 °C** = ~ 1,29 x 75/65/20 °C / **Output 70/55/20 °C** = ~ 0,80 x 75/65/20 °C / Heating outputs in accordance with EN 16430 / Not listed heating outpus for lengths per 100 mm steps calculate linearly. Exact values can be found at www.isan.cz

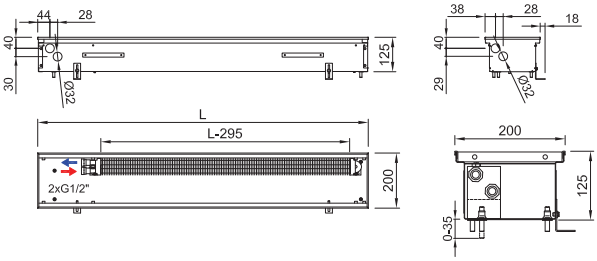
FRK 0125 0200 FRK 0125 0250 FRK 0125 0300 FRK 0125 0425

Technical drawing

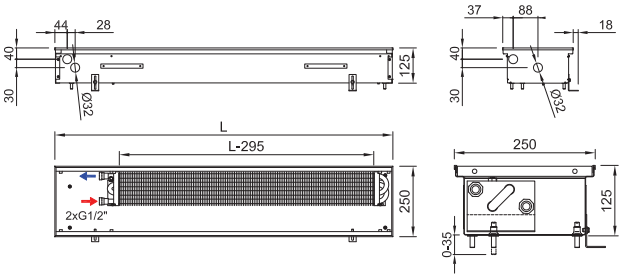
FRK 0125 0175



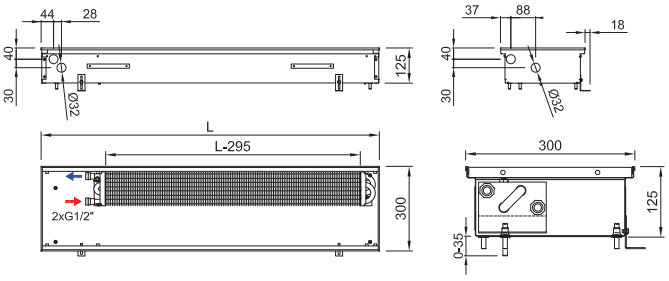
FRK 0125 0200



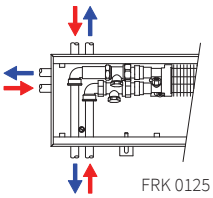
FRK 0125 0250



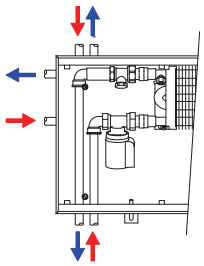
FRK 0125 0300



Connection to heating system



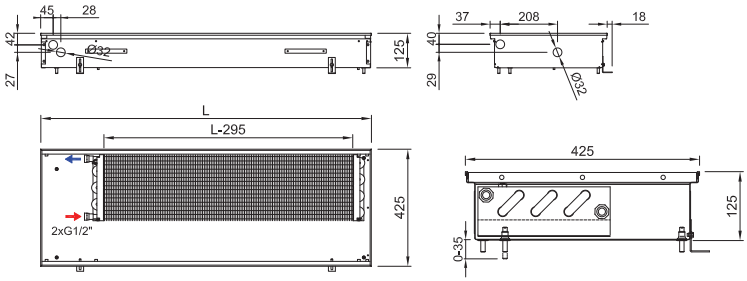
FRK 0125 0175



Electrothermal actuator can't be installed in the body of the trench heater due to limited internal space.

The hydraulic parameters of the heat exchanger → page 82

FRK 0125 0425



Trench heater standard equipment

Trough	Galvanized steel trough with surface finish and black spray layer inside, black cover plates of connection
Heat exchanger	Al-Cu lamellar exchanger with air vent valve, black painted
Grille	Design walkable grille according the customer's choice*
Ledge	Made of anodized aluminium, type and colour according the customer's choice
Assembly elements	Leveling screws for setting up the trough, mounting brackets
Manual	Manual for the progress of work during installation and user manual
Wiring	Electrical wiring diagram of the trench heaters
Mounting board	Cover and the spacer particle board for easy installation
Package	Transport package for protection against damage during transportation and handling

*stainless grilles surcharge

Accessories per order

Manual hermostat

Room thermostat with a capillary

Electrothermal actuator

Power supply

Lockshield valve

Thermostatic valve

Accessories details → page 64

Code example: FRK 0125 0250 1500 C 62 L2 L - 0
Trench heater **FRK** H = **125** mm, W = **250** mm, L = **1 500** mm, „**C**" Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**62**" stained beech grille, transverse, roll-up, „**L2**" peripheral ledge „L" with an overlap, bronze anodized aluminium, „**L**" water connection at the left side (when installing the heat exchanger closer to the window, fans to the room), „**0**" trench heater with natural convection

FRK 0140 0175/0200/0250/0300/0425

TRENCH HEATERS WITH NATURAL CONVECTION


FRK 0140 0175

- Offices, corridors, halls, flats, winter garden
- High heating output of natural convection
- Suitable for combining with other heating systems
- Using in dry environment
- 2pipe system

Technical data

Trench heater

Height	H = **140** mm
Width	W = **175, 200, 250, 300, 425** mm
Length	L = **700–4 800** mm in step **100** mm

Heat exchanger

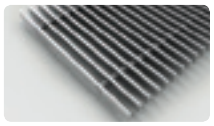
Type	**Al-Cu** lamellar
Length	L–**295** mm
Connection thread	**2×G1/2"** inner

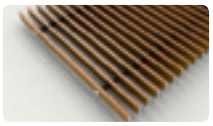
Working conditions

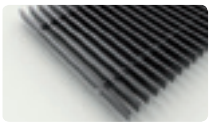
Max. temperature	**110** °C
Max. overpressure	**1** MPa (**10** bar)
Protection	IP **20**
Ambient conditions	Temp. T = **+2** to **+40** °C Humidity Rh = **20** to **70**%

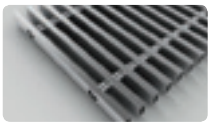
Variants

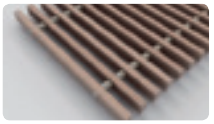
Transverse roll-up grilles


natur - anod. aluminium

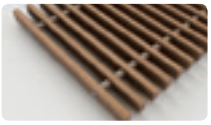

bronze - anod. aluminium


black - anod. aluminium


stainless

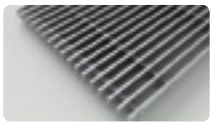

natur beech - wooden


stained beech - wooden


natur oak - wooden


stained oak - wooden

Linear non-rolling grilles


natur - anod. aluminium


bronze - anod. aluminium


black - anod. aluminium

Peripheral ledges


(more on page 8)

More possibilities and variants → page 6

Trench heater heating output FRK 0140 0175/0200/0250/0300/0425

Q[W] 75/65/20 °C (ΔT=50 °C)

H×W [mm]	0140 0175	0140 0200	0140 0250	0140 0300	0140 0425
L [mm]	n=1,495	n=1,496	n=1,443	n=1,453	n=1,403
700	111 W	116 W	200 W	223 W	354 W
800	138 W	145 W	249 W	278 W	441 W
900	165 W	174 W	298 W	333 W	528 W
1000	192 W	203 W	347 W	389 W	615 W
1100	220 W	231 W	396 W	444 W	703 W
1200	247 W	260 W	446 W	499 W	790 W
1300	274 W	289 W	495 W	554 W	877 W
1400	301 W	317 W	544 W	609 W	964 W
1500	329 W	346 W	593 W	664 W	1 052 W
1600	356 W	375 W	642 W	719 W	1 139 W
1700	383 W	404 W	692 W	774 W	1 226 W
1800	411 W	432 W	741 W	829 W	1 314 W
1900	438 W	461 W	790 W	885 W	1 401 W
2000	465 W	490 W	839 W	940 W	1 488 W
2100	492 W	519 W	889 W	995 W	1 575 W
2200	520 W	547 W	938 W	1 050 W	1 663 W
2300	547 W	576 W	987 W	1 105 W	1 750 W
2400	574 W	605 W	1 036 W	1 160 W	1 837 W
2500	602 W	633 W	1 085 W	1 215 W	1 925 W
2600	629 W	662 W	1 135 W	1 270 W	2 012 W
2700	656 W	691 W	1 184 W	1 325 W	2 099 W
2800	683 W	720 W	1 233 W	1 381 W	2 186 W
2900	711 W	748 W	1 282 W	1 436 W	2 274 W
3000	738 W	777 W	1 332 W	1 491 W	2 361 W
3200	793 W	835 W	1 430 W	1 601 W	2 536 W
3400	847 W	892 W	1 528 W	1 711 W	2 710 W
3600	902 W	949 W	1 627 W	1 821 W	2 885 W
3800	956 W	1 007 W	1 725 W	1 932 W	3 059 W
4000	1 011 W	1 064 W	1 824 W	2 042 W	3 234 W
4200	1 065 W	1 122 W	1 922 W	2 152 W	3 408 W
4400	1 120 W	1 179 W	2 021 W	2 262 W	3 583 W
4600	1 174 W	1 237 W	2 119 W	2 373 W	3 757 W
4800	1 229 W	1 294 W	2 218 W	2 483 W	3 932 W

Q[W] 55/45/20 °C (ΔT=30 °C)

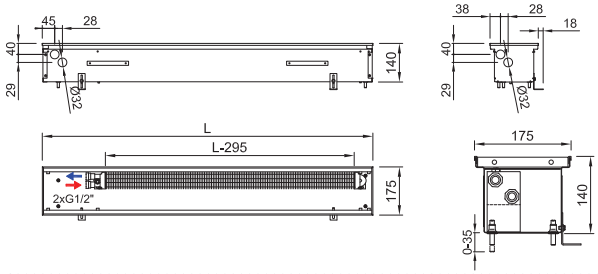
H×W [mm]	0140 0175	0140 0200	0140 0250	0140 0300	0140 0425
L [mm]	n=1,495	n=1,496	n=1,443	n=1,453	n=1,403
700	52 W	54 W	96 W	106 W	173 W
800	64 W	68 W	119 W	132 W	215 W
900	77 W	81 W	143 W	159 W	258 W
1000	89 W	95 W	166 W	185 W	300 W
1100	103 W	108 W	189 W	211 W	343 W
1200	115 W	121 W	213 W	238 W	386 W
1300	128 W	135 W	237 W	264 W	428 W
1400	140 W	148 W	260 W	290 W	471 W
1500	153 W	161 W	284 W	316 W	514 W
1600	166 W	175 W	307 W	342 W	556 W
1700	179 W	188 W	331 W	368 W	599 W
1800	192 W	201 W	355 W	395 W	642 W
1900	204 W	215 W	378 W	421 W	684 W
2000	217 W	228 W	401 W	447 W	727 W
2100	229 W	242 W	425 W	474 W	769 W
2200	242 W	255 W	449 W	500 W	812 W
2300	255 W	268 W	472 W	526 W	854 W
2400	268 W	282 W	496 W	552 W	897 W
2500	281 W	295 W	519 W	578 W	940 W
2600	293 W	308 W	543 W	604 W	982 W
2700	306 W	322 W	567 W	631 W	1 025 W
2800	318 W	335 W	590 W	657 W	1 067 W
2900	331 W	348 W	613 W	684 W	1 110 W
3000	344 W	362 W	637 W	710 W	1 153 W
3200	370 W	389 W	684 W	762 W	1 238 W
3400	395 W	415 W	731 W	814 W	1 323 W
3600	420 W	442 W	778 W	867 W	1 409 W
3800	446 W	469 W	825 W	920 W	1 494 W
4000	471 W	495 W	873 W	972 W	1 579 W
4200	496 W	522 W	920 W	1 024 W	1 664 W
4400	522 W	549 W	967 W	1 077 W	1 749 W
4600	547 W	576 W	1 014 W	1 129 W	1 834 W
4800	573 W	603 W	1 061 W	1 182 W	1 920 W

75/65/20 °C → 75°C inlet temperature, 65°C outlet temp., 20 °C room temp. / **Output 90/70/20 °C** = ~ 1,29 x 75/65/20 °C / **Output 70/55/20 °C** = ~ 0,80 x 75/65/20 °C / Heating outputs in accordance with EN 16430 / Not listed heating outpus for lengths per 100 mm steps calculate linearly. Exact values can be found at www.isan.cz

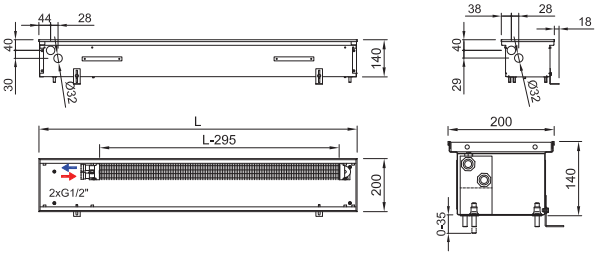
FRK 0140 0200 FRK 0140 0250 FRK 0140 0300 FRK 0140 0425

Technical drawing

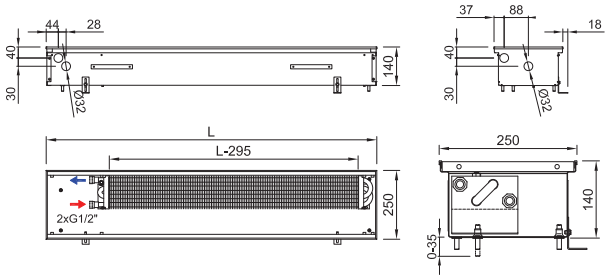
FRK 0140 0175



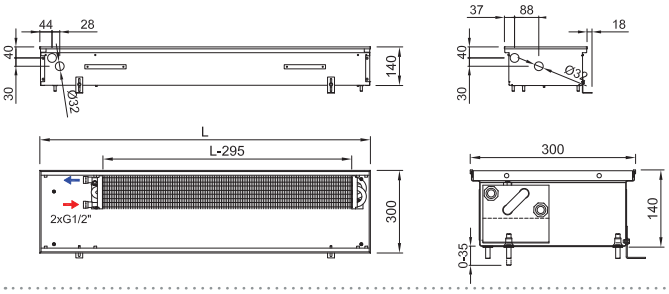
FRK 0140 0200



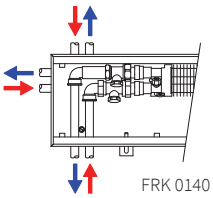
FRK 0140 0250



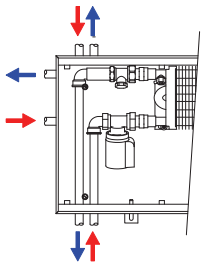
FRK 0140 0300



Connection to heating system



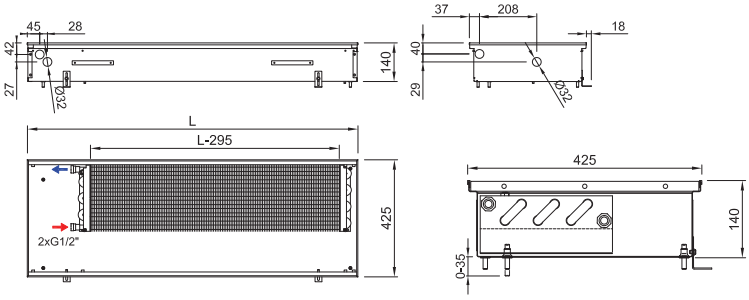
FRK 0140 0175



Electrothermal actuator can't be installed in the body of the trench heater due to limited internal space.

The hydraulic parameters of the heat exchanger → page 82

FRK 0140 0425



Trench heater standard equipment

Trough	Galvanized steel trough with surface finish and black spray layer inside, black cover plates of connection
Heat exchanger	Al-Cu lamellar exchanger with air vent valve, black painted
Grille	Design walkable grille according the customer's choice*
Ledge	Made of anodized aluminium, type and colour according the customer's choice
Assembly elements	Leveling screws for setting up the trough, mounting brackets
Manual	Manual for the progress of work during installation and user manual
Wiring	Electrical wiring diagram of the trench heaters
Mounting board	Cover and the spacer particle board for easy installation
Package	Transport package for protection against damage during transportation and handling

*stainless grilles surcharge

Accessories per order


Manual hermostat


Room thermostat with a capillary


Electrothermal actuator


Power supply


Lockshield valve


Thermostatic valve

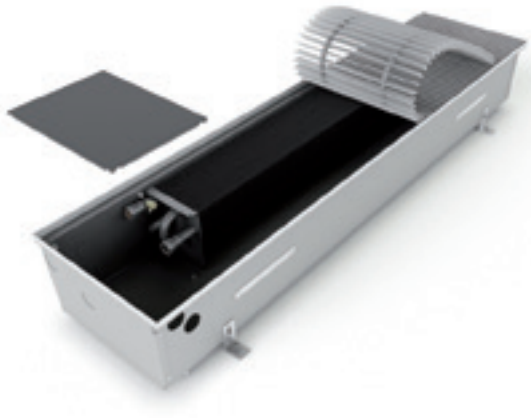
Accessories details → page 64

Code example: FRK 0140 0425 1400 C 63 L1 L - 0

Trench heater **FRK** H = **140** mm, W = **425** mm, L = **1 400** mm, „**C**" Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**63**" natural oak grille, transverse, roll-up, „**L1**" peripheral ledge „L" with an overlap, natur anodized aluminium „**L**" water connection at the left side (when installing the heat exchanger closer to the window, fans to the room), „**0**" trench heater with natural convection

FRK 0165 0300/0425

TRENCH HEATERS WITH NATURAL CONVECTION



- Offices, corridors, halls, flats, winter garden
- High heating output of natural convection
- Suitable for combining with other heating systems
- Using in dry environment
- 2pipe system

Technical data

Trench heater

Height	H = **165** mm
Width	W = **300, 425** mm
Length	L = **700–4 800** mm in step **100** mm

Heat exchanger

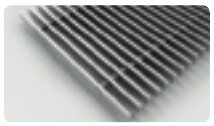
Type	**Al-Cu** lamellar
Length	L–**295** mm
Connection thread	**2×G1/2"** inner

Working conditions

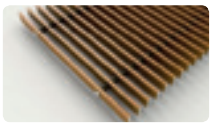
Max. temperature	**110** °C
Max. overpressure	**1** MPa (**10** bar)
Protection	IP **20**
Ambient conditions	Temp. T = **+2** to **+40** °C Humidity Rh = **20** to **70**%

Variants

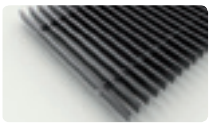
Transverse roll-up grilles



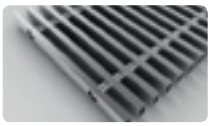
natur - anod. aluminium



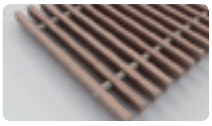
bronze - anod. aluminium



black - anod. aluminium

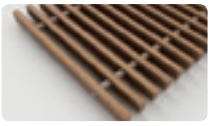


stainless



natur beech - wooden

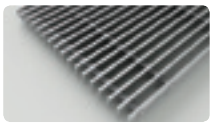
stained beech - wooden



natur oak - wooden

stained oak - wooden

Linear non-rolling grilles



natur - anod. aluminium

bronze - anod. aluminium

black - anod. aluminium

Peripheral ledges

(more on page 8)

More possibilities and variants → page 6

Trench heater heating output FRK 0165 0300/0425

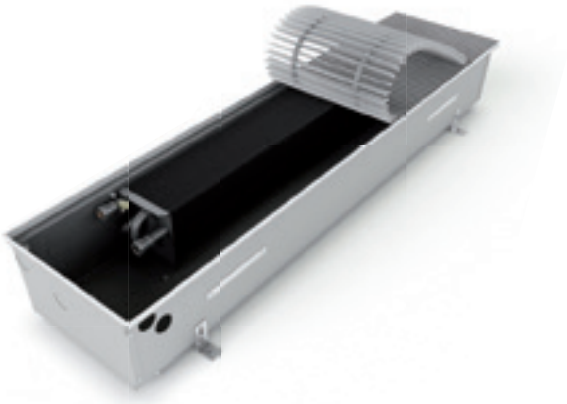
Q[W] 75/65/20 °C (ΔT=50 °C)

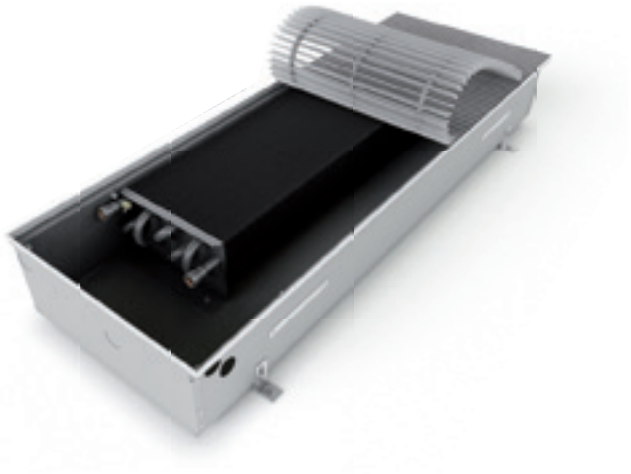
H×W [mm]	0165 0300	0165 0425
L [mm]	n=1,457	n=1,442
700	233 W	401 W
800	291 W	500 W
900	349 W	599 W
1000	406 W	698 W
1100	464 W	797 W
1200	521 W	896 W
1300	579 W	995 W
1400	637 W	1 094 W
1500	694 W	1 193 W
1600	752 W	1 292 W
1700	809 W	1 391 W
1800	867 W	1 490 W
1900	925 W	1 589 W
2000	982 W	1 688 W
2100	1 040 W	1 787 W
2200	1 097 W	1 886 W
2300	1 155 W	1 985 W
2400	1 213 W	2 084 W
2500	1 270 W	2 183 W
2600	1 328 W	2 282 W
2700	1 385 W	2 381 W
2800	1 443 W	2 480 W
2900	1 501 W	2 579 W
3000	1 558 W	2 678 W
3200	1 673 W	2 876 W
3400	1 789 W	3 074 W
3600	1 904 W	3 272 W
3800	2 019 W	3 470 W
4000	2 134 W	3 668 W
4200	2 250 W	3 866 W
4400	2 365 W	4 064 W
4600	2 480 W	4 262 W
4800	2 595 W	4 460 W

Q[W] 55/45/20 °C (ΔT=30 °C)

H×W [mm]	0165 0300	0165 0425
L [mm]	n=1,457	n=1,442
700	111 W	192 W
800	138 W	239 W
900	166 W	287 W
1000	193 W	334 W
1100	220 W	382 W
1200	248 W	429 W
1300	275 W	476 W
1400	303 W	524 W
1500	330 W	571 W
1600	357 W	619 W
1700	384 W	666 W
1800	412 W	713 W
1900	440 W	761 W
2000	467 W	808 W
2100	494 W	856 W
2200	521 W	903 W
2300	549 W	950 W
2400	576 W	998 W
2500	603 W	1 045 W
2600	631 W	1 093 W
2700	658 W	1 140 W
2800	686 W	1 187 W
2900	713 W	1 235 W
3000	740 W	1 282 W
3200	795 W	1 377 W
3400	850 W	1 472 W
3600	905 W	1 567 W
3800	959 W	1 661 W
4000	1 014 W	1 756 W
4200	1 069 W	1 851 W
4400	1 124 W	1 946 W
4600	1 178 W	2 041 W
4800	1 233 W	2 135 W

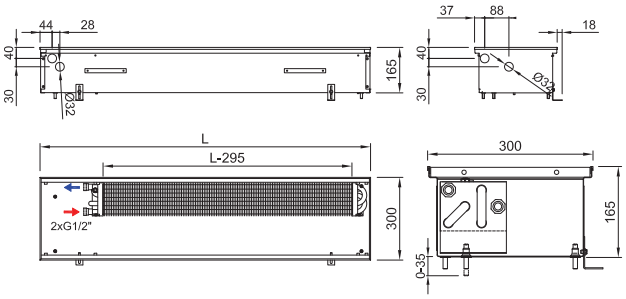
75/65/20 °C → 75°C inlet temperature, 65°C outlet temp., 20 °C room temp. / **Output 90/70/20 °C** = ~ 1,29 x 75/65/20 °C / **Output 70/55/20 °C** = ~ 0,80 x 75/65/20 °C / Heating outputs in accordance with EN 16430 / Not listed heating outpus for lengths per 100 mm steps calculate linearly. Exact values can be found at www.isan.cz



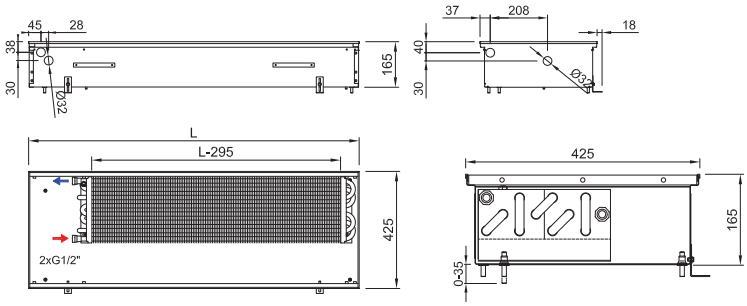


Technical drawing

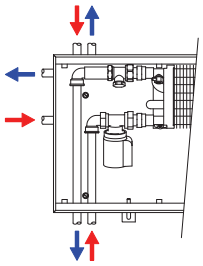
FRK 0165 0300



FRK 0165 0425



Connection to heating system



The hydraulic parameters of the heat exchanger → page 82

Trench heater standard equipment

Trough	Galvanized steel trough with surface finish and black spray layer inside, black cover plates of connection
Heat exchanger	Al-Cu lamellar exchanger with air vent valve, black painted
Grille	Design walkable grille according the customer's choice*
Ledge	Made of anodized aluminium, type and colour according the customer's choice
Assembly elements	Leveling screws for setting up the trough, mounting brackets
Manual	Manual for the progress of work during installation and user manual
Wiring	Electrical wiring diagram of the trench heaters
Mounting board	Cover and the spacer particle board for easy installation
Package	Transport package for protection against damage during transportation and handling

*stainless grilles surcharge

Accessories per order


Manual hermostat


Room thermostat with a capillary


Electrothermal actuator


Power supply


Lockshield valve

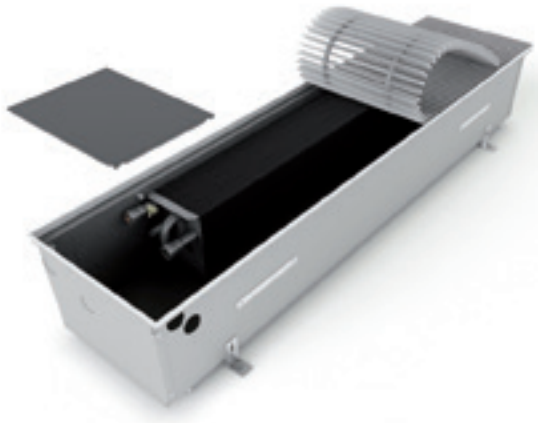

Thermostatic valve

Accessories details → page 64

Code example: FRK 0165 0300 1900 C 52 J1 R - 0
Trench heater **FRK** H = **165** mm, W = **300** mm, L = **1 900** mm, „**C**" Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**52**" stainless grille, transverse, roll-up, „**J1**" peripheral ledge „J", natur anodized aluminium, „**R**" water connection at the right side (when installing the heat exchanger closer to the window, fans to the room), „**0**" trench heater with natural convection

FRK 0200 0300/0425

TRENCH HEATERS WITH NATURAL CONVECTION



- Offices, corridors, halls, flats, winter garden
- High heating output of natural convection
- Suitable for combining with other heating systems
- Using in dry environment
- 2pipe system

Technical data

Trench heater

Height	H = **200** mm
Width	W = **300, 425** mm
Length	L = **700–4 800** mm in step **100** mm

Heat exchanger

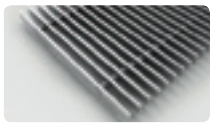
Type	**Al-Cu** lamellar
Length	L–**295** mm
Connection thread	**2×G1/2"** inner

Working conditions

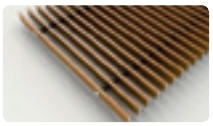
Max. temperature	**110** °C
Max. overpressure	**1** MPa (**10** bar)
Protection	IP **20**
Ambient conditions	Temp. T = **+2** to **+40** °C Humidity Rh = **20** to **70**%

Variants

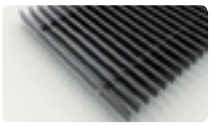
Transverse roll-up grilles



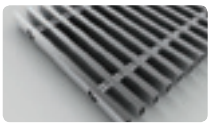
natur - anod. aluminium



bronze - anod. aluminium



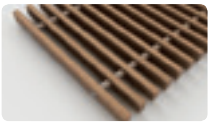
black - anod. aluminium



stainless

natur beech - wooden

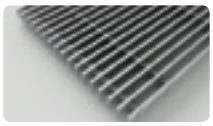
stained beech - wooden



natur oak - wooden

stained oak - wooden

Linear non-rolling grilles



natur - anod. aluminium

bronze - anod. aluminium

black - anod. aluminium

Peripheral ledges

(more on page 8)

More possibilities and variants → page 6

Trench heater heating output FRK 0200 0300/0425

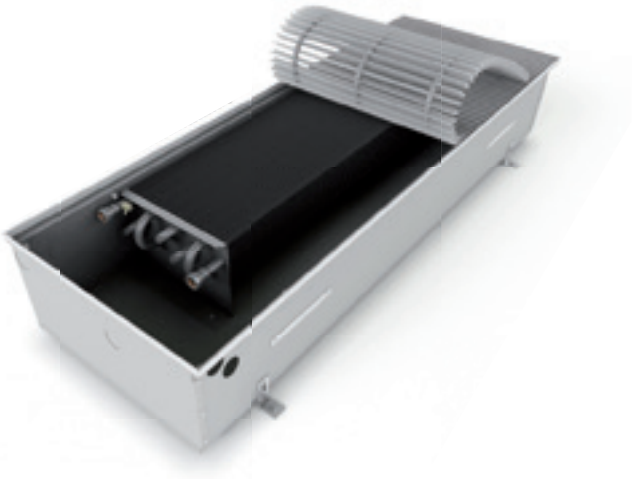
Q[W] 75/65/20 °C (ΔT=50 °C)

H×W [mm]	0200 0300	0200 0425
L [mm]	n=1,462	n=1,461
700	237 W	435 W
800	296 W	542 W
900	354 W	649 W
1000	413 W	756 W
1100	471 W	864 W
1200	530 W	971 W
1300	588 W	1 078 W
1400	647 W	1 185 W
1500	706 W	1 293 W
1600	764 W	1 400 W
1700	823 W	1 507 W
1800	881 W	1 615 W
1900	940 W	1 722 W
2000	998 W	1 829 W
2100	1 057 W	1 936 W
2200	1 115 W	2 044 W
2300	1 174 W	2 151 W
2400	1 233 W	2 258 W
2500	1 291 W	2 366 W
2600	1 350 W	2 473 W
2700	1 408 W	2 580 W
2800	1 467 W	2 687 W
2900	1 525 W	2 795 W
3000	1 584 W	2 902 W
3200	1 701 W	3 117 W
3400	1 818 W	3 331 W
3600	1 935 W	3 546 W
3800	2 052 W	3 760 W
4000	2 169 W	3 975 W
4200	2 287 W	4 189 W
4400	2 404 W	4 404 W
4600	2 521 W	4 618 W
4800	2 638 W	4 833 W

Q[W] 55/45/20 °C (ΔT=30 °C)

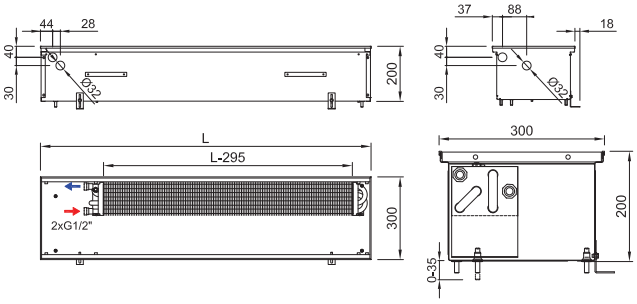
H×W [mm]	0200 0300	0200 0425
L [mm]	n=1,462	n=1,461
700	112 W	206 W
800	140 W	257 W
900	168 W	308 W
1000	196 W	358 W
1100	223 W	410 W
1200	251 W	460 W
1300	279 W	511 W
1400	307 W	562 W
1500	335 W	613 W
1600	362 W	664 W
1700	390 W	715 W
1800	417 W	766 W
1900	445 W	816 W
2000	473 W	867 W
2100	501 W	918 W
2200	528 W	969 W
2300	556 W	1 020 W
2400	584 W	1 071 W
2500	612 W	1 122 W
2600	640 W	1 173 W
2700	667 W	1 223 W
2800	695 W	1 274 W
2900	723 W	1 325 W
3000	751 W	1 376 W
3200	806 W	1 478 W
3400	861 W	1 579 W
3600	917 W	1 681 W
3800	972 W	1 783 W
4000	1 028 W	1 885 W
4200	1 084 W	1 986 W
4400	1 139 W	2 088 W
4600	1 194 W	2 190 W
4800	1 250 W	2 291 W

75/65/20 °C → 75°C inlet temperature, 65°C outlet temp., 20 °C room temp. / **Output 90/70/20 °C** = ~ 1,29 x 75/65/20 °C / **Output 70/55/20 °C** = ~ 0,80 x 75/65/20 °C / Heating outputs in accordance with EN 16430 / Not listed heating outpus for lengths per 100 mm steps calculate linearly. Exact values can be found at www.isan.cz

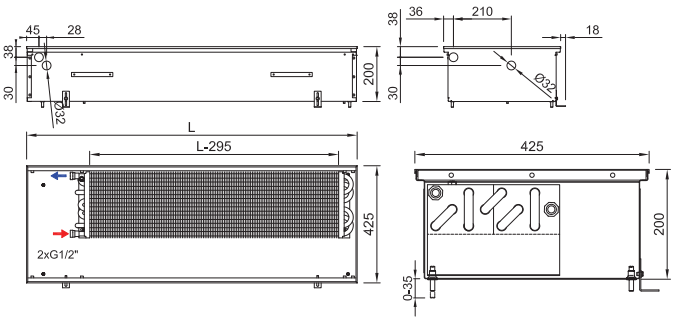


Technical drawing

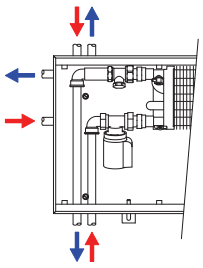
FRK 0200 0300



FRK 0200 0425



Connection to heating system



The hydraulic parameters of the heat exchanger → page 82

Trench heater standard equipment

Trough	Galvanized steel trough with surface finish and black spray layer inside, black cover plates of connection
Heat exchanger	Al-Cu lamellar exchanger with air vent valve, black painted
Grille	Design walkable grille according the customer's choice*
Ledge	Made of anodized aluminium, type and colour according the customer's choice
Assembly elements	Leveling screws for setting up the trough, mounting brackets
Manual	Manual for the progress of work during installation and user manual
Wiring	Electrical wiring diagram of the trench heaters
Mounting board	Cover and the spacer particle board for easy installation
Package	Transport package for protection against damage during transportation and handling

*stainless grilles surcharge

Accessories per order


Manual hermostat


Room thermostat with a capillary


Electrothermal actuator


Power supply


Lockshield valve


Thermostatic valve

Accessories details → page 64

Code example: FRK 0200 0425 1500 C 62 L2 L - 0
Trench heater **FRK** H = **200** mm, W = **425** mm, L = **1 500** mm, „**C**" Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**62**" stained beech grille, transverse, roll-up, „**L2**" peripheral ledge „L" with an overlap, bronze anodized aluminium, „**L**" water connection at the left side (when installing the heat exchanger closer to the window, fans to the room), „**0**" trench heater with natural convection

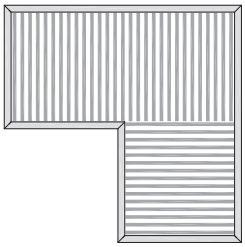
Atypical trench heaters

Folded and cranked

Use broken-line trench heaters to cover heat losses from glassed-in surfaces copying irregular ground plans of rooms. We supply both acute and obtuse angles and multiple cranked trench heaters.
Folded trench heaters comprising from multiple units can be installed in front of long glassed-in surfaces. The trench heater is equipped with a grille from one or multiple pieces which looks like a single long piece at the first sight. Specification of the trench heater location and approval of the design documentation by the customer are required before the start of the production.

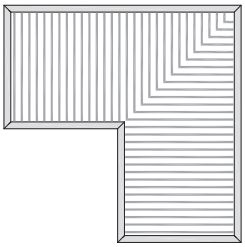
ALUMINIUM

transverse grilles
TYPE: 15, 25, 35



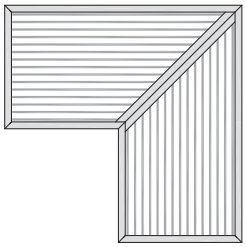
90° angle only

transverse roll-up grilles
TYPE: 11, 21, 31



angle 40°– 320°

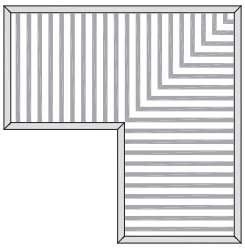
linear non-rolling grilles
TYPE: 12, 22, 32



angle 40°– 320°

WOOD

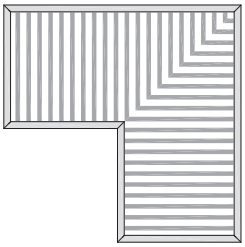
roll-up grilles
TYPE: 61, 62, 63, 64



angle 40°– 320°

STAINLESS

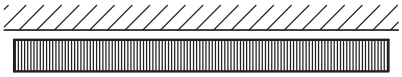
roll-up grilles
TYPE: 51, 52



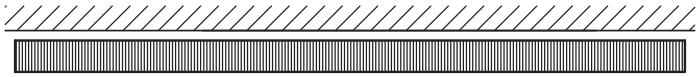
90°angle only

more about grilles on page 6

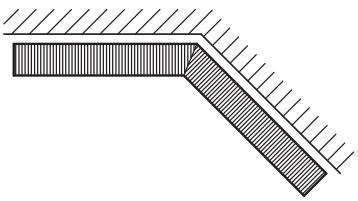
Examples



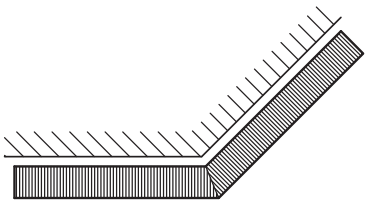
trench heater section length



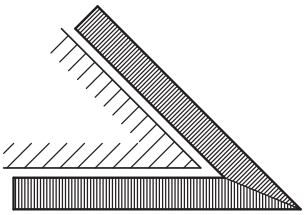
long trench heater, usually composed of multiple internal units



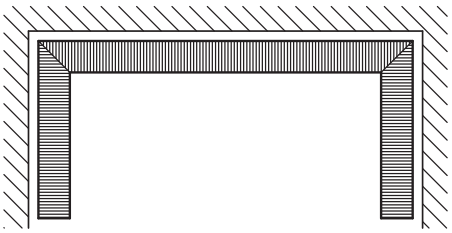
pointed towards inside



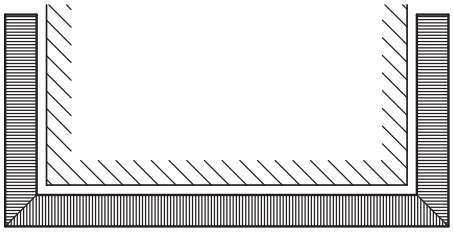
pointed towards outside



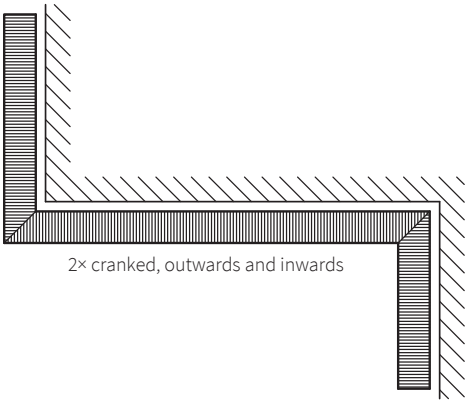
pointed - acute angle



2× pointed towards inside



2× pointed towards outside



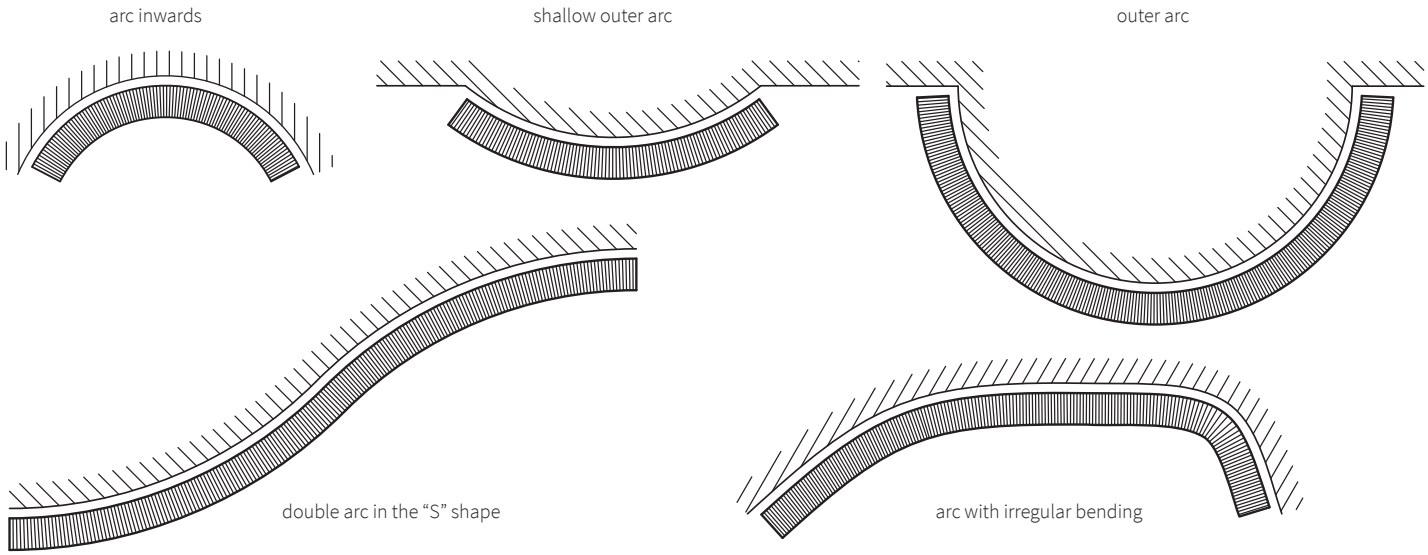
2× cranked, outwards and inwards

Atypical trench heaters

Arched

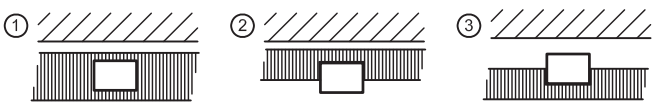
Modern structures with glassed-in arched sections can be equipped with rounded trench heaters. Windows are of arched or multiple broken-line shapes. The arch must follow the running line of the glassed-in surface. The trench heater's location must be measured at the construction site since the actual ground plan frequently differs from the design. Please consult this type of the trench heater in advance with the Technical Department of ISAN Radiátory s.r.o.

Examples

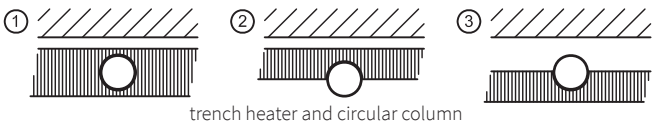


Cutouts in trench heaters

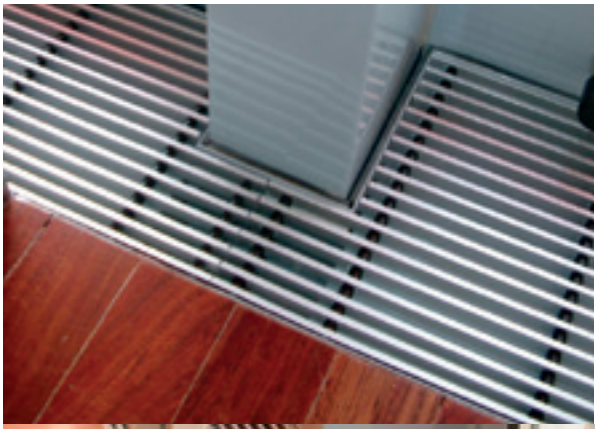
Trench heaters frequently intersect component parts of the structure, such as columns and partition walls. Columns may be fully incorporated in a trench heater or they can only interfere with it. A grille bypasses the column.



trench heater and a rectangular (square) column



trench heater and circular column



Heat exchanger – Hydraulic resistance

FRT: 65x250, 80x175, 80x200, 80x250, 90x175, 90x200, 110x175, 110x200
FRK: 80x250, 80x300, 90x175, 90x200, 90x250, 90x300, 110x175, 110x200, 125x175, 125x200, 140x175, 140x200

Length [mm]	Volume [l]	40	60	80	100	150	200	250	300	350	400
800	0,2	0,01	0,01	0,03	0,05	0,11	0,22	0,36	0,53	0,75	1,00
1000	0,3	0,01	0,02	0,04	0,06	0,14	0,26	0,42	0,61	0,85	1,14
1500	0,5	0,01	0,03	0,06	0,09	0,20	0,36	0,57	0,82	1,12	1,47
2000	0,6	0,02	0,05	0,08	0,12	0,27	0,47	0,72	1,03	1,40	1,81
2500	0,8	0,03	0,06	0,10	0,15	0,33	0,57	0,87	1,24	1,67	2,15
3000	1,0	0,03	0,07	0,12	0,18	0,39	0,68	1,03	1,45	1,94	2,49
3500	1,2	0,04	0,08	0,14	0,22	0,46	0,78	1,18	1,66	2,21	2,83
4000	1,4	0,05	0,10	0,16	0,25	0,52	0,88	1,33	1,86	2,48	3,17
4500	1,6	0,05	0,11	0,19	0,28	0,59	0,99	1,49	2,07	2,75	3,50
4800	1,7	0,06	0,12	0,20	0,30	0,62	1,05	1,58	2,20	2,91	3,71

FRT: 65x300, 80x300

FRK: -

Length [mm]	Volume [l]	40	60	80	100	150	200	250	300	350	400
800	0,3	0,00	0,01	0,02	0,03	0,09	0,16	0,27	0,40	0,56	0,75
1000	0,4	0,01	0,01	0,03	0,04	0,10	0,19	0,31	0,46	0,64	0,85
1500	0,7	0,01	0,02	0,04	0,07	0,15	0,27	0,43	0,62	0,84	1,11
2000	1,0	0,02	0,03	0,06	0,09	0,20	0,35	0,54	0,77	1,05	1,36
2500	1,3	0,02	0,04	0,08	0,11	0,25	0,43	0,66	0,93	1,25	1,61
3000	1,6	0,03	0,05	0,09	0,14	0,30	0,51	0,77	1,09	1,45	1,87
3500	1,9	0,03	0,06	0,11	0,16	0,34	0,59	0,89	1,24	1,65	2,12
4000	2,2	0,04	0,07	0,12	0,19	0,39	0,66	1,00	1,40	1,86	2,37
4500	2,5	0,04	0,08	0,14	0,21	0,44	0,74	1,11	1,55	2,06	2,63
4800	2,7	0,04	0,09	0,15	0,22	0,47	0,79	1,18	1,65	2,18	2,78

FRT: 90x250, 110x250, 125x250, 125x300, 140x250, 140x300
FRK: 90x425, 110x250, 110x300, 125x250, 125x300, 140x250, 140x300

Length [mm]	Volume [l]	40	60	80	100	150	200	250	300	350	400
800	0,4	0,02	0,04	0,07	0,10	0,23	0,40	0,62	0,88	1,20	1,55
1000	0,5	0,02	0,05	0,08	0,12	0,27	0,47	0,73	1,04	1,40	1,81
1500	0,9	0,03	0,07	0,12	0,18	0,38	0,66	1,01	1,43	1,91	2,46
2000	1,3	0,04	0,09	0,15	0,23	0,49	0,85	1,29	1,81	2,42	3,11
2500	1,7	0,05	0,11	0,19	0,29	0,61	1,03	1,57	2,20	2,93	3,76
3000	2,1	0,06	0,13	0,22	0,34	0,72	1,22	1,85	2,59	3,44	4,40
3500	2,5	0,07	0,15	0,26	0,39	0,83	1,41	2,12	2,97	3,95	5,05
4000	2,9	0,08	0,17	0,30	0,45	0,94	1,59	2,40	3,36	4,46	5,70
4500	3,3	0,09	0,20	0,33	0,50	1,05	1,78	2,68	3,75	4,97	6,35
4800	3,5	0,10	0,21	0,35	0,53	1,12	1,89	2,85	3,98	5,28	6,74

FRT: 90x300, 110x300
FRK: 165x300, 200x300

Length [mm]	Volume [l]	40	60	80	100	150	200	250	300	350	400
800	0,6	0,03	0,06	0,11	0,17	0,35	0,61	0,92	1,29	1,72	2,21
1000	0,8	0,04	0,08	0,13	0,20	0,43	0,72	1,09	1,53	2,03	2,59
1500	1,4	0,06	0,12	0,20	0,29	0,61	1,02	1,53	2,12	2,79	3,55
2000	2,0	0,08	0,16	0,26	0,39	0,79	1,32	1,96	2,71	3,56	4,51
2500	2,6	0,10	0,20	0,32	0,48	0,98	1,62	2,39	3,30	4,32	5,46
3000	3,1	0,12	0,23	0,39	0,57	1,16	1,91	2,83	3,89	5,09	6,42
3500	3,7	0,14	0,27	0,45	0,66	1,34	2,21	3,26	4,48	5,85	7,38
4000	4,3	0,15	0,31	0,51	0,76	1,52	2,51	3,69	5,07	6,62	8,34
4500	4,9	0,17	0,35	0,58	0,85	1,71	2,81	4,13	5,66	7,38	9,30
4800	5,2	0,19	0,37	0,61	0,90	1,82	2,99	4,39	6,01	7,84	9,87

FRT: 90x425, 110x425, 125x425, 140x425
FRK: 110x425, 125x425, 140x425

Length [mm]	Volume [l]	40	60	80	100	150	200	250	300	350	400
800	0,8	0,04	0,09	0,15	0,23	0,48	0,81	1,21	1,68	2,23	2,84
1000	1,1	0,05	0,11	0,19	0,28	0,58	0,97	1,44	2,00	2,63	3,34
1500	1,9	0,08	0,17	0,27	0,41	0,83	1,37	2,02	2,78	3,65	4,61
2000	2,6	0,11	0,22	0,36	0,53	1,07	1,77	2,60	3,57	4,66	5,88
2500	3,4	0,14	0,27	0,45	0,66	1,32	2,17	3,18	4,36	5,68	7,15
3000	4,2	0,16	0,33	0,54	0,79	1,57	2,57	3,77	5,14	6,70	8,41
3500	5,0	0,19	0,38	0,62	0,91	1,82	2,97	4,35	5,93	7,71	9,68
4000	5,7	0,22	0,44	0,71	1,04	2,07	3,37	4,93	6,72	8,73	10,95
4500	6,5	0,25	0,49	0,80	1,17	2,32	3,77	5,51	7,50	9,74	12,22
4800	7,0	0,26	0,52	0,85	1,24	2,47	4,02	5,86	7,98	10,35	12,98

FRT: -
FRK: 165x425, 200x425

Length [mm]	Volume [l]	40	60	80	100	150	200	250	300	350	400
800	1,2	0,07	0,14	0,24	0,35	0,72	1,20	1,77	2,44	3,21	4,06
1000	1,6	0,09	0,18	0,29	0,43	0,87	1,44	2,12	2,91	3,81	4,81
1500	2,8	0,13	0,26	0,42	0,62	1,24	2,03	2,99	4,09	5,32	6,70
2000	4,0	0,17	0,34	0,55	0,81	1,61	2,63	3,85	5,26	6,84	8,59
2500	5,1	0,21	0,42	0,68	1,00	1,98	3,23	4,72	6,43	8,35	10,47
3000	6,3	0,25	0,50	0,81	1,19	2,35	3,83	5,58	7,60	9,86	12,36
3500	7,5	0,29	0,58	0,94	1,38	2,72	4,43	6,45	8,77	11,38	14,25
4000	8,7	0,34	0,66	1,07	1,56	3,10	5,02	7,31	9,94	12,89	16,14
4500	9,8	0,38	0,74	1,21	1,75	3,47	5,62	8,18	11,11	14,40	18,02
4800	10,5	0,40	0,79	1,28	1,87	3,69	5,98	8,70	11,82	15,31	19,16

Self-standing trench heaters

Its bottom supports make the trench heater a self-standing unit. The setting of the heating unit is final with no additional underlayment concrete required as with standard installations. The self-supporting components allow for height-adjustment in three positions: 0-35 mm, 10-70 mm and 60-300 mm.
In this way, the trench heater can be installed in openings deeper than its height.

- installation with the heater not resting on a firm base
- the installation opening is deeper than the height of the planned trench heater unit
- double floor structure (administrative buildings)

NOTICE:

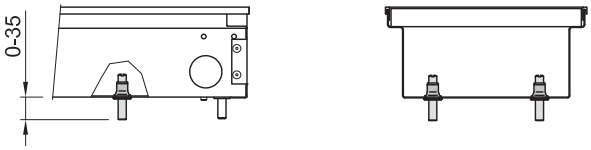
- If this mounting option (self-standing) is selected, the heater acoustic parameters specified in the catalog cannot be guaranteed. Appropriate resonance absorption materials should be used.
- When using the self-standing supports, check the installation opening for adequate size to ensure that there is enough room to use the required tools.

Self-standing option B, 0-35 mm

This type is compatible with FRK heating units only.
In contrast with the standard design, this trench heater features more supporting screws located inside the heater casing.

FRK trench heaters allow 0-35 mm height adjustment.

Note: This alternative is not available for FRT trench heaters. In this case, use underlayment concrete or self-standing option D where applicable.



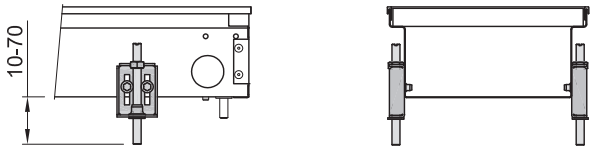
ADJUSTING SCREWS, 0-35 mm

Convector length [mm]	Number of adjusting screw pairs
700-900	2
1000-1400	3
1500-1900	4
2000-2400	5
2500-2900	6
3000-3400	7
3500-3900	8
4000-4400	9
4500-4800	10

Self-standing option D, 10-70 mm

FRT and FRK heating units
The trench heater is fitted with supporting legs and adjusting screws on the sides. The metal leg box is designed for rough height adjustment, while the screw is used for fine-tuning. Lower models might require adjustment of the screw length. The anchor stands are used to prevent the unit from shifting on the floor.

FRT and **FRK** trench heaters allow 10-70 mm height adjustment.



leg with screw

anchor stand

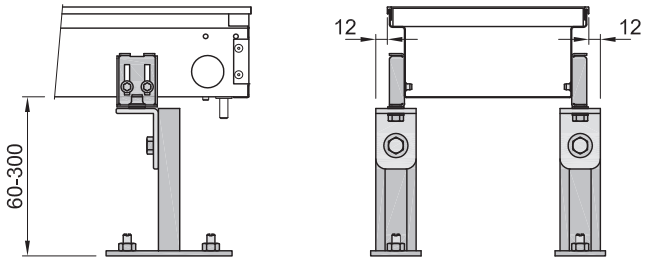
ADJUSTING SCREWS, 10-70 mm

Convector length [mm]	Number of supporting leg pairs	Number of anchor stands
700-900	2	2
1000-1400	3	4
1500-1900	4	4
2000-2400	5	4
2500-2900	6	4
3000-3400	7	6
3500-3900	8	6
4000-4400	9	6
4500-4800	10	6

Self-standing option V, 60-300 mm

FRT and FRK heating units.
The trench heater is fitted with brackets and a metal box for mounting to the heater. The heating unit is set in the correct position by reducing the bracket height (following measurements at the installation site) and shifting the metal box attached to the heater body.
Given the setting height of the heater, anchor the brackets firmly to the floor.

FRT and **FRK** trench heaters allow 60-300mm height adjustment.



bracket

BRACKETS, 60-300 mm

Convector length [mm]	Number of bracket pairs
700-900	2
1000-1400	3
1500-1900	4
2000-2400	5
2500-2900	6
3000-3400	7
3500-3900	8
4000-4400	9
4500-4800	10

Electric connection of trench heaters with fan

The trench heaters and their components are powered with safe direct current voltage of 24 V DC. The low voltage requires specific sizing of the network. Based on the number of installed units it is necessary to assess the total input of the circuit and size the capacity of the power source and the cross sections of the conductors in the circuit shall be correctly sized with respect to the distances between individual heating bodies and the switched source of the voltage of 24 V DC. The total input of the bodies is considered for maximal speed (i.e. speed no. 4), if the electrothermal actuator is used we will add its operating input. The voltage in the circuit may not, in any point, drop below the value of 22 V DC.

Procedure of the network sizing

1. **Consider the trench heater's input for speed 4 from the table.**
2. **If the electrothermal actuator is considered, add its input.**
3. **Determine the position for the installation of the switched power supply for the voltage of 24 V DC, this position shall be as close to installed trench heaters as possible.**
4. **Record the distances between the bodies and the source from the project.**
5. **Determine the lines of the electric network.**
6. **Calculate the decline of voltage in individual bodies.**
7. **If the voltage at all heating bodies is >22 V DC, determine the power supply's capacity, consider the output reserve of 5%** (see SCHEME 1 on page 86).
8. **If the voltage along the network lines drops below 22 V DC, size a large cross section of conductors or install additional power supply on the lines** (see SCHEME 3 on page 87).
9. **When installing more than 10 trench heaters it is necessary to incorporate a switching relay RL10 in the circuit,** (see SCHEME 2 on page 86)**.**

The sizing of the network is easier with the use of the computer program that can be downloaded at website www.isan.cz

Setting the thermostat RTD201

It is necessary to carry out basic presetting before the first start-up to secure the correct function of the thermostat:

DIP SWITCH
Switch the switch 1 on the back side of the thermostat to position ON. The other switches will remain in the OFF position. With this the 2pipe heating system has been preset.

SERVICE LEVEL - PARAMETERS
The „service level" contains a small set of parameters for the adjustment of the regulator to the HVAC system and for the setting of the user's interface. These parameters may usually be set at any time.

SET
P01 = 0 the setting of the heating mode

EXPERT LEVEL - PARAMETERS
The parameters in the "Expert level" shall be adjusted with great care because they influence the regulation process and the regulator's function.

SETTING
P38 = 0 the thermostat will function only in the heating mode
P55 = 100% maximal speed, in the case of need the maximal speed may be limited with this parameter (e.g. P55 = 60%)
P56 = 20% minimal speed
P72 = 2 setting the opening of the thermal actuator to the thermostat's terminal Q1

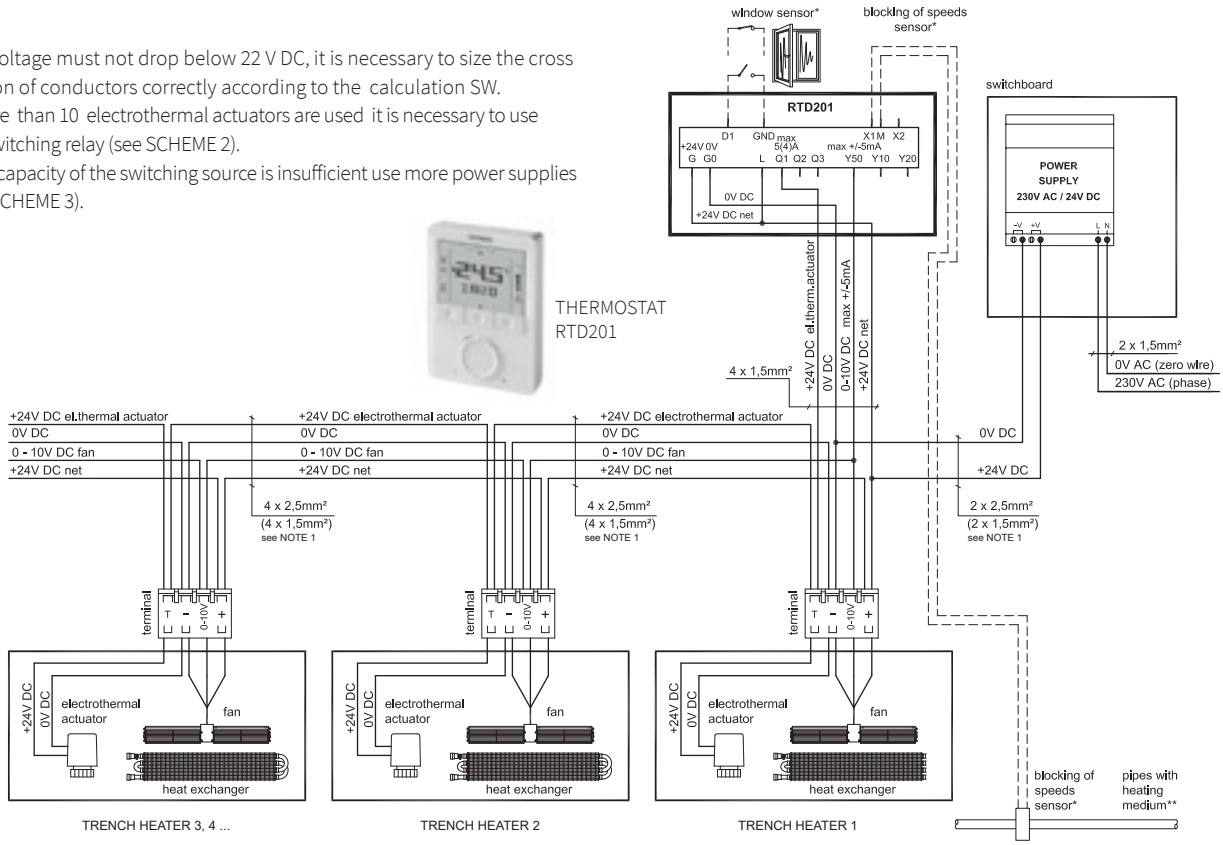
If the speed blocking sensor TE30 is to be used it is necessary to change the inner setting of the thermostat. Consult the setting with the technical department of ISAN Radiátory.

Electrical diagram

SCHEME 1 - basic connection

Note

- The voltage must not drop below 22 V DC, it is necessary to size the cross section of conductors correctly according to the calculation SW.
- If more than 10 electrothermal actuators are used it is necessary to use the switching relay (see SCHEME 2).
- If the capacity of the switching source is insufficient use more power supplies (see SCHEME 3).

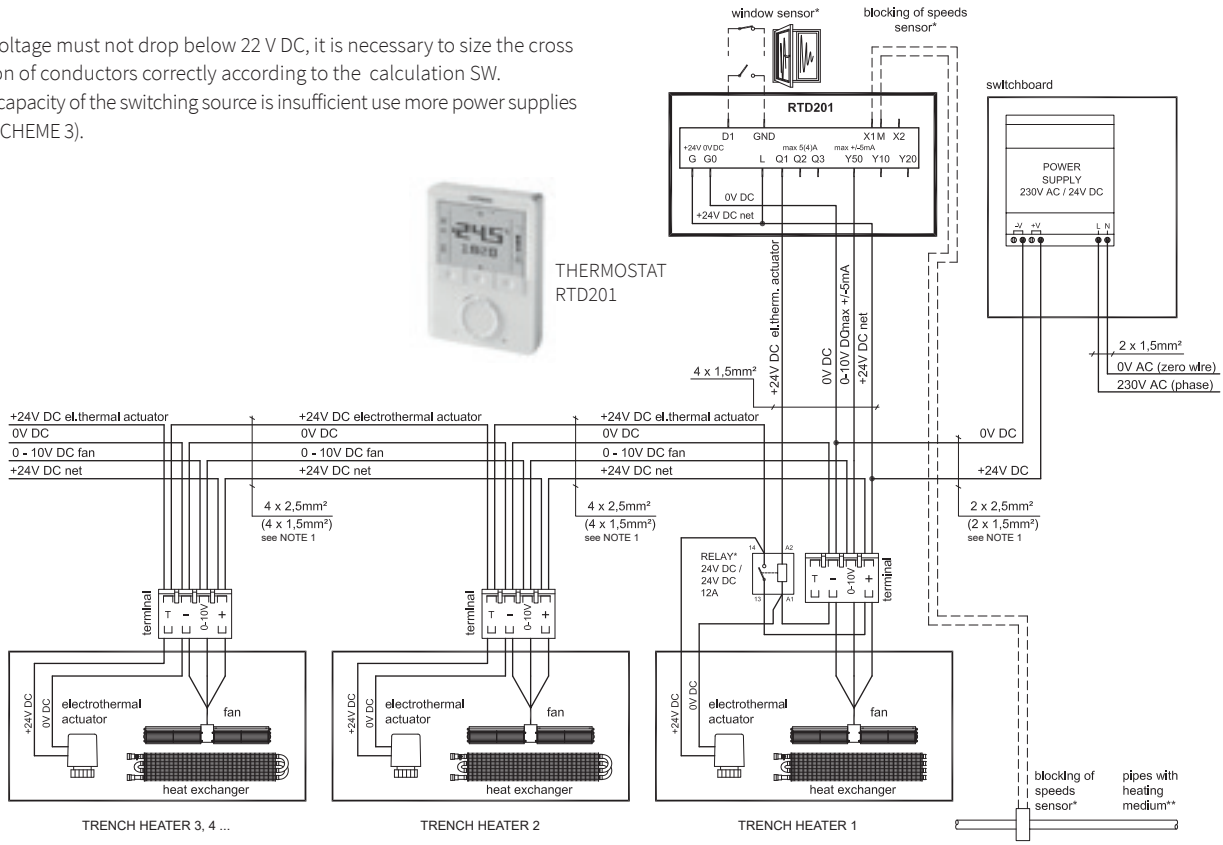


*ccessories / ** The temperature sensor (block of revs) must be fi xed on the tube, through which the heating medium freely flows and which is not closed by the actuator.

SCHEME 2 - connection with more than 10pcs of electrothermal actuator

Note

- The voltage must not drop below 22 V DC, it is necessary to size the cross section of conductors correctly according to the calculation SW.
- If the capacity of the switching source is insufficient use more power supplies (see SCHEME 3).



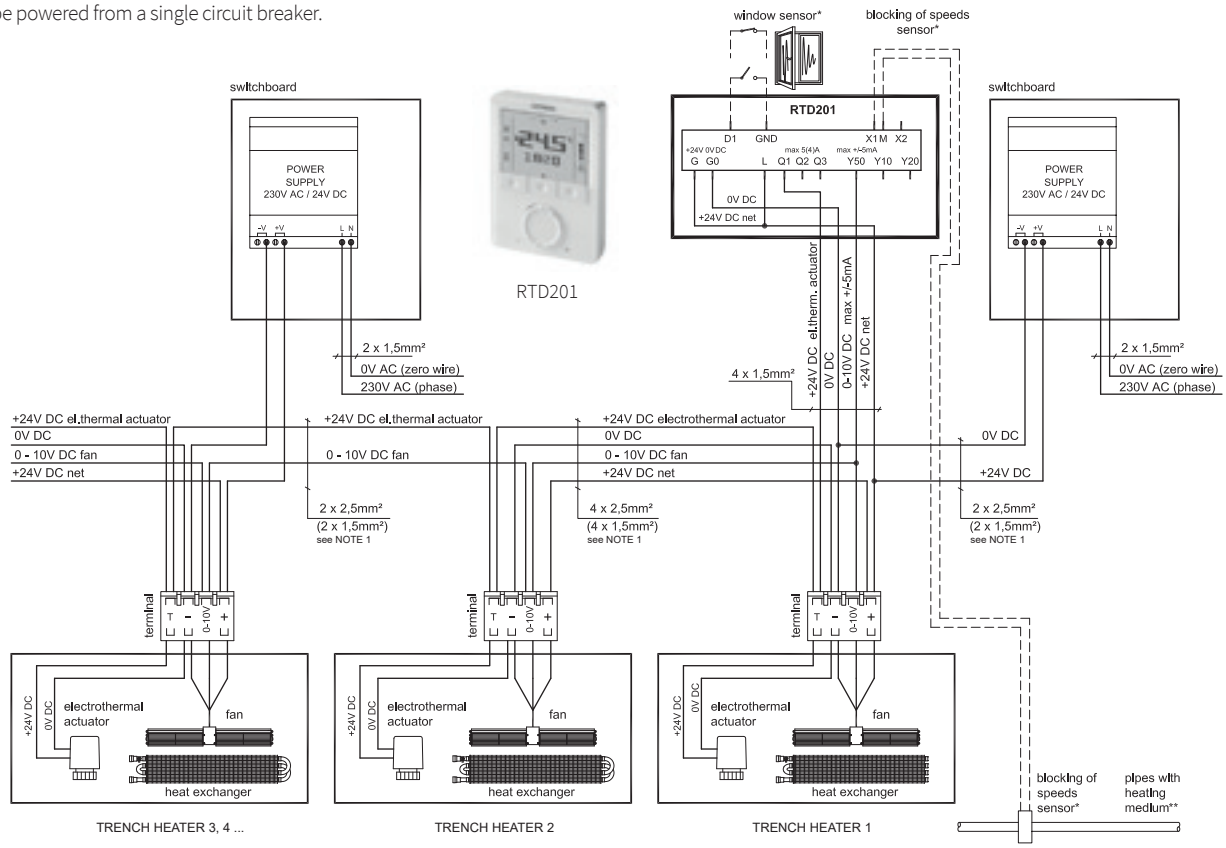
*ccessories / ** The temperature sensor (block of revs) must be fi xed on the tube, through which the heating medium freely flows and which is not closed by the actuator.

Electrical diagrams

SCHEME 3 - connection with more supplies

Note

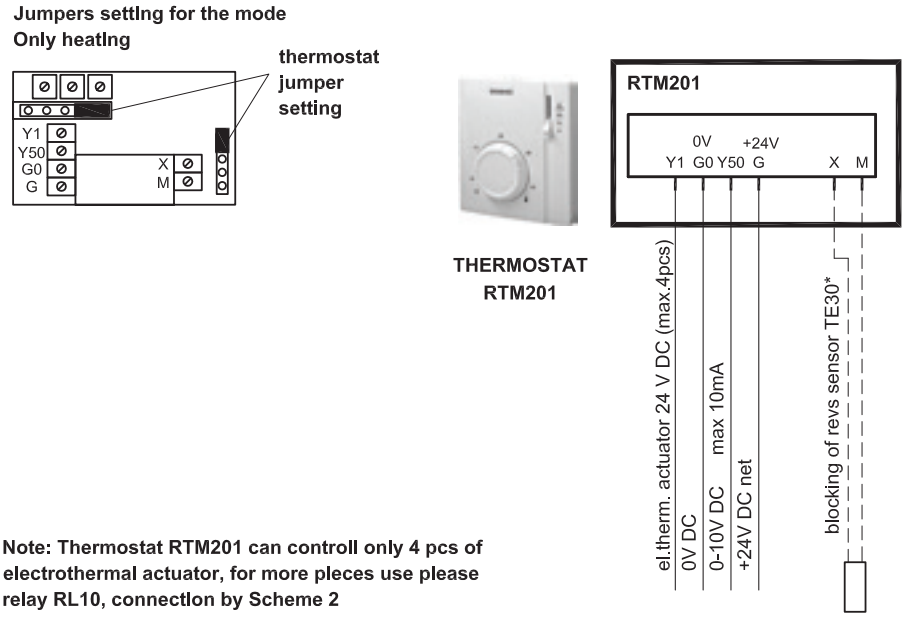
- The voltage must not drop below 22 V DC, it is necessary to size the cross section of conductors correctly according to the calculation SW.
- If more than 10 electrothermal actuators are used it is necessary to use the switching relay (see DIAGRAM 2).
- All sources shall be powered from a single circuit breaker.



*ccessories / ** The temperature sensor (block of revs) must be fi xed on the tube, through which the heating medium freely flows and which is not closed by the actuator.

RTM201 thermostat connection

- The RTM201 thermostat is to be installed in accordance with RTD201 digital thermostat wiring diagrams, including the required parameters.
- Wiring connection to the RTM201 thermostat terminals.



Note: Thermostat RTM201 can controll only 4 pcs of electrothermal actuator, for more pleces use please relay RL10, connectlon by Scheme 2

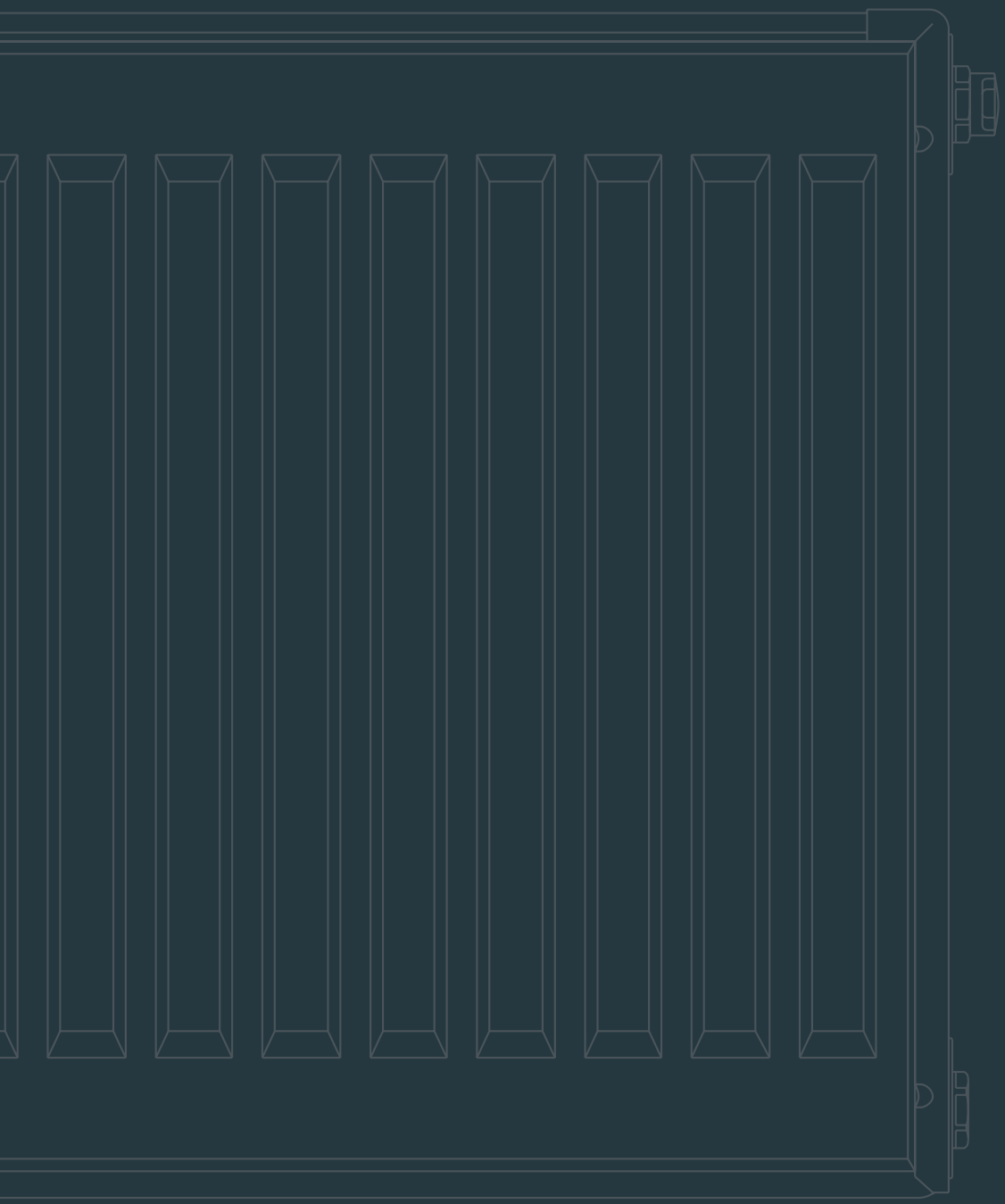
*accessories

The coding of trench heaters New Practic

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
F	R	T	0	1	1	0	0	2	5	0	1	2	0	0	C	1	2	J	1	L	B	5	
PRODUCT	LINE	TYPE	HEIGHT [mm]				WIDTH [mm]				LENGTH [mm]				TROUGH & COMPONENTS	GRILLE, TYPE AND COLOUR		LEDGE Colour OF LEDGE		WATER CONNECTION LEFT / RIGHT	SELFSTANDING	REGULATION	ATYPICAL / STANDARD

Code description
Trench heater **FRT** H = **110** mm, W = **250** mm, L = **1 200** mm, „**C**“ Galvanized steel trough with black inside, heat exchanger and inner parts painted black, „**12**“ natur anodized aluminium grille, linear, rigid „**J1**“ peripheral ledge „J“, natur anodized aluminium, „**L**“ water connection at the left side (when installing the heat exchanger closer to the window, fans to the room), „**B**“ selfstanding 0-35 mm „**5**“ 24 V DC fans without controller (controller is not needed)

Brenner
RADIATORER APS



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