



Fig. 71: Elstein construction set REF/250 with SHTS/1 (Top)
Elstein construction set REF/125 with SHTS/2 (Down)

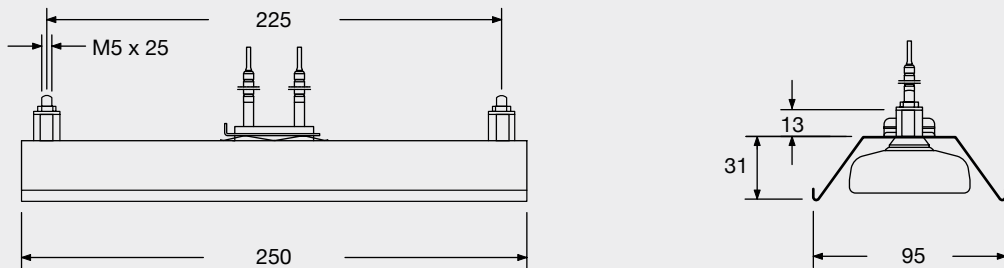
By quoting the REF/250 or REF/125 construction set designations and the heater type required, the REO/250 and REO/125 reflectors are available fitted with the FSR, FSM, HFS, HSR, HTS and SHTS series ceramic infrared panel heaters.

The REO reflectors are made from polished stainless steel. They are used to hold and fix panel heaters with the dimensions 245 mm x 60 mm (Figure 73) and 122 mm x 60 mm (Figure 74) as well as for reflecting the IR radiation in the direction of the material to be heated.

The REF system can be used to assemble IR radiation areas with any geometry. When building heating areas or plants a closed wiring space has to be considered for the electrical connections of the REF system.

The Elstein range of products includes the EBF construction elements and the BSI construction panels as fitted heating area solution, in which the electrical connections are situated in a housing.

REF/250



REF/125

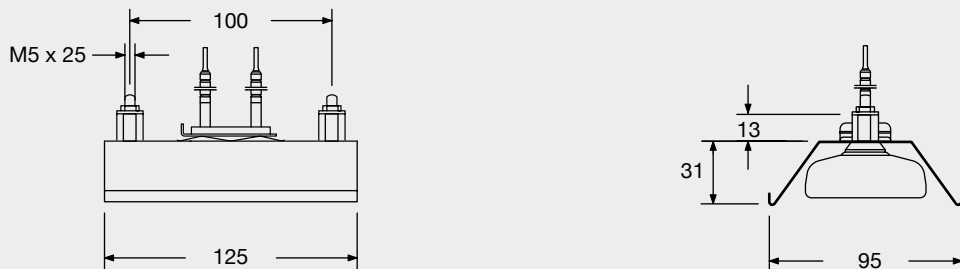


Figure 72: Mounting dimensions and REF dimensions () in mm



Reflector and heater type	REF/250, equipped with...						
	FSM	FSR	HFS/1	HSR/1	HTS/1	SHTS/1	
	REF/125, equipped with...						
	FSM/2	FSR/2	HFS/2	HSR/2	HTS/2	SHTS/2	
Maximum possible surface rating	40.0	40.0	24.0	40.0	40.0	48.0	kW/m ²
Maximum possible typical operating temperature	to 720	to 720	to 630	to 860	to 860	to 860	°C
Maximum permissible temperature	750	750	700	900	900	900	°C
Wavelength range	2 - 10						µm

Standard design	Thermocouple heaters	Variants
<p>Reflector made from polished stainless steel with two M5 x 25 fixing screws, spacer bolts and M5 nuts (fitted)</p> <p>Ceramic infrared heater, fixed to the reflector</p>	<p>Available for all above-mentioned heater types.</p> <p>Designation REF/... with T-...</p> <p>For example: REF/250 with T-HTS/1 250 W 230 V</p>	<p>Special wattages</p> <p>Special voltages</p> <p>Extended leads</p> <p>Leads with ring terminals</p> <p>REO/250S and REO/125S Width 62,5 mm instead of 95 mm For compact heater mounting</p>

The power can be controlled using thermocouple heaters together with TRD 1 temperature controllers, TSE thyristor switching units and other accessories.

The national safety regulations must be complied with for the respective application, for example, the IEC or EN standard 60519-1, Safety in electrical heating installations.

Our instructions for mounting, operation and safety must be observed.



Figure 75: Elstein Construction Elements EBF

Elstein EBF construction elements are linear heating panels being assembled in our factory.

They can be equipped with Elstein ceramic panel heaters of the width 60 mm. A combination of different sizes and wattages within the same heater type is possible.

The user does the wiring and the connection with the electricity mains.

Optionally EBF is available with silicone coated cables.

Heating panels can be realised in any sizes, geometries and positions with Elstein Construction Elements EBF.

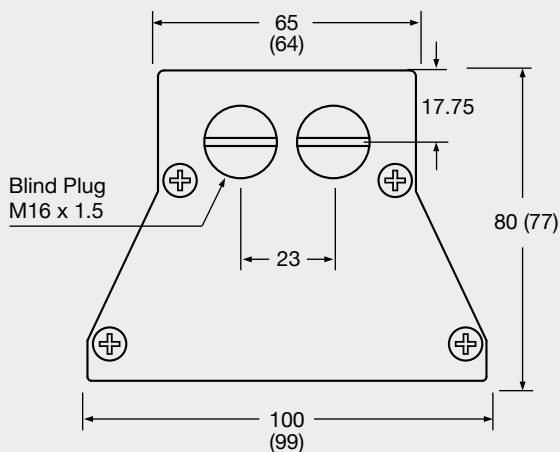
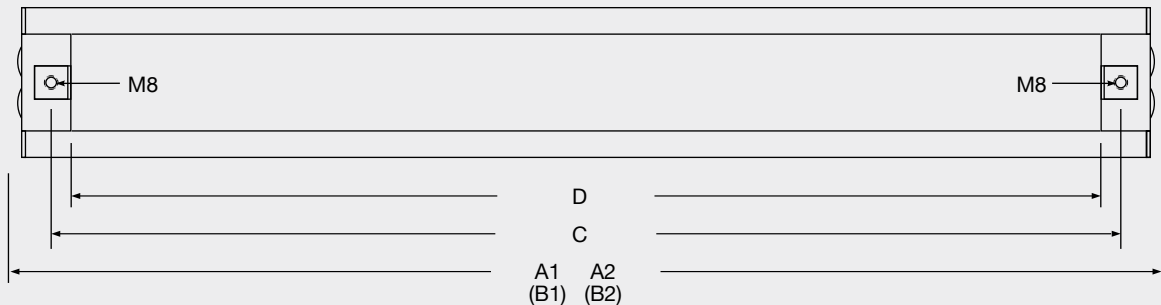
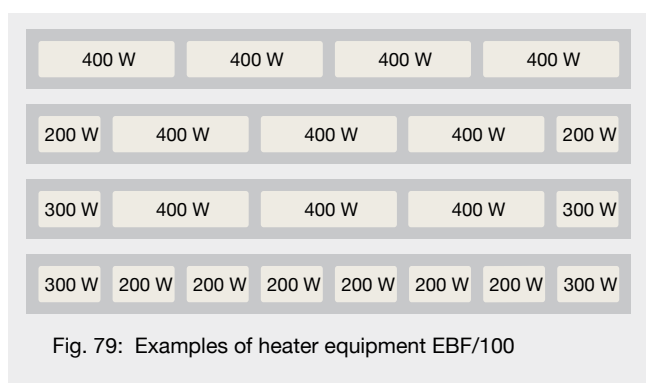
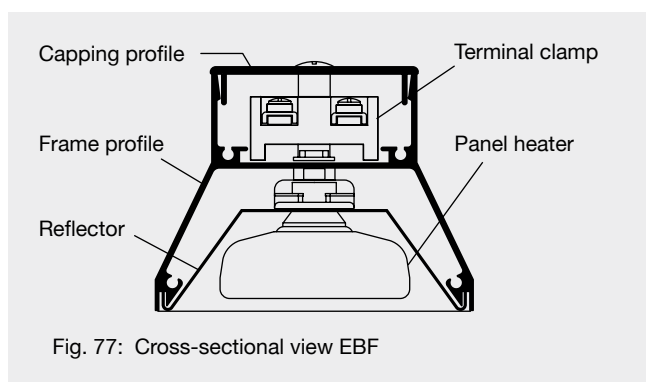


Figure 76: Mounting dimensions and EBF dimensions () in mm

	A1	B1	A2	B2	C	D
	With M16 x 1.5 Blind Plug		No M16 x 1.5 Blind Plug			
EBF/25	270	262	260	255	217	190
EBF/50	520	512	510	505	467	440
EBF/75	770	762	760	755	717	690
EBF/100	1020	1012	1010	1005	967	940
EBF/125	1270	1262	1260	1255	1217	1190
Other lengths on request						



Construction Elements EBF are equipped with the following single components:

Ceramic Infrared Heaters

Equipment with panel heaters of the Elstein standard series.

Depending on the selection of heater types and designs, the maximum heaters' surface rating can be up to 76.8 kW/m² for housing lengths up to 500 mm and from 750 mm up to 38.4 kW/m². Heaters with integrated thermocouple can be selected for temperature control purposes.

Reflectors

The reflectors are made from polished stainless steel. They are used for focussing the radiation energy in the direction of the material to be heated. Optionally the reflectors are available separately, too.

Frame and Capping Profile

The frame and capping profile is made from aluminium. The end pieces on the front sides of the frame profile have one thread M8 each for screwing the EBF construction elements on a holder being manufactured by the user. The end pieces also include a labelled safety earth terminal and two drillings with thread M16 for feeding through the cables. The drillings are closed by removable blind plugs. Optionally there are cable glands M16 with strain relief available from our assortment.

Bipolar Terminal Clamps AK

For wiring the ceramic infrared heaters.

Accessories

Temperature controller, thyristor switching units, reflectors, cable glands with strain relief, and wiring material is available in our standard assortment.

Please observe our instructions for mounting, operation and safety.



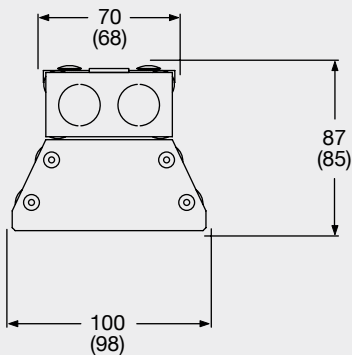
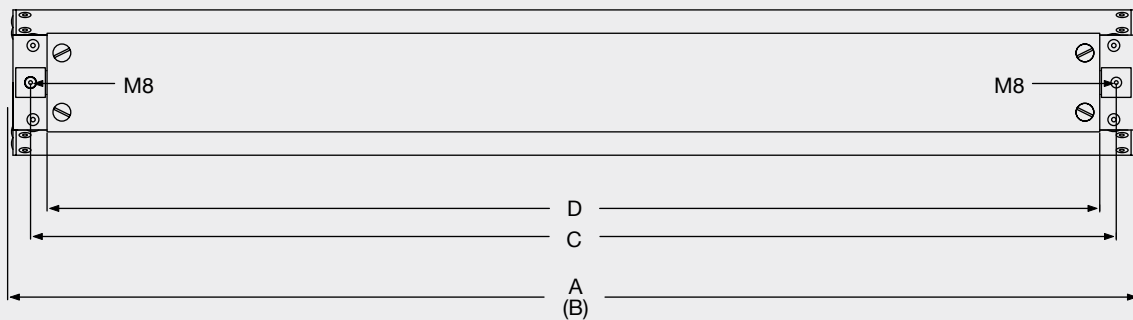
Figure 81: Elstein EBI construction element made from stainless steel, equipped with HTS/1

Elstein EBI construction elements are infrared radiation systems, whose housing parts are made from stainless steel. EBI systems are corrosion resistant and mechanically as well as thermally very stable. Therefore they are very suited for applications, where such requirements have to be fulfilled; for example in the food industry.

Elstein EBI construction elements are assembled in our factory. They can be equipped with Elstein ceramic panel heaters FSM, FSR, HTS/1, SHTS/1, HSR/1 and FSM/2, FSR/2, HTS/2, SHTS/2, HSR/2, whereby it is also possible to combine different heater designs and wattages of the same types of heaters.

The user only has to do the wiring, fix the EBI elements in a steel section frame to be made on site and connect up with the electricity mains.

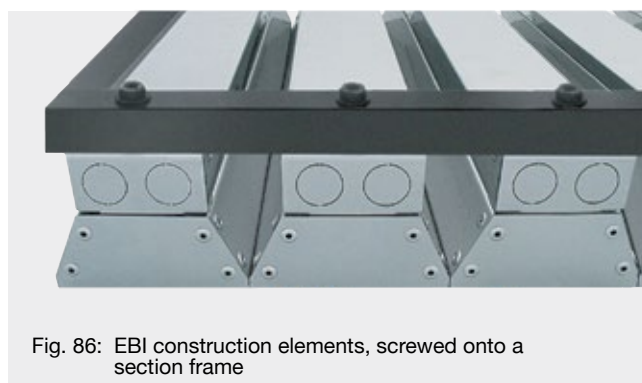
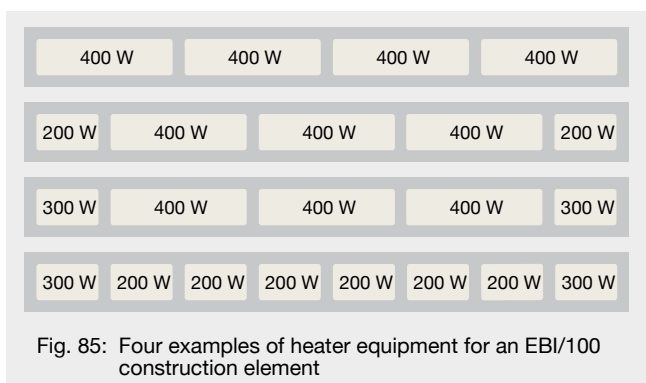
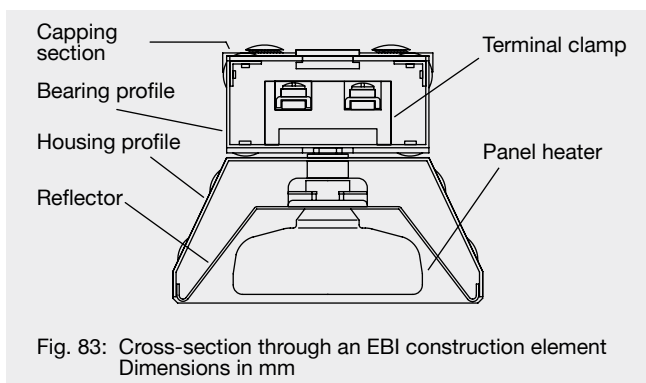
Elstein EBI construction elements are available in many lengths and can be fitted together to form radiation panels in any installed position as well as geometry.



	A	B	C	D		A	B	C	D
EBI/25	260	257	233	210	EBI/87,5	894	885	861	838
EBI/37,5	386	383	359	336	EBI/100	1020	1010	986	963
EBI/50	513	508	484	461	EBI/112,5	1148	1136	1112	1089
EBI/62,5	641	634	610	587	EBI/125	1275	1261	1237	1214
EBI/75	767	759	735	712	Other lengths available on request (from 125 mm to 2500 mm and longer)				

When exchanging EBF against EBI varying dimensions of housing and installation must be considered.

Figure 82: Mounting dimensions and EBI dimensions () in mm



Standard scope of delivery (variants and other lengths are available on request)

Ceramic infrared heaters, fitted, selectable heater types:

FSM, FSR, HSR/1, HTS/1, SHTS/1, FSM/2, FSR/2, HSR/2, HTS/2, SHTS/2

The maximum heater power level available is 1200 W. Mixed heater wattages and dimensions can be fitted.

Thermocouple heaters for temperature control are installed in the EBI construction element at the request of the customer. Accessories for controlling the temperature, such as the TRD 1 temperature controller and TSE thyristor switching units are included in the Elstein range of products.

REO reflectors for the heater dimensions 245 mm x 60 mm and 122 mm x 60 mm, fitted

The REO reflectors are made from polished stainless steel. They are used for holding and fixing the heaters as well as reflecting the IR radiation in the direction of the material to be heated. On request, the reflectors fitted with ceramic infrared heaters are also available separately under the type designations REF/250 and REF/125.

Housing and bearing profiles, capping sections, appropriate end pieces, all made from stainless steel, fitted

For mounting the ceramic infrared heaters fixed to the REO reflectors. Each EBI consists of a housing profile with 2 end pieces, 1 bearing profile with 2 appropriate end pieces and a capping section. The end pieces of the bearing profile have 2 ring slits each. Cutting the land at the ring slit releases holes to insert M20 threaded joints for the electric power supply.

AK bipolar terminal clamps, fitted and connected with heater power leads

For wiring the ceramic infrared heaters. The Elstein range of products includes accessories for the wiring, heat resistant flexible metal hoses and screw fitting accessories. The hoses are used to hold the nickel wire and thermo line and to protect them from mechanical stress.

Our instructions for mounting, operation and safety must be observed.



Figure 87: Elstein BSI construction panel 1250 x 1875 mm equipped with HTS

Elstein BSI construction panels are infrared radiation areas, which can be equipped with the ceramic IR panel heaters HTS or HSR.

The ceramic infrared panel heaters are fixed to the MBO mounting sheets and surrounded with a housing of frame and capping sections.

All housing parts consist of stainless steel so that heaters with high power can be used, too.

The BSI construction panels are factory assembled so that the user only has to do the wiring, insert the BSI panel in a steel section frame to be made on site and connect the panel with the electricity mains.

Elstein BSI construction panels can be fitted with HTS heaters up to 800 W or rather with HSR heaters up to 1000 W and are suited for building infrared heating areas in any dimensions.

Length in mm

Inner dim. (Outer dim.) [No. of rad.]	250 (261) [2]	375 (386) [3]	500 (511) [4]	625 (636) [5]	750 (761) [6]	875 (886) [7]	1000 (1011) [8]	1125 (1136) [9]	1250 (1261) [10]	1375 (1386) [11]	1500 (1511) [12]		Heater wattage
125 (136) [1]	0.50 to 2.00	0.75 to 3.00	1.00 to 4.00	1.25 to 5.00	1.50 to 6.00	1.75 to 7.00	2.00 to 8.00	2.25 to 9.00	2.5 to 10.00	2.75 to 11.00	3.00 to 12.00	kW	250 W to 1000 W
250 (261) [2]	1.00 to 4.00	1.50 to 6.00	2.00 to 8.00	2.50 to 10.00	3.00 to 12.00	3.50 to 14.00	4.00 to 16.00	4.50 to 18.00	5.00 to 20.00	5.50 to 22.00	6.00 to 24.00	kW	250 W to 1000 W
375 (386) [3]	1.50 to 6.00	2.25 to 9.00	3.00 to 12.00	3.75 to 15.00	4.50 to 18.00	5.25 to 21.00	6.00 to 24.00	6.75 to 27.00	7.50 to 30.00	8.25 to 33.00	9.00 to 36.00	kW	250 W to 1000 W
500 (511) [4]	2.00 to 8.00	3.00 to 12.00	4.00 to 16.00	5.00 to 20.00	6.00 to 24.00	7.00 to 28.00	8.00 to 32.00	9.00 to 36.00	10.00 to 40.00	11.00 to 44.00	12.00 to 48.00	kW	250 W to 1000 W
625 (636) [5]	2.50 to 10.00	3.75 to 15.00	5.00 to 20.00	6.25 to 25.00	7.50 to 30.00	8.75 to 35.00	10.00 to 40.00	11.25 to 45.00	12.50 to 50.00	13.75 to 55.00	15.00 to 60.00	kW	250 W to 1000 W
750 (761) [6]	3.00 to 12.00	4.50 to 18.00	6.00 to 24.00	7.50 to 30.00	9.00 to 36.00	10.50 to 42.00	12.00 to 48.00	13.50 to 54.00	15.00 to 60.00	16.50 to 66.00	18.00 to 72.00	kW	250 W to 1000 W
875 (886) [7]	3.50 to 14.00	5.25 to 21.00	7.00 to 28.00	8.75 to 35.00	10.50 to 42.00	12.25 to 49.00	14.00 to 56.00	15.75 to 63.00	17.50 to 70.00	19.25 to 77.00	21.00 to 84.00	kW	250 W to 1000 W
1000 (1011) [8]	4.00 to 16.00	6.00 to 24.00	8.00 to 32.00	10.00 to 40.00	12.00 to 48.00	14.00 to 56.00	16.00 to 64.00	18.00 to 72.00	20.00 to 80.00	22.00 to 88.00	24.00 to 96.00	kW	250 W to 1000 W

Maximum surface rating 64.0 kW/m² Weight approx. 50 kgs/m² Other dimensions and surface ratings available on request
The outer dimensions indicated in the table do not include the mounting fishplates.

Figure 88: Overview of the standard dimensions, outer dimensions (), number of heaters [] and the connected loads in kW

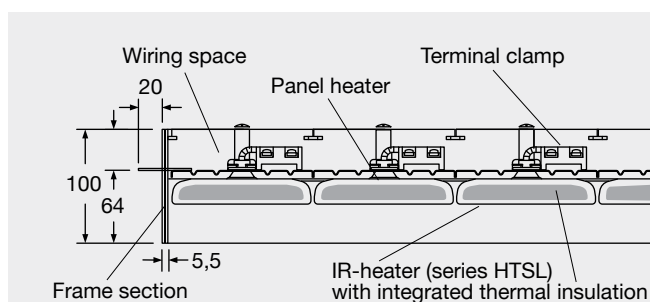


Fig. 89: Structural design of the BSI construction panel
Dimensions in mm

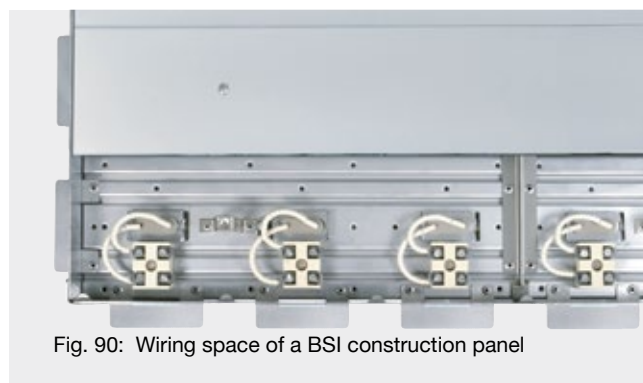


Fig. 90: Wiring space of a BSI construction panel

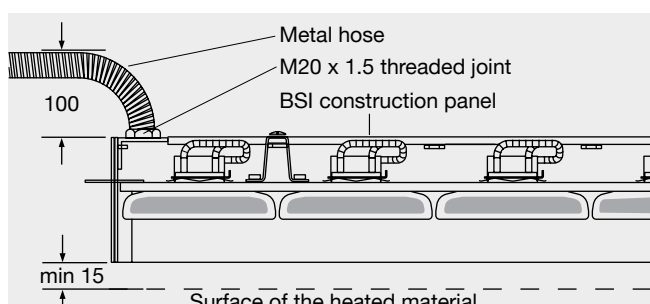


Fig. 91: Arrangement of the connection unit for establishing the mains connection. Dimensions in mm



Fig. 92: BSI construction panel, inserted in a steel section frame

Standard scope of delivery (variants available on request)

Ceramic infrared heaters HTS and T-HTS or HSR and T-HSR, fitted

Heaters can be chosen from the heater power ratings 250 W, 400 W, 600 W and 800 W. The HSR heaters can be fitted also up to 1000 W. Mixed heater wattages can also be fitted. One heater with integrated thermocouple (T-HTS or T-HSR respectively) is provided for each construction panel.

Frame sections with mounting fishplates and capping sections both made from stainless steel, fitted

These components are used to surround the ceramic infrared heaters fixed to the MBO mounting sheets and to hang the BSI construction panel into a steel section frame to be built on site.

AK bipolar terminal clamps, fitted and connected with heater power leads

For the electrical wiring of the individual heaters in conjunction with heat resistant insulated nickel wires and the connection of the thermocouple in conjunction with the heat resistant insulated thermo line.

Mounting units, enclosed, individual parts are not fitted

A mounting unit contains an angle section, up to 3 heat resistant flexible metal hoses with a length of 1m and screw fitting accessories. The hoses are used to hold the nickel wire and thermo line and to protect them from mechanical stress. The mounting units can be fixed to anywhere on the BSI frame section.

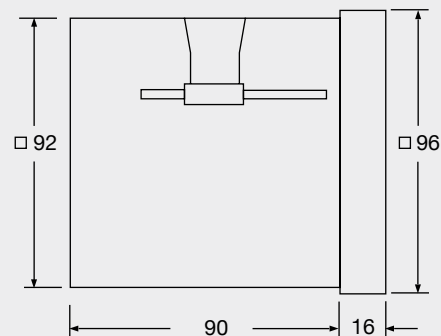
Wiring material (nickel wire, thermo line), enclosed

Nickel wire (2.5 mm², max. 500 °C, max. 11 A) is supplied for the electrical wiring of the ceramic infrared heaters. The thermo line (1 mm², max. 400 °C) is used to connect the thermocouple to the controller. The Elstein product range includes a compensating line (1.5 mm², max. 100 °C) for extending this connection outside the IR radiation area.

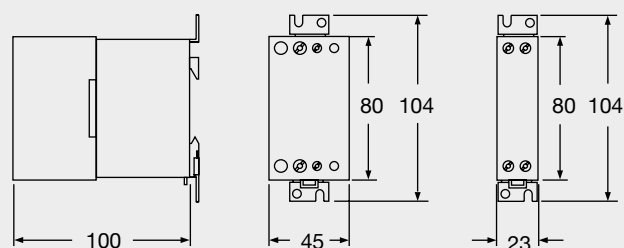
Our instructions for mounting, operation and safety must be observed.

Connection and Control Accessories

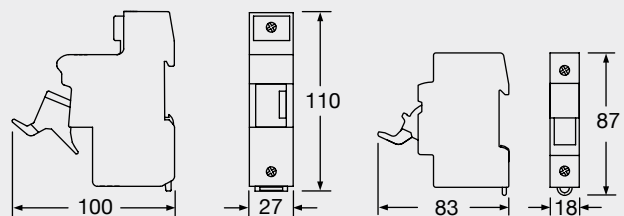
1) Elstein TRD 1 temperature controller



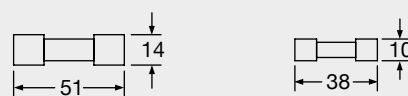
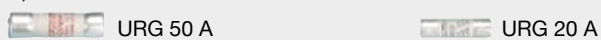
2) Elstein thyristor switching units



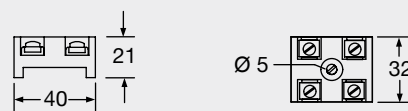
3) Elstein fuse holders



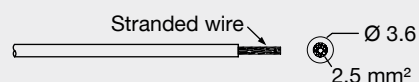
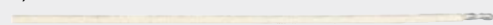
4) Elstein fuses



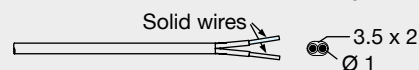
5) Elstein AK terminal clamp



6) Elstein nickel wire



7) Elstein thermo line



8) Elstein compensating line

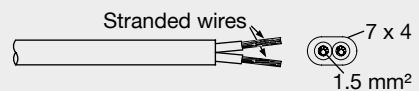


Figure 93: Electrical and temperature controlling accessories

Figure 94: Electrical and temperature controlling accessories
Dimensions in mm

Connection and Control Accessories

1) Elstein TRD 1 temperature controller

Type:	two point controller with PID performance
No. of switching units:	max. 6 TSE per controller
Temperature sensor:	NiCr-Ni + 16 further types
Control range:	up to 1100 °C
Setpoint setting:	in 1 °C steps, 4 setpoint values, distant access
Outputs:	2 x 0/12 V DC bi-stable load max. 30 mA and 2 relay outputs
Supply voltage:	95 V - 263 V, 48/63 Hz
Measuring circ. monit.:	outputs are switched off in case of break of sensor
Perm. ambient temp.:	0 - 55 °C
Perm. air humidity:	< 90%
Setpoint value display:	LCD 14.0 mm, green
Actual value display:	LCD 19.7 mm, red
Degree of protection:	front side IP 65 rear side IP 20
Connections:	screwed terminals
Installed position:	any
Dimensions:	DIN format 96 x 96 mm

The TRD 1 electronic temperature controllers analyse the signal of the thermocouple being integrated in each thermocouple heater. The TRD 1 temperature controllers operate as quasi-continuous controllers and their factory settings are specially matched to the controlled process performance of Elstein infrared systems, so that practically no temperature fluctuations occur.

The two 0/12V DC logical outputs control the TSE thyristor switching units. In addition, two programmable floating relay contacts are available, which can be used, for example, as alarm contacts in conjunction with the limit comparators.

Further information and safety information are given in the TRD 1 operating instruction.

2) Elstein TSE thyristor switching units

The TSE thyristor switching units are used to switch the load circuits (infrared heaters). They are available in two power stages:

TSE 40 A, max. 40 A = 9.2 kW at 230 V
TSE 20 A, max. 20 A = 4.6 kW at 230 V

TSE thyristor switching units are supplied complete with heat sink and mounting clips for 35-mm standard rails. They are not subjected to any contact wear and therefore do not cause any switching

noises. They are easy to install and their service life is virtually unlimited.

The loads are switched on at voltage zero and switched off at current zero. This means there is no system perturbation.

The load voltage is 24 - 265 V for TSE 20 A and 42 - 660 V for TSE 40 A. The control voltage is 4 - 32 V. A thyristor switching unit must be provided for each phase of a multi-phase connection to a 230/400 V alternating current mains.

The thyristor switching units must be protected against short circuits with super-agile fuses.

Transformers cannot be switched due to the Rush Effect.

Further information and safety information are given in the TSE operating instruction.

3) Elstein PST 14 fuse holder for URG 50 and PST 10 fuse holder for URG 20

The fuse holders can be clipped onto 35-mm standard rails and make a disconnection from the voltage possible according to the technical rules for safety. When changing the fuses, the front lever only has to be pressed down to expose the fuse shaft.

4) Elstein URG 50 A fuse for TSE 40 A and URG 20 A fuse for TSE 20 A

The super-agile fuses are used to protect the thyristor switching units against short circuits. Conventional fuses are unsuitable.

5) Elstein AK terminal clamp, bipolar, max. 480 V, max. 500 °C, consisting of steatite socket and stainless steel metal parts for cables with a maximum wire cross-section of 2.5 mm².

6) Elstein nickel wire, max. 500 °C, max. 11 A, stranded, single core, 2.5 mm² wire diameter, for the electrical connection of the ceramic infrared heaters.

7) Elstein thermo line, NiCr-Ni, max. 400 °C, for connecting the thermocouple integrated in the thermocouple heater with the temperature controller.

8) Elstein compensating line, stranded, NiCr-Ni, max. 100 °C, for extending the connection thermocouple-controller outside the IR radiation area.

Metal Parts

1) Elstein Housings



EBO/100



EBO/75



EBO/50



EBO/25

Further Elstein housings (without picture):

EBO/125

2) Elstein Reflectors



REO/250



REO/125

Further Elstein reflectors (without picture):

REO/250S and REO/125S for compact heater mounting (Width 62,5 instead of 95 mm)

3) Elstein Mounting profiles



MPO



MPO/2

4) Elstein Mounting sheets



MBO/500



MBO/375



MBO/250

5) Elstein mounting set



Slide (upper part)

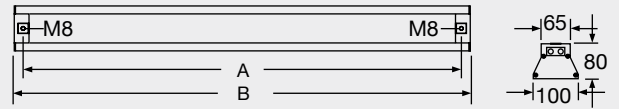


Mounting spring (lower part)

6) Elstein fixing spring



Figure 95: Metal accessories



	A	B
EBO/125	1217	1260
EBO/100	967	1010
EBO/75	717	760
EBO/50	467	510
EBO/25	217	260

Other lengths available on request (from 125 mm to 2500 mm and longer)

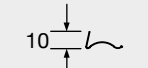
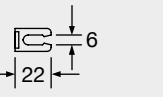
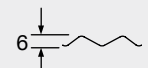
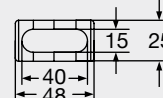
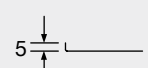
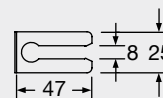
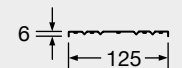
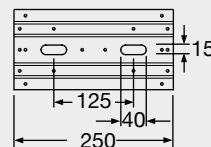
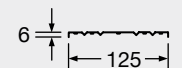
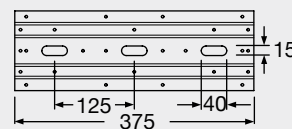
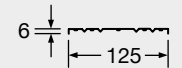
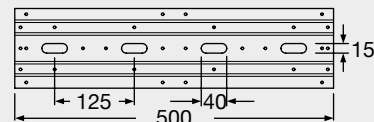
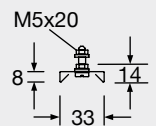
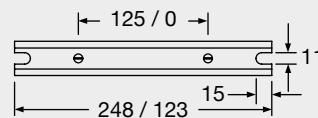
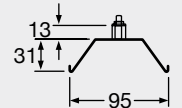
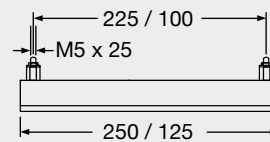


Figure 96: Metal accessories, Dimensions in mm

1) Elstein EBO housings

The EBO housings consist of an anodised, extruded aluminium section with an H-like cross-section, on which an aluminium capping section and two aluminium die cast end pieces are fitted.

Each die cast end piece contains a sliding nut with M8 thread for fixing the housings, for example on a steel section frame. They also contain a ceramic bushing for the electricity cables and a labelled safety earth terminal.

The EBO housings are available in the lengths 250 mm, 500 mm, 750 mm, 1000 mm and 1250 mm. Other sizes beginning from 125 mm length are also possible.

EBO housings being equipped with Elstein heaters are available as ready-for-assembly construction elements by using the designation EBF (see there).

2) Elstein REO reflectors

The REO/250 and REO/125 reflectors are used to hold and fix the FSM, FSR, HFS/1, HSR/1, HTS/1, SHTS/1, and FSM/2, FSR/2, HFS/2, HSR/2, HTS/2 and SHTS/2 ceramic infrared heaters, and to reflect the IR radiation in the direction of the material to be heated.

They are made from polished stainless steel and have a protective foil on the inside, which must be removed before installation.

REO reflectors are part of the ready to fit EBF construction elements and the fitted REF construction sets.

They are available in the two lengths 125 mm and 250 mm.

3) Elstein MPO mounting profiles

The MPO mounting profiles are made from stainless steel and are used to hold and fix HLS and IRS series heaters.

They are available in the two lengths 125 mm and 250 mm.

4) Elstein MBO mounting sheets

The MBO mounting sheets are designed for holding and fixing ceramic infrared heaters with the dimensions 122 mm x 122 mm.

They are made from stainless steel and have a protective foil on the upper side which must be removed before installation.

MBO mounting sheets are part of the ready to fit BSI construction panels and are available in the lengths 250 mm, 375 mm and 500 mm.

5) Elstein mounting set

All ceramic infrared heaters, which have a standard Elstein socket are fixed to the reflector or mounting sheet with the help of the mounting set.

The mounting set includes a wave mounting spring and a slide, both made from stainless steel.

The scope of delivery of the heaters with a standard Elstein socket includes one mounting set for each heater.

6) Elstein fixing springs

The fixing springs are made from stainless steel and are used to fix HLS and IRS series heaters to the MPO and MPO/2 mounting profiles.

Two springs per heater are included in the scope of supply of HLS and IRS series heaters.

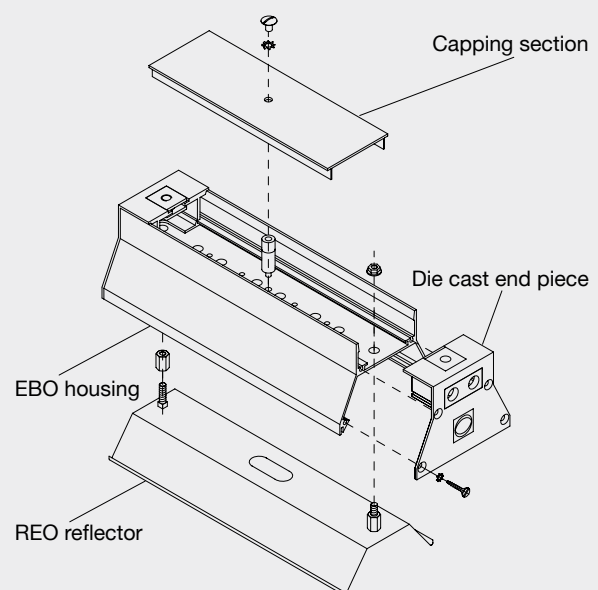
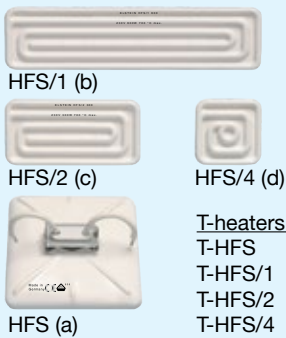


Figure 97: Example for the arrangement of metal parts using an EBO housing with REO reflector

Further Products

Further Elstein panel heaters. Technical data sheets with more detailed information are available on request or on the internet at www.elstein.com.



HFS series

a) 122 x 122 mm
b) 245 x 60 mm
c) 122 x 60 mm
d) 60 x 60 mm

60 - 600 W
230 V

max. 38.4 kW/m²
typ. up to 630 °C


Stocked items for standard wattages and voltages

T-heaters are available

T-heaters:
T-HFS
T-HFS/1
T-HFS/2
T-HFS/4

HFS (a)

Heaters of the HFS series were used for fitting the Elstein BSP construction panel. BSP is no longer available; it is replaced by BSI with HTS/HSR. The heaters of the HFS series are available however it is recommended to use the update HTS being energy saving and compatible to HFS.



FSF series

a) 122 x 122 mm
b) 245 x 60 mm
c) 122 x 60 mm
d) 60 x 60 mm

60 - 1000 W
230 V

max. 64,0 kW/m²
typ. up to 720 °C


Stocked items for standard wattages and voltages

T-heaters are available

T-heaters:
T-FSF
T-FSF/1
T-FSF/2
T-FSF/4

FSF (a)

Elstein FSF panel heaters are ceramic infrared heaters with a low overall height. Compared to other Elstein heaters with standard socket, the overall height of the FSF heaters, measured from the radiation surface up to the mounting plate, has been reduced by approximately 45 %.



HLF

122 x 122 mm


250 W 230 V
400 W 230 V
650 W 230 V

max. 41.6 kW/m²
typ. up to 630 °C

Stocked items for standard wattages and voltages

Heaters with thermocouple (T-heaters) are available (T-HLF)

Elstein HLF heaters were used for fitting the Elstein BSF construction panel. BSF is no longer available; it is replaced by BSI with HTS/HSR. The HLF heaters are available but it is recommended to use the update HTS being energy saving.



LCR

245 x 95 mm


400 W 230 V
600 W 230 V
900 W 230 V
1200 W 230 V
1500 W 230 V

max. 60.0 kW/m²
typ. up to 710 °C

Heaters with thermocouple (T-heaters) are available (T-LCR)

Elstein LCR big size heaters correspond to the concave shape of Elstein FSR, but their surface is larger by 58 %.

(Compare: The dimensions of FSR are 245 x 60 mm).



HLF/S

122 x 122 mm


250 W 230 V
400 W 230 V
650 W 230 V
800 W 230 V
1000 W 230 V

max. 64.0 kW/m²
typ. up to 720 °C

Stocked items for standard wattages and voltages

T-heaters available (T-HLF/S)

Elstein HLF/S heaters have a heightened socket and are classified between HLF and standard panel heaters (e. g. FSF, HFS, HTS). HLF/S heaters are used in heating panels or machines, which are designed for the model of HLF/S heaters; mainly in Asia.



SHTS/100

96 x 96 mm

800 W 230 V


max. 80.0 kW/m²
typ. up to 860 °C

Heaters with thermocouple (T-heaters) are available (T-SHTS/100)

The Elstein SHTS/100 super high temperature heater with the dimensions 96 x 96 mm and a surface rating of 80 kW/m² is a variant of the SHTS heater with the customary market dimensions 122 x 122 mm and a surface rating of 77 kW/m². The heaters can be mounted using the mounting carriers MTO.


Further Products

Further Elstein rod heaters and long panel heaters. Technical data sheets with more detailed information are available on request or on the internet at www.elstein.com.




ISS
 328 x 10 mm
 250 W 230 V
 400 W 230 V
 max. 48.0 kW/m²
 typ. up to 630 °C
 Heaters with thermocouple (T-heaters) are not available

Next to linear heating tasks Elstein ISS heaters are used as room, comfort or patio heater as well as heating element on terraces. The update IRS/330 can be used in already existing ISS systems. Only the holes need to be enlarged so that the bigger sockets of IRS/330 can be inserted.




IRS/330
 328 x 17 mm
 250 W 230 V
 400 W 230 V
 max. 36.4 kW/m²
 typ. up to 530 °C
 Heaters with thermocouple (T-heaters) are available (T-IRS/330)

Elstein IRS/330 rod heaters are the following model for ISS heaters. They have larger mounting sockets and the heating rod has a bigger diameter. The result is better mechanical strength and longer service life.



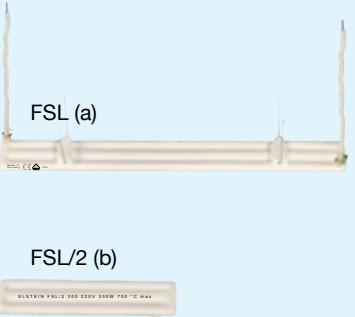
SBM series
 a) 460 x 20 mm
 b) 310 x 20 mm
 200 W bis 400 W
 230 V
 max. 36.0 kW/m²
 typ. up to 550 °C
 Heaters with thermocouple (T-heaters) are available (T-SBM/300 and T-SBM/450)

Elstein rod heaters SBM are used in infrared saunas.



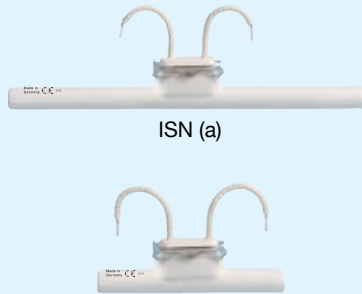
IRS/K
 from 125 mm to 300 mm
 125 W to 750 W
 230 V
 30.0 - 75.0 kW/m²
 typ. up to 700 °C
 Heaters with thermocouple (T-heaters) are available (T-IRS/K)

The leads of Elstein IRS/K rod heaters lie only on one side. Thus IRS/K heaters make the heating of the interior of hollow bodies possible.



FSL
 a) 37 x 326 mm
 b) 37 x 163 mm
 600 W and 300 W
 230 V
 max. 45 kW/m²
 typ. up to 550 °C
 Stocked items for standard wattages and voltages
 T-heaters are available. (T-FSL, T-FSL/2)

Elstein FSL long panel heaters have two sockets with integrated litz fixing wires, which are put through corresponding holes in the mounting sheet and twisted behind it. No special pre-punched holders or reflector plates are required for the assembly.




ISN series
 a) 245 x 25 mm
 b) 122 x 25 mm
 400 W 230 V
 600 W 230 V
 max. 72.0 kW/m²
 typ. up to 650 °C
 Heaters with thermocouple (T-heaters) are available (T-ISN, T-ISN/2)

Elstein ISN rod heaters are used for linear heating tasks. The heater's fixing to the mounting sheet is made using the standard socket, which also have the panel heaters like HTS series. If required an exchange between panel heater and ISN-rod heater is easily possible.

Further Products

Further Elstein screw-, round panel- and sphere heaters as well as switchboard heaters. Technical data sheets with more detailed information are available on request or on the internet at www.elstein.com.




IPO

Ø 50 mm
150 W 230 V
max. 38.4 kW/m²
typ. up to 510 °C

Heaters with thermocouple (T-heaters) are not available

Elstein IPO heaters are especially suited for building up three dimensional heating panels.




KSS/60

Ø 60 mm
250 W 230 V
max. 38.0 kW/m²
typ. up to 670 °C

Heaters with thermocouple (T-heaters) are available (T-KSS/60)

Elstein KSS/60 sphere heaters are a further development of IPO heaters and are especially suited for building up three dimensional heating panels. Compared to IPO they have a higher wattage, another kind of connection and can be supplied with integrated thermocouple (T-KSS/60).




IPT

Ø 75 mm
Ø 100 mm
Ø 125 mm
60 - 500 W
max. 30,3 kW/m²
typ. up to 510 °C

Heaters with thermocouple (T-heaters) are not available

Elstein IPT heaters are ceramic infrared heaters with E27 screw caps.




SSH

Ø 75 mm
60 W 230 V
100 W 230 V
max. 17.6 kW/m²
typ. up to 350 °C

Heaters with thermocouple (T-heaters) are available (T-SSH)

Elstein SSH infrared heaters are used for switchboards in order to avoid the formation of condensation water. SSH switchboard heaters are delivered with a fixing clip, which allows an easy mounting of the SSH heater onto 35-mm standard rails.




SSV

Ø 96 mm
75 W
typ. up to 200 °C

Heaters with thermocouple (T-heaters) are not available

Elstein heaters SSV are used for vaporising sulphur in green houses.



RFS series

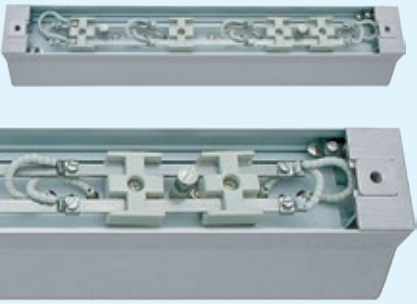
Ø 125 mm
Ø 100 mm
150 W - 500 W
230 V
max. 46.2 kW/m²
typ. up to 610 °C

Heaters with thermocouple (T-heaters) are available (T-RFS/125 and T-RFS/100)

Elstein RFS round panel heaters enable an optimum heating of corresponding areas (for example the bottom of bottles). They are also used in small thermoform devices for dental technique.


Further Products

Further Elstein infrared systems and focus infrared heaters. Technical data sheets with more detailed information are available on request or on the internet at www.elstein.com.



EBF-R
EBF-R/25 (cm)
in steps of 25 to
EBF-R/125 (cm)
and longer
max. 48.0 kW/m²
typ. up to 860 °C
for the heaters
(and T-heaters):
FSM, FSM/2
FSR, FSR/2
HFS/1, HFS/2
HTS/1, HTS/2
SHTS/1, SHTS/2
HSR/1, HSR/2


Elstein EBF-R construction elements correspond to the EBF system, but EBF-R is supplied in prewired condition using stainless steel power rails.



Rail wiring
AK terminal clamp, bipolar, consisting of steatite socket and stainless steel metal parts.
Stainless steel univ. power rail with 23 holes.
Total length: 1580 mm
Max. 400 V
Max. 25 A
Max. 600 °C


AK terminal clamp
Universal power rail (section)

The pictures show the delivery condition of the required materials used for rail wiring. The metal parts of the terminal clamp have to be disassembled and are used for fixing the heater's connections to the power rail. The ceramic body of the clamp is used for holding the power rail.




EBI
EBI/25 (cm)
in steps of 25 to
EBI/125 (cm)
and longer
max. 48.0 kW/m²
typ. up to 860 °C
for the heaters
(and T-heaters):
FSM, FSM/2
FSR, FSR/2
HFS/1, HFS/2
HTS/1, HTS/2
SHTS/1, SHTS/2
HSR/1, HSR/2

Elstein construction elements EBI are used for Elstein heaters with the dimensions 245x60 and 122x60 mm in order to assemble them to heating panels in various geometries. The housing parts are made from stainless steel. Construction elements EBI are available with power rails under the designation EBI-R.




EBI-R
EBI-R/25 (cm)
in steps of 25 to
EBI-R/125 (cm)
and longer
max. 48.0 kW/m²
typ. up to 860 °C
for the heaters
(and T-heaters):
FSM, FSM/2
FSR, FSR/2
HFS/1, HFS/2
HTS/1, HTS/2
SHTS/1, SHTS/2
HSR/1, HSR/2

Elstein construction elements EBI are available with power rails under the designation EBI-R.



FIS
Ø 125 mm
250 W 230 V
max. 12.3 kW/m²
typ. up to 750 °C
Stocked items for standard wattages and voltages.
Heaters with thermocouple (T-heaters) are not available

Elstein FIS focus infrared heaters are suited for solving tasks dealing with the heating of selective or small areas.

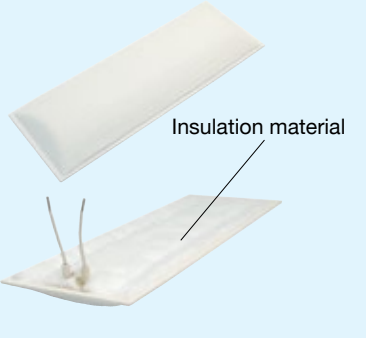


BSH
from 125x250mm to 1000x1500mm and larger
with HTS to 600W with HSR to 600W
max. 38.4 kW/m²
typ. up to 700 °C
Heaters with thermocouple are available (T-HTS, T-HSR)

Elstein BSH construction panels are used for assembling bigger sized infrared radiation areas with Elstein heaters of the HTS- or HSR series. The housing is made from aluminium. BSH is available but it is replaced by BSI, which has housing parts made from stainless steel.

Further Products

Elstein infrared heaters for room heating and infrared saunas, which are an alternative to the classical sauna. Technical data sheets with more detailed information are available on request or on the internet at www.elstein.com.



Insulation material


WKS

327 x 120 mm

200 W 230 V
250 W 230 V
600 W 230 V

Stocked items for standard wattages and voltages

Elstein WKS infrared sauna heaters are ceramic IR heaters, which fit to the requirements in IR saunas as well as room heating devices regarding material, geometry, function, design and mounting. In IR saunas heaters up to 250 W are used; room heating devices use heaters up to 600 W.




IRH

245 x 95 mm

200 W 230 V
250 W 230 V
400 W 230 V
600 W 230 V
800 W 230 V
1000 W 230 V

Stocked items for standard wattages and voltages

Elstein IRH infrared heaters are ceramic heaters in convex design. The radiating surface consists of ten small longish radiation surfaces, which are also designed in a convex shape. In IR saunas heaters up to 250 W are used; room heating devices use heaters up to 1000 W.



IRH/S

245 x 60 mm

150 W 230 V
200 W 230 V
250 W 230 V
400 W 230 V
600 W 230 V
800 W 230 V
1000 W 230 V

Stocked items for standard wattages and voltages

Elstein IRH/S infrared heaters are ceramic heaters. Their radiating surface is arranged in six small longish and convexly designed radiation surfaces. The whole radiation surface of IRH/S is also convexly designed. Like IRH these heaters are used in IR saunas as well as room heating devices.

Space for Notes

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