



Installation instructions for ESWA ceiling heating elements, type: AC 90W * 120W * 140W

Safety tip! ESWA ceiling heating elements must be installed by approved service technicians.



This instruction guide is part of the product. Please read these installation instructions carefully before the installation and first use of ESWA ceiling heating elements. Please follow both the local regulations for electrical installations and the safety tips and instructions of this installation guide during installation, otherwise the performance and operational safety of



this product cannot be ensured. The heating elements must be used only in accordance with the following instructions. ESWA does not accept liability for failure of any goods supplied which are not installed in accordance with the manufacturer's instructions.

ESWA ceiling heating elements are available in the following standard sizes with the specified electrical power:

Electrical output at 90 W/m ²				Electrical output 120 W/m ²				Electrical output at 140 W/m ²			
Width/cm	Length/cm	Volt	Watt/EL	Width/cm	Length/cm	Volt	Watt/EL	Width/cm	Length/cm	Volt	Watt/EL
30	185	115	50	30	300	230	110	30	290	230	120
30	265	115	70	30	430	230	155	30	420	230	175
30	290	115	80	30	480	230	175	40	210	230	120
40	140	115	50	40	230	230	110	40	265	230	150
40	180	115	65	40	290	230	140	40	320	230	180
40	220	115	80	40	350	230	170	40	375	230	210
40	240	115	85	40	400	230	190	40	425	230	240
40	275	230	100	60	80	115	60	60	75	115	65
40	355	230	130	60	160	230	115	60	150	230	125
60	95	115	50	60	230	230	165	60	220	230	185
60	130	115	70	60	250	230	180	60	235	230	195
60	185	230	100	60	300	230	215	60	290	230	245
60	265	230	140	60	330	230	240	60	315	230	265
60	290	230	160	60	375	230	270	60	350	230	295
60	350	230	190	60	430	230	310	60	420	230	355
60	390	230	210	60	480	230	345	80	105	230	120
80	140	230	100	80	115	230	110	80	160	230	180
80	180	230	130	80	180	230	175	80	210	230	235
80	220	230	160	80	230	230	220	80	265	230	295
80	240	230	170	80	290	230	280	80	320	230	360
80	275	230	200	80	350	230	335	80	375	230	420
80	355	230	250	80	400	230	385	80	425	230	475

Power supply: Rated voltage: 230V AC. Rated power input: details on the type labels of the ceiling heating elements.

Data sheet available on request. Possible variance in rated power input according to EN 60335-1: + 5% / - 10%.

Certification: ESWA ceiling heating elements are examined and certified by VDE Germany:

EN 60335-1:2007-02; EN 60335-1:2002 + A1 + A11 + A12 + Corr. + A2:2006; EN 60335-2-96:2004-07; EN 60335-2-96:2002 + A1:2004; EN 50366:2006-11; EN 50336:2003 + A1:2006;

Construction of ESWA ceiling heating elements:

The ceiling heating elements consist of a metallic resistance foil which is laminated between two high-grade multiple layer plastic foils. The heating elements are equipped with firm connection housings. ESWA ceiling heating elements are a very safe product if installed in accordance with the instructions. The melting point of the metallic resistance foil is lower than the melting point of the surrounding plastic films.

Heat- and fire resistance – Nominal maximum working temperature:

ESWA ceiling heating elements meet the requirement of IEC 60695-2-11. The nominal maximum working temperature is 80°C.

Radiation – Conformity:

The development of electromagnetic fields is almost entirely prevented by the meander-like arrangement of the paths in the heating foils. The magnetic flow density measured at a distance of 1m below the ceiling is only 2% of the legal limit, which is 100 µt.

ESWA ceiling heating elements are CE compliant and they serve the requirements of the German Electrical and Electronic Equipment Act (Elektro-G). The guidelines of the EC directive 2002/95 EG (RoHS) can be implemented differently in national directives. Please check the directives for your country before the installation of ESWA ceiling heating.

Specified use:

ESWA ceiling heating elements (Type AC) are intended to be installed in ceilings of residential and business buildings as well as in sloping ceilings which are inclined less than 45° to the perpendicular. Suitable lining materials are: gypsum plasterboards and fibrous plasterboards, chipboards, profiled woods, plywood, hardboards.

Improper use: Other applications as the installation of a ceiling heating are not permitted. ESWA ceiling heating elements must not be installed into walls as well as sloping ceilings below 2.3m.

Maximum thickness of the lining material:

material	thickness in mm		coefficient of thermal conductivity W/(mK)
	Min.	Max.	
gypsum plasterboards and fibrous plasterboards	9	15	0,21
profiled woods	9	15	0,13
plywood	9	15	0,14

material	thickness in mm		coefficient of thermal conductivity W/(mK)
	Min.	Max.	
chipboards	9	15	014
hardboards	3	4	0,12
hardboards (medium hard)	3	4	0,85



Important: You must observe the following standards, regulations and instructions during the installation of a ceiling heating with ESWA ceiling heating elements:

The standards IEC/EN 60364 Section 701 u. 753, as well as IEC/EN 60335 part 96, plus the latest supplements and appendices. As well as the standards listed in national issues, e.g. VDE 0100 in Germany.

Please check before installation that all ceiling materials used are suitable for ceiling heating with respect to, heat transition, the thermal compatibility and the evaporation of any contained ingredients. Do not drill, staple, screw or nail the heating conductor. The heating conductor can be stapled at the intended edge strips or centrelines of the substructure. It is also possible to attach the heating conductor with a commercial double-sided adhesive tape. Do not fold or cut the ceiling heating elements. The ceiling heating elements (including the mounting surfaces) must be covered completely with sheeting. The smallest bending radius is 30mm. The elements must not be installed at temperatures below 5°C. Do not damage the ceiling heating elements, e.g. by using sharp objects or by stepping onto the heating elements. The nominal voltage has to be checked before the electrical connection of the heating elements. If the power supply cord of a ceiling heating element is damaged, it must be replaced by the manufacturer or by a qualified installer.

The installer has to hand over the description of the ceiling heating with the following content to the client: Description of the construction of the heating system. An installation plan containing the division of the heating circuits and their rated voltage. The order of the heating elements in every room. The special features considered during the installation of the heating elements. Details of the control units used plus the corresponding circuit diagrams. Page 4 of this instruction must be completed with the required details by the installer and it must be attached permanently to the electric circuit distributor of the heating system.

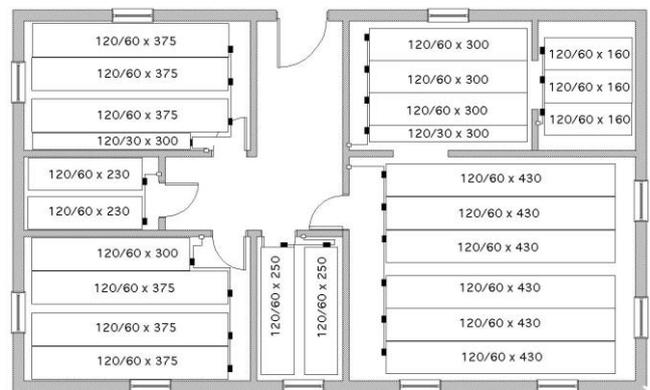
The installer of the ceiling heating system must inform other trades people that no other mounting elements are to be used in the area of the ceiling heating.

The EN sign of the particular ceiling heating element does not list the safety of the finished ceiling heating in which the heating elements are installed. The qualified installer is responsible for the correct installation and for obeying the standards and legal regulations. Our products are the state of the art. Data and application-specific advice for their proper use are given in accordance with our knowledge and experience at the time of printing. However, no guarantee according to §443 BGB is given. The provided installation instruction does not consider special circumstances of the individual case. Please check the suitability of the product for the specific purpose. If you have any other questions, do not hesitate to contact us.

Planning

In order to heat a room exclusively with ESWA ceiling heating elements, U-values for the exterior walls, windows and cavity are required. **A heat requirement calculation must be drawn up.**

Draw up a heating element plan similar to the diagram opposite. Determine the position of the room temperature controller and of the junction boxes. The junction boxes are to be fixed below the ceiling. Determine the connected load per room and consider that possibly several junction boxes plus the accompanying connecting cables are required. Mark the position of the lighting fixture and of any other ceiling components. Please consider that heating elements must not be installed above these built-in appliances. The supply lines for lights and any other ceiling components are to be installed in the insulation before the installation of the heating elements.



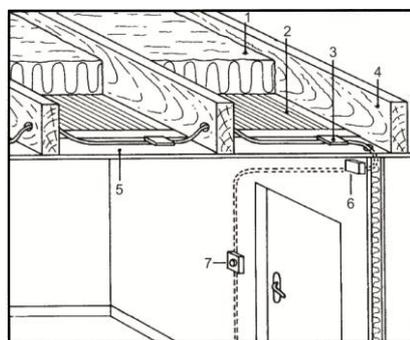
Substructure and insulation

First install the substructure made of metal or wood. The distance of the wood slats or the metal sections to each other must be adjusted to the width of the chosen heating elements. Drawings of the heating elements plus measurements are illustrated on page 3.

Insulation

Use pressed mineral wool without aluminium lamination (building material class A1) as insulating material. Choose the thickness of the insulation material such that it ends flush with the lower edge of the supporting structure.

Important note: ESWA heating elements do not fulfil the function of a vapour barrier. If necessary, it is important that the vapour barrier or its covering is not made of any electrically conductive material or material containing carbon. If an earthing grid is necessary or required by the national installation standards, you have to keep to the following measurements: mesh size: 25-30mm, wire gauge: 1.0mm².



- 1) insulation
- 2) ESWA heating elements
- 3) terminal boxes
- 4) beam
- 5) ceiling lining
- 6) junction box
- 7) room thermostat

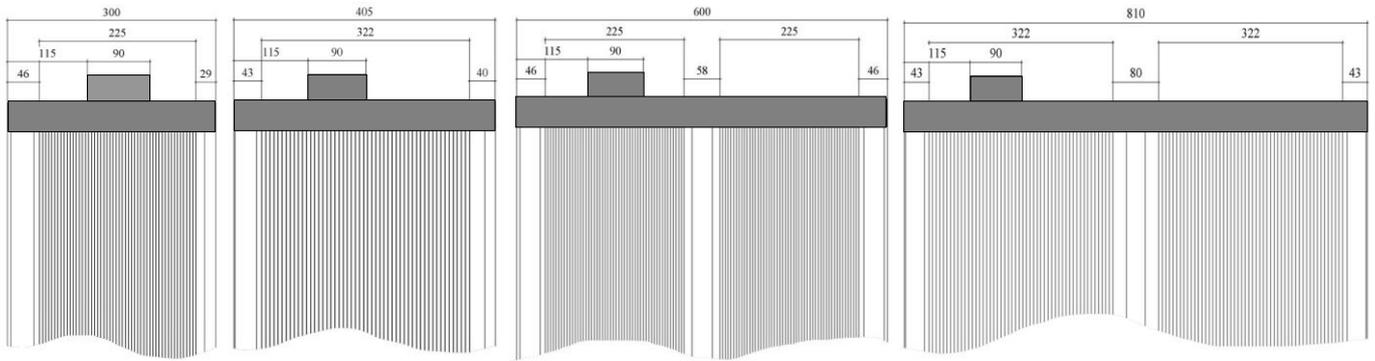
Assembly of ESWA heating elements

Choose the length of the heating elements so there is free space of at least 10cm between the connections end of the heating elements and the wall junction so that the cable connection boxes and the cables can be lowered into the insulation. The flat part of the cable connection boxes must be turned to the ceiling lining. This side is marked with the following sticker: "Heat radiating surface".

Start at the cable connection boxes to fix the heating elements to the construction. The exact aligning of the heating elements is very important. Unroll the heating elements similar to wallpaper. If you use a substructure made of wood, staple the heating elements to the lathing at a distance of approx. 30cm. If you use a substructure made of metal, fix the heating elements with a double-sided adhesive tape.

Important: Do not staple the heating elements except at the intended edge strips or centrelines. The distance between staples and heating conductor strips must be at least 8 mm. Do not staple or screw into the heating conductors and the black adhesive tape at the connection end of the heating elements. Do not fold, turn down or cut the heating elements. It is important that there is no air space between the ceiling lining, the heating elements and the insulation. After all heating elements are fixed in accordance with this installation instruction, determine the electrical resistivity of the heating elements and check it with suitable testing equipment (ohmmeter). The details of the electrical resistivity of the individual heating element can be found in a data sheet available on request.

Drawings of ESWA heating elements, type: AC 90 W/m² * 120 W/m² * 140 W/m² (measurements in mm)

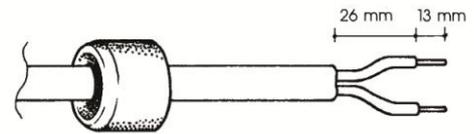


Electrical connection

The electrical connection of the fixed elements to the room temperature controller and to the power grid must be carried out by a qualified installer. A residual current device (RCD) of max. 30mA must be installed into the current supply. Please keep to the regulations of the standard IEC/EN 60364-753 and 701 in the latest version. Furthermore keep to the regulations of the local power supply companies. The room temperature thermostat must meet the demands of the standard IEC/ EN 60730. **Important! Switch power off before any installation is carried out!**

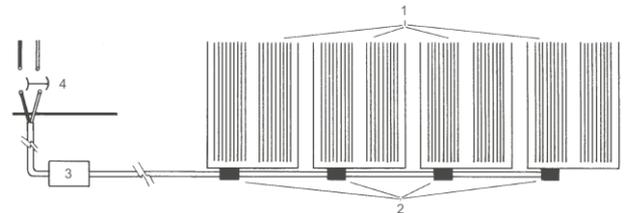
Type of connection line: NYM 2 x 1.5 mm, outside diameter 7.8 mm

Remove the orange seal plugs from the black terminal boxes. The tops of the boxes can now be opened. Pierce through the seal plugs and put them on the stripped connection lines (cf. picture).



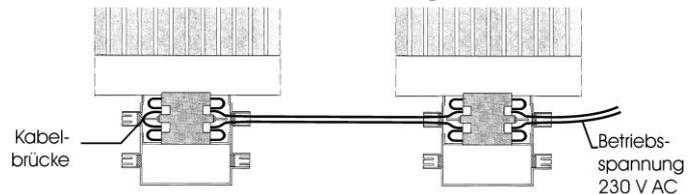
Start with the electrical connection at the heating element which is nearest to the wall terminal box. Plug the two cable tails into the WAGO contacts at one side of the contact area. Connect the heating elements as shown in the drawing below. Close the tops of the terminal boxes and push the seal plugs back to the terminal boxes. The connected load of each supply line must not be higher than 1780 W (7.75 A). If the connection power is higher, use several electric circuits.

- 1) ESWA heating elements
- 2) terminal boxes
- 3) junction box
- 4) mains connection



Important! Special electric circuit 115 V AC

If you use heating elements with an operating voltage of 115 V AC, connect the heating elements in series. The contact areas of the terminal boxes are made for this purpose. Install a cable crossover at the output terminal in the contact area of the second heating element.



Ceiling lining

Following materials are suitable for the ceiling lining: gypsum plasterboards and fibrous plasterboards, chipboards, profiled woods, plywood, hardboards. Details about the maximum thickness of these materials can be found in the table on page 1. Please check the manufacturer's instructions of the sheeting whether the chosen sheeting is suitable for ceiling heating. The processing and fixing to the substructure must be carried out in accordance with the instructions given by the manufacturer of the sheeting.

Important! Please use joint tape to fill the joints of the gypsum plasterboards and fibrous plasterboards. Please form expansion joints at the ceiling attachments of the enclosure walls. Form expansion joints in the ceiling surface as well if the room is more than 30 square metres.

Environment and Recycling

Please help us to protect the environment by disposing of the packaging in accordance with the national regulations for waste processing. Do not dispose ESWA heating elements as normal domestic waste. According to the German Electrical and Electronic Equipment Act (Elektro-G), a ceiling heating is a so-called "fixed installation" and therefore it does not subject to the regulations on waste disposal. The national directives of the EG regulation 2002/96 EG (WEEE) can be different in other European countries. Please check the national regulations before the installation of an ESWA ceiling heating.

Storage

Storing instructions: ESWA ceiling heating elements should be stored in a dry and clean room. Do not store anything on the ESWA ceiling heating elements. The storage temperature must not be below -10°C and not above + 80°C. The enforcement of warranty claims requires that the assembly of ESWA heating elements takes place within 12 months after delivery.

Description of the symbols fixed to the ESWA ceiling heating elements:



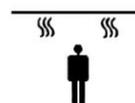
Caution! Danger!
Dangerous voltage!



Do not nail!
Nailing causes damage



Protection class II
Test voltage 3000 V



Ceiling heating
Direct acting radiation



Disposal
Do not dispose as normal domestic waste!

Information for the building owner and the user of the ceiling heating system

This information sheet meets the requirements of the installer standard BS 7671 regarding the information duty of the installer to the building owner and the user of the ceiling heating.

The missing information and drawings must be added by the installer of the ceiling heating. This information sheet must be fixed permanently to the applying electric circuit distributor. A sufficient number of copies must be handed over to the owner or to his/her deputy. The installer must point out that the owner or his/her deputy must hand over the operating instructions to the user of the ceiling heating.

Details about the construction of the heating elements and their maximum operating temperature:

The ceiling heating elements consist of a metallic resistance foil which is laminated between two high-grade multiple layer plastic foils. The heating elements are equipped with firm connection housing. The maximum permitted operating temperature is 80°C.

The heating elements are examined and certified by VDE Germany: EN 60335-1:2007-02; EN 60335-1:2002 + A1+ A11+ A12 + Corr.+ A2:2006 EN 60335-2-96:2004-07; EN 60335-2-96:2002 + A1:2004; EN 50366:2006-11; EN 50366:2003+A1:2006

ESWA heating elements meet the corresponding harmonized European directives (CE-marking).

Details about the construction of the ceiling heating system:

Construction of the suspension:.....Insulation:.....Lining material:.....

Special features considered during the installation of the heating elements: (floor openings, train stairs, lightning fixture, etc.)

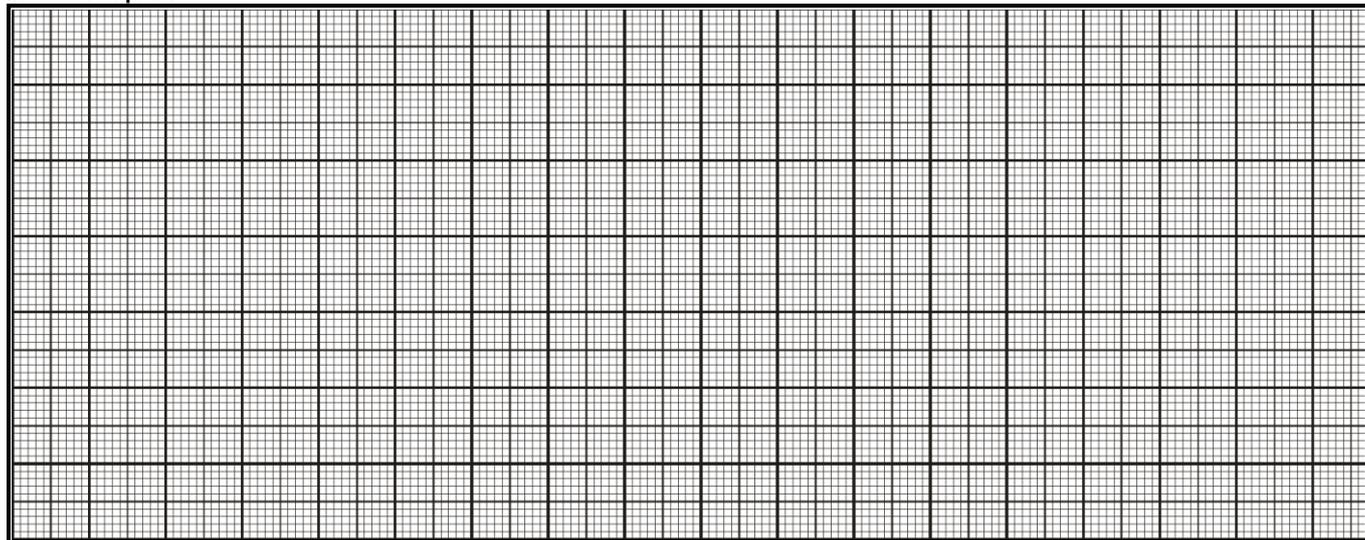
.....
.....

Details about the installed control units:

Manufacturer:.....Type:.....Volt..... Amp:.....(Circuit diagram must be fixed permanently to the power distributor)

The order of the heating elements in every room plus division of the heating circuits and their rated voltage:

Installation plan:



Operating instructions for the user of the ceiling heating system

Description of the heating system and its function:

The installed heating system is an electrical ceiling heating. The heating elements are installed across the ceiling. Because of the high number of heating elements in the ceiling the maximum surface temperature is 40°C +/- 5°C. The heat transfer through radiation can be compared to a tiled stove. Infra-red heat waves warm people, objects and walls directly. In principle the heating of the occupants can be compared to winter sports enthusiasts who sunbathe at low external temperature but feel comfortable heat.

The ESWA principle: Because of the meander-like arrangement of the paths in the heating foil, a contrary electric current arises which prevents the development of electromagnetic fields almost entirely. The magnetic flow density measured at a distance of 100 cm below the ceiling is 0.02µt. The legal limit is 100 µt.

Important

Do not bore, nail or screw into the heated ceiling. Do not install any additional lighting appliances.

Floor-to-ceiling cupboards can be fixed only in the area where no heating elements are installed.

Use of the operation and control system:

The heating system can be turned on and off only by using the installed room thermostat. The room temperature can be changed at the adjustment and setting equipment of the room thermostat. If you use a room thermostat allowing night-time setback, please carry out the adjustment of the operating time according to the operation instruction of the room thermostat.

