



Instructions for installation and operation

Heating jackets, heating mats and insulation jackets
Series WOX





Important safety information for the use of heating jackets, heating mats and insulation jackets

Please read the installation and operating instructions very carefully before using the heating jackets. Pay attention to the information on the type plate and any warnings on the product. The installation and operating instructions are an important element of the product, they must be available to all users. Keep the installation and operating instructions in a safe place if the product is to be used later. The product should only be installed and operated by persons with necessary skills.

Heating jackets and heating mats are used in areas where particular operating conditions exist and where certain requirements must be fulfilled. Please consider this and obtain information about the relevant regulations beforehand to ensure trouble-free operation as intended.

If you have any questions, do not hesitate to contact us; you will find the details in Section 9. We will be happy to advise you and provide assistance to ensure safe and proper operation of our heating jackets, heating mats and insulation jackets.

Heating jackets and heating mats are electrical devices

To prevent electrical hazards the heating jackets and heating mats must be checked regularly and if necessary, maintained in accordance with the generally recognized codes of practice (VDE / BGV A3 / ...).

**A 30 mA residual current device should be installed to ensure safe operation.
This must be tested before start-up and in periodic intervals to ensure it's functioning.**



Additional safety information

In case of obvious damage, the heating jackets and heating mats must be disconnected immediately and must not be used any more. Determine and eliminate the cause of the damage.

- Mechanical damage to the outer or inner sheath > caused by external forces.
- Mechanical damage to the connection cables/screw-in joints > caused by external forces.
- Brittle or broken protective tube > thermal stress or extreme sunlight.

Avoid overheating of the heating jackets, heating mats and insulation jackets. Observe the minimum and maximum operation temperature and never exceed or undercut these. Overheating can occur in many different ways. Please check the operating and ambient conditions in advance and monitor the first heating processes.

Monitored operation with suitable temperature controllers is a requirement for heating jackets to be operated as intended.

Guidelines and regulations

Design, production and inspection of the heating jackets / heating mats are according to the following guidelines and regulations:

EU-Low Voltage Directive 2014/35/EU from 26.02.2014
EU-Electromagnetic Compatibility Directive 2014/30/EU from 26.02.2014
EU Directive 2011/65/EU RoHS Directive
DIN EN IEC 60519-1:2020-12;VDE 0721-1:2020-12) Safety In electro heat Installations
DIN EN 60398:2016-02;VDE 0721-50:2016-02 Industrial electro heat Installations
DIN VDE 0100-600:2017-06;VDE 0100-600:2017-06 Low-voltage electrical installations - Verification
DIN VDE 0701-0702 Recurrent Tests

With Winkler heater you have acquired a high-quality product which can successfully be operated within its application when considering corresponding standards and regulations. It is always our main objective that the products manufactured by us function to your full satisfaction and meet the desired requirements. As a rule, the installation and intended use must be in compliance with the valid regulations for electric heating systems (VDE) and the recognized rules of engineering practice (DIN, accident prevention regulations).

The heating mats / heating jackets / insulating jackets may only be installed by suitably trained technical personnel in accordance with the following instructions for installation and operation.

If the heaters are operated in conditions deviating from these installation and operating instructions or are not operated as intended all warranty claims expire and the product could also be damaged. If you have any questions please contact us and ask for assistance (see chapter 9. Contact).



Below the heating jackets and heating mats are simply referred to as „heaters“; the insulation jackets are simply referred to as „insulation“.

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1. General information / checking the heater

The heaters must be applicable to the intended application. Before installing the heating system check the following:

- The data on the type plate is identical with your ordering data (mains voltage, power, type, max. working temperature, etc.).
- Is the heater fitting closely to the heated object?
- Are precautionary measures in place against excessive temperatures?
- Is the temperature sensor located at the desired location?
- Is it ensured that the heater can be disconnected quickly from the mains supply in the event of danger?

The heaters are generally suitable for a large variety of applications. However, if the heater has been designed for a specific application which changes in the course of time, the user should contact the manufacturer and enquire about further areas of application and operation. The heater needs to be protected against chemical, mechanical or aggressive environments which could damage the heater and thus endanger its safe and correct operation.



The maximum operating temperatures are specified on the type plate. These must not be exceeded at any point in the heater. The heaters and insulation with Velcro® fasteners, the ambient temperature of +85 °C must not be exceeded, as this would result in damage.

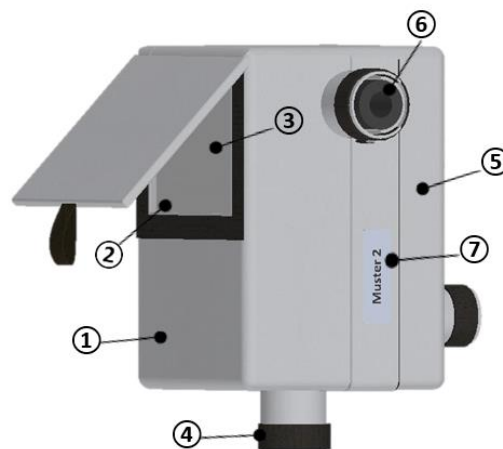
Use a suitable thermostat to control the heater operation.

2. Structure of the heater

A self-limiting heating cable can be, or is, located in the special designed inner pockets for heating cable. The evenly spaced heating cable distances ensure optimum and uniform temperature distribution. Selected insulation thicknesses with high-quality Armaflex reduce heat dissipation to the outside.

Cross section / Principle structure of a heating jacket

- 1: Outer sheath: PVC coated fabric, gray
- 2: Window: PVC transparent (with optional flap)
- 3: Inner sheath: water-repellent polyester fabric
- 4: Fastening: hook and loop
- 5: Insulation: Armaflex® foam panels
- 6: Cable ducts
- 7: Nameplate



Structure Standard Serie: self-limiting heating cable with integrated thermostat

The heating is constructed of a self-limiting heating cable with protective braiding. This protective braid provides electrical safety for connection to protective measures.

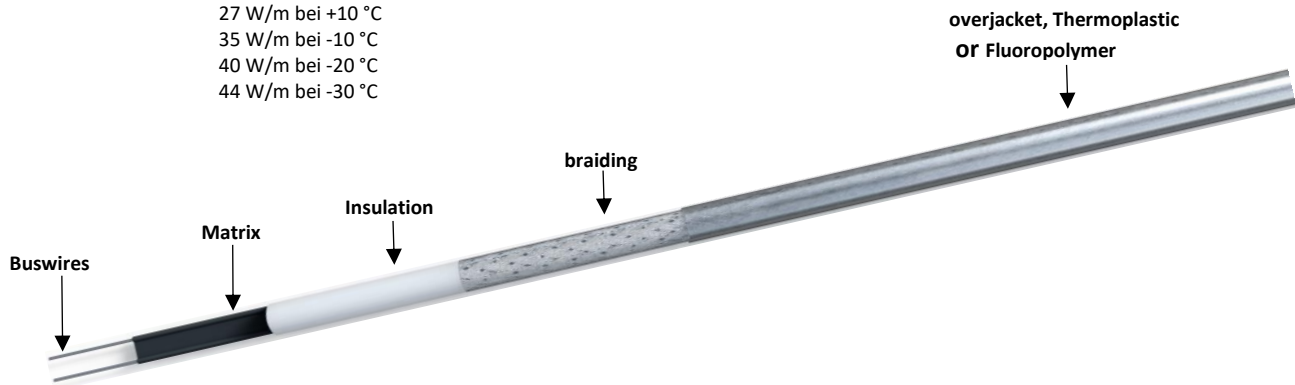
- Factory terminated self-limiting heating cable
- with or without Schuko Plug
- integrated thermostat (+5...+15 °C) between heating cable and cold lead
- overjacket, Thermoplastic: 230V, 15 W/m @ 10 °C



Structure Serie: self-limiting heating cable for connection to external thermostat or junction box

The heating is constructed of a self-limiting heating cable with protective braiding. This protective braid provides electrical safety for connection to protective measures.

- Factory terminated self-limiting heating cable
- with cold lead or terminated for heating cable installation directly into a junction box
- overjacket, Thermoplastic: 230V;
 - 30 W/m bei +10 °C
 - 35 W/m bei -10 °C
 - 37 W/m bei -20 °C
 - 39 W/m bei -30 °C
 - 41 W/m bei -40 °C
- overjacket, Fluoropolymer: 230V;
 - 27 W/m bei +10 °C
 - 35 W/m bei -10 °C
 - 40 W/m bei -20 °C
 - 44 W/m bei -30 °C



In terms of structure, insulating jacket

corresponds to heating jackets, but does not have a heat conductor. The insulating thickness may differ to suit the particular application.



Both versions need to be protected against moisture. If any moisture has ingressed into the heater due to incorrect storage or application etc., the device should be returned to the manufacturer for inspection.



Optionally, temperature sensors with reliable separation from the potential compensation of the heater and consistent shielding (sensor, connection cable and plug) may be installed. Before the heater is used, you must ensure reliable separation (visual check and/or measurement). If there is obvious or measurable damage to the separation, have the heater inspected professionally (e.g. responsible department, manufacturer).



Electrical heaters must be installed and operated so that they cannot cause hazards even if they are not supervised or switched on accidentally. Suitable safety precautions must be taken, such as operation with a controller.

3. Area of application / electrical connection

The supply is normally 230 V. Other voltages are possible. The voltage specification on the heater's type plate is decisive and must be observed. Electrical protection measures and shock-hazard protection must be provided in compliance with DIN VDE 0100. The connecting mains cable has a standard-length of 1000 mm, but may also be supplied shorter or longer depending on the layout of your system. The electric cables (supply network) must be dimensioned according to fuse capacity and max. permissible voltage change. The cross-section of the connecting cable must be dimensioned according to VDE 0100 corresponding to the current input. The requirement also applies to all connecting leads of control devices. If the heater is equipped with a protective conductor, this will need to be included into the protection measures (protective conductor has to be connected to PE terminal).



The electrical connection of the heater must be via a residual current device (FI=30 mA) to ensure that dangerous touch voltage cannot occur on the heater in the event of a fault. Circuit breakers (C-characteristic) with max. 80 % load are to be used for operation of self-limiting heating cables.



Different ambient temperatures near the heater cause different inner temperatures. Important for controlling the heater is the ambient temperature where the sensor is located, which must be in the range of the lowest ambient temperature to provide frost protection. This must be determined beforehand and be taken into account in the project planning. By default, the sensor can be inserted directly into the inner or outer jacket sensor pockets. The sensor location for the operating temperature can be defined specifically for the customer or the application.

4. Installation / Commissioning

Depending on the application and the customer's requirements, the heating/insulation is assembled ready for connection and can be used in accordance with the following installation instructions and proper operation:

1. The heater/insulation is mechanically sensitive. It must not be laid over burrs or sharp edges.
2. If metal parts or metallic surfaces are heated, these must be included in the protective measures (e.g. protective earthing).
3. When used outdoors, appropriate measures must be taken in accordance with the relevant regulations.
4. The connecting cables of the heating systems must not be laid in a twisted or kinked manner.
5. The heating/insulation must be firmly connected to the object to be heated. Care must be taken to ensure good heat transfer to the heated object.
6. It must also be noted that heating systems operating with incorrectly adjusted temperature controllers and temperature sensors may exceed the specified temperature range and thus cause damage.

The following safety measures are recommended to install the heater:



Protective eyewear



Long-armed work clothing



Leather gloves (EN 388)

5. Operation / dismantling

1. **Always monitor the first heating phases** so that you see any faults in good time and can make any necessary changes.
2. Extreme vibrations or movements should be avoided when the heater is operating (shaking, vibrating, etc.) or suitable measures should be taken so that the heater is not damaged.
3. Make sure that the object to be heated is not hotter than the maximum operating temperature of the heater, otherwise the heater may be damaged.
4. Before you dismantle the heater, allow it to cool and disconnect it from the power supply.
5. Never pull the heaters by the connecting cables, as they are not suitable for this.
6. If damage or irregularities in the function of the heater occur during operation, switch it off as quickly as possible and disconnect it from the power supply. For this purpose, a separation device (main switch) with min. 3 mm contact opening and a C-Characteristic RCBO suitable for the cable cross-section must be fitted. The exact cause of the fault must be analysed. Our experts can help you in this respect.
7. Direct sunlight on the heating sleeve must be avoided or, if not possible, protection must be provided. Direct and prolonged exposure to sunlight can cause damage to the outer jacket, which can only be detected after prolonged and dynamic operation and thus impair the protective effect.
8. Check the information on the type plate to make sure that the type, design, mains voltage, power and temperature match your requirements.
9. Check visually that the design is what you ordered. If you have any doubts, check that the documentation is correct.
10. Is the heater suitable for the conditions where it will be used?
11. Suitable temperature controllers must be used. The controller power, sensor type and temperature range must correspond. Is the heater connected to the right controller? An incorrect sensor does not allow the heating to switch correctly.
12. Are there special conditions at the installation location, and were they considered during installation (explosion risk area, fire risk area, etc.)?
13. Users must check whether the materials that come into contact with the medium are resistant to the media to be heated (see General technical specifications, Section 8). If you have any questions, contact us directly so that we can advise you (see Contact details, Section 9).
14. Check whether any surrounding objects, system components or other items could damage or have adverse effects on the heating function and remove these.
15. Include conductive parts that can be touched in the potential compensation.
16. A residual current device (RCD) ($I_F < 30\text{mA}$) must be used.

**Please note:**

Any heater exposed to high working temperatures over longer periods of time, should not be constantly shifted or removed. After removal, the insulation resistance needs to be measured against the heated object and documented prior to putting the device back into operation.

6. Inspections according to DIN VDE 0100-600 / periodic inspections according to DIN VDE 0701-0702

DIN VDE 0100-600 "Low voltage electrical installations – verification" obliges the installer of electrical plant to ascertain – before putting the system into operation – whether the required protection measures, corresponding to the intended application, are in place for the different plant elements, and whether flawless functioning of these protection measures is assured. This necessitates a thorough inspection of all the plant components that are important for the safety of the protection measures as well as measurements and tests for verifying the effectiveness of the protection measures.

DIN VDE 0701-0702 "Inspection after repair, modification of electrical appliances – Periodic inspection on electrical appliances" obliges the operator of electrical installations to carry out inspections at regular intervals and to keep a record as proof of the correct and safety-compliant operation of the electrical installation.

7. Thermal insulation / temperature effect

The heaters are provided with thermal insulation. The thickness of the thermal insulation will depend on the specific heater type or application and may vary according to the customer's specifications.

In order to mark the heated plant components, marking labels with the wording "ELECTRICALLY HEATED" are to be forseen on the heating jacket.

To ensure heating a frost protection temperature, it must be operated with a thermostat. The temperature sensor must always be placed at the coldest point.

The operating temperatures specified on the type plate are the max. permissible temperatures of the heating / insulating jacket. The user must take appropriate measures to ensure that the max. operating temperature is not exceeded at any point.

**Attention:**

Electric heaters must be installed and operated so that they cannot cause hazards even if they are not supervised or are switched on accidentally. Suitable safety measures must be taken, such as operation with a controller and/or limiter. Use of a RCD safety plug (FI) ($I_f < 30 \text{ mA}$) is recommended.

Also remember that heaters cannot operate properly if wrongly coordinated temperature controllers or sensors are used.

**Note:**

When using the heating/insulation for the first time, an odor may develop depending on the application (evaporation of the material layers). This is a normal process for the material used and will stop shortly.

8. General technical data

	Series WOX
Min. ambient temperature	-45 °C
Max. ambient temperature	+85 °C
Nominal voltage (other voltages possible)	230 V / 50...60 Hz
Dimensions	customer specified
Mains cable connection	1000 mm (or as specified)
Design	customer specified

9. Contact

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10. Quality Management Certificate according to ISO 9001:2015

CERTIFICAT

CERTIFICADO

СЕРТИФИКАТ

認證證書

CERTIFICATE

ZERTIFIKAT



Management Service

CERTIFICATE

The Certification Body
of TÜV SÜD Management Service GmbH
certifies that

winkler.eu

Winkler AG

Englerstr. 24 • 69126 Heidelberg • Germany

for the scope of application

**Development, manufacture and sales
of heat engineering products with
control and monitoring systems**

Kleinfeldweg 38 • 69190 Walldorf • Germany

for the scope of application

**Manufacture of heat engineering products
with control and monitoring systems**

has established and applies
a Quality Management System.

An audit was performed, Order No. **70002379**.

Proof has been furnished that the requirements
according to

ISO 9001:2015

are fulfilled.

The certificate is valid from **2021-04-20** until **2024-04-19**.

Certificate Registration No.: **12 100 28096 TMS**.

Head of Certification Body
Munich, 2021-04-12



TÜV SÜD Management Service GmbH • Zertifizierungsstelle • Ridlerstrasse 57 • 80339 München • Germany
www.tuev-sued.de/certificate-validity-check

TUV®

MS01-01/2015

11. Declaration of EU conformity (CE marking)

**EU-DECLARATION OF
CONFORMITY**

winkler.eu



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Product group : heating jackets / heating mantels / insulation jackets

Produkt : **WOX...**

Directives : **EU Directive 2014/35/EU**
Low Voltage Directive from 26.02.2014
"Electrical equipment for use within certain voltage limits"

EU Directive 2014/30/EU
Electromagnetic compatibility from 26.02.2014

We hereby declare that in planning and manufacturing of this product the basic safety and health requirements of the EU Directives mentioned above have been observed.

Other national standards and technical specifications applied:

EN 60519-1/-2 (VDE 0721)
Safety in electro heat installations

EN 60398 (VDE 0721)
Industrial electro heat installations

Any modification to the product without our consent will make this declaration invalid.

Heidelberg, June 23rd 2021

Winkler GmbH



B. Henkel
General Manager

For your notes:

A large grid area for taking notes, consisting of approximately 30 columns and 40 rows of small squares.