

A. Rak WÄRMETECHNIK GmbH



Heat without Limit

RMS HEATING SYSTEM

- Heating cables
- Pipe trace heating
- Thermostats
- Underfloor heating
- Outdoor heating
- Gutter heating
- Heated carpets
- Shoe dryer

RMS



Heat wherever you need it

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an introduction to the company

As one of Germany's leading manufacturers of electric heating elements, we offer our customers only high-quality products featuring the very latest state-of-the-art technology.

Our range includes electric underfloor heating systems for indoor use; outdoor underfloor heating systems for keeping exterior areas, roofs and gutters free of snow and ice; pipe trace heating systems to protect pipes from frost; and heated carpets for personal comfort.

We process our heating cables from resistance wire to granulate to the finished product. That means we can meet all your extrusion, binding, assembling and testing needs from a single source.

New products are designed and tested in our cutting-edge development department.

Thanks to our extensive machinery, we can flexibly cater to special requirements. For custom products, we adapt the size and performance to perfectly match the conditions.

Individual delivery and declaration of our products as OEM version (Original Equipment Manufacturer) is possible at any time.

In order to guarantee the highest safety standards, our products carry internationally recognized certificates such as VDE, BEAB, IEC und CE.

Every **ARak**-product is subject to strict quality and functional testing. As well as resistance and output measurements, all heating mats are tested for **dielectric strength of insulation** at three different production levels with a test voltage of 4000 V. They therefore feature outstanding safety and durability.

A few facts and figures:

Company founded in 1991

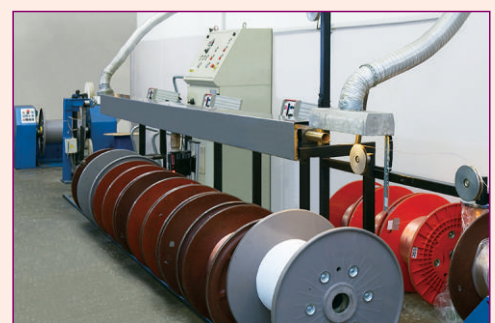
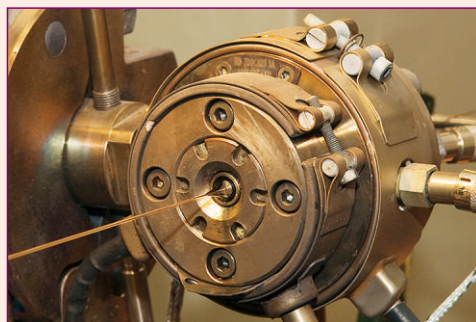
Over 20 years of product experience

Customers in over 35 countries

Export quota of 63%

27 distribution centers worldwide

Products "Made in Germany"



Heat without limit

Electric underfloor heating

Economical, no maintenance, customizable, easy to fit

1. ARak -Thin-bed-mats Twin for interior use

The ARak -heating mats in **Twin-Version** are used especially in new buildings because of its **low height of construction** of only approx. **2,8 mm** as well as for refurbishing and renovation. They are qualified for all living areas such as bathrooms, children's rooms, kitchens, basements, offices, winter gardens etc.

The heating mats are ready to be laid and can be installed in **flexible** adhesive, flexible leveling compound or screed. This embedding ensures an optimum and **equal heating distribution**.

- easy handling and fast installation, **only one connection**
- can **be adapted to any size of room** by cutting and folding the mesh
- can be laid under **all floor coverings** such as natural stone, tiles, wood, laminate, carpet, cork, PVC etc.
- **completely maintenance-free and economical** thanks to sophisticated, energy-saving control technology



- the mesh **is entirely equipped with adhesive** on one side
- highest safety standard – **VDE-certified** according to the pan-European standards DIN EN 60335-1 / 60335-2-96 and DIN EN 50366
- deliverable in the sizes from **0,5 m² up to 10,0 m²** and with a specific heat output of **160 W/m² or 200 W/m²**, width 50 cm



Sign of conformity to safety standards
German Association for electrical engineering

- practically **no electrosmog**
- protection class 1, **protection category IP X7**, therefore suitable for wet areas
- 100% quality „**Made in Germany**“

Construction of the cable



- 5 Twin-heating conductor. Forward and return conductor run parallel and are made from strand (no rigid wire)
- 4 Primary insulation: FEP (Teflon®)
- 3 Multi-overlapping polyester insulation
- 2 Protective conductor: copper braid, tinned
- 1 Outer sheath: PVC

Technical Data

Voltage:	230 V AC
Nominal limit temperature:	80° C
External diameter:	2,8 mm
Specific heat output per m ² :	160W / 200W
Resistance tolerance:	+10% / -5%
Supply line:	1 x 3 m
Minimum bending radius:	6 x d _A

Heat without limit

Electric underfloor heating

Economical, no maintenance, customizable, easy to fit

2. **ARak** -Mono thin-bed heating mat for indoor use

The **ARak** -heating mats with **two PTC resistors** are designed as a direct heating system to be embedded in flexible adhesive or leveling compound directly underneath the floor covering.

Due to the **low height of the construction** of only approx. **2,0 mm** they are mainly qualified for refurbishing and renovation. The mesh is entirely equipped with adhesive on one side.



Sign of conformity to safety standards
German Association for electrical engineering

- as the design Twin, but only **one heating conductor**
- with **2 x 4 m** connection PTC resistor, especially adapted and **extra thin**, in order to not increase the height of the construction
- deliverable in the sizes from **0,75 m² up to 15,0 m²** with a specific heat output of **180 W/m²**
- deliverable also as project mats for **temperature control of large areas**. Sizes from **10,0 m² up to 20,0 m²** with a specific heating output of **100 W/m²**
- width 50 cm



Construction of the cable



- 1 Heating conductor: made from strand (no rigid wire)
- 2 Primary insulation: FEP (Teflon®)
- 3 Protective conductor: copper braid, tinned
- 4 Outer sheath: PVC

Technical Data

Voltage:	230 V AC
Nominal limit temperature:	80° C
External diameter:	2,0 mm
Specific heat output per m ² :	180W / 100W
Resistance tolerance:	+10% / -5%
Supply line:	2 x 4 m
Protection class:	1
Protection category:	IP X7
Minimum bending radius:	6 x dA

Heat without limit

Electric underfloor heating

Economical, no maintenance, customizable, easy to fit

3. **ARak** Laminate thin-bed heating mat for indoor use Especially developed for the installation under laminate and parquet

This product **does not have to be embedded** in tile adhesive. Due to the **dry installation** the mats can be reinstalled in another room or habitation if required.

- 100% dry installation system
- very thin heating conductor, height of construction incl. mesh max. **1,5 mm**
- optimum heat distribution because of the **small distance of the heating cables of only 4 cm**
- **repeated installation possible**, therefore perfect for rented habitations (relocation)
- completely converted, with **2 x 4 m** connection PTC-resistor, specially adapted and **extra thin**, in order to not increase the height of the construction
- the mesh **is entirely equipped with adhesive** on one side
- deliverable in the sizes from **0,75 m² up to 10,0 m²** and with a specific heat output of **160 W/m² or 200 W/m²**, width 50 cm



Construction of the cable

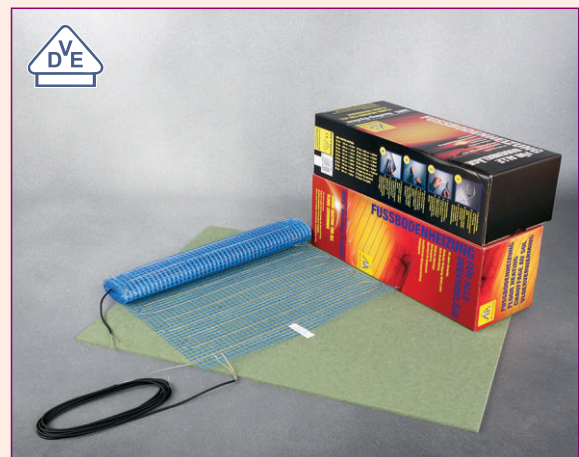


- 1 Heating conductor: strand
- 2 Primary insulation: FEP (Teflon®), wall 0,3 mm
- 3 Protective conductor: spiral-wound copper braid
- 4 Outer sheath: FEP (Teflon®), wall 0,3 mm

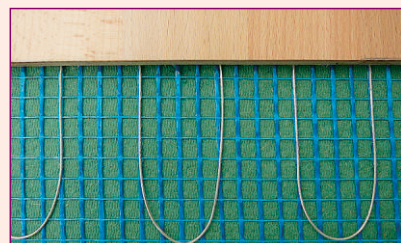
Technical Data

Voltage:	230 V AC
Nominal limit temperature:	80° C
External diameter:	1,5 mm
Specific heat output per m ² :	160W / 200W
Resistance tolerance:	+10% / -5%
Supply line:	2 x 4 m
Protection class:	1
Protection category:	IP X7
Minimum bending radius:	6 x dA

Double Teflon®-Insulation



Sign of conformity to safety standards
German Association for electrical engineering



Heat without limit

Universal heating cable

a cable for any occasion

4. ARak Twin-heating cable for indoor and outdoor use

The **ARak**-Twin-heating cables with only one connection are deployable interior and exterior as radiant panel heating as well as frost protection of gutters, downspouts and surfaces of pitched roofs.

The heating cables can be laid in **any configuration** under all floor coverings that are suitable for underfloor heating.

Unusual room shapes with angles, rounded surfaces or stairs don't pose a problem for this **high flexible heating cable**.

It can be installed in **any** conceivable shape of room. This extremely multi-functional heating cable can also be used for sitting and reclining surfaces of tiled relaxation and resting furniture.

The **power output per m²** of the **ARak**-Twin-heating cable can be freely selected and therefore allows optimum heat adjustment to the required temperature.

Application examples:

- in living areas with complex room shapes
- Conservatories
- Carport-roofs
- Greenhouses
- Gutters, downspouts
- Exterior stairs



Construction of the cable



- 5
 - 4
 - 3
 - 2
 - 1
- 1 Twin-heating conductor. Forward-and return conductor run parallel and are made from strand (no rigid wire)
 - 2 Primary insulation: FEP (Teflon®)
 - 3 Multi-overlapping polyester-Insulation
 - 4 Protective conductor: copper braid, tinned
 - 5 Outer sheath: PVC

Technical Data

Voltage:	230V AC
Nominal limit temperature:	80° C
External diameter:	3 mm / 5 mm
Specific heat output per m:	15W / 20W / 30W
Resistance tolerance:	+10% / -5%
Supply line:	1 x 3m
Minimum bending radius:	6 d _A

- completely converted, with **3 m PTC resistor on only one side**
- completely **maintenance- and wear free**
- specific output **per linear meter 15 W, 20 W or 30 W**
- the heating cable with an output of 20 W/m respectively 30 W/m (ø 5 mm) can be used **exterior as radiant panel heating** or as **frost protection** of gutters and surfaces of pitched roofs, therefore also equipped with a **UV-resistant** outer sheath
- protection class 1, **protection category IP X7**, suitable for wet areas
- manufactured in compliance with the VDE-standards DIN EN 60335-1, DIN EN 60335-2 und DIN-EN 50366

Heat without limit

Keep the snow and ice away with our

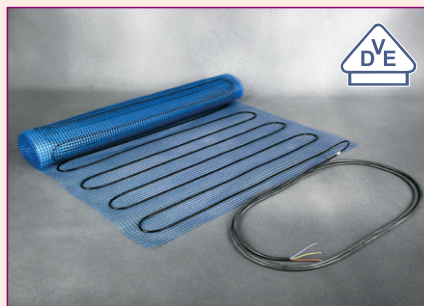
outdoor heating systems

5. ARak heating mat Twin FH A and FH B for outdoor areas

The **ARak**-outdoor underfloor heating mats are used to prevent ice forming on stairs, footways, terraces, driveways, bridges, ramps, loading zones, road surfaces etc.

The risk of accidents is minimized since surfaces are kept free of snow and ice at all times, and there is no need to use spreadable de-icing agents that can cause damage to the environment or buildings.

Laying the heating elements close to the surface ensures optimum, **energy-saving heat distribution.**



Construction of the cable

5 4 3 2 1

- 1 Twin-heating conductor. Forward-and return conductor run parallel and are made from strand (no rigid wire)
- 2 Primary insulation: FEP (Teflon®)
- 3 Multi-overlapping polyester-Insulation
- 4 Protective conductor: copper braid, tinned
- 5 Outer sheath:
Type FH A: radiation cross-linked PVC
Type FH B: PVC

Technical Data

Voltage:	400 V AC
Nominal limit temperature:	80° C
External diameter:	5 mm
Specific heat output per m²:	300W
Resistance tolerance:	+10% / -5%
Supply line:	1 x 3m
Minimum bending radius:	6 x dA

- **Quick and easy to install.** The heating cable is stitched onto a fibreglass mesh at evenly spaced intervals to ensure **equal heat output.**
- The heating mat can be **adapted to fit any space** by cutting and folding over the fibreglass mesh.
- Completely converted, with **1 x 3 m** connection PTC resistor on only one side.
- Due to sophisticated, intelligent regulation technology an **energy-saving** control takes place.
- Protection class 1, protection category **IP X7.**
- Deliverable in the sizes from **4,0 m² up to 18,0 m². Width 100 cm.**
- The connection cable is also suitable for installation in the types of flooring stated below:

Areas of application:

Type FH A

Version especially designed for **melted asphalt. Installation temperature: short duration 240° C**

Type FH B

Version for screed, concrete bed or sand bed

Heat without limit

Pipe trace heating

a heating system that's not just for pipes...

6. **ARak** trace heating with and without frost protection thermostat

The heating cables are **assembled ready to plug in**, very flexible and very economical with a consumption of just **15 W/per linear meter** according to DIN VDE 0253 for different applications.

In order to improve heat transmission, **the heating cable's shape is flat** with an elliptical cross-section. This significantly **increases** the **surface in contact** with the object to be heated (pipe, tank etc.) in comparison to other, round trace heating systems.

Construction of type 1 and type 2



- 1 Twin-heating conductor. Forward-and return conductor run parallel and are made from strand (no rigid wire)
- 2 Primary insulation: PTFE (Teflon®)
- 3 Multi-overlapping polyester-Insulation
- 4 Protective conductor: copper braid, tinned
- 5 Outer sheath: PVC

Technical data

Voltage:	230 V AC
Nominal limit temperature:	80° C
External diameter :	3,3 / 5,5 mm
Specific heat output per m:	15 W - 16 W
Resistance tolerance:	+10% / -5%
Supply line:	1 x 1,5 m with safety plug
Protection category:	IP X7
Minimum bending radius:	6 dA

Type 1 with integrated thermostat

- Pipe trace heating
- Switch-on automatically at approx. +5° C, switch-off automatically at approx. +8° C
- This **prevents** pipes or similar installations from **freezing**



Type 2

- Completely converted, **directly to use**
- e.g. for terrariums, cold frames, greenhouses



Type 3, trace heating for 12 V AC / DC

The heating cable with an operating voltage of **12 V** is a **flexible generator of heat** with **open ends**. It is suitable for e.g. use in caravan- or boatbuilding, as a pre-heater for engines of snow devices of all kinds as well as for greenhouses and tool sheds with a 12 V installation.



Construction of type 3



Technical data

Voltage:	12 V AC/DC
Nominal limit temperature:	80° C
External diameter:	1,5 mm
Specific heat output per m:	15 W
Supply line:	2 x 1,5 m

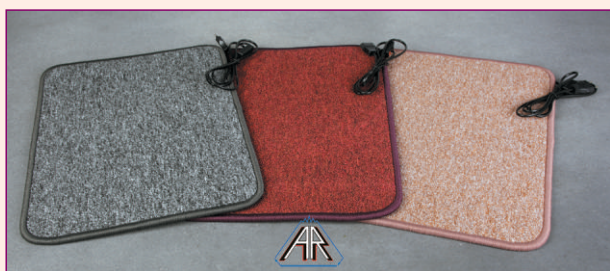
Heat without limit

Electrically heated carpets – the “Heat Master™” heating carpet

7.a. ARak “Heat Master™” heating carpet

Heating carpet, manufactured with heating conductors featuring the **very latest state-of-the-art technology**. The heating conductor – stitched onto a fibreglass mesh – is placed between two carpets, afterwards their edgings get a overcast seam with a matched yarn.

With their **high heat output**, these carpets heat rapidly and effectively. The heated carpet comes with a **temperature limiter** for protection from overheating in case of operating errors.



- Electrically heated carpet for indoor use
- Provides comfortable heat in foot area and supports the well being
- Especially designed for living-, hobby- and working areas
- Colours: anthracite, bordeaux, cognac

- Design in 230 V with around 2 m-long connection cable with flat plug and build-in on/off switch

- Available in the sizes

40 cm x 60 cm,	75 W
50 cm x 70 cm,	100 W
60 cm x 90 cm,	150 W

Other sizes are available on request.



ARak
„Heat Master™”
car carpet



- To heat the floor in the car, caravan, motorhome, boat or similar
- **Immediately ready for use** by plugging into the cigarette lighter

7.b. ARak „Heat Master™” shoe dryer

If shoes have become damp or wet due to rain, snow or perspiration, they should be **dried slowly**. If the moisture is removed too fast, leather and other materials become hard and brittle. It is therefore inadvisable to dry shoes directly next to a heater.

The **Heat Master™ shoe dryer** is the solution. The constant **heat output gently removes** moisture from the shoes with no need for tiresome stuffing with newspaper. Deformations (banana effect) and premature aging of the material are prevented and your shoes last longer.

- Very **low energy consumption**
- Useable for **all materials** like leather, fabric, linen etc.
- Due to its small dimensions it can be placed in **every entrance area**
- Maximum surface temperature 25° to 30° C
- Design in 230 V with around 2 m-long connection cable
- Colour anthracite. Available in the sizes:

30 cm x 60 cm, 25 W
for singles/couples

30 cm x 100 cm, 40 W
for families



Heat without limit

We exclusively use thermostats...

... that come from leading, selected and certified suppliers. Quality, durability, functionality and user-friendliness are at the top of our agenda.

8. Thermostats to control the electrical floor heating for indoor

Fast heating of the floor based on precision timing keeps the **operating costs low**. Cozy heat is generated only in the places where it is needed. This saves energy costs. The floor temperature is controlled independently of the room temperature using a thermostat with a floor sensor. The thermostats mentioned below are adapted for our heating elements and **certified as a complete system**.

Thanks to their universal design, the thermostats are compatible with most standard switches e.g. Busch-Jäger, Merten, Eljo, Ensto etc. with practically no restrictions.

All thermostats will be delivered with a NTC-floor sensor, length 3m.

Further thermostats are available on request.



Thermostat type ST-AR 16, in-wall mounting

- **Ultra-flat** thermostat
- Output relay: 16 A, max. 3600 W, 230 V AC
- Temperature range: +5° C / +45° C
- On- off-switch with LED display
- Dimensions (L/W/H) 86/86/25 mm



Thermostat type OTD2, with built-in room sensor and external floor sensor, in-wall mounting

- Thermostat with digital display making it easy to set the required floor or room temperature
- Maximum and minimum **limitation temperatures** can be set e.g. for wooden floors.
- Output relay: 16 A, max. 3600 W, 230 V AC
- Temperature range: 0° C / +40° C
- Dimensions (L/W/H) 81/81/38 mm



Thermostat type analog, in-wall mounting

- Electronic on/off-thermostat for a high heating comfort
- Output relay: 14 A, max. 3200 W, 230 V AC
- Temperature range: +5° C / +40° C
- Dimensions (L/W/H) 80/80/50 mm



Thermostat type digital, with clock function, in-wall mounting

- Programmable to suit individual needs
- Recommended for control of heating systems for **heating comfort** with minimum power consumption
- Output relay: 16 A, max. 3600 W, 230 V AC
- Temperature range: +5° C / +40° C
- Dimensions (L/W/H) 80/80/48 mm

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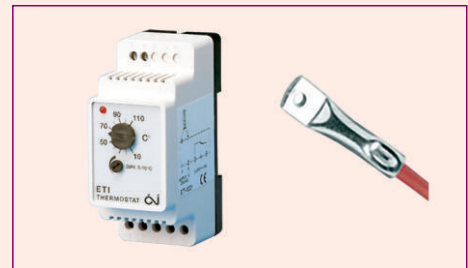
9. Thermostats for snow melting systems

Easy operatable thermostats for **economic control** from snow melting systems, e.g. on footways, stairs, parks, loading zones – but also for gutters and **frost protection** of drainpipes.

With these systems you can **enjoy the winter completely**, without thinking about the inconvenience of impassable footways and parks, frozen drainpipes or falling down icicle.

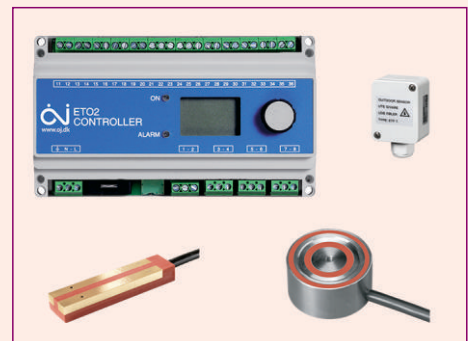
Thermostat type ETI, for frost protection of pipes

- ETI is an on/off thermostat with an adjustable temperature differential
- The temperature sensor ETF-6 is available **as an accessory**



Thermostat type ETO, economical control of snow melting systems in exterior areas

- An „all-in-one“ solution for ice- and snow melting systems. This thermostat can be combined with different sensors.
- Floor sensor ETOG for detection of **temperature and moisture**
- Sensor ETOR for mounting in gutters or drainpipes
- Outdoor sensor ETF **detects temperature**



Thermostat type ETR for heating cables in gutters

- ETR is a thermostat for economical control of **de-icing** cables in gutters of small buildings, e.g. single family houses
- Incl. outdoor sensor ETF



Thermostat type ETR2 for small applications

- The ETR2 system offers an economical control of **ice- and snow melting systems** for small applications and can be combined with different sensors
- Floor sensor ETOG for detection of **temperature and moisture**
- Sensor ETOR for mounting in drainpipes
- Outdoor sensor ETF **detects temperature**



Heat without limit

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