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PILZ[®] LABORATORY HEATERS

The quality brand with tradition



Dear Business Partners,

Our new catalogue, valid since 01.05.2017, offers a survey of our wide selection of products and further improved PILZ quality.

Our warehouse holds stocks for you of all common heating mantles and tapes (intermediate sales rights are reserved).

You can, of course, find everything as usual in this catalogue that distinguishes the traditional PILZ® brand: reliability, durability, safety – in short: quality!

PILZ® laboratory heating systems and accessories are consistently manufactured in compliance with the latest safety regulations and standards, enabling you to assume responsibility with a clear conscience with regard to your customers for the products you sell.

You can therefore place your trust in a reliable brand and a company with tradition and experience spanning for almost 40 years!

Please send all your inquiries and orders to our central sales office at sales@winkler.eu to ensure that they are speedily processed.

With best regards from Heidelberg

Michael Walter

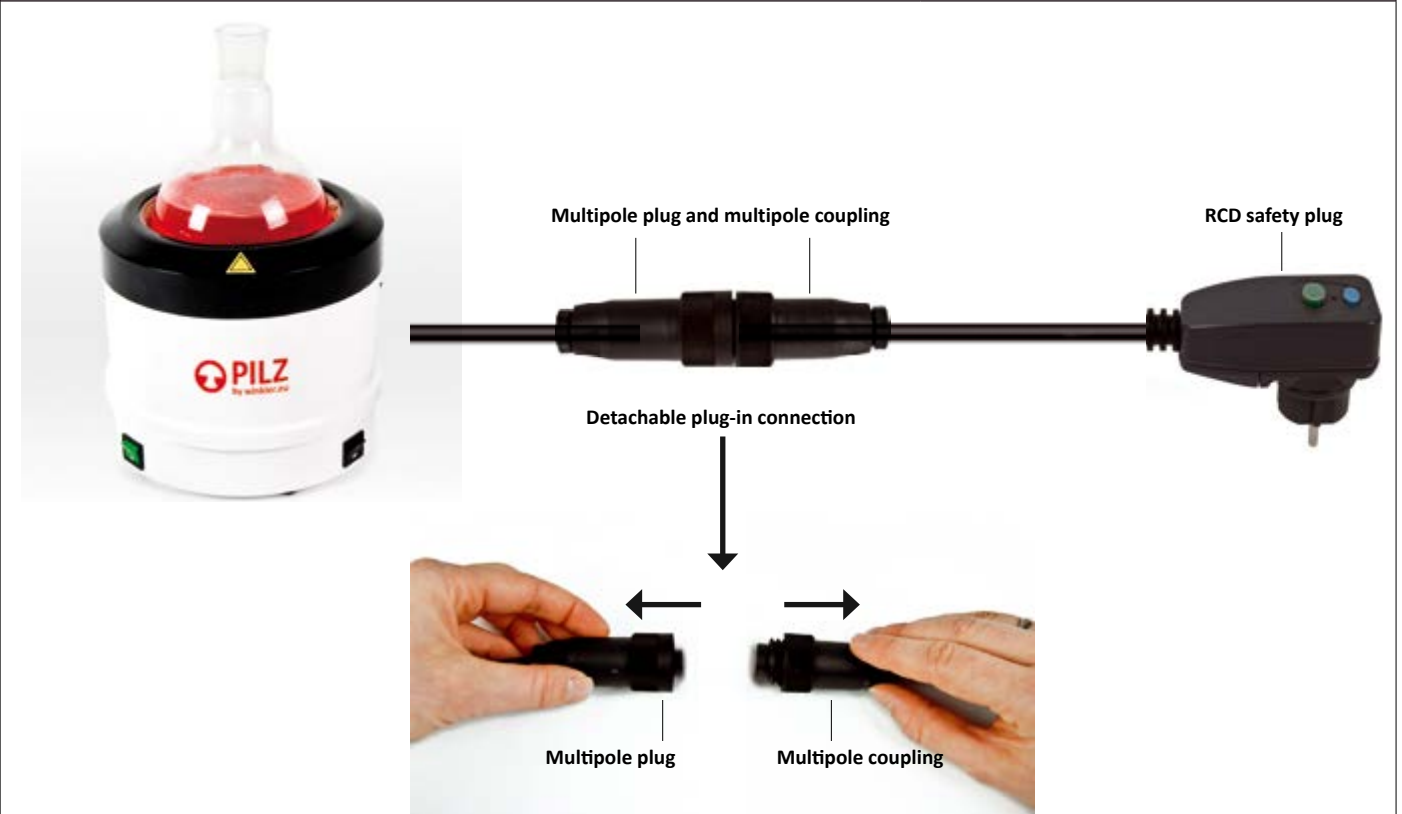
Sales Manager Controllers & Laboratory

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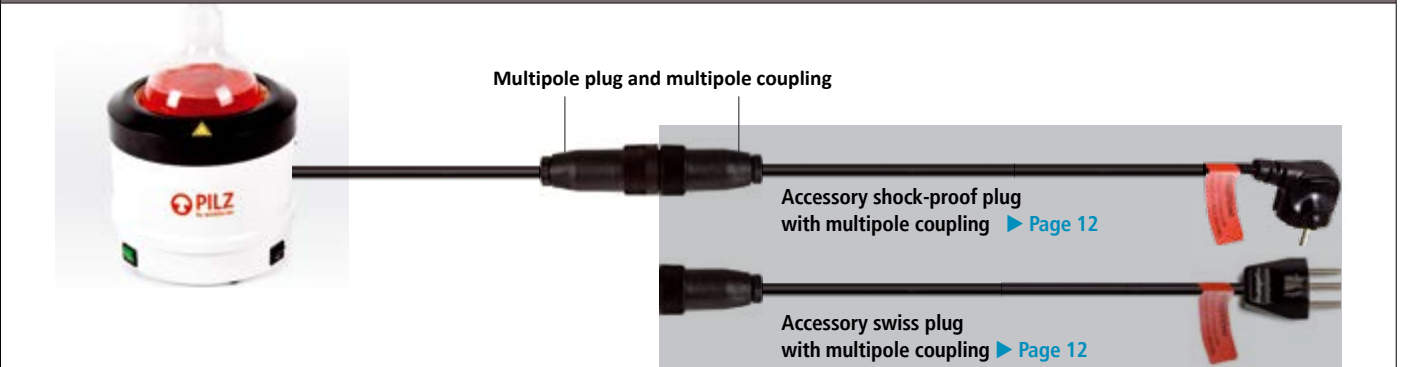
Important information

- Our sales terms and delivery conditions apply exclusively for all sales and deliveries (see www.winkler.eu).
- We reserve the right to technical changes without notice.
- Unless expressly stated otherwise, the products from Winkler GmbH are to be connected to 230V/50Hz operating voltage.

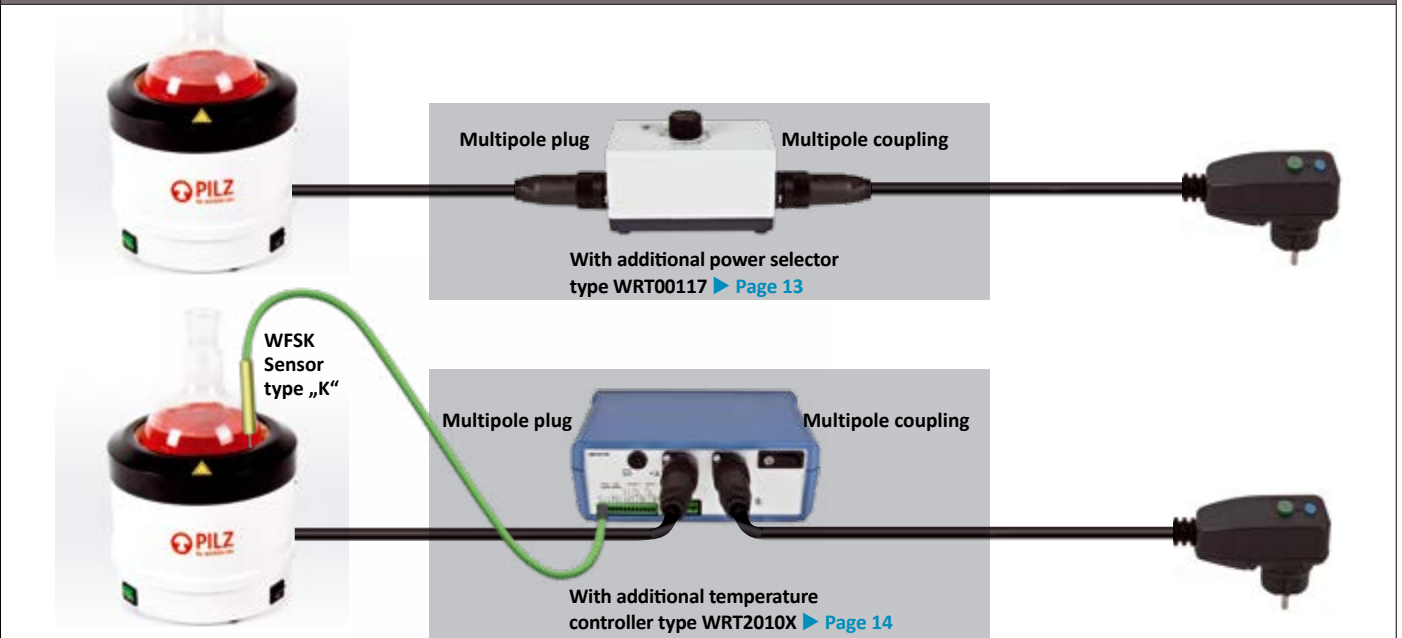
STANDARD CONNECTING SYSTEMS FOR HEATING MANTLES



OPTIONAL CONNECTING SYSTEMS FOR HEATING MANTLES



CONNECTION OF ADDITIONAL POWER SELECTOR OR CONTROLLER



OUR CLASSIC DESIGN – THE “PILZ” HEATING MANTLE

The forerunner of our standard series WHG2 was first developed for laboratory applications more than 80 years ago. It was also the basis for most of the other series. Continuous improvements in materials technology, and not least a high level of functionality and safety against accidents make this series an integral

part of any laboratory facility. The product line is rounded off by a large range of accessories and suitable control devices. As from size 500 ml through to 20 litres, the heating mantles have a base opening. Except for the smallest models with volumes of 25 ml and 50 ml (one heating zone) the heating mantles are always equipped with two heating zones.

SERIES WHG2 HEATING MANTLES WITH CROCHETED OUTER JACKET FOR ROUND-BOTTOM FLASKS

T_{max} = 450 °C

- hand crocheted heating mantles made of glass silk

Device features

- 25 and 50 ml heating mantles with slide switch
 - selectable power (0-50-100%)
 - one heating zone
- 100 to 1,000 ml with series/parallel slide switch
 - selectable power (0-25-50-100%**)
 - heating zone 1 or heating zone 1+2
- as from 2,000 ml with series/parallel rotary switch
 - selectable power (0-25-50-100%*)
 - heating zone 1 or heating zone 1+2
- detachable plug-in connection (cable length 0.5 m)
- RCD safety plug (cable length 1.0 m)

Accessories ▶ Page 12

- support rings and tripods



25 & 50 ml 1 heating zone



from 100 ml 2 heating zones



** Step 1 → heating zone 1 + 2 (in series) → power 25%
 Step 2 → heating zone 1 (lowest heating zone) → power 50%
 Step 3 → heating zones 1 + 2 (parallel) → power 100%

Volume (ml)	Flask Ø (mm)	Power (W ±10%)	Heating zones	Base opening Ø (mm)	Article No. 230 VAC*	Delivery code
25	41	40	1	-	WHG2XXXX-230XX450-000025RC	A
50	51	70	1	-	WHG2XXXX-230XX450-000050RC	A
100	64	110	2	-	WHG2XXXX-230XX450-000100RC	A
250	85	200	2	-	WHG2XXXX-230XX450-000250RC	A
500	105	300	2	62	WHG2XXXX-230XX450-000500RC	A
1,000	131	450	2	62	WHG2XXXX-230XX450-001000RC	A
2,000	166	700	2	62	WHG2XXXX-230XX450-002000RC	A
3,000	185	800	2	62	WHG2XXXX-230XX450-003000RC	A
4,000	207	1,000	2	62	WHG2XXXX-230XX450-004000RC	A
5,000	223	1,200	2	62	WHG2XXXX-230XX450-005000RC	A
6,000	236	1,400	2	62	WHG2XXXX-230XX450-006000RC	A
10,000	279	2,000	2	62	WHG2XXXX-230XX450-010000RC	A
20,000	345	2,800	2	62	WHG2XXXX-230XX450-020000RC	A

*other voltages on request



SERIES WHG4R HEATING MANTLES WITH CROCHETED OUTER JACKET FOR ROUND-BOTTOM FLASKS

T_{max} = 450 °C

- same design as WHG2R but four heating zones
- hand crocheted heating mantle made of glass silk

Device features

- heating zone switch (cable length 0.5 m)
 - selectable power by activating additional heating zones
 - heating zone 1 or heating zones 1+2 or heating zones 1+2+3 or heating zones 1+2+3+4
- detachable plug-in connection (cable length 0.2 m)
- RCD safety plug (cable length 1.0 m)

Accessories ▶ Page 12

- support rings and tripods



4 heating zones



Volume (ml)	Flask Ø (mm)	Power (W ±10%)	Heating zones	Base opening Ø (mm)	Article No. 230 VAC*	Delivery code
4,000	207	1,000	4	62	WHG4RXXX-230XX450-004000RC	B
6,000	236	1,400	4	62	WHG4RXXX-230XX450-006000RC	B
10,000	279	2,000	4	62	WHG4RXXX-230XX450-010000RC	B
20,000	345	2,800	4	62	WHG4RXXX-230XX450-020000RC	B

*other voltages on request

SERIES WHG2H HEATING MANTLES WITH CROCHETED OUTER JACKET FOR ROUND-BOTTOM FLASKS

T_{max} = 900 °C

- corresponds to series WHG2, but with a maximum permissible temperature of 900 °C
- hand crocheted heating mantle made of silicate yarn

Device features

- series/parallel rotary switch (cable length 0.5 m)
 - selectable power (0-25-50-100%)
 - heating zone 1 or heating zone 1+2
- detachable plug-in connection (cable length 0.2 m)
- RCD safety plug (cable length 1.0 m)

Accessories ▶ Page 12

- support rings and tripods



2 heating zones



Volume (ml)	Flask Ø (mm)	Power (W ±10%)	Heating zones	Base opening Ø (mm)	Article No. 230 VAC*	Delivery code
250	85	300	2	-	WHG2HXXX-230XX900-000250RC	B
500	105	500	2	62	WHG2HXXX-230XX900-000500RC	B
1,000	131	750	2	62	WHG2HXXX-230XX900-001000RC	B
2,000	166	1,200	2	62	WHG2HXXX-230XX900-002000RC	B
4,000	207	1,800	2	62	WHG2HXXX-230XX900-004000RC	B
6,000	236	2,500	2	62	WHG2HXXX-230XX900-006000RC	B

*other voltages on request

SERIES WHLG2 METAL-CASED HEATING MANTLES FOR ROUND-BOTTOM FLASKS

T_{max} = 450 °C

- powder coated, robust metal housing with high chemical resistance
- hand crocheted heating unit made of glass silk

Device features

- master switch
- integrated heating zone switch
 - heating zone 1 or heating zone 1+2
- detachable plug-in connection (cable length 0.5 m)
- RCD safety plug (cable length 1.0 m)

Accessories ▶ Page 12

- rod clamp STK 2
 - for mounting set-ups



25 & 50 ml 1 heating zone
→ no heating zone switch



from 100 ml 2 heating zones



Volume (ml)	Flask Ø (mm)	Power (W ±10%)	Heating zones	Dimensions Ø × H (mm)	Article No. 230 VAC*	Delivery code
50	51	50	1	158 × 175	WHLG2XXX-230XX450-000050RC	A
100	64	100	2	158 × 175	WHLG2XXX-230XX450-000100RC	A
250	85	150	2	158 × 175	WHLG2XXX-230XX450-000250RC	A
500	105	200	2	203 × 190	WHLG2XXX-230XX450-000500RC	A
1,000	131	300	2	203 × 190	WHLG2XXX-230XX450-001000RC	A
2,000	166	500	2	278 × 210	WHLG2XXX-230XX450-002000RC	A
3,000	185	600	2	278 × 210	WHLG2XXX-230XX450-003000RC	A

*other voltages on request

SERIES WHLG2ER METAL-CASED HEATING MANTLES FOR ROUND-BOTTOM FLASKS

T_{max} = 450 °C

- powder coated, robust metal housing with high chemical resistance
- hand crocheted heating unit made of glass silk

Device features

- master switch
- integrated heating zone switch
 - heating zone 1 or heating zone 1+2
- integrated mechanical power selector
 - infinitely variable power (0-100%)
- detachable plug-in connection (cable length 0.5 m)
- RCD safety plug (cable length 1.0 m)

Accessories ▶ Page 12

- rod clamp STK 2
 - for mounting set-ups



25 & 50 ml 1 heating zone
→ no heating zone switch



from 100 ml 2 heating zones



Volume (ml)	Flask Ø (mm)	Power (W ±10%)	Heating zones	Dimensions Ø × H (mm)	Article No. 230 VAC*	Delivery code
50	51	50	1	158 × 175	WHLG2ERX-230XX450-000050RC	A
100	64	100	2	158 × 175	WHLG2ERX-230XX450-000100RC	A
250	85	150	2	158 × 175	WHLG2ERX-230XX450-000250RC	A
500	105	200	2	203 × 190	WHLG2ERX-230XX450-000500RC	A
1,000	131	300	2	203 × 190	WHLG2ERX-230XX450-001000RC	A
2,000	165	500	2	278 × 210	WHLG2ERX-230XX450-002000RC	A
3,000	185	600	2	278 × 210	WHLG2ERX-230XX450-003000RC	A

*other voltages on request

SERIES WHLMG3ER METAL-CASED HEATING MANTLES FOR ROUND-BOTTOM FLASKS
T_{max} = 450 °C

- powder coated, robust metal housing with high chemical resistance
- hand crocheted heating unit made of glass silk
- Variable-volume, metal-cased heating mantle for different flask sizes (see ordering data)

Device features

- master switch
- integrated heating zone switch
 - heating zone 1 or heating zone 1+2 or heating zone 1+2+3
- integrated mechanical power selector
 - infinitely variable power (0-100%)
- detachable plug-in connection (cable length 0.5 m)
- RCD safety plug (cable length 1.0 m)

Accessories ▶ Page 12

- rod clamp STK 2
 - for mounting set-ups



3 heating zones



Volume (ml)	Flask Ø (mm)	Power (W ±10%)	Heating zones	Dimensions Ø × H (mm)	Article No. 230 VAC*	Delivery code
50-250	51-85	150	3	158 × 175	WHLMG3ER-230XX450-000250RC	A
250-1,000	85-131	360	3	203 × 190	WHLMG3ER-230XX450-001000RC	A
1,000-3,000	131-185	600	3	278 × 210	WHLMG3ER-230XX450-003000RC	A

*other voltages on request

SERIES WHLSG2ER METAL-CASED HEATING MANTLES FOR ROUND-BOTTOM FLASKS
T_{max} = 450 °C

- powder coated, robust metal housing with high chemical resistance
- corrosion-resistant heating shell with optimal thermal conductivity
- suited for baths or catching leaking fluid due to vessel breakage

Device features

- master switch
- integrated heating zone switch
 - heating zone 1 or heating zone 1+2
- integrated mechanical power selector
 - infinitely variable power (0-100%)
- detachable plug-in connection (cable length 0.5 m)
- RCD safety plug (cable length 1.0 m)
- with fabric inlay for protection of glass vessel

Accessories ▶ Page 12

- rod clamp STK 2
 - for mounting set-ups



2 heating zones



Volume (ml)	Flask Ø (mm)	Power (W ±10%)	Heating zones	Dimensions Ø × H (mm)	Article No. 230 VAC*	Delivery code
250	85	120	2	158 × 175	WHLSG2ER-230XX450-000250RC	A
500	105	200	2	203 × 190	WHLSG2ER-230XX450-000500RC	A
1,000	131	300	2	203 × 190	WHLSG2ER-230XX450-001000RC	A
2,000	166	500	2	278 × 210	WHLSG2ER-230XX450-002000RC	A

*other voltages on request

SERIES WHU2ER METAL-CASED HEATING MANTLES FOR ROUND-BOTTOM FLASKS

T_{max} = 450 °C

- powder coated, robust metal housing with high chemical resistance
- hand crocheted heating unit made of glass silk

Device features

- master switch
- integrated heating zone switch
 - heating zone 1 or heating zone 1+2
- integrated mechanical power selector
 - infinitely variable power (0-100%)
- detachable plug-in connection (cable length 0.5 m)
- RCD safety plug (cable length 1.0 m)

Accessories ▶ Page 12

- rod clamp STK 2
 - for mounting set-ups



2 heating zones



Volume (ml)	Flask Ø (mm)	Power (W ±10%)	Heating zones	Dimensions W × H (mm)	Article No. 230 VAC*	Delivery code
4,000	207	700	2	288 × 166	WHU2ERXX-230XX450-004000RC	C
5,000	223	860	2	318 × 166	WHU2ERXX-230XX450-005000RC	C
6,000	236	1,000	2	318 × 166	WHU2ERXX-230XX450-006000RC	C
10,000	279	1,400	2	368 × 194	WHU2ERXX-230XX450-010000RC	C
20,000	345	2,400	2	438 × 234	WHU2ERXX-230XX450-020000RC	C

*other voltages on request



SERIES WHRE4 MULTI-PLACE HEATING MANTLE WITH 4 HEATING PLACES
T_{max} = 450 °C

- powder coated, robust metal housing with high chemical resistance
- stainless steel front and cover plate
- hand crocheted heating unit made of glass silk
- 4 heating places

Device features

- master switch
- integrated mechanical power selector per heating place → infinitely variable power (0-100%)
- detachable plug-in connection (cable length 0.5 m)
- RCD safety plug (cable length 1.0 m)
- rod clamp STK 2 per heating place (without rod)



1 heating zone per heating place



Back of multi-place heating mantle with rod clamp STK 2

Volume (ml)	Flask Ø (mm)	Power (W ±10%)	Heating zones per heating place	Dimensions W × H × D (mm)	Article No. 230 VAC*	Delivery code
100	64	4 x 110	1	620 × 220 × 130	WHRE4ERX-230XX450-000100RC	C
250	85	4 x 220	1	620 × 220 × 130	WHRE4ERX-230XX450-000250RC	C
500	105	4 x 330	1	765 × 260 × 130	WHRE4ERX-230XX450-000500RC	C
1,000	131	4 x 495	1	765 × 260 × 130	WHRE4ERX-230XX450-001000RC	C

*other voltages on request

SERIES WHRE6 MULTI-PLACE HEATING MANTLE WITH 6 HEATING PLACES
T_{max} = 450 °C

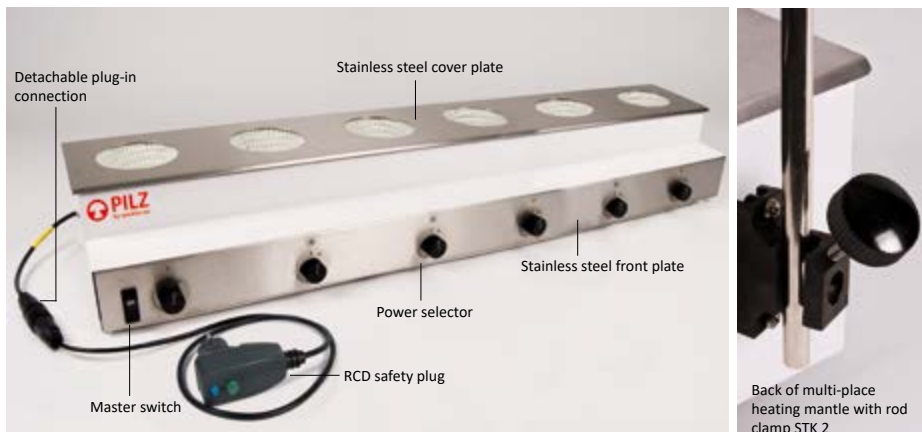
- powder coated, robust metal housing with high chemical resistance
- stainless steel front and cover plate
- hand crocheted heating unit made of glass silk
- 6 heating places

Device features

- master switch
- integrated mechanical power selector per heating place → infinitely variable power (0-100%)
- detachable plug-in connection (cable length 0.5 m)
- RCD safety plug (cable length 1.0 m)
- rod clamp STK 2 per heating place (without rod)



1 heating zone per heating place



Back of multi-place heating mantle with rod clamp STK 2

Volume (ml)	Flask Ø (mm)	Power (W ±10%)	Heating zones per heating place	Dimensions W × H × D (mm)	Article No. 230 VAC*	Delivery code
100	64	6 x 110	1	870 × 220 × 130	WHRE6ERX-230XX450-000100RC	C
250	85	6 x 220	1	870 × 220 × 130	WHRE6ERX-230XX450-000250RC	C
500	105	6 x 330	1	1146 × 260 × 130	WHRE6ERX-230XX450-000500RC	C
1,000	131	6 x 495	1	1146 × 260 × 130	WHRE6ERX-230XX450-001000RC	C

*other voltages on request

SERIES WHI INDUSTRIAL HEATING MANTLES

T_{max} = 450 °C

With respect to its basic structure, this heating mantle series corresponds to the mantles for laboratory applications. However, because of the size the devices are mechanically reinforced by a sturdy carrier basket. Four eyebolts M12, which are movably connected to the support ring, are used as mounting fixtures.

- outer jacket made of aluminium coated glass fabric or PTFE coated glass fabric (as desired)
- hand crocheted heating unit made of glass silk yarn

Device features

- terminal box
- connecting cable with 10-pole industrial plug (2.0 m)

Accessories ▶ Page 11

- controller WRTI71 for regulating the heating zones



Volume (l)**	Flask Ø (mm)	Power (W ±10%)	Heating zones	Base opening Ø (mm)	Article No. 230 VAC*	Delivery Code
10	280	1,600	3	to be specified if non-standard	WHI3X280-230XK450-0010XXXX	C
20	350	2,400	3		WHI3X350-230XK450-0020XXXX	C
20	365	2,400	3		WHI3X650-230XK450-0020XXXX	C
50	490	4,500	3	standard: Ø 60 mm	WHI3X490-230XK450-0050XXXX	C
50	510	4,500	3		WHI3X510-230XK450-0050XXXX	C
100	610	6,000	4		WHI4X610-230XK450-0100XXXX	C
200	750	9,000	5		WHI5X750-230XK450-0200XXXX	C
200	760	9,000	5		WHI5X760-230XK450-0200XXXX	C

* other voltages on request
** other volumes on request

SERIES WHIS SAFETY HEATING MANTLES

T_{max} = 300 °C

This safety heating mantle, which offers up to 5 heating zones, is combined with a Winkler WRTI72 controller for temperature control to a maximum of 300 °C. This protects the glass flasks against stress. In the event of excessive stress there is a danger of glass flask breakage.

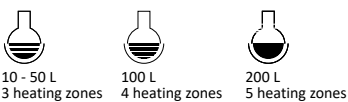
- outer jacket made of aluminium coated glass fabric or PTFE coated glass fabric (as desired)
- hand crocheted heating unit made of glass silk

Device features

- terminal box
- connecting cable with 10-pole industrial plug (2.0 m)
- cable with sensor plug (2.0 m)
- one temperature sensor per heating zone
 - **standard:** thermocouple Typ K (NiCr-Ni)
 - **option:** thermocouple Typ J (Fe-CuNi)
 - **option:** resistance thermometer RTD Pt100 (2- or 4-wire configuration)

Accessories ▶ Page 11

- controller WRTI72 for regulating the heating zones

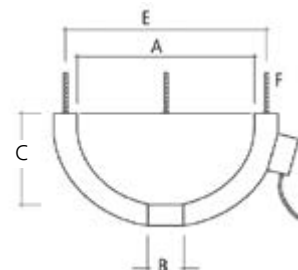


Volume (l)**	Flask Ø (mm)	Power (W ±10%)	Heating zones	Base opening Ø (mm)	Article No. 230 VAC*	Delivery Code
10	280	1,600	3	to be specified if non-standard	WHI3S280-230DK300-0010XXXX	C
20	350	2,400	3		WHI3S350-230DK300-0020XXXX	C
20	365	2,400	3		WHI3S365-230DK300-0020XXXX	C
50	490	4,500	3	standard: Ø 60 mm	WHI3S490-230DK300-0050XXXX	C
50	510	4,500	4		WHI3S510-230VK300-0050XXXX	C
100	610	6,000	4		WHI4S610-230VK300-0100XXXX	C
200	750	9,000	5		WHI5S750-230FK300-0200XXXX	C
200	760	9,000	5		WHI5S760-230FK300-0200XXXX	C

* other voltages on request
** other volumes on request



A Flask Ø*	B Base opening	C Height*	E Screw to screw*	F Screw
280	to be specified if non-standard	150	315	4 x M12
350		190	398	4 x M12
365		200	405	4 x M12
490		265	555	4 x M12
510	standard: Ø 60 mm	275	575	4 x M12
610		325	670	4 x M12
750		395	825	4 x M12
760		400	830	4 x M12



Schematic structure of an industrial heating mantle

*All dimensions in mm

SERIES WRTI71 CONTROLLER FOR INDUSTRIAL HEATING MANTLES

Controller series WRTI71 is employed for operating industrial heating mantle WHI.

- table-top controller in a powder coated, robust metal housing with high chemical resistance
- aluminium front plate

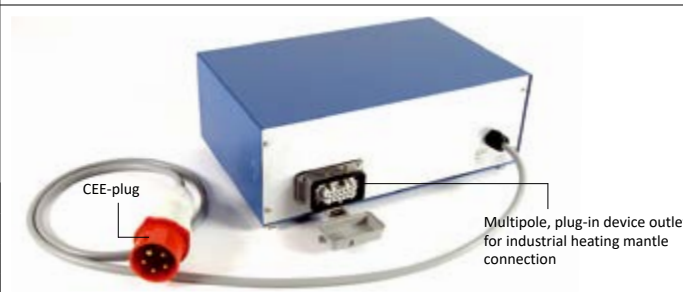
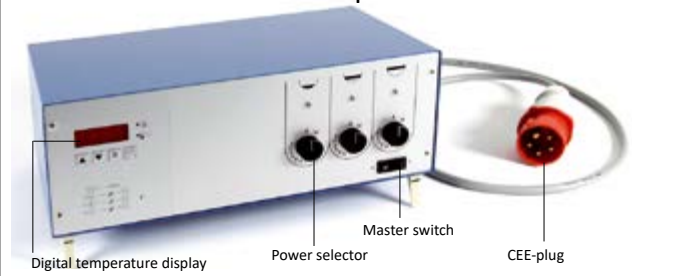
Device features

- master switch
- digital temperature display for lowest heating zone
- 3 to 5 power selectors with control status display for each heating zone
- with CEE-plug 16A for three-phase current connection 3x230V/50Hz (cable length 1.5 m)
- multipole, plug-in device outlet for industrial heating mantle connection

Dimensions (mm)

w 400 x h 180 x d 250

Controller WRTI7103 with three power selectors



Zones to be heated	Article No. 230 VAC	Delivery code
3	WRTI7103-2W4XK000	C
4	WRTI7104-2W4XK000	C
5	WRTI7105-2W4XK000	C

SERIES WRTI72 CONTROLLER FOR SAFETY HEATING MANTLES

Controller series WRTI72 is employed for operating safety heating mantle WHIS. A safety system limits the temperature of the different heating zones to 300 °C.

- table-top controller in a plastic coated, robust metal housing with high chemical resistance
- aluminium front plate

Device features

- master switch
- digital temperature display for media temperature
- 3 to 5 power selectors with control status display for each heating zone
- with CEE-plug 16A for three-phase current connection 3x230V/50Hz (cable length 1.5 m)
- Multipole, plug-in device outlet for industrial heating mantle connection

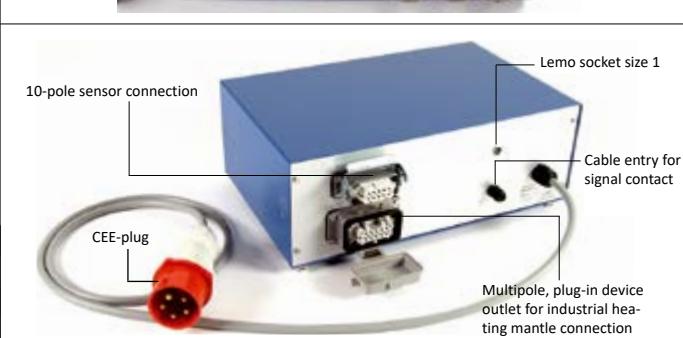
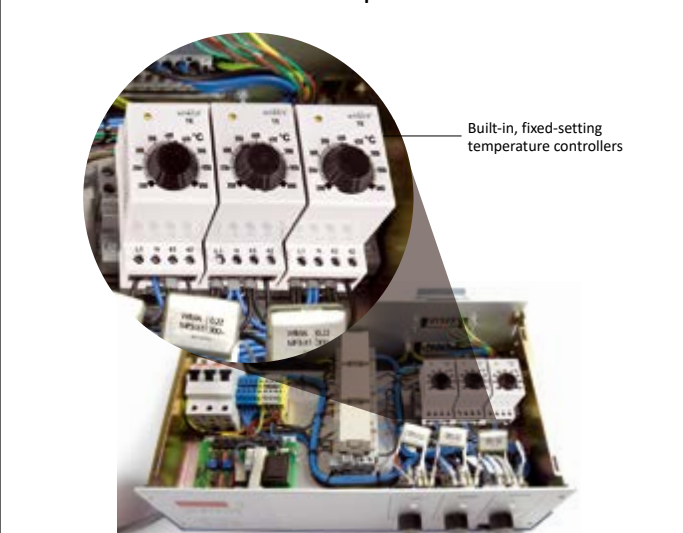
Additional features of WRTI72 device

- 10-pole sensor connection
- Cable entry for signal contact to permit temperature monitoring
- Lemo socket size 1; 4-pole; assignment in accordance with NAMUR (connection for external sensor to measure the media temperature)
- The overall control takes place via the freely selectable medium temperature → T_{max} = 300 °C
- The temperature is limited by built-in temperature controllers → 300 °C for each zone being heated

Dimensions (mm)

w 400 x h 180 x d 250

Controller WRTI7203 with three power selectors



Zones to be heated	Article No. 230 VAC	Delivery code
3	WRTI7203-2W4DK000	C
4	WRTI7204-2W4VK000	C
5	WRTI7205-2W4FK000	C

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ACCESSORIES

ROD CLAMPS FOR MULTI-PLACE HEATING MANTLES - STK 1



Material	Article No.	Delivery code
Cast aluminium	WHZSTK01	A

Clamping device for support rods up to Ø 15 mm or fixation of heating mantle in a scaffolding setup.

ROD CLAMPS FOR MULTI-PLACE HEATING MANTLES - STK 1



Material	Article No.	Delivery code
Plastic	WHZSTK02	A

Clamping device for support rods up to Ø 10 mm or fixation of heating mantle in a scaffolding setup.

SERIES WHZT SUPPORT RING FOR CROCHETED HEATING MANTLES



Flask volume (ml)	Article No.	Delivery code
25	WHZT0025	A
50	WHZT0050	A
100	WHZT0100	A
250	WHZT0250	A
500	WHZT0500	A
1,000	WHZT1000	A
2,000	WHZT2000	A
3,000	WHZT3000	A
4,000	WHZT4000	A

SERIES WHZD TRIPOD FOR CROCHETED HEATING MANTLES



Flask volume (ml)	Article No.	Delivery code
100	WHZD0100	A
250	WHZD0250	A
500	WHZD0500	A
1,000	WHZD1000	A
2,000	WHZD2000	A
3,000	WHZD3000	A
4,000	WHZD4000	A
5,000	WHZD5000	A
6,000	WHZD6000	A
10,000	WHZD0010	A
20,000	WHZD0020	A

POWER SUPPLY CABLES FOR ALL TYPES HEATING MANTLES

RCD safety plug and multipole coupling (comes as standard with all heating mantles)



Cabel length	Current	Article No.	Delivery code
1,0 m	10 A	WHZA1000	A

To be used if the user's mains network is **not** protected by a residual current device.

Shock-proof plug with multipole coupling



Cabel length	Current	Article No.	Delivery code
1,0 m	10 A	WHZA2000	A
1,0 m	10 A	WHZA20CH	A

May be employed when the user's mains network is protected by a residual current device.

CONTROL AND MONITORING EQUIPMENT - MECHANICAL DEVICES

POWER SELECTOR SERIES WRT00116

- plug-in power selector made of impact-resistant polystyrene
- sturdy switching mechanism

Device features

- mechanical power selector with bimetal element
→ infinitely variable power (0-100%)
- signal light for control status indication
- cable with grounding type plug → cable length 1.4 m

Technical Data

Dimensions (mm) w × h × d	120 × 56 × 57
Nominal voltage	230 VAC
Nominal current	13 A ohmic load
Nominal frequency	50 Hz
Nominal switching capacity	3,000 W
Mains connection	grounding type plug (1.4 m cable)
Consumer unit connection	socket

Article No. 230 VAC	Delivery code
WRT00116-230XX013	A
WRT00116-230XX0CH	A



POWER SELECTOR TYPE WRT00117

- plug-in power selector made of impact-resistant polystyrene
- sturdy switching mechanism

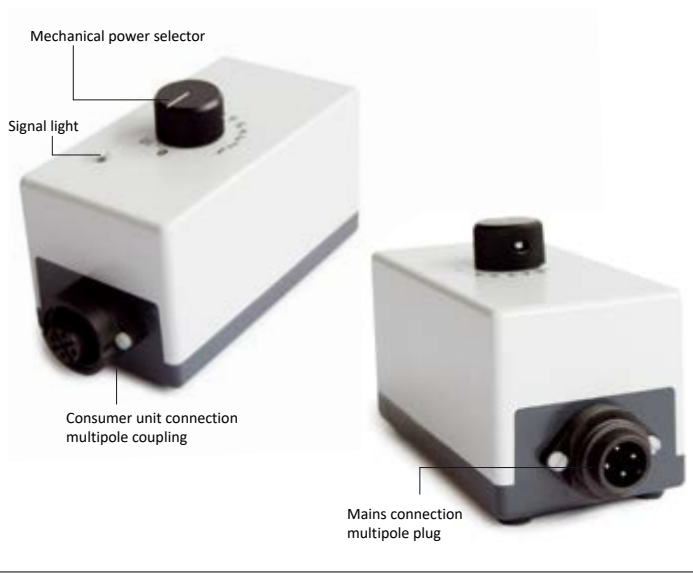
Device features

- mechanical power selector with bimetal element
→ infinitely variable power (0-100%)
- signal light for control status indication

Technical Data

Dimensions (mm) w × h × d	120 × 56 × 57
Nominal voltage	230 VAC
Nominal current	10 A ohmic load
Nominal frequency	50 Hz
Nominal switching capacity	2,300 W
Mains connection	Multipole plug
Consumer unit connection	Multipole coupling

Article No. 230 VAC	Delivery code
WRT00117-230XX010	A



POWER SELECTOR SERIES WRT00011

- plug-in power selector made of impact-resistant polystyrene
- sturdy switching mechanism

Device features

- mechanical power selector with bimetal element → infinitely variable power (0-100%)
- signal light for control status indication
- connection: cable with grounding type plug → cable length 1.4 m
- socket with integrated fuses
- mains connection on the back

Technical Data

Dimensions (mm) w × h × d	155 × 65 × 135
Nominal voltage	230 VAC
Nominal current	10 A ohmic load
Nominal frequency	50 Hz
Nominal switching capacity	2,300 W
Mains connection	grounding type plug (1.4 m cable)
Consumer unit connection	socket

Article No. 230 VAC	Delivery code
WRT00011-230XX010	A
WRT00011-230XX0CH	A



CONTROL AND MONITORING EQUIPMENT - MICROPROCESSOR-CONTROLLED DEVICES

Function as

- Single-channel controller
- Two-position controller
- Continuous-action controller
- Three-position controller
- Step controller

Additional functions

- Timer function (process time)
- Ramp function
- Selector function
- Two logic inputs
- Configurable functions

Configurable input

- Resistance thermometer Pt 100
- Thermocouples

Additional configurable input

- Limit value/cut-out function**
- Pt 100
 - Thermocouples
 - Standard signal U or I

Analogue output

- Configurable output quantity and function

TABLE-TOP CONTROLLER SERIES WRT2000X

- table-top controller made of impact-resistant polystyrene according to DIN 53 453, fire-protection class UL 94 HB

Device features

- ON/OFF switch
- connecting cable (length 1.5 m) with grounding type plug
- analogue output
- digital temperature display of actual and setpoint temperatures
- integrated start and stop button
- terminal block for signal contacts
- terminal block for sensors and analogue output

Option

Serial interface RS232 / second analogue output



Technical Data

Dimensions (mm) w x h x d	205 x 80 x 188
Nominal voltage	230 V
Nominal current	10 A ohmic load
Fuse protection	built-in thermal fuse
Power input	<4,5 VA
Ambient temperature	0...70 °C
Mains switch	all-pole disconnection
Protection standard	IP 30
Sensor connections	IP20, pluggable screw terminal blocks for wire or leads up to 2.5 mm ²
Safety class	I

Article No. 230 VAC	Delivery code
WRT2000X-230WW010	A
WRT2000X-230WW0CH	A

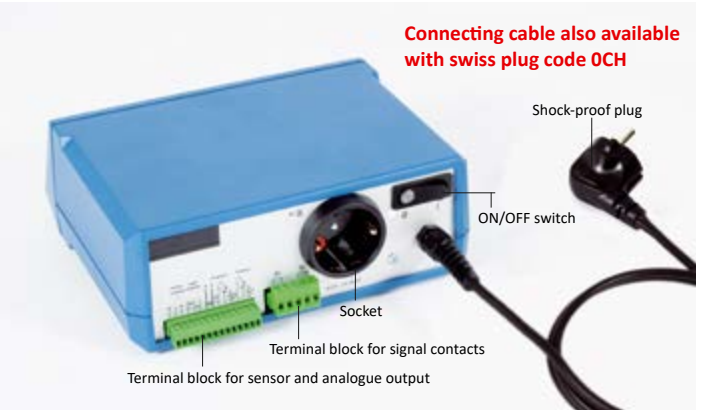


TABLE-TOP CONTROLLER TYPE WRT2010X

- table-top controller made of impact-resistant polystyrene according to DIN 53 453, fire-protection class UL 94 HB
- temperature controller for equipment with multipole coupling and plug

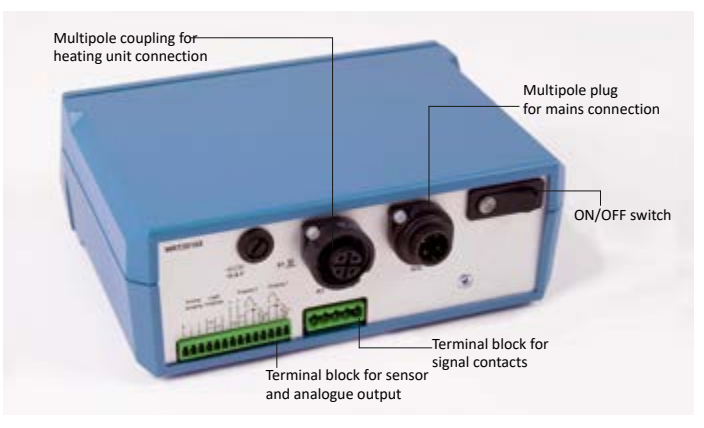
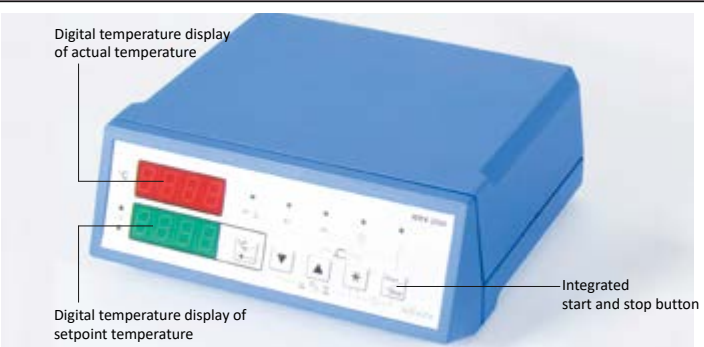
Device features

- ON/OFF switch
- connections for multipole coupling and plug
- digital temperature display of actual and setpoint temperature
- integrated start and stop button
- terminal block for signal contacts
- terminal block for sensors and analogue output

Technical Data

Dimensions (mm) w x h x d	205 x 80 x 188
Nominal voltage	230 V
Nominal current	10 A ohmic load
Fuse protection	built-in thermal fuse
Power input	<4,5 VA
Ambient temperature	0...70 °C
Mains switch	all-pole disconnection
Protection standard	IP 30
Sensor connections	IP20, pluggable screw terminal blocks for wire or leads up to 2.5 mm ²
Safety class	I

Article No. 230 VAC	Delivery code
WRT2010X-230WW010	A



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CONTROL AND MONITORING EQUIPMENT – TEMPERATURE SENSORS

General information

Temperature sensors are designed to measure temperatures on the basis of an electronic evaluation system. In order to ensure correct functioning of the electronic system, the temperature sensors must be matched suitably to the specific application.

A number of basic factors need to be observed:

The temperature sensor always measures the temperature at the place where it is installed. Therefore the place of installation must be carefully chosen – with due consideration to the relevant technical requirements – to prevent overheating of the heating device, while maintaining the desired process temperature. As a rule, the temperature should be measured at the most critical point. The sensor must be correctly connected to the control system.


Where there is too great a difference between the operating temperature and the temperature at the hottest measuring point, a temperature controller and a thermal cut-out with separate sensors should be provided for safety reasons.


Resistance thermometer Pt 100


With a two-wire system, polarity reversal of Pt 100 resistance thermometers is not possible. Three-wire and four-wire systems have to be connected in compliance with instructions. In the case of two-wire systems, it should be realized that the line resistance has an impact on the temperature measurement. The line resistance can be measured and the control suitably adjusted.



Thermocouples

Special attention must be paid to avoid polarity reversal since this would create a risk of overheating. For thermocouple extension it is essential to use the correct type of compensating cable.

SERIES WFMP RESISTANCE THERMOMETER Pt100		T _{max} = 250 °C		T _{max} = 500 °C	
					
Sensor length	50 mm	Type	T_{max}	Article No.	Delivery code
Sensor diameter	4 mm	Pt 100 two-wire	250 °C	WFMP1250	A
Cable length	1.8 m	Pt 100 four-wire	500 °C	WFMP1500	A

TYPE WFSJ AND WFSK THERMOCOUPLE ROD		T _{max} = 500 °C		T _{max} = 1000 °C	
					
Sensor length	300 mm	Type	T_{max}	Article No.	Delivery code
Sensor diameter	1.6 mm	Type J (Fe-CuNi)	500 °C	WFSJ1500	A
Cable length	1.2 m	Type K (NiCr-Ni)	1000 °C	WFSK1999	A

TYPE WFBJ AND WFBK THERMOCOUPLE TAPE		T _{max} = 500 °C		T _{max} = 1000 °C	
· with wire end ferrules, ready for connection					
Sensor length	450 mm	Type	T_{max}	Article No.	Delivery code
Sensor width	16 mm	Type J (Fe-CuNi)	500 °C	WFBJ1500	A
Cable length	1.2 m	Type K (NiCr-Ni)	1000 °C	WFBK1999	B

TYPE WFZJ AND WFZK COMPENSATING CABLES		T _{max} = 250 °C			
<ul style="list-style-type: none"> · PTFE insulated, twisted leads · 2 x 0,5 mm² · sold by the metre → minimum purchase quantity 10 m 		Type J 		Type K 	
twisted leads black / white	Type J	Type	T_{max}	Article No.	Delivery code
	Type J	Type J (Fe-CuNi)	250 °C	WFZJ0250	A
twisted leads green / white	Type K	Type	T_{max}	Article No.	Delivery code
	Type K	Type K (NiCr-Ni)	250 °C	WFZK0250	A

HEATING TAPES AND HEATING CABLES

maximum temperature is not exceeded.

Application

In laboratories and experimental facilities where an easily employed system is desired to heat shapes and parts to high temperatures or where it is important to ensure short heating-up periods.

Advantages

- very high and constant heating power per metre
- high operating temperature
- extremely flexible
- quick and easy installation

Please note:

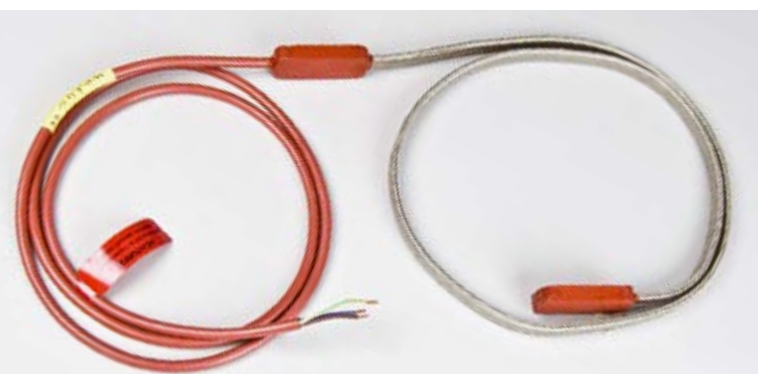
- the high power (W/m) requires a good heat-transfer contact with the heated object.
- constant W/m heat output independent of pipe or surface temperature.
- to avoid overheating, heating tapes or cables must be laid in such a way that they are not in close contact with each other or overlapping.
- the surface temperature of the (switched on) heating system is always higher than the pipe temperature.
- install a temperature controller to ensure that the specified

HEATING TAPE TYPE WBS00202

T_{max} = 200 °C

Structure

- 4 heat conductors
- Silicone-insulated
- Outer braiding: tinned copper wire (except WBS00201)
- Factory-terminated, vulcanized mains connection



Technical Data

Heat conductor temperature	max. 200 °C
Heating power	50 / 75 / 100 W/m
Nominal voltage	230 VAC
Power tolerance	± 10%
Heating tape length	according to list
Mains connection	terminated ready for connection 1.50 m
Insulation material	silicone rubber with protective conductor braiding
Construction type	moisture resistant
Dimensions	12.0 x 6.4 mm
Min. bending radius	> 9 mm

HEATING TAPE TYPE WBS00202 (50 W/M)

Length (m)	Power (W ±10%)	Article No. 230 VAC*	Delivery code
0.9	50	WBS00202-230XX200-00900050	B
1.8	100	WBS00202-230XX200-01800100	B
2.7	130	WBS00202-230XX200-02700130	B
4.0	200	WBS00202-230XX200-04000200	B
6.3	320	WBS00202-230XX200-06300320	B
9.5	470	WBS00202-230XX200-09500470	B
13.5	670	WBS00202-230XX200-13500670	B
16.0	780	WBS00202-230XX200-16000780	B

HEATING TAPE TYPE WBS00202 (75 W/M)

Length (m)	Power (W ±10%)	Article No. 230 VAC*	Delivery code
1.1	80	WBS00202-230XX200-01100080	B
2.2	160	WBS00202-230XX200-02200160	B
3.1	230	WBS00202-230XX200-03100230	B
4.6	350	WBS00202-230XX200-04600350	B
7.3	550	WBS00202-230XX200-07300550	B
11.0	820	WBS00202-230XX200-11000820	B
15.5	1,160	WBS00202-230XX200-15501160	B
18.3	1,370	WBS00202-230XX200-18301370	B

HEATING TAPE TYPE WBS00202 (100 W/M)

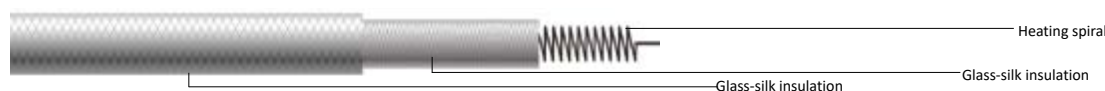
Length (m)	Power (W ±10%)	Article No. 230 VAC*	Delivery code
0.9	100	WBS00202-230XX200-00900100	A
1.8	200	WBS00202-230XX200-01800200	A
2.7	270	WBS00202-230XX200-02700270	A
4.0	410	WBS00202-230XX200-04000410	B
6.3	640	WBS00202-230XX200-06300640	B
9.5	950	WBS00202-230XX200-09500950	B
13.5	1,340	WBS00202-230XX200-13501340	B
16.0	1,570	WBS00202-230XX200-16001570	B

*other voltages on request



HEATING CABLE TYPE WKG00401

T_{max} = 400 °C



- Structure**
- one heating spiral
 - glass-silk insulation
 - outer braiding: flexible glass silk



Technical Data

Heat conductor temperature	max. 400 °C
Heating power	150 W/m
Nominal voltage	230 VAC*
Power tolerance	± 10%
Heating cord length	according to list
Mains connection	Ready for connection, both ends terminated; length 1.0 m
Insulation material	glas silk
Construction type	not moisture resistant
Dimensions	∅ ca. 3.5 mm
Min. bending radius	> 5 mm

Length (m)	Power (W ±10%)	Article No. 230 VAC*	Delivery code
0.5	75	WKG00401-230XX400-00500075	B
1.0	150	WKG00401-230XX400-01000150	B
1.5	225	WKG00401-230XX400-01500225	B
2.0	300	WKG00401-230XX400-02000300	B
2.5	375	WKG00401-230XX400-02500375	B
3.0	450	WKG00401-230XX400-03000450	B
4.0	600	WKG00401-230XX400-04000600	B
5.0	750	WKG00401-230XX400-05000750	B
6.0	900	WKG00401-230XX400-06000900	B

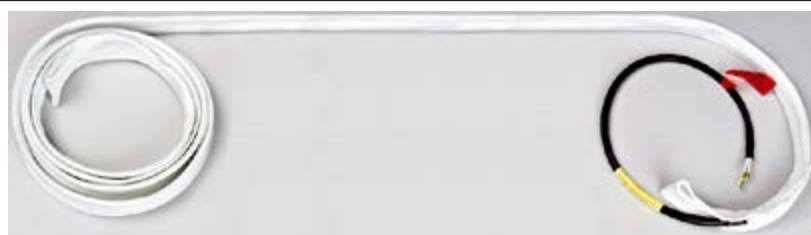
*other voltages on request

HEATING TAPE TYPE WBG00402

T_{max} = 400 °C



- Structure**
- two heat conductors arranged in parallel / heating spirals
 - glass silk-insulated
 - protective braiding: Nickel
 - outer braiding: flexible glass silk



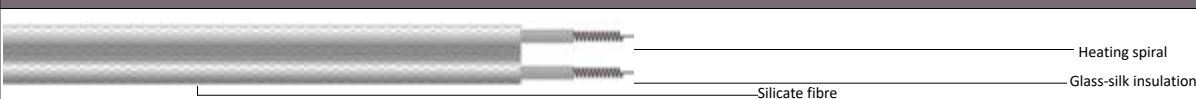
Technical Data

Heat conductor temperature	max. 400 °C
Heating power	250 W/m
Nominal voltage	230 VAC*
Power tolerance	± 10%
Heating cord length	according to list
Mains connection	ready for connection, length 0.4 m
Insulation material	glas-silk
Construction type	not moisture resistant
Dimensions	30 x 5 mm
Min. bending radius	> 15 mm

Length (m)	Power (W ±10%)	Article No. 230 VAC*	Delivery code
0.5	125	WBG00402-230XX400-00500125	A
1.0	250	WBG00402-230XX400-01000250	A
1.5	375	WBG00402-230XX400-01500375	A
2.0	500	WBG00402-230XX400-02000500	A
2.5	625	WBG00402-230XX400-02500625	A
3.0	750	WBG00402-230XX400-03000750	A
5.0	1,250	WBG00402-230XX400-05001250	A

*other voltages on request

HEATING TAPE TYPE WBQ00901



- Structure**
- two heating spirals arranged in parallel
 - protecting braiding: silicate-fibre insulated
 - outer braiding: flexible silicate fibre
 - without protective conductor



Technical Data

Heat conductor temperature	max. 900 °C
Heating power	350 W/m
Nominal voltage	230 VAC*
Power tolerance	± 10%
Heating cord length	according to list
Mains connection	ready for connection, length 0.4 m
Insulation material	silicate fibre
Construction type	not moisture resistant
Dimensions	30 x 8 mm
Min. bending radius	> 15 mm

Length (m)	Power (W ±10%)	Article No. 230 VAC*	Delivery code
0.5	175	WBQ00901-230XX900-00500175	B
1.0	350	WBQ00901-230XX900-01000350	B
1.5	525	WBQ00901-230XX900-01500525	B
2.0	700	WBQ00901-230XX900-02000700	B
2.5	875	WBQ00901-230XX900-02500875	B
3.0	1,050	WBQ00901-230XX900-03001050	B

*other voltages on request

SAFETY

By purchasing a PILZ® heating mantle you have chosen a good and safe product. The materials employed are designed to suit the type of application and undergo constant quality control inspections at our works. In order to ensure safe and trouble-free operation of the PILZ® heating mantle over a long period, you should observe the rules and conditions set out in the operating instructions supplied with the heating mantle.

The operating instructions are an important part of the device and must be made available to the user. They contain information for the safe, correct and economic operation of PILZ® heating mantles. Compliance with the operating instructions will help you to avoid dangers and increase the reliability and service life of the PILZ® heating mantle. The operating instructions must always be at hand; the user must have read and understood these instructions before putting a PILZ® heating mantle into operation. The proper and intended use of PILZ® heating mantles is explained and described in detail in the operating instructions. Warning and information symbols marked in colour complement the safety instructions for PILZ® heating mantles. Especially the important safety instructions on page 2 of the operating instructions must be understood and complied with for operating the device. Even when all the safety rules and instructions are observed, the operation of PILZ® heating mantles still carries a residual risk. Anyone working with PILZ® heating mantles must know these residual risks. You need to follow the instructions and safety rules which prevent these residuals risk leading to injury or damage.



The operation of a PILZ® heating mantle must always be monitored or corresponding safety measures have to be put in place to ensure that the PILZ® heating mantle cannot pose a danger to persons or the environment.

In view of the fact that PILZ® heating mantles are designed for high operating temperatures and could suffer damage during uncontrolled operation, it will be necessary to employ suitable temperature controllers or power selectors. PILZ® heating mantles possess a certain flexibility and are available as crocheted versions made of high quality materials; these crocheted versions are not moisture resistant for constructional reasons.

In accordance with the relevant European Directives and national standards and regulations it must be ensured that no dangerous touch voltage, which could harm the user or endanger property, can arise on the electrical equipment during the proper and intended use of the electrical equipment and likewise during a first fault condition.

Since the proper and intended use of a heating mantle cannot fully exclude breakage of a vessel or overflowing of liquids (foreseeable fault condition), technical measures must be in place to provide the user of the heating mantle with suitable protection against the risk of injury or other damage. Here, the danger of indirect contact plays a significant role.

**Safety principle:**

Merely displaying warnings on the heating mantle or including warnings in the operating instructions as a preventive measure against obvious risks is contrary to the general principles of safety engineering according to which safety must first and primarily be ensured by constructional and technical measures (state of the art). Only when all constructional and technical measures have been exhausted, will information-based safety measures be required and considered adequate (warning or indicating labels) to prevent any still existing residual risks. Transferring the residual risk to the user without first exhausting the technically possible safety measures is not allowed.

Heating mantles fitted only with a grounding type plug without a residual current device (RCD) do not meet the valid safety standards and, in the event of a fault, do not guarantee the necessary protection in accordance with Low Voltage Directive 2006/95/EC and the valid standards and regulations. Heating mantles can also be employed outside laboratories or similar facilities, where compliance with Directives and safety standards cannot be guaranteed. Here, there is a potential foreseeable risk of dangerous touch voltage arising on conductive parts in the event of a fault (overflowing, flask breakage, defective insulation, etc.).

For this reason all PILZ® heating mantles are supplied with a built-in residual current device (30 mA) in the power cable. In the event of a fault, this device will disconnect the PILZ® heating mantle from the mains supply before a dangerous electric current flow could set in (I_f – fault current). The device also enables the monitoring of other electrical faults (defects or breaks in the insulation), which will likewise lead to the PILZ® heating mantle being disconnected.



Tripping of the residual current device indicates a defect of or damage to the PILZ® heating mantle, which must then be given immediately to a qualified electrician for checking. The PILZ® heating mantle may only be put back into operation when the fault has been remedied.

The protective system also functions when PILZ® heating mantles are used in combination with corresponding accessories, such as controllers and power selectors. With this solution our customers can feel assured that PILZ® heating mantles do not pose a danger to persons or property provided the devices are operated in accordance with their proper and intended use (see operating instructions).

Inspections according to BGV A3 and VDE 0702 – periodic inspections

The inspection of operational equipment as well as of plant requiring supervision, or plant subject to obligatory supervision, is legally regulated by the new operational safety ordinance (BetrSichV) of 02.10.2002. This also lays down that persons carrying out inspections must have an appropriate training and further qualification. The BGV A3 accident prevention regulations (formerly VBG 4) of the employers' liability insurance association provide instructions and detailed rules for the inspection of electrical plant and equipment.

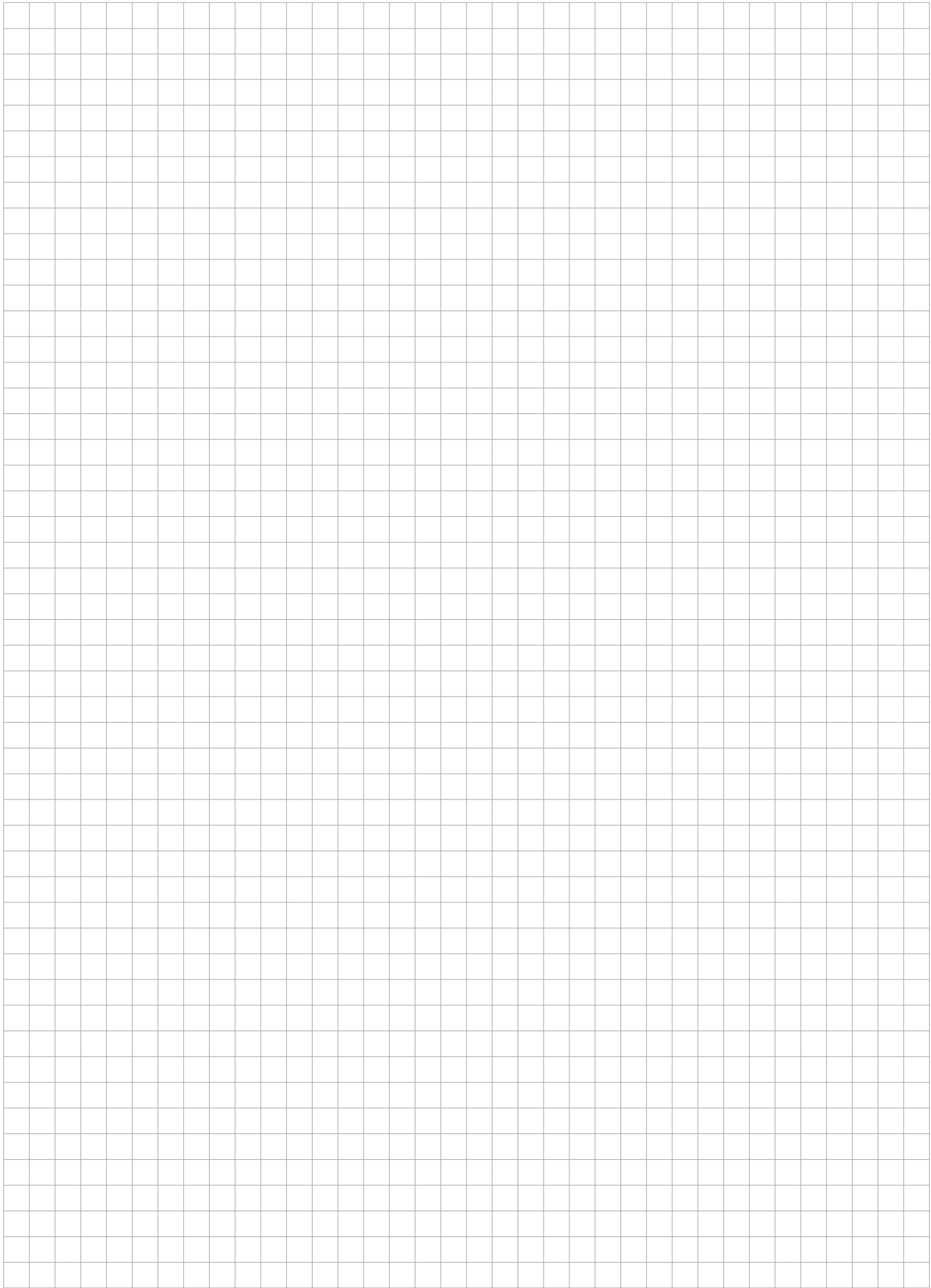
Electrical plant and equipment must be inspected before being put into service and thereafter re-inspected at regular intervals. For portable equipment (heating mantles) an inspection period of 6 months is considered to be a guide and maximum value. If several inspections result in an error rate of < 2%, the inspection interval can be correspondingly extended (maximal 1 year).

DIN VDE 0701-0702:07-2008 (inspection after repair, modification of electrical appliances, periodic inspection of electrical appliances – general requirements for electrical safety) contains rules and information for carrying out the inspections and specifies limit values which need to be met for re-inspections.

Apart from a visual inspection, the scope comprises checking the effectiveness of the protective measure against electric shock and, after successful inspection, a corresponding functional test. The residual current device (RCD) must also be included in this inspection. For further information about the correct inspection of the residual current device see the accompanying operating instructions and the relevant regulations and standards.



FOR YOUR NOTES



Winkler – who we are and what distinguishes us

Our work not only centres on the product itself, but also on developing complete solutions. It is with this belief in mind that our employees plan and manufacture electrical heating devices - adapted precisely to your requirements as a customer. Your temperature problem is our inspiration. Our resourceful developers and skilled manufacturing specialists do everything within their power to make your enquiry into a Winkler heating solution. This way we can respond flexibly and quickly deliver you a ready-for-connection result from a single source. We're proud of that.

There is not only enthusiasm for innovation in our 120 employees' heads, but also comprehensive knowledge from a wide range of technologies. We have continuously transferred the experience gained since the company's foundation in 1979 into new product and application areas, such as explosion protection. This versatility allows us to supply customers in industry, in the laboratory and in railway technology – worldwide. But no matter where: We are in close contact with every customer. Because the better we fulfil your requirements, the more convincing the results. And that is what matters for us.



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Our application and product range

<p>Heating solutions for exhaust measurement technology</p>	<p>Heating solutions for process and environmental measurement</p>	<p>Heated hoses for glueing technology and for filling and dosing systems</p>	<p>Heating solutions for rail technology</p>	<p>Heating solutions for chemical and thermal process engineering</p>	<p>Flexible thermal insulation made of silicone</p>
<p>Heating solutions for hazardous areas</p>	<p>Parallel heating tapes</p>	<p>Drum and IBC heaters</p>	<p>Silicone heaters and heating foils</p>		

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