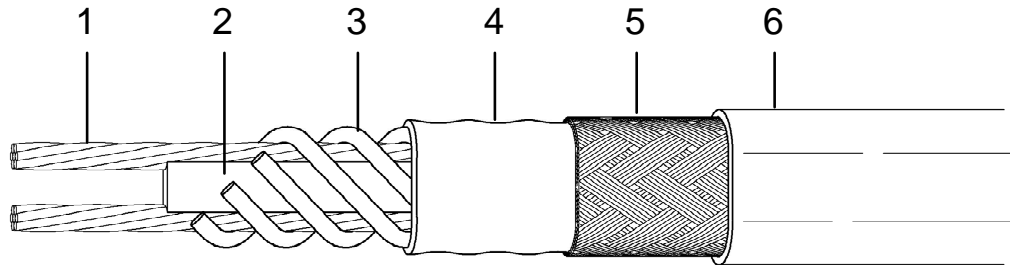


Heating Tape Structure

- 1) Nickel-plated copper bus wire
- 2) Spacer
- 3) Self-limiting polymeric fiber heating element
- 4) Fluoropolymer inner jacket
- 5) Tinned copper braid
- 6) Fluoropolymer outer jacket

Description:

The Klöpper-Therm heating tape type KTH is a parallel heating cable with self-limiting characteristic. As shown above, the self-limiting polymeric fiber element is closely wrapped around the stranded, nickel-plated copper bus wires (2.27mm²), ensuring an electrically good contact. Induced by temperature changes the heat output of the semi-conductive fiber element material rises or declines.

Moisture resistance, special dielectric strength and protection against impact and abrasion damage is realised by two jackets. An inner Fluoropolymer jacket is extruded over the heating cable core, followed by a tinned copper braid, ensuring a continuous ground path. The braid is covered by an outer Fluoropolymer jacket, providing an optimal protection against corrosive or chemical impacts.

Thus, the heating tape is highly suitable for applications in humid or chemically high aggressive atmosphere.

Operation principle:

Voltage is applied along the complete length of the heating tape by the parallel bus wires. Due to the semiconductive fiber element which provides an infinite number of parallel conductive paths, the heating tape can be cut to any length at site without generating dead or cold zones. The self-limiting characteristic of the heating tape is drawn from the in-built properties of the semiconductive fiber element.

When the temperature of the fiber element increases, the number of conductive paths in the fiber element is reduced, automatically reducing the heat output. When the fiber element temperature decreases, the number of conductive paths is raised, thus leading to a higher heat output at every point along the length of the heating tape. Hereby the power output of the heating tape is adjusted to the varying conditions along the pipe.

Due to the self-limiting effect the heating tape can be overlapped without creating hot spots or burnout. By regulating its heat output itself, the heating tape provides an efficient use of power. Heat is only produced when and where it is needed and simultaneously the maximum sheath temperature is limited.

Utilization:

The Klöpper-Therm heating tape type KTH is supremely applicable when it comes to maintaining the fluid flow of a medium across a wide range of operating temperatures. Characteristically, our product is utilized for frost protection systems that are cleaned by steam and for temperature maintenance systems up to 121°C.

Rating Data of Heating Tapes:

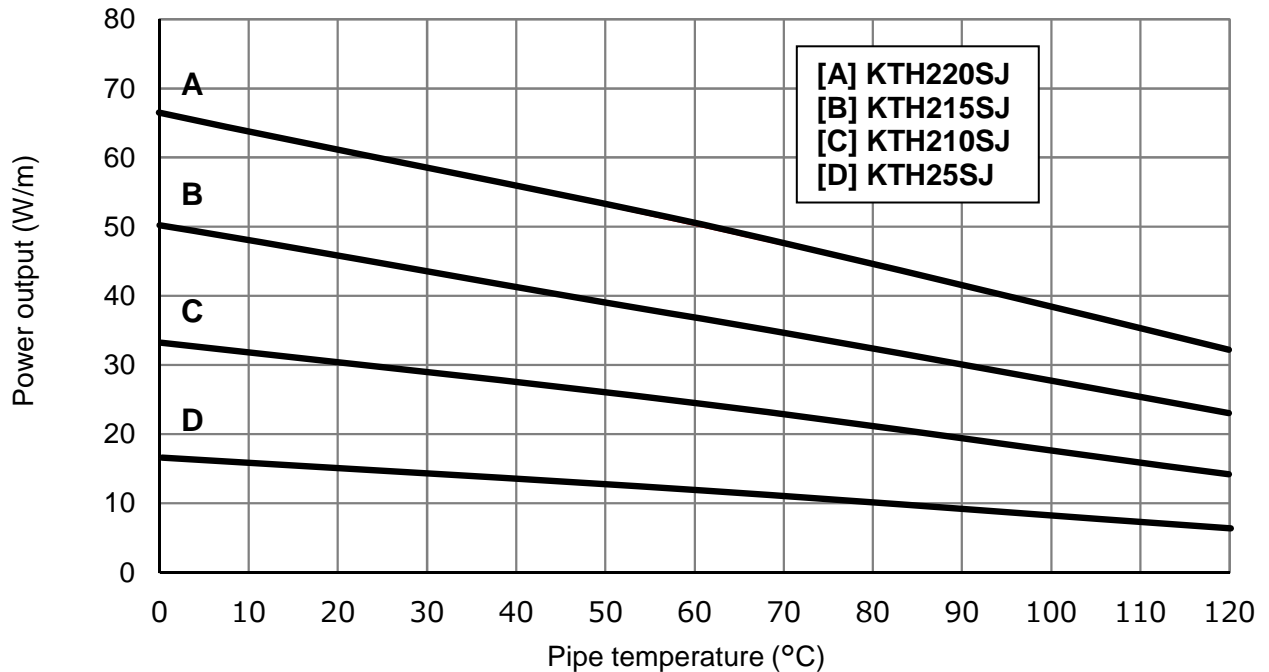
Type Designation	Watts/Meter at 10°C	Service Voltage	Maximum Length of Heating Tape	Maximum Exposure Temperature Continuous	Maximum Exposure Temperature Intermittent	Temperature Class (Gas Ex-Area)*
		[V AC]	[m]	[°C]	[°C]	
KTH25SJ	15	230	235	121	250	T3
KTH210SJ	31	230	165	121	250	T3
KTH215SJ	48	230	125	121	250	T3
KTH220SJ	64	230	95	121	250	T2

*The temperature classification of electrical equipment is applied in hazardous areas and defines the surface temperature the electrical devices do not exceed during proper operation.

The heating tapes have been certified for the use in hazardous areas, endangered by gases, of zones 1 and 2 according to EU Type Examination Certificate No. CML 16ATEX3124X and must only be completed by connection and end seal kits delivered by Klöpper-Therm making use of the power termination type HP-A69R and the end seals type HP-A17 plus HP-A30. In addition, Klöpper-Therm delivers a complete range of connection boxes, too,

Dimensions (nominal): width 12.0 mm, thickness 7.5 mm
 Weight: 185 g/m
 Outer jacket colour: Red
 Minimum installation temperature: -40°C
 Minimum bending radius: 30 mm at +20°C / 66mm at -40°C

Heating Tape Power Output Rating at 230 V AC:



Remark: The power rating is valid for applications on insulated steel pipes.

used by or conveyed to any person without our authority

Information contained herein is our property and must not be

Rev. 0 – 29.11.2016

Subject to changes

37G4-9999-509EN

Circuit Breaker Selection (C-Characteristic):

Type Designation	Start-up Temperature [°C]	Max. Recommended Heating Tape Length (in Meters) vs. Circuit Breaker Size				
		16A	20A	25A	32A	40A
KTH25SJ	+10	140	180	215	235	235
	0	130	160	205	235	235
	-10	125	160	200	235	235
	-20	120	145	190	235	235
	-30	115	145	185	235	235
	-40	110	140	175	225	235
KTH210SJ	+10	75	95	115	150	165
	0	70	90	110	140	165
	-10	65	80	105	135	165
	-20	65	80	100	130	165
	-30	60	80	100	125	160
	-40	60	75	95	120	155
KTH215SJ	+10	50	65	80	100	125
	0	45	60	75	95	120
	-10	45	55	70	95	115
	-20	45	55	70	90	110
	-30	40	50	65	85	110
	-40	40	50	65	85	105
KTH220SJ	+10	35	45	60	75	95
	0	35	45	55	70	90
	-10	35	45	55	70	90
	-20	35	40	50	70	85
	-30	30	40	50	65	85
	-40	30	40	50	65	80

Remarks:

1. The circuit breaker size must be based on minimum start-up temperature, since the inrush current of the heating tapes increases with decreasing ambient temperature.
2. Do not exceed maximum recommended heating tape length, indicated for each type of heating tape.
3. When connecting two or more different wattage heating tapes in parallel on the same breaker, please use the 16 amps column (16A) and divide 16 amps by the maximum heating tape length indicated with reference to the desired minimum start-up temperature. Thus you get an amps/meter value for each type of heating tape. Multiply the length of each heating tape with the derived amps/meter value. The single amp values calculated have to be added up. The added value must not exceed the amperage rating of the breaker.
4. For electrical heating systems, Klöpper-Therm stipulates the use of a residual current device with a residual current rating not exceeding 300 mA. Residual current devices with a residual current rating of 30 mA should be used preferably.