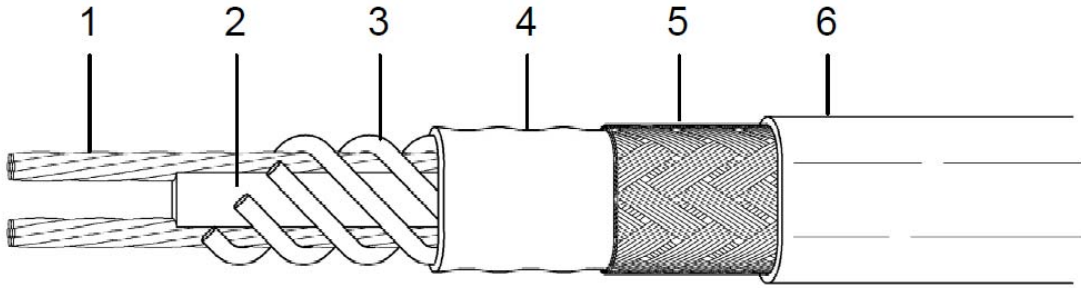


Heating Tape Structure 伴热带结构



- 1) Nickel-plated copper bus wire 镀镍铜母线
- 2) Spacer 绝缘分隔条
- 3) Self-limiting polymeric fiber heating element 自调控聚合物-纤维加热元件
- 4) Fluoropolymer inner jacket 含氟聚合物内护套
- 5) Tinned copper braid 镀锡铜编织层
- 6) Fluoropolymer outer jacket 含氟聚合物外护套

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.

产品说明:

KTH 伴热带符合自限温并行伴热带的特性。如图所示 2.77 mm²镀锡铜母线被聚合物-纤维加热元件紧密包裹，确保电接触良好。温度的变化增加或减少聚合物-纤维加热元件热量的输出。

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.

增加了绝缘强度、防潮性保护免受冲击和磨损。内层聚烯烃护套包覆线芯材料。聚烯烃内护套外是改良聚烯烃绝缘层第二层外护套外面覆盖镀锡铜编织层。

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

伴热带提供了最佳的防腐或提耐化学腐蚀保护

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.

工作原理:

在平行的两条母线上通上电压，导电纤维所产生的导通电路可以在整条伴热线上，不会产生死去和冷的区域。伴热带的特性来自于内部导电纤维的特性。

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.

当纤维加热元件温度升高，导电通路数量减少，伴热带减少热量输出。当纤维加热元件温度降低，导电通路数量增加，伴热带增加热量输出。

Due to the self-limiting effect the heating tape can be overlapped without creating burnout or hot spots. 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.

自限温效应使加热电缆可以重叠铺设而不会增加过热点或燃烧点。由于加热电缆自行调节其热输出功率，提供了电力使用效率，同一时间只在需要的地方产生热量，同时限制了外护套最高温度。

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.

应用:

KTH 伴热带广泛应用于流体的正常工作温度的温度维持，典型应用于防冻、维度维持最高可达 121°C。

Klöppler-Therm Heating Cables 克鲁博加热电缆

Self-limiting Heating Tapes Type KTH

KTH 自调控伴热带

Rating Data of Heating Tapes: 伴热带技术参数:

Type Designation 型号	Watts/Meter at 10°C 10°C时额定功率	Service Voltage 工作电压 [V AC]	Maximum Length of Heating Tape [m] 加热带最大长度	Maximum Exposure Temperature Continuous [°C] 最高暴露温度 (持续供电)	Maximum Exposure Temperature Intermittent [°C] 最高暴露温度 (间歇式)	Temperature Class (Gas Ex-Area)* 温度等级 (气体防爆区)
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.

产品可应用于高危区，但环境操作温度不得超过温度等级定义的范围

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 Klöppler-Therm making use of the power termination type HP-A69R and the end seals type HP-A17 plusHP-A30. In addition, Klöppler-Therm delivers a complete range of connection boxes, too.

加热带通过EU检测认证，证书编号CML 16ATEX3124X，适用于1区、2区及气体危险区域。

Dimensions (nominal): width 12.0 mm, thickness 7.5 mm
外形尺寸 (标称) width 12.0 mm, thickness 7.5mm

Weight: 185 g/m
重量: 185 g/m

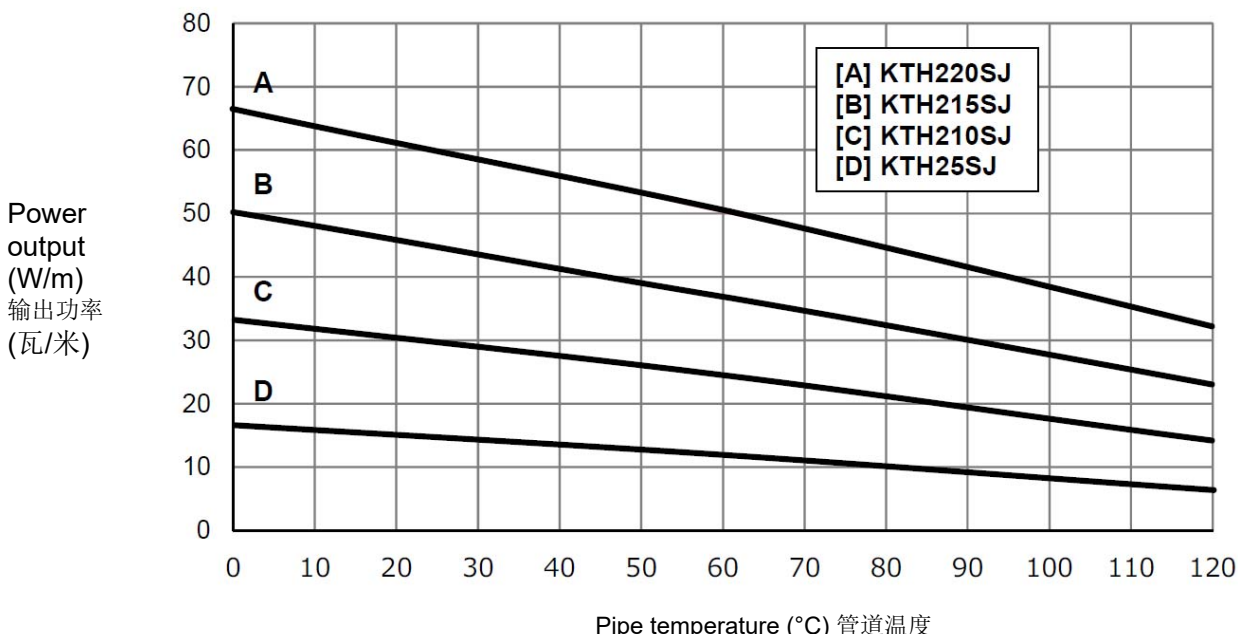
Outer jacket colour: Red
外护套颜色: 黑色

Minimum installation temperature: -40°C
最低安装温度: -40°C

Minimum bending radius: 30 mm at +20°C / 66mm at -40°C
最小弯曲半径: 20°C时为30 mm/-40°C时为66 mm

Heating Tape Power Output Rating at 230 V AC:

交流电源为 230V 时的输出功率:



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

备注: 保温钢管上的额定功率。

Circuit Breaker Selection (C-Characteristic) 断路器选型 (C-特性) :

Type Designation 型号名称	Start-up Temperature [°C] 启动温度	Max. Recommended Heating Tape Length (in Meters) vs. Circuit Breaker Size 不同断路器容量对应的最大加热长度				
		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:

- 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.
断路器大小必须根据最低启动温度来选型，因为伴热带的回路电流是随环境温度而增减变化的。
- Do not exceed maximum recommended heating tape length, indicated for each type of heating tape.
不同型号伴热带的分支不要超过其相应的加热长度。
- 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.
当在同一个断路器下并联连接两个或更多不同功率的伴热带时，要使用16A的断路器。16A除以要求的最低启动温度，就是16A开关所能带的伴热带的最大回路长度。这样就能得到不同型号伴热带每米的启动电流 (A/m)，再乘以长度得到不同伴热带的启动电流。电流值还要考虑增加的系数，增加值不允许超过断路器的额定电流值。
- For electrical heating systems, Klöppler-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.
克鲁博规定电加热系统使用漏电保护装置的剩余电流不超过 300 mA 的评级。最好使用额定电流为 30 mA 的漏电保护装置。