



XING-YUAN

JIANGSU XINGYUAN HIGH TEMPERATURE CABLE CO. LTD.

行业创新领导者，技术革新执行者

Industry innovation leader, technical innovation executor

江苏兴缘高温线缆有限公司

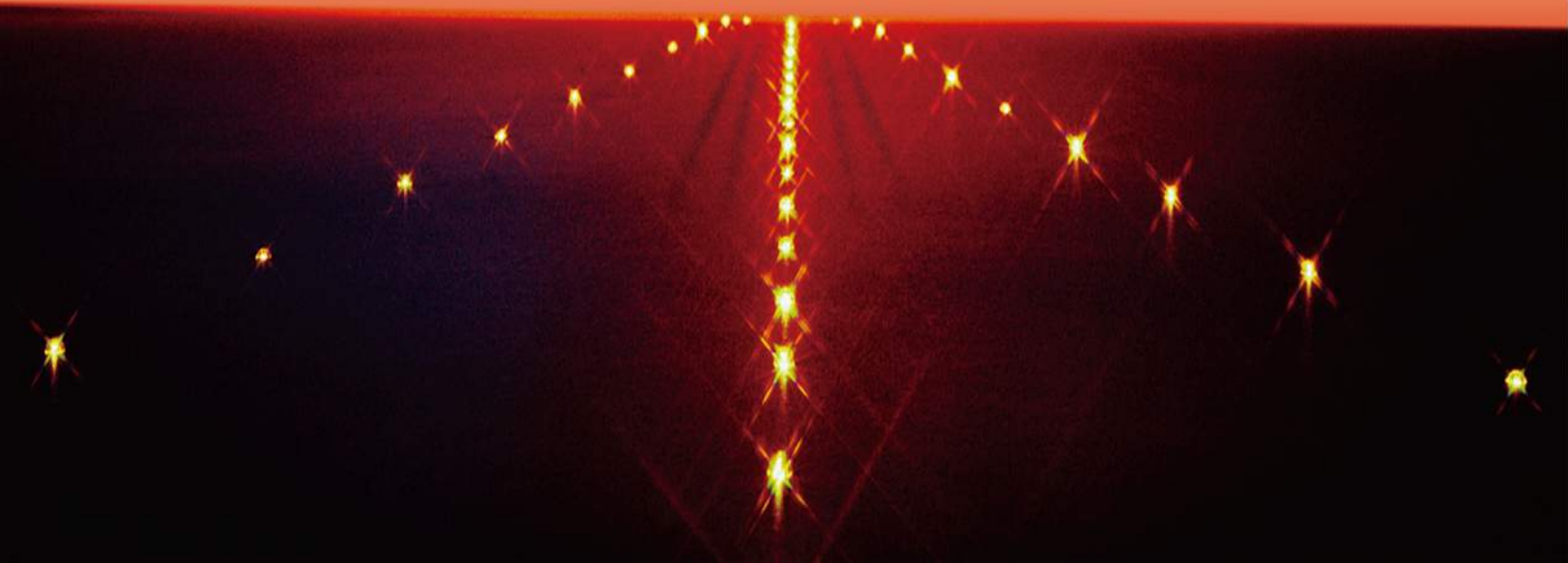
JIANGSU XINGYUAN HIGH TEMPERATURE CABLE CO. LTD.

ENTERPRISE LOOK FORWARD

企业展望

公司全体员工精诚团结、奋力拼搏、攻坚克难，在市场经济人潮中，抢占市场高地，用自己的智慧、勤劳、汗水奠定了坚实的发展基础

All the staff of the company are united, work hard, overcome difficulties, seize the market height in the crowd of market economy, With their own wisdom, hard work, sweat laid a solid foundation for development



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江苏兴缘高温线缆有限公司

JIANGSU XINGYUAN HIGH TEMPERATURE CABLE CO. LTD.



江苏兴缘高温线缆有限公司创办于2007年，现为国家高新技术企业，江苏省泰州市民营科技企业，拥有三项发明专利，公司目前占地面积 20000 平方米。拥有先进的生产设备，雄厚的开发基础，科学的检测手段和可靠的质保体系。

公司专业生产氟塑料耐高温耐腐蚀耐油电线电缆AF、AFP、AFPF、AFF、KFF、；硅橡胶绝缘护套电线电缆 60245IECO3(YG)，AGR，AGRP，AGG、RGG、YGZ、YGC；高温耐火矿物质绝缘高温线（500℃-1000℃），计算机屏蔽电缆线，加热线，低压发热线，碳纤维发热线缆，自控温伴热带，并联高温电伴热带，恒功率电热带，硅胶电伴热带等10大类，300多种型号规格的产品。广泛应用于航空、冶金、化工、石油、电力、汽车、消防、户外融雪、建筑采暖、电子、机械和家电行业。

“兴缘”牌高温线缆已深得用户好评，畅销国内外市场。产品已通过IATF16949：2016质量管理体系和国家强制性CCC、CQC安全认证,美国安规UL认证以及欧盟CE认证，并获得PICC中国人民财产保险公司对产品质量的承保。本着质量为本、诚信为先、服务至上的经营理念，竭诚为广大客户提供优质的产品和优良的服务，开创互利双赢和谐发展的未来。

Jiangsu Xingyuan High Temperature Cable Co., Ltd , established in 2007, now is a national high-tech Technical Enterprise, Taizhou Private Division, Jiangsu Province Technology enterprise with three independent invention patents. The company currently covers an area of 20,000square meters. Have advanced production Facilities equipment, solid development foundation, scientific testing methods and reliable quality assurance system.

The company specializes in producing fluoroplastics with high temperature resistance corrosion and oil resistant wire and cable AF, AFP, AFPF, AFF, KFF ; Silicone Rubber insulated sheathed wires and cables 60245IECO3 (YG, AGR, AGRP, AGG, RGG, YGZ, YGC; High temperature refractory mineral insulation high temperature Wire (500 ° C-1000 ° C), computer shielded cable, heating wire, low voltage heating wire, carbon fiber heating cable, self-control warm heat tracing, parallel high temperature electric heat tracing Band, constant power electric heating belt, silicone electric cable, etc 10 categories including tropical, more than 300 modelsGrid products. Widely used in aviation,metallurgy, chemical industry, petroleum, electric power, steam vehicles, fire protection, outdoor snow melting, construction mining heating, electronics, machinery and appliance industries.

"Xingyuan" brand high temperature cable has won the customers' high praise and sell well in domestic and foreign markets.

The Products passed ATF16949: 2016 quality system and national mandatory CCC, CQC

Safety certification, U. S. safety UL certification and EU CE certification and obtained PICC China People's Property Insurance Company . Underwriting.

Based on quality high ,integrity First, service-oriented business philosophy, dedication to provide our customers with quality products quality and excellent service, creating a mutually beneficial double Win the future of harmonious development.

诚信铸就品质

Honesty makes quality

质量赢得市场

Quality wins the market

品牌代言人

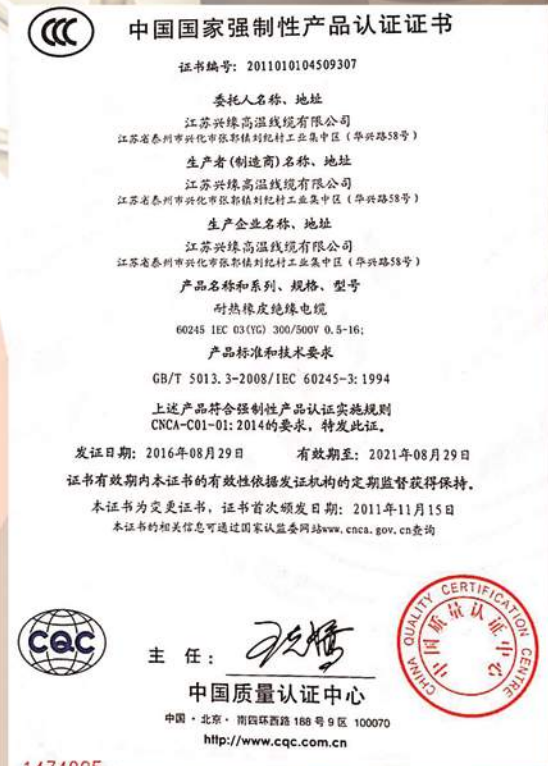
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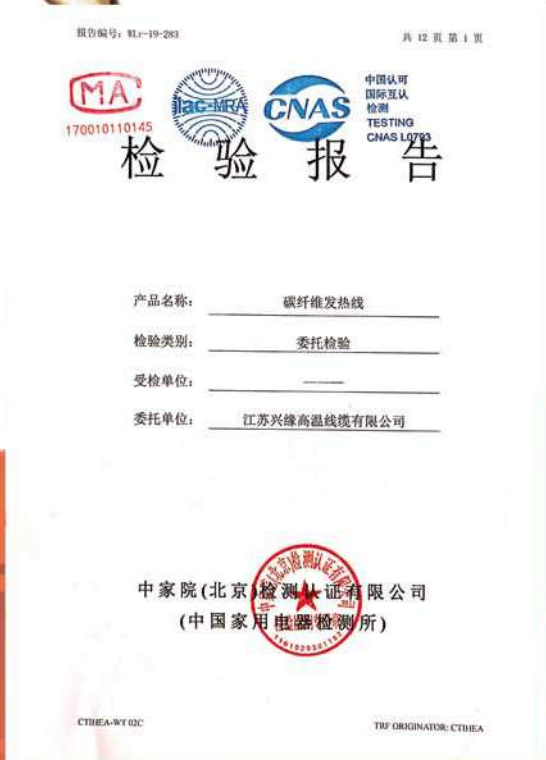


Enterprise Honor Brand Under Auraa

企业荣誉——光辉下的品牌

荣誉是对历史贡献的肯定，我们的眼光将更加远瞻！





[生产设备] Equipment

企业必须拥有坚定信念与明确的发展方向，信念是我们团结协作的基石，是我们竭尽全力的动力，是我们敢于对责任的担当。
The enterprise must have firm faith and clear direction of development, belief is the cornerstone of solidarity and cooperation, the dynamic to all out, the dare to be responsible.



缔造工程精品 竭诚为您服务

Create the quality engineering
Serve for you with all sincerity

我公司愿以优越的工厂环境、精良的机械设备、精干的员工队伍、完善的检测系统为顾客提供一流的产品、一流的服务。

A superior factory environment, extremely well equipped, competent workforce, perfect detection system to keep the best quality product and best service for our customer.



[生产设备] Equipment

企业必须拥有坚定信念与明确的发展方向，信念是我们团结协作的基石，是我们竭尽全力的动力，是我们敢于对责任的担当。
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**追求卓越
创新未来**

**Pursue excellent
create future**



[生产设备] Equipment

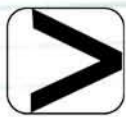
本公司产品，品种规格齐全，质量一流，产品远销欧美、澳大利亚、日本、韩国等众多国家。

Our products are the complete types, best quality, most of production are vended to Occident, Australia, Japan, Korea, etc.



品质 铸就品牌
Quality
makes for brand





品质检测

QUALITY TEST & INSPECTION

- 完善的系统检测设备,
- 以专业严谨的态度、自主进取的研发精神,
- 保证我们一流的产品品质。
- The complete systematic testing equipment guarantees Our first-class
- products quality with the attitude of rigorous speciality, and the spirit of aggressive
- research and self probing.



系统的检测设备 优良的品质保证
SYSTEMATIC TESTING EQUIPMENT
FINE QUALITY IS GUARANTEED

质量控制

Quality Control And Equipment



综合先进的设备、诚实守信的服务原则、科学的管理以及具有实力的科研队伍，配合我们的经营理念，我们的产品拥有一流的逐鹿实力。

Comprehensive advanced equipment, sincere pragmatic principles of service, scientific management and competent research team and our business philosophy, which made our products always good and competitive.

电伴热带工作原理 Working Principle of Electric Tracing Belt

公司自限温伴热带工作原理：在两根平行导线中间充填PTC高分子导电塑料作芯带，其中高分子塑料是基本材料，起骨架和填料载体的作用，无机导体填料是电流载体在绝缘体中形成连通的导电网络，起电流通道作用。当电源接通后，电流经过其中一根导线通过芯带到另一根导线上，形成回路，芯带通电后发热，以补偿管道的散热损失。

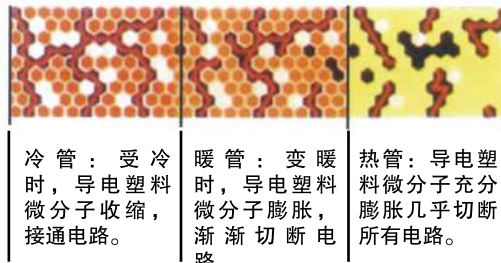
这种导电塑料，在温度上升时，受热膨胀，使得部分电流通道网络逐步断开，通过的电流减少，发热量也随之减少。当温度上升到某个范围时，导电塑料中电流通道因受热膨胀，几乎都成断路，电伴热带电源等于切断，而在温度降低时，芯带收缩，电流通道重新接通，电伴热带又开始共给热量，这就是自限温电伴热带实现自动调节温度的原理。

Working principle of the company's self limited temperature tracing belt: Filling PTC polymer conductive plastic core belt between two parallel wires, Among them, high molecular plastic is the basic material, which plays the role of skeleton and filler carrier, The inorganic conductive filler is a conductive network formed by the current carrier in the insulator and plays the role of current channel. When the power supply is connected, the current passes through one of the wires and is brought to another wire through the core to form a circuit. After the core belt is powered on, it generates heat to compensate the heat loss of the pipeline.

When the temperature of the conductive plastic rises, it will expand when heated, so that part of the current channel network will be gradually disconnected, the current passing through will be reduced, and the heat generation will be reduced accordingly. When the temperature rises to a certain range, the current channel in the conductive plastic expands due to heating, almost all of them become open circuit. The power supply of the electric tracing band is cut off. When the temperature drops, the core band shrinks, the current channel is reconnected, and the electric tracing band begins to supply heat again. This is the principle of automatic temperature regulation of the self limiting electric tracing band.

右图为导电塑料的自控原理，红点表示导电塑料内的加热元件。

The right figure shows the automatic control principle of conductive plastics, and the red dot indicates the heating element in the conductive plastics.



冷管：受冷时，导电塑料微分子收缩，接通电路。

暖管：变暖时，导电塑料微分子膨胀，渐渐切断电路。

热管：导电塑料微分子充分膨胀几乎切断所有电路。

Heat pipe: conductive plastic micromolecule expands sufficiently to cut off almost all circuits

Cold pipe: when it is cold, the conductive plastic micromolecule shrinks and the circuit is connected

Warm pipe: when warming up, conductive plastic molecules expand and gradually cut off the circuit

以上的工作原理，就是我们常提到的PTC效应。PTC效应即是正温度系数效应，特指材料电阻率随着温度升高而增大，并在一定温度区间电阻率急剧增加的特性。那么具备这种效应的材料也就称之为PTC材料，我们现在所介绍的电伴热带的芯带就是高分子PTC材料，由半晶高聚物与炭黑等混合制成。

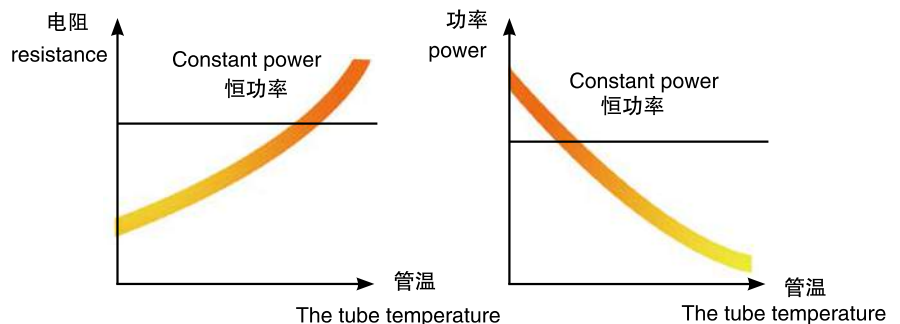
电伴热带的电阻随着温度升高而增大，在降温时电阻能沿着原升温路线返回原来的起点，这便是PTC的记忆功能，具有长期反复使用的记忆性能，对电伴热带使用寿命长短品质优劣起着决定性的作用。

The above working principle is the PTC effect we often mentioned. PTC effect is a positive temperature coefficient effect, especially the property that the resistivity of materials increases with the increase of temperature, and the resistivity increases sharply in a certain temperature range. So the material with this effect is also called PTC material. The core belt of the electric tracing belt we are introducing now is polymer PTC material, which is made of semi crystal polymer and carbon black.

The resistance of the electric tracing band increases with the increase of the temperature. When the temperature drops, the resistance can return to the original starting point along the original heating route. This is the memory function of PTC, which has the memory performance of long-term repeated use and plays a decisive role in the service life and quality of the electric tracing band.

右图为我们自限温电伴热带随温度变化的情况。温度上升时，电阻增加，功率减少；温度下降时，电阻减少，功率增大。

The figure on the right shows the temperature dependence of our self limiting electric tracing belt. When the temperature increases, the resistance increases and the power decreases; when the temperature decreases, the resistance decreases and the power increases.



自限温电伴热主要指标有：标称功率、最高工作温度、最高承受温度、最高表面温度、最大使用长度、启动电流

The main indexes of self limiting electric heat tracing are: nominal power, maximum working temperature, maximum bearing temperature, maximum surface temperature, maximum operating length and starting current.

电伴热带的市场应用 Market application of electric tracing belt

公司自限温伴热带是一种新型高科技产品，虽然其历史仅有十多年，但它的应用领域十分广阔，并且还在不断的发展，现主要应用在工业方面有：石油、化工、热电厂等需用伴热管道的场所。在公共设施方面主要用于消防管道的伴热。在民用方面可用作室内取暖（地面采暖），现已大量的用在太阳能热水器管的伴热方面。

The company's self limited temperature tracing is a new type of high-tech product. Although it has only a history of more than ten years, its application field is very broad, and it is still developing. Now it is mainly used in industries such as petroleum, chemical industry, thermal power plant and other places that need tracing pipes. In terms of public facilities, it is mainly used for heat tracing of fire-fighting pipes. It can be used as indoor heating (ground heating) in civil use, and has been widely used in the heat tracing of solar water heater pipes.

通过对自限温电热带与传统的伴热形式相比较，其特点有以下明显的优点：

在工业方面：传统的伴热形式是用蒸汽、热水伴热，投资费用大，（一般有锅炉、供热管道、水泵等一系列的设备）。而电伴热带只需要电缆、电热带和特殊场合下防爆器件既可，投资成本大幅降低。

在节能方面：蒸汽和热水在长途输送过程中，热损相当可观，能直接用在被伴热管道上的热能也存在温度不平均的问题。这些在使用电伴热带时都可以避免，使得伴热小率高，节约了不必要的能源损耗。

在维护方面：传统的伴热所使用管道很容易锈蚀、堵塞、蚀穿，这样维护起来困难比较大，而电热带没有上述问题。

在经济效益方面：电伴热带安装、运行、维护费用低。

社会效益：在于环保、节能，给社会构造一个和谐的环境。

民用方面：电热带有独到用途，是其它产品不可替代的，如我们常见到的太阳能热水器在寒冷的冬季，水管容易结冰，堵塞水管而不能正常使用。使用电伴热带，就可以解决这类问题。现在北方地区的家庭和一些办公场所正在寻求用电伴热带取暖（如：地面采暖、屋面融雪、道路化冰等）不断的在取代蒸汽这一传统的取暖方式。

Compared with the traditional heat tracing form, the self limiting electric heating belt has the following obvious advantages:

In industry: the traditional form of heat tracing is to use steam and hot water for heat tracing, which costs a lot of investment (generally there are a series of equipment such as boilers, heating pipes, water channels, etc.). And the electric tracing belt only needs cable, electric heating belt and explosion-proof devices in special occasions, so the investment cost is greatly reduced.

In the aspect of energy saving: during the long-distance transportation of steam and hot water, the heat loss is considerable, and the heat energy that can be directly used in the heat tracing pipeline also has the problem of uneven temperature. These can be avoided when using the electric tracing belt, which makes the tracing efficiency high and saves unnecessary energy loss.

In the aspect of maintenance: the pipes used in the traditional heat tracing are easy to rust, block and erode, so it is more difficult to maintain, while the electric tropics do not have the above problems.

In terms of economic benefits: the installation, operation and maintenance costs of the electric tracing belt are low.

Social benefits: environmental protection and energy conservation, and building a harmonious environment for the society.

For civil use: the electric tropics have unique use and are irreplaceable for other products. For example, the solar water heater we often see in the cold winter, the water pipe is easy to freeze, blocking the water pipe and can not be used normally. This kind of problem can be solved by using electric tracing. At present, families and some offices in the north are seeking to use electric heating with tropical heating (such as floor heating, roof snow melting, road ice melting, etc.) to constantly replace the traditional heating method of steam.



自控温电热带概述：Overview of automatic temperature and electric tropics

产品型号Product Model: DXW-J-25-220 DXW-P-25-220 DXW-P/F-35-220

结构Structure: 7*0.23

低温型Low temperature type: DBR (DXW DKW DBW DWK DHR LV DZL DKWZ) 对应国外型号瑞侃BTV 和赛盟corresponding to foreign models Raychem BTV and Symantec BSX series

BSX 系列

D
Z HR-□-□-□
G 1 2 3 4

- 1、低、中、高温自控温伴热电缆
- 2、品种规格(P=防爆, J=基本, PB=防爆, 防腐F₄₆=进口含氟型等)
- 3、标称功率
- 4、工作电压

- 1、 Low, medium and high temperature automatic temperature tracing cable
- 2、 Specifications (P= Explosion-Proof, J= Basic, PB= Explosion Proof and Anticorrosive, F= Imported Fluorine-Containing Type)
- 3、 Nominal Power
- 4、 Working Voltage

电缆结构：Cable Structure



- 1、铜芯导线 2、低电阻过渡层 3、PTC 芯带 4、改良型聚烯烃绝缘层 (自研制) 5、改良型聚烯烃绝缘层 (自研制) 6、金属屏蔽层 7、低烟无卤外护套 (可定制氟塑料护套)

- 1.Copper Conductor 2. Low Resistance Transition Layer 3. PTC Core Tape
4. Modified polyolefine insulation layer (self-developed)
5. Modified polyolefine insulation layer (self-developed)
- 6.Metal shielding layer
7. Low smoke halogen free outer sheath (customizable fluorine plastic sheath)

技术指标 Technical Index:

1、标准颜色、灰色色:

1. Standard color: black、gray

2、温度范围:

2. Temperature range:

最高维持温度65℃; 最高表面温度80℃; 最高承受温度: 110℃

the highest holding temperature : 65℃,

the highest surface temperature : 80℃,

the highest bearing temperature : 110℃;

3、施工温度: 最低: -30℃

3. Construction temperature: lowest:-30℃

4、热稳定性: Thermal stability:

由10℃至99℃间来回循环300次后, 电热带发热量维持在90%以上

After 300 cycles between 10C and 99C, the calorific value of the electric tropics is maintained at more than 90%.

5、弯曲半径: Odd radius:

20℃室温时为25. 4mm; -30℃低温时为35. 0mm

20 C is 25 at room temperature. At low temperature of-30C, it is 35. 0 mm

6、绝缘电阻Insulation resistance:

电缆长度100m, 环境温度; 25℃时, 用500VDC

Cable length 100m, ambient temperature 25℃, 500VDC

摇表摇试1 分钟, 绝缘电阻(导经与屏蔽间)最小值为2000MΩ

For 1 minute, the minimum value of insulated film (between guide and shield) is 2000 MΩ

工作电压operating voltage: 12V 24V 36V 110V 220V 380V

10℃输出功率:10℃ output power:

10W/m 15W/m 20W/m 25W/m 30W/m

产品优点Advantages of products:

1、伴热管线温度均匀, 不会过热, 安全可靠;

1. The temperature of the heating pipeline is uniform. It will not overheat, safe and reliable:

2、节约电能; 2. The electric energy of the section;

3、间歇操作时, 升温启动快速; 3. When asking song operation, the heating up starts quickly:

4、安装及运行费用低; 4, the installation and operation cost is low:

5、安装维护简便; 5, the installation male guard is simple;

6、便于自动化管理; 6, is convenient for automatic management:

7、无环境污染; 7. No environmental pollution:

8、适合复杂管线伴热; 8. Suitable for complex pipeline heating;

9、适用于远离装置的管线伴热; 9. Suitable for pipeline heating away from the device;

10、适用于仪表箱及管道防冻。10. suitable for instrument box and pipe antifreeze.

自控温电热带 Automatic heating and electric tropics

ZXW/ZBR/ZKW/ZBW/ZWK/ZHR/DZ/HV/ZKWZ 对应国外型号瑞侃QTVR 和赛盟RBX 系列，中温自限温电伴热带（又称：自控温电热带，自调控伴热电缆）广泛应用于石油、化工、钢铁、电力等工业企业的管线、储罐的伴热保温、抗凝、防冻。该电缆适用于普通区、危险区和腐蚀区。

ZXW/ZBR/ZKW/ZBW/ZWK/ZHR/DZ/HV/ZKWZ corresponds to foreign models Ruibao OTVA and Saimeng RBX series, medium temperature self-limiting temperature and electricity with tropical (also known as: automatic temperature and electric heating belt, self-control heating cable) is widely used in petroleum, chemical, iron and steel, power and other industrial enterprises pipeline. The heat preservation, anticoagulant and antifreeze of the storage tank. The cable is suitable for ordinary, hazardous and corrupt areas.

型号说明 Model description

产品型号 Product Model: ZBR-J ZBR-P ZBR-PB ZBR-PB46

D
Z HR-□-□-□
G 1 2 3 4

- 1、低、中、高温自控温伴热电缆
- 2、品种规格(P=防爆, J=基本, PB=防爆, 防腐F₄₆=进口含氟型等)
- 3、标称功率
- 4、工作电压

1. Low and medium high temperature automatic temperature tracing cable
2. Specifications (P= Explosion-Proof, J= Basic, PB= Explosion Proof and Anticorrosive, F= Imported Fluorine-Containing Type)
3. Nominal Power
4. Working Voltage

电缆结构 Cable structure:



- 1、铜芯导线
- 2、低电阻过渡层
- 3、PTC 芯带
- 4、改良型聚烯烃绝缘层（自研制）
- 5、改良型聚烯烃绝缘层（自研制）
- 6、金属屏蔽层
- 7、低烟无卤外护套（可定制氟塑料护套）

1. Copper Conductor
2. Low Resistance Transition Layer
3. PTC Core Tape
4. Modified polyolefine insulation layer (self-developed)
5. Modified polyolefine insulation layer (self-developed)
6. Metal shielding layer
7. Low smoke halogen free outer sheath (customizable fluorine plastic sheath)

技术指标: Technical indicators:

1、标准颜色: 棕色、褐色 1. Standard color: Brown, brown

2、温度范围: 2. Temperature range:

最高维持温度105℃ Maximum maintenance temperature 105℃

最高表面温度130℃ maximum surface temperature 130℃

最高承受温度: 135℃ maximum bearing temperature: 135℃

3、施工温度: 最低: -30℃ 3. Construction temperature: lowest: -30C

4、热稳定性: thermal stability: 由10℃至99℃间来回循环300次后, 电热带发热量维持在90%以上
After 300 cycles between 10℃ and 99C, the heating capacity of the electric tropics is more than 90%.

5、弯曲半径: Bend radius:

0℃室温时为25. 4mm; -30℃低温时为35. 0mm

0℃ is 25 at room temperature. At low temperature of 30C, it is 350 mm

6、绝缘电阻: Insulation Resistance:

电缆长度100m, 环境温度25℃时, 用500VDC摇表摇试1分钟, 绝缘电阻(导经与屏蔽间)最小值为2000MΩ

When the cable length is 100m and the ambient temperature is 25℃, the insulation resistance (between guide and screen) is tested with 500VDC shaking meter for 1 minute. The 2000MΩ is small in the bath.

工作电压: Operating voltage:

12V 24V 36V 110V 220V 380V

10℃输出功率: 10℃ Output Power:

35W/m 40W/m 45W/m 50W/m 60W/m

产品优点: Advantages of products:

1、伴热管线温度均匀, 不会过热, 安全可靠;

1. The temperature of the heating pipeline is uniform, it will not overheat, and it is safe and reliable.

2、节约电能; 2. Saving electric energy;

3、间歇操作时, 升温启动快速; 3. When the song is operated, the heating up starts quickly

4、安装及运行费用低; 4, the installation and operation cost is low;

5、安装维护简便; 5, the installation and maintenance is simple;

6、便于自动化管理; 6、 it is convenient for automatic management

7、无环境污染; 7. No environmental pollution:

8、适合复杂管线伴热; 8. Suitable for complex pipeline heating;

9、适用于远离装置的管线伴热; 9. Suitable for pipeline heating away from the device:

10、适用于仪表箱及管道防冻。10. Suitable for instrument box and pipe antifreeze.

工程案例 Engineering case



自限温电热带 Self-limiting temperature and electricity tropics

主要用途：自限温电伴热带广泛应用于石油，化工，钢铁，电力等工业企业的管线、储罐的伴热保温、抗凝、防冻。该电缆适用于普通区，危险区和腐蚀区。

Main uses: Self-limiting heating and heating tropics are widely used in pipelines and tanks of petroleum, chemical, iron and steel, electric power and other industrial enterprises, such as heat preservation, anticoagulant and antifreeze. The cable is suitable for ordinary areas, hazardous areas and corrosion areas.

产品名称：Product name:

高温自限温电伴热带 High temperature self-limiting temperature with tropical

型号：GBR Model: GBR

产品规格：12-13.5mm Product specification: 12-13.5mm

温度范围：0-135℃ 耐温温度：155/205℃

Temperature range: 0 -135℃ Temperature resistant temperature: 155k 205C

标准功率：Standard Power: 25 35 45 55 65 75W/m

常用电压：Common Voltage:

12 24 36 110 220 380V

产品认证：Product Certification: EMC CE RoHs CMA Ex ISO9001

自限温电伴热带广泛应用于石油、化工、钢铁、电力等工业企业的管线、储罐的伴热保温、抗凝、防冻。该电缆适用于普通区、危险区和腐蚀区。

limiting temperature and electricity with tropical zone are widely used in pipelines and storage tanks of petroleum, chemical, iron and steel, electric and other industrial enterprises. Anticoagulant, antifreeze. The cable is suitable for ordinary areas, hazardous areas and corrosion areas.

产品型号：Product Models: GHR-J GHR-P GHR-F GHR-PF GHR-PF46

高温型：GHR (GXW、GBR、GKW、GBW、GWK、GHR、ZKWG、HHV、DZL) 对应国外型号瑞侃XTV和赛盟KSX系列

High Temperature Type: GHR (GXW, GBR, GKW, GBW, GWK, GHR, ZKWG, HHV, DZL) corresponding to foreign countries Model Ruicheng XTV and League KSX Series

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1、低、中、高温自控温伴热电缆

2、品种规格(P=防爆, J=基本, PB=防爆, 防腐F₄₆=进口含氟型等)

3、标称功率

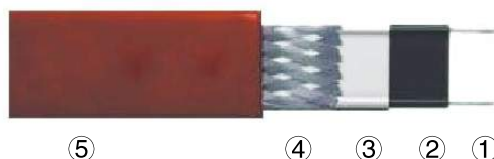
4、工作电压

1. Low, medium and high temperature automatic temperature tracing cable

2. Variety specifications (P = explosion-proof, J = basic, PB= explosion-proof and anticorrosion, F₄₆ = imported fluorine-containing type, etc.)

3. Nominal power

4. working voltage



电缆结构：Cable structure:

1、铜芯导线 2、导电塑料层 3、聚烯烃绝缘层 4、镀锡铜丝屏蔽层 5、氟塑料护套

1. Copper core conductor 2, conductive plastic layer 3, polyolefine insulation layer

4, tinned copper wire shield layer 5, fluorine plastic sheath

技术指标: Technical Index:

1、标准颜色: 棕色、红色 1. Standard color: Brown, Red

2、温度范围: 2, Temperature Range:

最高维持温度 135°C Max maintenance temperature 135°C

最高表面温度 135°C ± 5°C Max surface temperature 135°C ± 5°C

最高承受温度: 155°C max bearing temperature: 155°C

3、热稳定性: 3. Thermal Stability:

由 10°C 至 99°C 间来回循环 300 次后, 电热带发热量维持在 90% 以上

After 300 cycles between 10°C and 99°C, the calorific value of the electric tropics is maintained at more than 90%.

4、弯曲半径: Bending Radius

20°C 室温时为 25.4mm; -30°C 低温时为 35.0mm

The bending radius is 25.4 mm at 20°C room temperature. At low temperature of 30°C, it is 35.0mm

5、绝缘电阻: 5, Insulation Resistance:

电缆长度 100m, 环境温度 75°C 时, 用 2500VDC 摇表摇试 1 分钟, 绝缘电阻(导经与屏蔽间)最小值为 3000MΩ

When the cable length is 100m and the ambient temperature is 75°C, the minimum value of insulation resistance (between guide and shield) is 3000MΩ when shaking test with 2500VDC rocking meter for 1 minute.

工作电压: Operating Voltage: 12V 24V 36V 110V 220V 380V

10°C 输出功率: 10°C output power:

25W/m 35W/m 45W/m 55W/m 65W/m 75W/m

防爆标志: Exe II T4 Explosion proof sign: Exe IT4.

产品优点: The advantages of the product are as follows:

1、伴热管线温度均匀, 不会过热, 安全可靠;

2、节约电能;

3、间歇操作时, 升温启动快速;

4、安装及运行费用低;

5、安装维护简便;

6、便于自动化管理;

7、无环境污染;

8、适合复杂管线伴热;

9、适用于远离装置的管线伴热;

10、适用于仪表箱及管道防冻。

1, The temperature of the heating pipeline is uniform, it will not overheat, safe and reliable,

2, Save electric energy;

3. During intermittent operation, the temperature rise starts quickly;

4, The installation and operation cost is low;

5, The installation and maintenance is simple;

6, It is convenient for automatic management;

7, There is no environmental pollution;

8. Suitable for complex pipeline heating;

9, suitable for pipeline heating away from the device,

10, suitable for instrument box and pipeline antifreeze.

自控温电热带 Automatic heating and electric tropics

04油田井口保温专用36伏电热带（又称：自控温电热带，自调控伴热电缆）广泛应用于石油井口伴热保温、抗凝、防冻。该电缆适用于油田管道伴热的普通区、危险区和腐蚀区，其介质维持温度范围为0~65℃。

04 oil field wellhead thermal insulation special 36 volt electric zone (also known as: automatic heating and electric tropics, self-control heating cable) is widely used in oil wellhead thermal insulation, anti-coagulation, anti-freezing. The cable is suitable for the common area, dangerous area and corrosion area of oil field pipeline, and its medium maintenance temperature range is 0-65℃.

产品型号Product model: DBR-J DBR-P DBR-P DBR-PB46

低温型: DBR (DXW、DBR、DKW、DBW、DWK、DHR、LV、DZL、ZKWD) 对应国外型号瑞侃BTV 和赛盟BSX 系列

Low temperature: DBR (DXW, DBR, DKW, DBW, DWK, DHR, LV, DZL, ZKWD) corresponding to foreign models Ruican BTV and Saimeng BSX series

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1、低、中、高温自控温伴热电缆

2、品种规格(P=防爆, J=基本, PB=防爆, 防腐F₄₆=进口含氟型等)

3、标称功率

4、工作电压

1. Low and medium high temperature automatic temperature tracing cable

2. Variety specifications (P = explosion-proof, J = basic, PB= explosion-proof, anticorrosion F₄₆ = imported gas-containing type, etc.)

3. Nominal Power

4. Working voltage



电缆结构: Cable structure:

1、铜芯导线 2、导电塑料层3、聚烯烃绝缘层 4、镀锡铜丝屏蔽层5、氟塑料护套

1. Copper core conductor 2, conductive plastic layer 3, polyolefine insulation layer

4, tinned copper wire shield layer 5, fluorine plastic sheath

技术指标: Technical Index:

1、标准颜色: 黑色、灰色 1. Standard color: black, gray

2、温度范围: 2, temperature range:

最高维持温度65°C Max maintenance temperature 65°C

最高表面温度70°C ± 5°C Max surface temperature 70°C ± 5°C

最高承受温度: 改良性聚烯烃105°C、阻燃聚烯烃135°C、含氟聚烯烃180°C、全氟材料205°C

Max bearing temperature: modified polyolefine 105°C, flame retardant polyolefine 135°C, fluorine-containing polyolefine 180°C, perfluoromaterial 205°C.

3、施工温度: 最低: -60°C

3, construction temperature: lowest: -60°C

4、热稳定性: 4, thermal stability:

由10°C至99°C间来回循环300次后, 电热带发热量维持在90%以上

After 300 cycles between 10°C and 99 ° C, the calorific value of the electric tropics is above 90%.

5、弯曲半径: Bend radius:

20°C室温时为25.4mm; -30°C低温时为35.0mm

20°C is 25.4mm at room temperature. At low temperature of 30°C, it is 35.0mm

6、绝缘电阻: 6, insulation resistance:

电缆长度100m, 环境温度75°C时, 用2, 500VDC摇表摇试1分钟, 绝缘电阻(导经与屏蔽间)最小值为1200MΩ

When the cable length is 100m and the ambient temperature is 75°C, the output power is 20W/m when the minimum value of insulation resistance (between guide and shield) is 1200MΩ

工作电压: 36V operating voltage: 36V

10°C时输出功率: 10°C output power: 20W/m

防爆标志Explosion proof sign: Exe II T4

经济性: 简便的安装和根据特定油井的设计取得最佳效益的加热系统。

Economy: simple installation and heating system with the best benefit according to the design of a particular oil well.

该系统以下列方式即刻对原油产量产生效应:

The system produces crude oil immediately in the following ways

A、减少油管的堵蜡及频繁的刮蜡, 以稳定产量。

A. reduce the wax blocking and frequent wax scraping of tubing in order to stabilize the production.

B、提温降粘减小井筒的流动阻力增加泵效。

B. Increasing temperature and reducing viscosity to reduce the flow resistance of well simplicity increases pump efficiency.

C、减轻了抽油机负荷, 延长柱子泵周期。

C. The load of pumping unit is reduced and the cycle of column pump is prolonged.

便于控制: 油井伴热电缆输出的热量可以根据需要自行变化, 使运行费用达到最低值, 在临时关井后, 油管不会堵塞, 可迅速恢复油井的生产能力。同时低流速的原油不会产生部分堵塞油管的现象。

Easy to control: the heat output of the heating cable of the oil well can be changed according to the need, so that the operating cost can reach the lowest value. After temporary shutdown, the tubing will not be blocked, and the production capacity of the oil well can be restored quickly. At the same time, low flow rate crude oil will not produce partial blockage of tubing.

防腐采样复合管 Anticorrosive sampling composite pipe

防腐伴热采样复合管时环保监测系统中的重要部件，它是由一组耐腐高性能树脂或铜、不锈钢等导管辅以自控温电热带或恒功率电伴热带以及补偿电缆组成内芯、外加保温层，后敷以阻燃聚烯保护外套复合而成。自控温电热带的自动限温功能，可以保证采样管内维持一定的温度，从而尽可能保证采集样品与初始值保持一致，终确保环保监测系统连续、正确地采集气。根据采集气的成分、温度等实际情况，耐腐伴热采样复合管中采样导管可以选用不同的材质，如PFA（四氧乙烯与全氧烷基醚共物）、FEP（四氧乙烯和六氧丙烯共聚物）、PVDF（聚偏二氧乙烯）、PE（阻燃聚乙烯）、尼龙610等等，电热带可以选用低、中、高温型自限温电热带或恒功率电伴热带，另外还可以根据用户要求添加补偿导线、电源线等。耐腐伴热采样复合管时由多种器件组合而成的一个复合体，在有限的截面上组合上多个系统。

The environmental protection monitoring system is an important part of the corrosion resistance and thermal sampling composite pipe, which is composed of a group of corrosion resistant high performance resin or copper, stainless steel and other ducts supplemented by self-control temperature electric tropics or constant power electric with tropical zone and compensation cable to form an inner core, an external insulation layer, and a flame retardant polyene protective coat. The automatic temperature limit function of automatic temperature and electricity tropics can ensure the maintenance of the temperature in the sampling tube, so as to ensure that the collected samples are consistent with the initial values as far as possible, and finally ensure the continuous and correct collection of sample gas by the environmental protection monitoring system. According to the composition and temperature of the collection gas, the sampling ducts in the corrosion-resistant hot sampling composite pipe can choose different materials, such as PFA (tetraoxylene and peroxy ether), FEP (tetraoxylene and hexachloropropene), PVDF (polyvinylidene oxide), PE (flame retardant polyethylene), nylon 610, etc., the electric tropics can be selected as low, medium and high temperature self-limiting thermoelectric tropics or constant power electric companion tropics, etc. In addition, compensation wires, power cord and so on can be added according to the requirements of the user. When the corrosion resistance and thermal sampling composite tube is composed of a variety of devices, a complex is composed of multiple systems on a limited cross section.

材料部分Material Part

PFA、FEP、PE、尼龙610、12、铜管、316SS、304SS等多种材料组合成各种类型的采样复合管。也可以根据客户的要求定制。

PFA, FEP, PE, nylon 610, 12, copper tube, 316SS, 304SS and other materials are combined into various types of sampling composite pipe. It can also be customized according to the requirements of customers.

加热部分Heating Part

高效绝热、阻燃和质轻的保温层，自控温电热带或恒功率电伴热带。

High efficiency insulation, flame retardant and light insulation layer, automatic heating and electric tropics or constant power electric companion tropics.

电缆部分Cable part

可配备仪表信号电缆、补偿电缆盒控制电缆满足仪表显示监控用。

Can be equipped with instrument signal cable, compensation cable box control cable to meet the instrument display monitoring.

安全部分Security component

适应不同的工艺条件，将各系统铝箔或金属丝网屏蔽隔离，达到防火安全，防静电、电磁屏蔽的作用，有的加防水膜和增强阻燃，防紫外线的护套。

Adapt to different technological conditions, each system aluminum foil or wire mesh shield isolation, to achieve fire safety, anti-static, electromagnetic shielding role, some add waterproof film and enhance flame retardant, UV protection cover.

综合测评Comprehensive evaluation

多元系统的组合，集多功能于一体，使繁杂的工程简捷化。对于远程工作系统的远程诊断起到良好的保障作用，电伴热带系统使管内气体不冷凝，保持在露点以上测量，故测量精度得以得到保证，为中内集中控制计算机创造了条件。增强外护套防止交叉和因其它因素的损坏。

The combination of multiple systems, which integrates multiple functions in the body, simplifies the complicated projects. It plays a good role in ensuring the remote diagnosis of the remote working system. The electric tropical system makes the gas in the tube uncondensed and keeps the measurement above the dew point, so the measurement accuracy belt is guaranteed, which creates the conditions for the centralized control computer in the middle and inside. Strengthen the outer sheath to prevent cross and damage due to other factors.

AKS-HTSP-D-□□Φ1-□□Φ2-□-□-□-□
1 2 3 4 5 6 7

- 1、防腐采样复合管代号 1. anticorrosive sampling composite pipe code
- 2、采样复合管外径 (mm) 2, sampling composite pipe outer diameter (mm)
- 3、各管材质: PFA;FEP;PVDF;PE;尼龙12, 610, 1010; 316SS(焊接或者无缝钢); 304SS(焊接或者无缝钢)
3. Materials for each tube: PFA;FEP;PVDF;PE; nylon 1261010101010316SS (welded or seamless steel); 304SS (welded or seamless steel)
- 4、伴热电缆类型: 自限温 (A) 型; 恒功率 (B) 型
- 4, type of heating cable: self-limiting temperature (A) type, constant power (B) type.
- 5、补偿电缆数量 5, number of compensation cables
- 6、电源箱数量 6, number of power supply boxes
- 7、外护套: PVC(V);PE(E) 7. Outer sheath: PVC (V); PE (E)

防腐采样复合管产品结构形式

Product structure form of anticorrosive sampling Composite Pipe

序号	图示说明	型号结构	序号	图示说明	型号结构
1		AKS-HTSP-D42-A2 Φ50-A-Φ50-E 1. 外径 42mm; 2. Φ40 材质 PFA 的采样管 1 根; 3. 绝缘电热伴热带或自限温电热带一根; 4. 外护套材质为增强型 PE.	2		AKS-HTSP-D42-A1Φ Φ50-A-Φ50-E 1. 外径 42mm; 2. Φ40 材质 PFA 的采样管 1 根; Φ40 材质 PFA 的采样管 1 根; 3. 恒功率电热带一根; 4. 外护套材质为增强型 PE.
3		AKS-HTSP-D42-A1 Φ50-A-Φ50-E 1. 外径 42mm; 2. Φ40 材质 PFA 的采样管 1 根; 3. 恒功率电热带一根; 4. 外护套材质为增强型 PE.	4		AKS-HTSP-D42-B1Φ Φ50-A-Φ50-A-1-Φ-E 1. 外径 42mm; 2. Φ40.5 材质 PFA 的采样管 2 根; Φ40.5 材质 PFA 的采样管 2 根; 3. 绝缘电热伴热带一根; 4. 补偿带一根; 5. 仪表电热带一根; 6. 外护套材质为增强型 PE.
5		AKS-HTSP-D42-B2 Φ50-A-Φ50-E 1. 外径 42mm; 2. Φ40 材质 PFA 的采样管 2 根; 3. 绝缘电热伴热带一根; 4. 外护套材质为增强型 PE.	6		AKS-HTSP-D42-A2Φ Φ50-A-Φ50-E 1. 外径 42mm; 2. Φ40 材质 PFA 的采样管 1 根; 3. 绝缘电热伴热带一根; 4. 外护套材质为增强型 PE.
7		AKS-HTSP-D40-B2 Φ50-A-Φ50-A-1-Φ-V 1. 外径 40mm; 2. Φ40 材质 PFA 的采样管 2 根; Φ40 材质 PFA 的采样管 1 根; 3. 绝缘电热伴热带一根; 4. 补偿带一根; 5. 外护套材质为增强型 PE.	8		AKS-HTSP-D40-B4Φ Φ50-A-1-Φ-V 1. 外径 40mm; 2. Φ40 材质 PFA 的采样管 4 根; 3. 恒功率电热带一根; 4. 补偿带一根; 5. 仪表电热带一根; 6. 外护套材质为增强型 PE.

注：可根据用户多种要求制多种特殊结构的采样复合管。

Note: a variety of special structure sampling composite pipes can be made according to a variety of requirements of users.

防腐采样复合管技术参数 Technical parameters of anticorrosive sampling composite pipe

1. 电气指标 1. Electrical index

(1). 低温自限温电热带：15–35W/m(10℃时功率)，

(1). Low temperature self-limiting warm and electric tropics: 15–35W/m (10℃power)

中温自限温电热带：40–60W/m, middle temperature self-limiting thermoelectric tropics: 40 – 60W / m

高温自限温电热带：50–70W/m, high temperature self-limiting thermoelectric tropics: 50–70W / m

恒功率电伴热带：10–50W/m; constant power electric with tropics: 10–50W / m;

(2). 额定电压：220VAC; (2). Rated voltage: 220 VAC;

(3). 大加热长度100–150m; (3). The large heating length is 100 m / 150 m;

(4). 配备断路器电流值30A 若复合管长度≥50m 时，应配备自控温电热带专用自动限流器；

(4). When the current value of circuit breaker is 30A, if the length of composite pipe is ≥ 50m, it should be equipped with automatic automatic current limiter for heating and electric tropics.

(5). 伴热系统一个回路。(5). Heating system—a loop.

2. 热工指标 2. Thermal index

(1). 在–20℃环境温度，15m/s 风速情况下，管内保持温度40–50℃；

(1). Under the condition of –20C ambient temperature and 15m/s wind speed, the temperature in the tube is 40–50C;

(2). 采样管可耐各种酸、碱介质腐蚀，耐压强度1.0Mpa 不泄露；

(2). The sampling tube can resist the corrosion of various acid and alkali media, and the compressive strength 1.0Mpa does not leak.

(3). 采样管可在 < 200℃温度下长期工作 (3). The sampling tube can work for a long time at < 200C temperature.

3. 安装指标 Installation index

(1). 复合管的小取率半径0.5m; (1) the radius of small extraction rate of composite pipe is 0.5 m;

(2). 大连续长度100–150m; (2). Dalian continuous length 100–150m;

(3). 低安装温度–10℃ (在–30℃到–40℃时采取适当措施)；

(3). Low installation temperature –10C (take appropriate measures at –30C to –40C).

(4). 小固定距离：垂直方向5m,水平方向2m。Small fixed distance: vertical direction 5 m, horizontal direction 2 m.

注：施工时严禁扭曲及地面施行，管头护套只允许在安装接点时拆开。

Note: distortion and ground implementation are strictly prohibited during construction, and pipe head sheathing is only allowed to be removed when installing contacts.

中长及组合型电伴热带系列

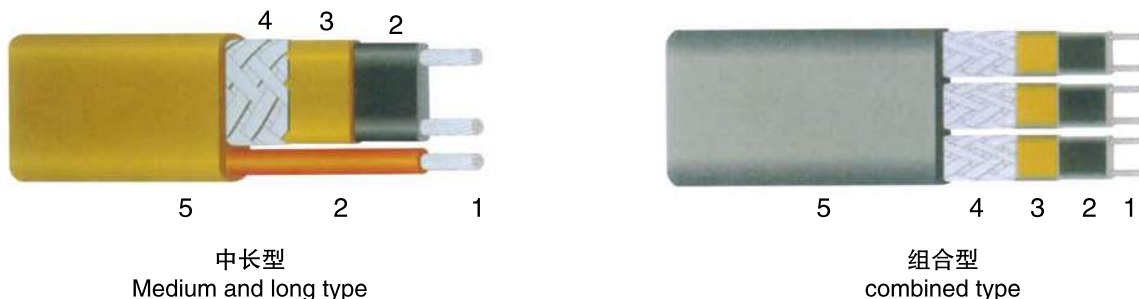
Medium length and combined electric companion tropical series

概述 Summary

兴缘控制系统的低、中、高温系列的中长型自限温电伴热带适用于中长管线、容器、储罐等大功率输出的防冻、降温、保温、伴热、适用于普通区，危险区或腐蚀区。

The low, medium and high temperature series of Xingyuan control system is suitable for the high power output of medium and long pipeline, container, storage tank and so on. It is suitable for common area, dangerous area or corrosion area.

结构 structure



- 1、镀锡圆线：19×0.40、37×0.30；阻燃型铜芯导线（2.5mm²）或（4mm²）
1. Tinned circular wire: 19x0.40, 37x0.30; flame retardant copper core conductor (2.5mm²) or (4mm²)
- 2、导电塑料层：普通PTC、阻燃PTC、含氟PTC
2. Conductive plastic layer: ordinary PTC, flame retardant PTC, fluorine containing PTC
- 3、绝缘层：改性聚烯烃、阻燃聚烯烃、含氟聚烯烃、全氟聚烯烃
3. Insulation layer: modified polyolefine, flame retardant polyolefine, fluorine-containing polyolefine, perfluoropolyolefine
- 4、屏蔽层：镀锡软圆铜线、覆盖密度达80%
4, shielding layer: tin-plated soft round copper wire, covering density up to 80%
- 5、护套型：改性聚烯烃、阻燃聚烯烃、含氟聚烯烃、全氟聚烯烃
5. Protective sleeve type: modified polyolefine, flame retardant polyolefine, fluorine-containing polyolefine, perfluoropolyolefine

产品型号 Product model

ZC D WL □ □ □
1 2 3 4 5 6

- 1、系列代号：ZC（中长型）、ZH（组合中长型）
1. Series code: ZC (medium length), ZH (combination medium length)
- 2、温度等级：低温(D)系列、中温(Z)系列、高温(G)系列
2. Temperature grade: low temperature (D) series, medium temperature (Z series, high temperature (G) series
- 3、电伴热带3, electric companion tropical
- 4、标称功率：10W-65W 4. Nominal power: 10W-65W
- 5、防爆等级：防爆防护型PJ、PF防爆防腐型（PJ_Z, PF_Z）
5. Explosion-proof grade: explosion-proof protective PJ, PF explosion-proof anticorrosive type (PJ_Z.PF₂)
- 6、电压等级：220V、380V、600V 6, voltage level: 220V, 380V, 600V

最大使用长度：单一电源、单向供电≤350m、双向供电≤700m，可根据用户需求定长。

Maximum service length: single power supply, unidirectional power supply ≤ 350 m. Bi-directional power supply ≤ 700 m, can be fixed according to the needs of users.

技术指标 Technical index

1、标准颜色：低温：黑色；中温：棕色；高温：红色

1. Standard color: low temperature: black; medium temperature: Brown; high temperature: red

2、温度等级：低温： $65 \pm 5^{\circ}\text{C}$ ；中温： $105 \pm 5^{\circ}\text{C}$ ；高温： $135 \pm 5^{\circ}\text{C}$

2. Temperature grade: low temperature: $65 \pm 5^{\circ}\text{C}$; medium temperature: $105 \pm 5^{\circ}\text{C}$;

3、电压等级：220V、380V、600V

3. high temperature: $135 \pm 5^{\circ}\text{C}$, voltage level: 220V, 380V, 600V

4、绝缘电阻：电伴热带长度100米，恒温区域 75°C 时；测试绝缘电阻最小值 $20\text{M}\Omega$ ，有屏蔽或防爆防护型，温度 20°C 时用2，500VDC在屏蔽层与导电线芯之间摇试1分钟，绝缘电阻最小值 $1200\text{M}\Omega$ 。

4. Insulation resistance: when electric with tropical length of 100 meters, constant temperature region 75°C ; test insulation resistance minimum value $20\text{M}\Omega$, with shield or explosion protection type, temperature 20°C with 2, 500VDC between shield layer and conductive wire core shaking test for 1 minute, insulation resistance minimum value $1200\text{M}\Omega$.

产品优点 Product advantages

1、伴热管线温度均匀,不会过热，安全可靠;

1. The temperature of the heating pipeline is uniform, it will not overheat, safe and reliable;

2、节约电能

2, save electric energy

3、间歇操作时，温度启动快速;

3. During intermittent operation, the temperature starts quickly;

4、安装及运行费用低

4. The installation and operation cost is low

5、安装维护简便

5, the installation and maintenance is simple

6、便于自动化管理

6, it is convenient for automatic management

7、无环境污染

7, and there is no environmental pollution.

RDP₂-J₃单相并联恒功率伴热带

RDP₂-J₃ single-phase parallel constant Power with Tropical Zone

应用Application

工艺温度维持或防冻：恒功率伴热带单位长度的发热量恒定，该伴热带的形式可以使长度任意切割。使用本公司提供的组件，可以容易的进行终端连接，另伴热带外层的编织层不仅起着传热和散热的作用，提高整体强度，同时还能作为安全接地线。RDP₂伴热带用于管道系统、储罐、阀门、泵体的伴热、防冻或仪表管线的工艺温度维持。

Process temperature maintenance or antifreeze: constant power with tropical unit length constant calorific value, this tropical form can make the length of arbitrary cutting. Using the components provided by the company, the terminal connection can be easily carried out, and the woven layer in the tropical outer layer not only plays the role of heat transfer and heat dissipation, improves the overall strength, but also can be used as a safe ground wire. RDP₂ with tropics is used to maintain the process temperature of pipeline system, tank, valve, pump body for heating, antifreeze or instrument pipeline.

可用于防爆场合 I、II 级2区 It can be used in explosion proof occasion 1, II class 2 area.

型号含义Model meaning

RDP₂(Q)-J-□
1 2 3 4 5

1、RDP:并联型伴热带

1. RDP: parallel type with tropics

2、2:芯线线2, 单相220V工作电压

2, 2: core line 2, single phase 220V working voltage

3、Q:加强型、普通型不注

3, Q: enhanced type, ordinary type without injection

4、绝缘层代号: Jz-F46氟塑料

4, insulation code: Jz-F46 fluoroplastics

5、额定功率W/m

5, rated power W /m

结构structure

1、镀锡铜母线

1. Tin-plated copper bus

2、电源绝缘层

2, power insulation layer

3、内护套绝缘层

3, inner sheath insulation layer

4、镍铬合金加热元件

4. Nickel-chromium alloy heating element

5、外护套绝缘层

5, outer sheath insulation layer

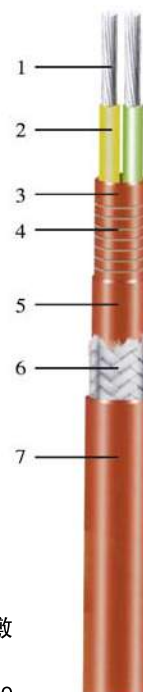
6、编织护套

6, braided sheath

可选件Optional parts

7、Q在编织层外的氟塑料套可对暴露在化学品或腐蚀和地下敷设的管道中的伴热带、编织层提供额外的保护。

7. Q fluoroplastic sleeves outside the braided layer can provide additional protection for tropical and woven layers exposed to chemicals or corroded and underground pipes.



规格及技术特性

Specifications and technical characteristics

产品型号	额定功率W/m	最大使用长度m	流体最高维持温度℃	最高耐温度℃
Product model	Rated power	Maximum operating length	fluid maximum maintenance temperature	Max temperature resistance
RDP ₂ (Q)-J ₃ -10	10	210	150	205
RDP ₂ (Q)-J ₃ -20	20	180	120	205
RDP ₂ (Q)-J ₃ -30	30	150	90	205
RDP ₂ (Q)-J ₃ -40	40	130	65	205

注：流体最高维持温度，是指管道内介质需要维持的最高工艺温度，一般不应超过本表规定定值。

当单点电源双向输出时，使用长度可以增加一倍。

Note: the maximum maintenance temperature of the fluid refers to the maximum process temperature that the medium in the pipeline needs to maintain. First, it should not exceed the specified value in this table. When a single point power supply is output in both directions, the length of use can be doubled.

RDP₃-J₃三相并联恒功率伴热带

RDP₃-J₃ three-phase parallel constant power with tropics

应用Application

工艺温度维持或防冻：RDP₃型伴热带与RDP₂型伴热带一样，能用于向管道系统：储罐、阀门、泵体的伴热、防冻或仪表管线的工艺温度维持（具体应用场合相见RDP₂型伴热带产品应用）。特别是当在长距离、大口径管道进行伴热保温时，采用三相带比单相带更经济，更合理，更能显示使用三相带的优越性。

Process temperature maintenance or antifreeze: RDP. Type A with tropical zone, like RDP2 type with tropical zone, can be used to maintain the process temperature of pipeline system: tank, valve, pump body heating, antifreeze or instrument pipeline (see RDP2 heater product application in specific application). Especially when the heat preservation of long distance and large diameter pipeline is carried out, the use of three-phase belt is more economical, more reasonable than single-phase belt, and can show the superiority of using three-phase belt.

可用于防爆场合 I、II 级2区 It can be used in explosion proof occasion 1, II class 2 area.

特点Characteristics

RDP₃型伴热带与RDP₂型伴热带相同的特点以外还有以下优点：

三相伴热带的最大允许使用长度高于单相伴热带，在大规模应用伴热带的场合，能均衡电网负载，三相带由于采用三根芯线，使电热带更趋扁平，降低了表面发热负荷，增加对管道的热传导面积，提高伴热带的热传输效率和最高维持温度。

In addition to the same characteristics of RDP, type with tropics as RDP: type with tropics, there are the following advantages:

The maximum allowable length of the three accompanying tropics is higher than that of the single concomitant tropics, which can balance the load of the power grid in the case of large-scale application with the tropics.

Due to the use of three core wires in the three-phase belt, the electric tropics become more flattened, the surface heating load is reduced, the heat conduction area of the pipeline is increased, and the heat transfer efficiency and the maximum maintenance temperature of the tropical zone are improved.

型号含义Model meaning

RDP₃(Q)-J₃-□
 1 2 3 4 5

1、RDP:并联型伴热带

1. RDP: parallel type with tropics

2、3:芯线线3, 380V工作电压

2, 3: core line 380V working voltage

3、Q:加强型、普通型不注

3, Q: enhanced type, ordinary type without injection

4、绝缘层代号: J₃-F₄氟塑料

4, insulation code: J₃-F₄ fluoroplastic

5.额定功率W/m

5. rated power W/m

规格及技术特性

Specifications and technical characteristics

产品型号	额定功率W/m	最大使用长度m	流体最高维持温度℃	最高耐温度℃
Product model	Rated power	Maximum operating length	fluid maximum maintenance temperature	Max temperature resistance
RDP ₃ (Q)-J ₃ -30	30	330	120	205
RDP ₃ (Q)-J ₃ -40	40	280	100	205
RDP ₃ (Q)-J ₃ -50	50	275	80	205
RDP ₃ (Q)-J ₃ -60	60	250	60	205

注：流体最高维持温度，是指管道内介质需要维持的最高工艺温度，一般不应超过本表规定定值。当单点电源双向输出时，使用长度可以增加一倍。

Note: the maximum maintenance temperature of the fluid refers to the maximum process temperature that the medium in the pipeline needs to maintain. First, it should not exceed the specified value in this table. When a single point power supply is output in both directions, the length of use can be doubled.

结构structure

1. 镀锡铜母线

1. Tin-plated copper bus

2、电源绝缘层

2, power insulation layer

3、内护套绝缘层

3, inner sheath insulation layer

4、镍铬合金加热元件

4. Nickel-chromium alloy heating element

5、外护套绝缘层

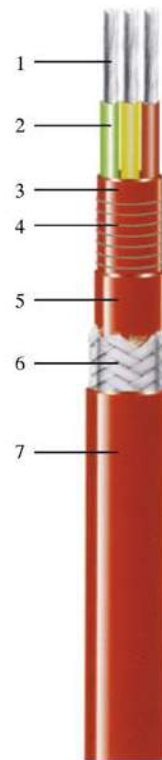
5, outer sheath insulation layer

6、编织护套6, braided sheath

可选件Optional parts

7、Q在编织层外的氟塑料套可对暴露在化学品或腐蚀和地下敷设的管道中的伴热带、编织层提供额外的保护。

7. Q fluoroplastic sleeves outside the braided layer can provide additional protection for tropical and woven layers exposed to chemicals or corroded and underground pipes.



RDP_{2a}-C 双线380V 并联恒功率超长伴热带

RDP_{2a}-C double wire 380V parallel constant power super long with tropical zone

应用 Application

工艺温度维持或防冻：Process temperature maintenance or antifreeze:

RDP_{2a}-C型伴热带，特别适用于石油、化工、电力、冶金等行业的长输管线储罐、反映塔等的防凝、保温、伴热和防冻。

RDP2a Type C with tropical zone, especially suitable for long distance pipeline storage tanks and reflection towers in petroleum, chemical, electric power, metallurgy and other industries, such as anti-coagulation, heat preservation, heating and freezing.

可用于不受外力直接冲击的防爆场合 I、II 级2区

It can be used in explosion-proof occasion I, II class 2 area which is not affected by external force directly.

特点 Characteristics

该伴热带最大使用长度是普通型单相伴热带的4倍左右，用于长输管线，可根据用户需要任意剪切，且不影响其性能。

The maximum service length of the tropical zone is about 4 times longer than that of the ordinary single companion tropics.

It can be used for long-distance pipelines and can be cut arbitrarily according to the needs of users without affecting its performance.

型号含义 Model meaning

RDP_{2a}(Q)-□-□
1 2 3 4 5

1、RDP: 并联型伴热带

1. RDP: parallel type with tropical

2、2a: 双线380V 工作电压

2, 2A: double wire 380V operating voltage

3、Q: 加强型、普通型不注

3, Q: enhanced type, ordinary type without injection

4、C 超长系列、II C 特长系列

4, C super long series, II C super long series

5、额定功率 W/m

5, rated power W /m

结构 structure

1、镀锡铜母线

1. Tin-plated copper wire

2、电源绝缘层

2, power insulation layer

3、内护套绝缘层

3, inner sheath insulation layer

4、镍铬合金加热元件

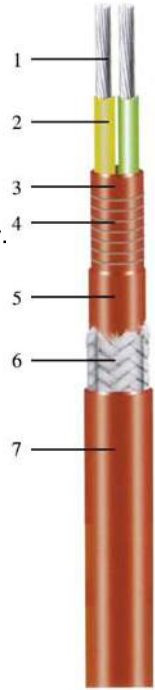
4. Nickel-chromium alloy heating element

5. 外护套绝缘层

5, outer sheath insulation layer

6、编织护套

6, braided sheath



可选件 Optional parts

7、Q 在编织层外的氟塑料套可对暴露在化学品或腐蚀和地下敷设的管道中的伴热带、编织层提供额外的保护。

7. Q fluoroplastic sleeves outside the braided layer can provide an additional protection for tropical and woven layers exposed to chemicals or corroded and underground pipes.

规格及技术特性 specification and technical characteristics

型号 Type	项目 Project	额定电压V Rated voltage	额定功率W/m Rated power	双向最大使用长度m Two-way maximum use Length	最高耐温度℃ maximum temperature resistance	防爆标志 Explosion proof mark	流体最高维持温度℃ Maximum fluid maintenance Temperature
RDP _{2a} -C-20		380	20	700	205	Exe II T3	130
RDP _{2a} - II C-20		380	20	1360	205	Exe II T3	130
RDP _{2a} -C-30		380	30	600	205	Exe II T3	120
RDP _{2a} - II C-30		380	30	980	205	Exe II T3	120
RDP _{2a} -C-40		380	40	450	205	Exe II T3	100
RDP _{2a} - II C-40		380	40	700	205	Exe II T3	100
RDP _{2a} -C-50		380	50	360	205	Exe II T3	80
RDP _{2a} - II C-50		380	50	580	205	Exe II T3	80
RDP _{2a} -C-60		380	60	300	205	Exe II T3	60
RDP _{2a} - II C-60		380	60	490	205	Exe II T3	60

注：流体最高维持温度，是指管道内介质需要维持的最高工艺温度，一般不应超过本表规定定值。

Note: the maximum maintenance temperature of the fluid refers to the maximum process temperature that the medium in the pipeline needs to maintain, and generally should not exceed the specified value in this table.

RDP₂-J₄高温恒功率伴热带

RDP₂-J₄ High temperature and constant Power with Tropical Zone

应用Application

工艺温度维持或防冻：高性能的RDP₂-J₄高温恒功率伴热带与RDP₂-J₃应用相同，是耐温等级高，它尤其适合沥青、重粘油管线伴热及防冻。

Process temperature maintenance or antifreeze: high performance RDP-J4 high temperature constant power with tropical application is the same as RDP2-J3 application, is high temperature resistance grade, it is especially suitable for asphalt, heavy viscous oil pipeline heating and antifreeze.

可用于防爆场合 I、II 级2区 Can be used in explosion-proof occasions I, II level 2 area

型号含义 Model meaning

RDP₂(Q)-J₄-□
 1 2 3 4 5

1、RDP: 并联型伴热带

1. RDP: parallel type with tropics

2、2: 芯线线2, 单相220V工作电压

2, 2: core line 2, single phase 220V operating voltage

3、Q: 加强型、普通型不注

3, Q: enhanced type, ordinary type without injection

4、绝缘层代号: J防水玻璃纤维及PFA氟塑料

4. Insulation code: J waterproof glass fiber and PFA fluoroplastics

5、额定功率W/m

5, rated power W / m

结构structure

1、镀锡铜母线

1. Tin-plated copper wire

2、电源绝缘层

2, power insulation layer

3、内护套绝缘层

3, inner sheath insulation layer

4、镍铬合金加热元件

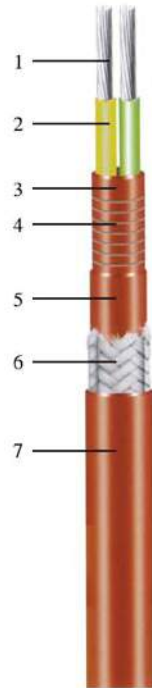
4. Nickel-chromium alloy heating element

5、外护套绝缘层

5, outer sheath insulation layer

6、编织护套

6, braided sheath



可选件Optional parts

7、Q在编织层外的氟塑料套可对暴露在化学品或腐蚀和地下敷设的管道中的伴热带、编织层提供额外的保护。

7. Q fluoroplastic sleeves outside the braided layer can provide additional protection for tropical and woven layers exposed to chemicals or corroded and underground pipes.

规格及技术特性 Specifications and technical characteristics

产品型号	额定功率W/m	最大使用长度m	流体最高维持温度℃	最高耐温度℃
Product model	Rated power W / m	max using length m	Maximum maintenance temperature	Maximum temperature resistance
RDP ₂ (Q)-J ₄ -40	40	140	205	260
RDP ₂ (Q)-J ₄ -60	60	115	180	260

注：流体最高维持温度，是指管道内介质需要维持的最高工艺温度，一般不应超过本表规定定值。

当单点电源双向输出时，使用长度可以增加一倍。

Note: the maximum maintenance temperature of the fluid refers to the maximum process temperature that the medium in the pipeline needs to maintain. -should not exceed the values specified in this table. When a single point power supply is output in both directions, the length of use can be doubled.

RDC串联恒功率伴热带 RDC Series constant Power with Tropical Zone

应用Application

长输管线温度维持或防冻:

Temperature maintenance or frost prevention of long distance pipelines:

RDC串联恒功率伴热带适用于回路长度超出了并联电阻伴热带上限的情况，一个单供点的回路，长度可达3600米。PDC串联具有一定电阻的芯线上通过电流芯线就发出焦耳热，形成整个长度上提供恒定单位输出功率瓦 / 米。

RDC series constant power with tropical circuit length exceeds the parallel resistance with tropical upper limit, a single supply point of the loop, the length can reach 3600 meters. The PDC series core wire with a certain resistance emits joule heat through the current core wire, forming a constant unit output power watt / m over the whole length.

可用于普通和防爆场合 I、II 级 2 区

Can be used in ordinary and explosion-proof occasions 1, II class 2 area

型号含义 model meaning

RDC□(Q)-□

1 2 3 4

1、RDP:串联式伴热带

1. RDP: series with tropical zone

2、芯线数代号: 1-单线; 2-双线; 3-三线

2. Core wire number code: 1-single line; 2-double line; 3-3 line

3、Q:加强型、普通型不注

3, Q: enhanced type, common type without injection

4、芯线截面mm²

4, core wire cross section mm²

规格及技术特性

Specifications and technical characteristics

产品型号	公称截面 (mm ²)	20℃阻值 (Ω / km)
Product model	Nominal cross section	20℃ resistance value
RDC ₁₂₃ (Q)-3	3	5.8
RDC ₁₂₃ (Q)-4	4	4.4
RDC ₁₂₃ (Q)-5	5	3.5
RDC ₁₂₃ (Q)-6	6	2.9
RDC ₁₂₃ (Q)-7	7	2.5
RDC ₁₂₃ (Q)-8	8	2.2
RDC ₁₂₃ (Q)-10	10	1.7

额定值 Rating value

1、额定电压220V、380V、660V、1100V

1. Rated voltage 220V, 380V, 660V, 1100V

2、最高维持温度-100C

2, max maintenance temperature-100C

3、最高承受温度-205C

3, max bearing temperature-205C

4、最低安装温度-50C

4, min installation temperature-50C

冷端连接cold end connection

为提高串联型伴热带的使用寿命，电源接线处常采用冷端接线方法。具体使用如下:

剥去串联型电热带的内外护套和绝缘露出发热芯线，用铜接头与冷端导线（预先剥去绝缘层）进行压接。

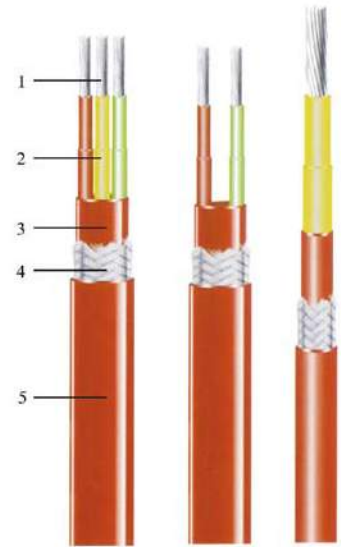
用3M带进行绕包，把编织层留在外面供接地使用。

再分别套上四层热收缩套管，用电吹风机加热热收缩管套使其紧包在线头上。

In order to improve the service life of series type with tropical zone, cold end connection method is often used in power connection. The specific use is as follows: stripping the inner and outer sheathing of the series electric tropics and insulation revealing the heating core wire, using copper joint and cold end wire (peeling the insulation layer in advance) to press the wire.

Wrap with 3M belt and leave the braided layer outside for grounding.

Set it separately. The upper four layers of thermal shrinkage casing, the electric hair dryer heats the thermal shrinkage pipe sleeve to make it tight on the online head.



结构structure

1、加热导线(一、二、三芯)

1. Heating conductor (one, two, three cores)

2、加热导线绝缘层

2, heating wire insulation layer

3、内护套绝缘层

3, inner sheath insulation layer

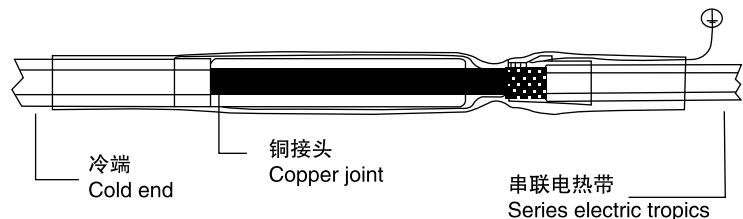
4、编织护套

4, braided sheath

可选件Optional parts

7、Q在编织层外的氟塑料套可对暴露在化学品或腐蚀和地下敷设的管道中的伴热带、编织层提供额外的保护。

7. Q fluoroplastic sleeves outside the braided layer can provide additional protection for tropical and woven layers exposed to chemicals or corroded and underground pipes.



并联恒功率发热线

Parallel constant power transmission hotline

产品结构Product structure:

1发热线导线是两条截面为0.75 x 2的包锡铜线

1.The heat wire is two tin coated copper wire with cross section 0.75 x 2

2隔离层是硅橡胶用挤出方法制造的

2 The isolation layer is made of silicone rubber by extrusion method.

3高强度合金丝螺旋与硅橡胶表面成为发热核心

3 High strength alloy wire screw and silicone rubber surface become heating core

4用挤出方法做的密封包层

4 Seal coating made by extrusion method

最长使用长度: 50米 耐压:3500V 绝缘:≥200mn

Maximum service length: 50 m withstand voltage: 3500V insulation: ≥ 200mn



产品特点Product characteristics:

1耐温性能好, 整体采用硅橡胶为绝缘材料(包括电源线)工作环境温度为-60° 至200度

1 good temperature resistance, the whole use of silicone rubber as insulation material (including power cord) working environment temperature of -60 ° to 200 degrees

2 good thermal conductivity: electricity can produce heat energy, direct heat conduction, high thermal efficiency, can be heated in a short period of time to achieve the effect.

2导热性能好:通电即可产生热能, 直接进行导热, 热效率高, 可短时间内加热达到效果。

3电性能可靠:每条加热带出厂时, 无不经过严格的直流电阻浸水高压和绝缘电阻等测试, 确保质量

3 reliable electrical performance: when each heating zone leaves the factory, it has gone through strict DC resistance immersion high voltage and insulation resistance tests to ensure that the quality

4结构坚固:柔韧性高易弯曲, 结合整体冷尾段, 无结合点结构合理, 便于安装。 4 structure is strong: flexible and easy to bend, combined with the overall cold tail section, no joint point structure is reasonable, easy to install.

5.可设计性强, 加热长度引线长度额定电压功率由用户确定

5. The rated voltage power of heating length lead length is determined by the user.

应用Application

建筑物, 管道 冷藏门及仓库地面加热, 管道加热 屋檐与屋顶除霜, 温床、蔬菜大棚、等、加温保温用。

Buildings, pipeline refrigerated doors and warehouse floor heating, pipe heating eaves and roofs defrosting, hotbeds, vegetable sheds, etc., heating and heat preservation.

排水管化霜加热线 Drainage pipe frosting plus hot line

应用范围 Application

冷风机工作一段时间后，风机的风叶上会结冰，用防冻发热线除霜，让融化的水通过排水管排除冷库外。由于排水管前端部分是安装在冷库内，常因为0℃以下的环境造成融霜水结冰，堵塞排水管，所以需要安装发热线以确保融霜水不在排水管内结冰。将发热线安装在排水管内，在除霜同时加热管道，使水顺利排出。

After working for a period of time, the wind blade of the fan will freeze, and the antifreeze hot line will be used to defrost, so that the melted water can be removed from the freezer through the drain pipe. Because the front part of the drain pipe is installed in the cold storage, often because the environment below 0C causes the defrosting water to freeze, blocking the drain pipe, it is necessary to install the hair hot line to ensure that the defrosting water is not frozen in the drainage pipe. Install the hot line in the drainage pipe, heat the pipe while defrosting, so that the water can be discharged smoothly.

特性 Characteristic

完全防水设计

Complete waterproof design

双层绝缘体 double insulator

模压接头极富伸缩性

The die joint is very flexible.

硅橡胶绝缘体适用范围: -60C至 ±200C

Applicable facet of silicon oak strands junction: -60C to ± 200C



规格 Specifications

加热体 The heater	镍铬或铜镍合金丝 Nickel-Ming or copper-nickel alloy wire	长度/M	40W/M	50W/M		
加热体尾端 at the tail end of the heater	硅胶体密封尾端 silicon colloid seal tail end	1	40W	50W		
最高表面温度 The highest surface temperature	200℃	1.3	52W	65W		
最低表面温度 The lowest surface temperature	-60℃	1.5	60W	75W		
浸水耐压 Immersion pressure resistance	AC2500V	2.0	80W	100W		
电压 Voltage	220-230V	形状 Shape	平 7 × 5mm	3.0	120W	150W
功率 power	± 5%	输出功率 output power	40-50W/M	4.0	160W	200W
带体长度 band length	± 5mm	绝缘阻 insulation resistance	≥ 200MN	5.0	200W	250W
容耐度 tolerance	± 10%	泄露电流 Leakage current	≤ 0.2MA	6.0	240W	300W

备注：在一般情况下，50W/M的排水管加热带较为常用。如用于塑料排水管，公司推荐使用输出功率40W/M的水管加热带。

警告：不可随意剪短加热线缆以达到缩短尾部的长度。

Note: in general, 50W/M drainage pipe heating zone is more commonly used. For example, for plastic drains, the company recommends the use of output power 40W/M pipe heating.

Warning: do not cut the heating cable at will to shorten the length of the tail.

特种电热带系列 Special electric tropical series

硅橡胶电热带Silicone rubber electric tropics

ABRDC-G型硅橡胶电热带防水性能好, 可用于潮湿的、无爆炸性气体场所工业设备或实验室的管道、罐体和槽池
 ABRDC- G silicone rubber electric tropical waterproof performance is good, can be used in wet, explosive gas free industrial equipment or laboratory pipes, tanks and tanks

可用于空调压缩机、电机、潜水泵等设备的辅助加热

It can be used for auxiliary heating of air conditioning compressor, motor, submersible pump and other equipment.

为减少热损失, 应在电热带外面加覆保温层; 严禁重叠缠绕安装, 以防过热损坏;

In order to reduce the heat loss, the insulation layer should be added outside the electric tropics; overlapping winding installation should be strictly prohibited to prevent overheating damage;

耐高压型的介电强度为2000V/1min, 适用于耐高压防爆电机的辅助加热。

the dielectric strength of the high voltage type is 2000 V ≤ 1 min, which is suitable for auxiliary heating of the high voltage explosion proof motor.

型号规格	电压V	功率 w	长度m	宽度mm	引线形式
Model specification	Voltage	power	length	width	lead wire form
ABRDC-G-220/80	220	80	1	26	单端Single ended
ABRDC-G-220/160		160	2	26	双端Double ends
ABRDC-G-220/240		240	3	26	单端Single ended
ABRDC-G-220/320		320	4	26	双端Double ends
ABRDC-G-220/400		400	5	26	单端Single ended
ABRDC-G-220/480		480	6	26	双端Double ends
ABRDC-G-220/560		560	7	26	单端Single ended
ABRDC-G-220/640		640	8	26	双端Double ends
ABRDC-G-220/720		720	9	26	单端Single ended
ABRDC-G-220/800		800	10	26	双端Double ends

型号含义Model meaning

$$\frac{RD}{1} \frac{C}{2} - \frac{G}{3} - \frac{220}{4} / \frac{\square}{5}$$

1、电热带

1. Electric tropics

2. 串联式电阻加热器

Series resistance heater,

3. 硅橡胶主绝缘材料

3. silicone rubber main insulation material,

4. 工作电压: V

4. working voltage: V

5、功率: Kw

5, power: Kw

绝缘材料最高耐热温度: 250C

Max heat resistance of insulation material: 250C

最高介质温度: < 200C Max dielectric temperature: < 200C

绝缘电阻: > 50MQ Insulation resistance: > 50MQ

介电强度: 1500V/1min Dielectric strength: 1500V/1min

推荐使用温度: < 200C

Recommended temperature: < 200C

介电强度: 1500V/1min

dielectric strength: 1500V/1min

绝缘电阻: > 50MΩ

insulation resistance: > 50MΩ

功率偏差: ±10%

power deviation: 10%



兴缘牌太阳能专用电伴热带系列

Xingyuan brand solar special electric companion tropical series

太阳能热水器专用自限温电伴热带使用说明

Instructions for the use of special self-limiting temperature and electricity with tropical zone for solar water heaters

在使用本产品为太阳能热水器保温、解冻时，切记配置漏电保护开关，以免发生触电事故。

When using this product for thermal insulation and thawing of solar water heaters, remember to configure leakage protection switches to avoid electric shock accidents.

电伴热带最大使用长度与负载大小及电伴热带的导电芯截面大小有关，超过10m管长伴热，一定要参照设计手册进行热工设计选型以免误用。

The maximum service length of the electric companion tropics is related to the load size and the cross section size of the conductive core of the electric companion tropics. If the pipe length is more than 10m, the thermal design selection must be carried out according to the design manual to avoid misuse.

电伴热带尾端应采用经辐照交联后的阻燃热收缩管封套，如使用绝缘胶带，时间长了因老化而短路，兴缘牌热水器专用电伴热带为用户配备了专用的热收缩套管。

The tail end of the electric companion should adopt the flame retardant thermal shrinkage pipe envelope after irradiation and cross-linking, such as the use of insulation tape, the short circuit due to aging for a long time, and the special electric companion of Xingyuan brand water heater is equipped with a special thermal shrinkage casing for the user.

太阳能热水器专用系列电伴热带，芯带部分采用纳米导电材料与高分子聚合物复合而成，均匀挤包在两根平行金属导线上，通过辐照交联，具有在寒冷环境中升温迅速，起动电流小，根据热水器管路温度的高低自动调节输出功率的大小，长度可自由裁截免，无高温过热现象、便于安装、维护方便等各种优点，是有效防止太阳能热水器管路冻堵的首选产品。

The special series of solar water heater is composed of nanometer conductive material and polymer, which is uniformly extruded on two parallel metal conductors. Through irradiation cross-linking, it has the advantages of rapid heating in cold environment and small starting current. According to the temperature of the water heater pipeline, the output power can be adjusted automatically, and the length can be cut off freely. Without the phenomenon of high temperature overheating, convenient installation, convenient maintenance and other advantages, it is the first choice to effectively prevent the freezing of solar water heater pipeline.



型号及功能参数

Model and functional parameters

品名 Product name	型号 model	功率 power W/m · 10℃	最高维持温度℃ Max maintenance temperature	最高承受温度℃ Max bearing temperature	最低安装温度℃ minimum installation temperature	最大使用长度m maximum service length
太阳能 专用带	DZG-a	10, 15, 25, 30	70℃	105℃	-15℃	20m
	DZG-A	10, 15, 25, 30	70℃	105℃	-20℃	30m
Solar energy special belt	DZG-B	10, 15, 25, 30	70℃	105℃	-30℃	30m
	DZG-C	10, 15, 25, 30	70℃	105℃	-30℃	30m
	DZG-D	10, 15, 25, 30	70℃	105℃	-40℃	30m

使用优点Advantages of use

- 1、伴热管线温度均匀,不会过热,安全可靠
1. The temperature of the heating pipeline is uniform, it will not overheat, and it is safe and reliable.
- 2、节约电能2. Save electric energy
- 3、间歇操作时,升温起动快速3. When the song is operated, the heating and starting speed is
- 4、安装及运行费用低4, the installation and operation cost is low
5. 安装维护简便5, the installation and maintenance is simple
6. 便于自动化管理6. convenient for automatic management
- 7、无环境污染7. there is no environmental pollution.

电伴热产品附件

Electric heating product accessories

防爆温度控制器

Explosion-proof temperature controller

防爆温度控制器用于控制被伴热的介质温度，本温度控制器为：BJW51A，BJW51型两种型号，它们都是按防爆电器要求设计和制造，防爆标志：“ed II bt”,BJW51型

The explosion-proof temperature controller is used to control the temperature of the heated medium. The temperature controller is BJW51A, BJW51, which is designed and manufactured according to the requirements of explosion-proof electrical appliances, and the explosion-proof mark is "ed II bt", BJW51.

型号Type

BJW	51	□	□
1	2	3	4

- 1、防爆温度控制器
1. Explosion-proof temperature controller
- 2、工厂用
- 2, factory use
- 3、设计序号
- 3, design serial number
- 4、最高控制温度
4. Maximum control temperature



主要技术性能指标

Main technical performance index

额定电压: - 220V
 rated voltage:-220V
 额定电流: 15A
 rated current: 15A
 调温范围:0~85℃、10~120℃、30~150℃
 Temperature range: 0 – 85℃, 10 – 120℃, 30 – 150℃
 控温精度: +4℃
 temperature control accuracy: + 4℃
 通断差动: ≤4℃
 on-off differential: ≤ 4℃
 控制电缆密封圈内经: φ 14
 Control cable seal ring inner warp: φ 14
 防爆标志: el
 explosion proof mark: el
 防护等级: IP54
 protection grade: IP54



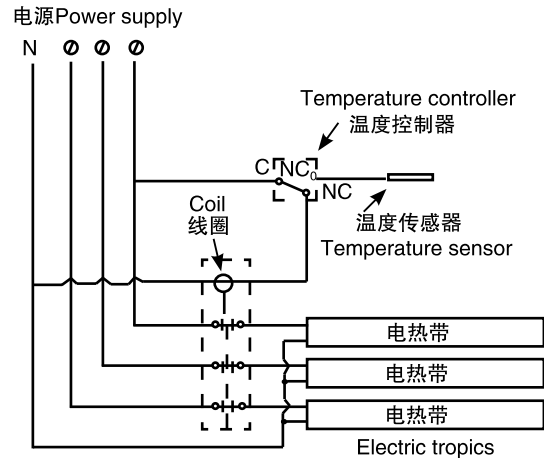
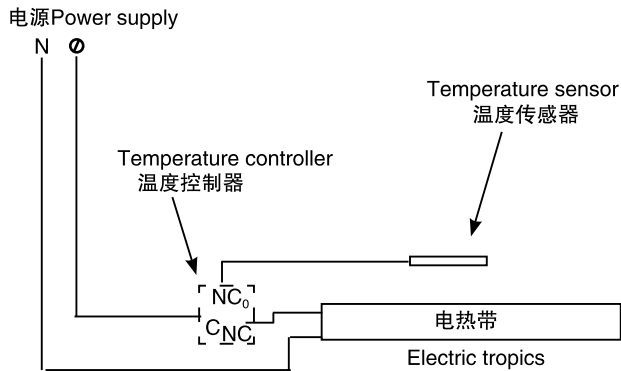
电伴热产品附件

Electric heating product accessories

注意事项 Matters needing attention

如发现接线盒外壳有变形裂痕或损坏，应停止使用。

If a deformed crack or damage is found in the outer shell of the junction box, it should be stopped.



增安型电源接线盒 Increased safety type power connection box

增安型防爆接线盒用于电源线与电热带在防爆区域的连接。本电源接线盒按增安型防爆电器要求设计和制造，防爆标志：“eII T₄”，与电热带配套后适用于工厂一区、二区爆炸气体混合物T4组场所。其外壳为高强度塑料。ZDH-2实用于电源与二根电热带连接（双向输出）。

The increased safety explosion-proof junction box is used to connect the power cord with the electric tropical zone in the explosion-proof area.

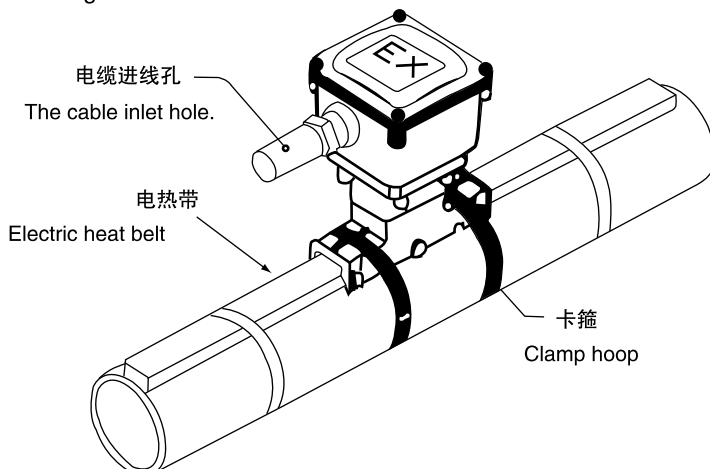
This power connection box is designed and manufactured according to the requirements of safety-increasing explosion-proof electrical appliances, and the explosion-proof mark is "eII T₄." it is suitable for use in group T 4 of explosion gas mixture in the first and second areas of the factory after matching with the electric tropics. Its shell is high strength plastic.

ZDH-2 is suitable for connecting the power supply with the two electric tropics (two-way output).

型号Type

ZDH $\frac{2}{1}$ $\frac{\square}{2}$ $\frac{\square}{3}$

- 1、增安型电源接线盒
1. Increased power supply junction box
- 2、设计序号
- 2, design serial number
- 3、密封圈代号
- 3, seal ring code



主要技术性能指标

Main technical performance index

额定电压: - 220V/380V

Rated voltage: -220V/380V

额定电流: 25A Rated current: 25A

电缆线嘴螺纹: G1/2"

Cable nozzle thread: G1o2 "

防爆标志: eIT explosion proof mark: eIT

防护等级: IP54 protection grade: IP54

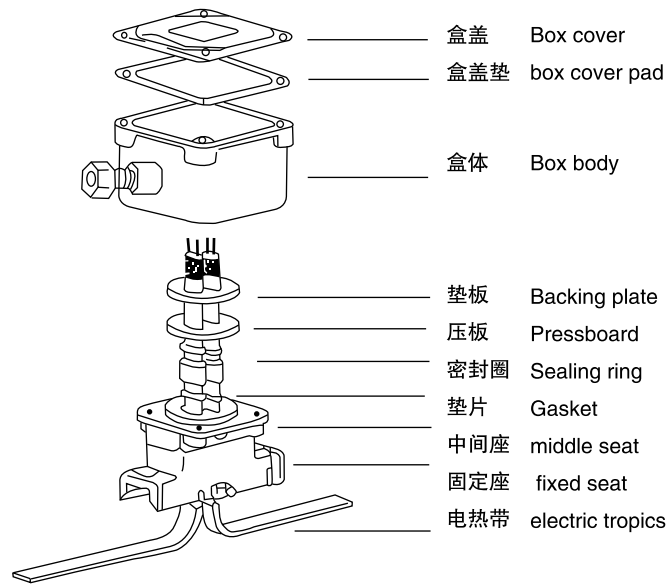
橡胶电缆密封圈直径: 10.7mm

Rubber cable seal ring diameter: 10.7mm

电伴热产品附件 Electric heating product accessories

不同规格型号的电热带由于尺寸不同，所以应用不同内孔的专用橡胶密封圈。各种规格型号电热的专用密封圈请按下表选用。

Due to the different dimensions of the electric tropics of different specifications and models, the gasket shall be equipped with special rubber sealing rings with different inner holes. All kinds of pressure plates. Please select the special sealing ring for electric heating according to the following table.



项目 Project	型号 Model	LTHT	RDP ₂ -J ₃ RDP ₂ -J ₄	RDP ₃ -J ₃
密封圈代号 Seal ring code		1	3	4
内孔尺寸 inner hole size		12 × 3.5	6.2 × 4	8 × 4.4

注意事项 Matters needing attention

发现接线盒外壳有变形、裂痕或损坏，应停止使用。

If the junction box shell is found to be deformed, cracked or damaged, it should be stopped.

安装时应防止电热丝、外编织铜丝芯线之间的短路及电气间隙的减少。

The short circuit between electric heating wire and outer braided copper wire core wire and the reduction of electrical gap should be prevented during installation.

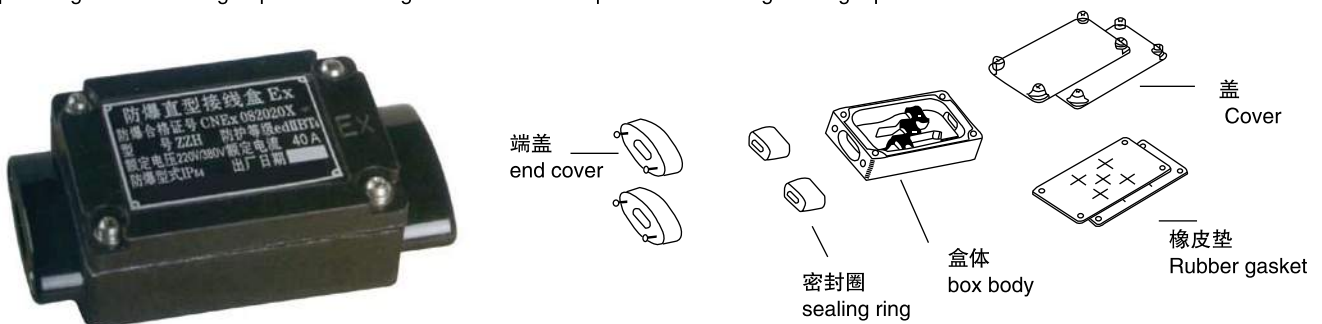
应接电热带型号选用所附适当的密封圈。The appropriate sealing ring attached to the model of the electric zone shall be selected. 不用的进线孔应用所附钢板堵住。

The attached steel plate should be used to plug the unused inlet hole.

增安型中间接线盒 Safety increasing intermediate junction box

增安型中间防爆接线盒用于防爆区域与电热带之间的连接，以增加电热带长度或用在同一管线上配用不同功率的电热带及三叉管等较复杂的场合。它有ZZH型直行接线盒与ZTH型T型接线盒两种型式，它们都按“增安型”防爆电器设计制造。防爆标志“eII T₄”，与电热带配套后适用于工厂一区、二区爆炸性气体混合物T4组场合。其外壳为高强度塑料。

The safety-increasing intermediate explosion-proof junction box is used to connect the explosion-proof area with the electric tropics in order to increase the length of the electric tropics or to use different power electric tropics and trigeminal tubes on the same pipeline. There are two types of ZZH type direct junction box and ZTH type T type junction box, both of which are designed and manufactured according to the "increased safety" explosion-proof electrical apparatus. The explosion-proof mark "eII T₄" is suitable for the factory-area and second-zone explosive gas mixture T4 group after matching with the electric tropics. Its shell is high strength plastic.



电伴热产品附件

Electric heating product accessories

型号含义 Model meaning

$\frac{ZZH-\square}{1 \quad 2}$

1. 增安直型接线盒

1. Zeng an straight junction box

2、密封圈代号

2, seal ring code

$\frac{ZTH-\square}{1 \quad 2}$

1、增安“T”接线盒

1. Zeng an "T" junction box

2、密封圈代号

2, seal ring code



主要技术性能指标

Main technical performance index

额定电压: - 220V/380V

Rated voltage: -220V/380V

额定电流: 25A

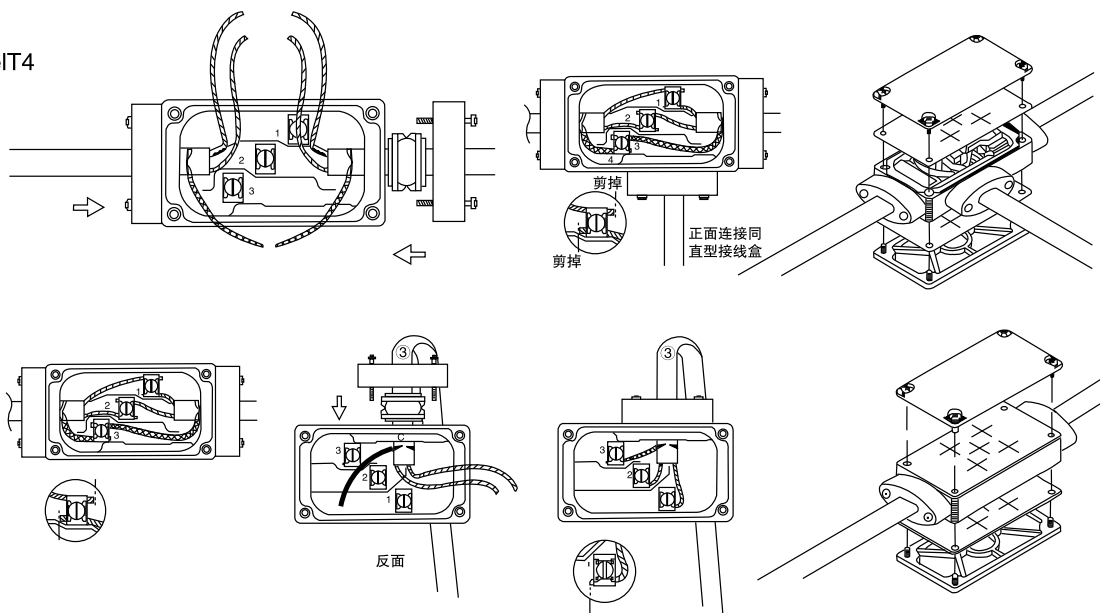
rated current: 25A

防爆标志: eII T4

explosion proof mark: eII T4

防护等级: IP54

protection grade: IP54



此中间接线盒（包括T型），当用于三相电热带连接时一方面须注意选取大号的密封圈，另一方面，端子3也当作负载接线用，编织屏蔽在接线盒之外进行连接。

This intermediate junction box (including T-type), when used for three-phase electric tropical connection, on the one hand, we should pay attention to the selection of large sealing ring, on the other hand, terminal 3 is also used as load wiring, braided shield outside the junction box for connection.

主要事项 Main matters

发现接线盒外壳有变形、裂痕或损坏，应停止使用。

If the junction box shell is found to be deformed, cracked or damaged, it should be stopped.

安装时应防止电热丝、外编织铜丝芯线之间的短路及电气隙的减少。应接电热带型号选用所附适当的密封圈。不用的进线孔应用所附钢板堵住。

The short circuit between electric heating wire and outer braided copper wire core wire and the reduction of electrical gap should be prevented during installation. The appropriate sealing ring attached to the model of the electric zone shall be selected. The attached steel plate should be used to plug the unused inlet hole.

防爆终端接线盒

Explosion-proof terminal junction box

防爆终端接线盒用于电热带的末端，使它与外界可靠隔绝。防爆标志“eII T4”，适合全天候条件和石油、化工等工厂一区、二区爆炸性气体混合物T4组场所使用。ZZF型外壳材料为高强度塑料，与Z系列接线盒配套使用。

The explosion-proof terminal junction box is used at the end of the electric tropics to make it reliably isolated from the outside world. Explosion-proof mark "eII T4", suitable for all-weather conditions and oil, chemical and other plants in the first and second areas of explosive gas mixture T4 site use. ZZF shell material is high strength plastic, which is used in conjunction with Z series junction box.

型号含义 Model meaning

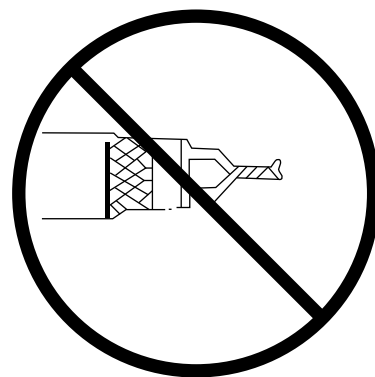
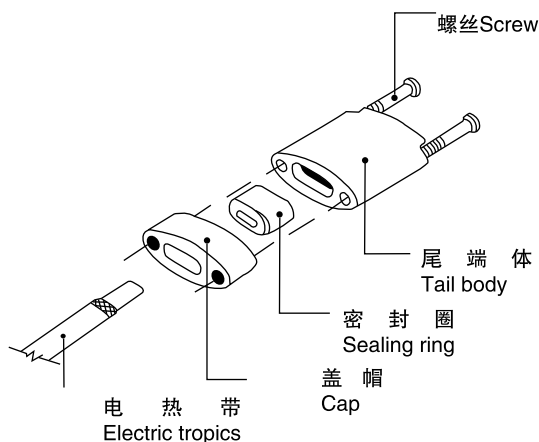
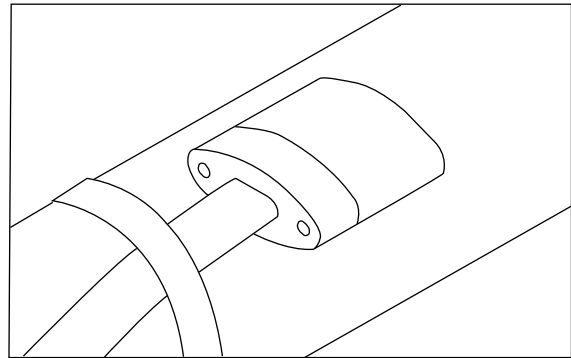
ZZF-□
1 2

1、增安型终端封头

1. Safety increasing terminal head

2、密封圈代号

2, seal ring code



注：尾端严禁绞合

Note: it is strictly forbidden to hang at the end of the end.

主要技术性能指标

Main technical performance index

额定电压：- 220V/380V

Rated voltage: -220V/380V

防爆标志：eII T4

Explosion proof mark: eII T4

防护等级：IP54

Protection grade: IP54

注意事项 Matters needing attention

发现接线盒外壳有变形、裂痕或损坏、应停止使用。

It is found that the shell of the junction box is deformed, cracked or damaged and should be stopped.

安装时应防止电热丝、外编织铜丝及芯线之间间隙的减少。The gap between electric heating wire, external braided copper wire and core wire should be prevented from being reduced during installation.

应按电热带的型号选用所附适当的密封圈。

The appropriate sealing ring shall be selected according to the model of the electric tropics.

耐热压敏胶粘带

Heat-resistant pressure-sensitive adhesive tape

耐热压敏胶粘带是玻璃纤维带上涂复一层特殊的胶粘剂。该带宽20mm，每卷为20m。用该耐热压敏胶带每0.8m沿管道径向将电热带固定牢，配备长度视伴热管管线径及长度而定，一般为0.5~0.8m。压敏胶带的用量一般取管道的周长×3（综合系数）。

Heat-resistant pressure-sensitive adhesive tape is a special adhesive coated with glassfibertape. The bandwidth is 20mm, 20m per volume. The heat-resistant varistor tape is used to fix the electric tropics along the radial direction of the pipe every 0.8 m, and the length depends on the diameter and length of the heat pipe, which is $0.5 \leq 0.8$ m. The amount of pressure-sensitive tape is generally taken from the perimeter of the pipe x 3 (comprehensive coefficient).



铝胶带Aluminum tape

铝胶带是铝箔带上涂复一层特殊的胶粘剂。用于沿电热带走向固定电热带、温控器的感温包，方便安装。其主要功能是固定电热带，增大电热带的散热面，提高热传导。该带宽50mm，每卷长为50m，铝胶带的用量设计为电伴热数量的1.2倍。

Aluminum tape is a special adhesive coated with aluminum foil tape. It is used for the temperature sensing package of fixed electric tropics and thermostats along the electric tropics, which is convenient for installation. Its main function is to fix the electric tropics, increase the heat dissipation surface of the electric tropics, and improve the heat conduction. The bandwidth is 50mm and the length of each roll is 50m. The amount of aluminum tape is designed to be 1.2 times of the amount of electric heating.



喉卡Throat card

喉卡由不锈钢带和调节螺丝所组成，它用于防爆电源接线盒等附件在管道上的固定。钢带可根据管径大小按实际固定长度的1.1倍剪切，再将调节螺丝的前后关分别固定在钢带二头的小孔内，拧紧调节螺丝即可。

The throat card is composed of stainless steel strip and adjusting screw, which is used to fix the accessories such as explosion-proof power connection box on the pipe. According to the diameter of the pipe, the steel strip can be cut 1.1 times of the actual fixed length, and then the front and rear of the adjusting screw can be fixed in the small hole of the two ends of the steel strip respectively, and the adjusting screw can be tightened.



示警铭牌Warning nameplate

示警铭牌为200×120mm不干胶铭牌，贴于施工完毕的伴热管线外表面作为示意及通电示警，一般每隔30m左右在易见位置贴一块。

The warning nameplate is 200x 120mm adhesive nameplate, which is affixed to the outer surface of the heating pipeline after construction as a signal and electric warning, which is affixed to an easy-to-see position every 30 m or so.



电伴热系统控制配电箱 Electric heating system control distribution box

该系列配电箱与本公司的各种规格电热带配套使用。电伴热产品在防爆厂区使用时，应将此防爆箱装在防爆区外，用电缆将电源引入防爆区，配电箱具有过载、短路和漏电保护功能。

This series of distribution boxes are used in conjunction with the company's various specifications. When the electric heating product is used in the explosion-proof plant area, the explosion-proof box should be installed outside the explosion-proof area, and the power supply should be introduced into the explosion-proof area by cable. The distribution box has the functions of overload, short circuit and leakage protection.

型号含义 Model meaning

$$\begin{array}{cccc} \square & \text{STEK} & - & \square - \text{J} \\ 1 & 2 & 3 & 4 \end{array}$$

- 1、电路相线数(1、单相220V,3、三相380V)
1. Circuit phase line number (1, single phase 220V, 3, three phase 380V)
- 2、电源配电箱
- 2, power distribution box
- 3、配电回路数
- 3, distribution circuit number
- 4、是否配接触器(否不注)
4. Whether or not to match contactors (no note)

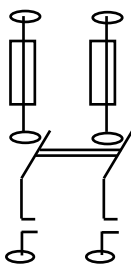
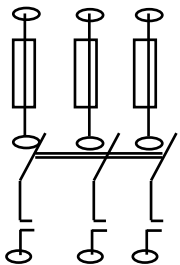


分类、参数、结构和安装调试 Classification, parameters, structure, installation and debugging

STEK系列电源配电箱分单相和三相两种形式。配电箱采用户外型结构。单相电伴热系统一般配用温控器，而温控器的容量不够或电热带为三相时，配电箱可选用接触器。电源配电箱的安装非常简单，只需将两根挂铁按规定尺寸固定在墙上，就可将电源箱挂上。电源配电箱有关参数见下表。另外我厂可为客户提供非上述的各种控制功能的配电系统，从简单的温度控制，过载和短路保护到温度的程序控制、各种保护及报警直至通过计算机对电伴热系统进行监测遥控。

STEK series power distribution box is divided into two forms: single-phase and three-phase. The distribution box adopts the outdoor structure. Single-phase electric heating system is generally equipped with temperature controller, but the capacity of temperature controller is not enough or the electric tropics is three-phase, the distribution box can choose contactor. The installation of the power distribution box is very simple, just fix the two hangers to the wall according to the specified size, and you can hang the power box. The relevant parameters of the power distribution box are shown in the following table. In addition, our factory can provide customers with non-the above control functions of the distribution system, from simple temperature control, overload and short circuit protection to temperature program control, all kinds of protection and alarm to computer monitoring and control of the electric heating system.

电源配电箱产品技术参数 Technical parameters of Power Distribution Box products

规格Specifications	单相220VSingle phase 220V	三相380VThree-phase 380V
线路图Line diagram		
型号Model	STEK ₁ -□-J	STEK ₂ -□-J
额定电流 Rated current	20A	40A
漏电动作电流Leakage action current	30mA	50mA

安装

安装总则 General rules for installation

本电伴热产品可用于工厂—区、二区防爆场合。安装时，应避免油气积聚的暗角等可能超过上述规定的防爆区。电伴热产品具有全天候防护能力，但安装时应使系统不会发生积聚雨雪现象。在这前提下，应使系统维护方便及整齐和美观。所有电伴热防爆产品除防爆等级外，电热带尚有防爆温度组别，请注意产品的正确选用。电伴热产品在空气中的表面温度应受到有效的控制，不得超过危险介质自然温度的80%。

This electric heating product can be used in the factory—area, zone 2 explosion—proof occasions. When installing, we should avoid the dark angle of oil and gas accumulation and other explosion—proof areas that may exceed the above provisions. Electric heating products have all—weather protection ability, but when installed, the system should not accumulate rain and snow. Under this premise, the system should be maintained conveniently, neatly and beautifully. In addition to explosion—proof grade, all electric heat explosion—proof products have explosion—proof temperature group, please pay attention to the correct selection of products. The surface temperature of electric heating products in air should be effectively controlled and should not exceed 80% of the spontaneous combustion temperature of dangerous media.

电伴热产品的安装必须在管线系统全部安装,调试结束后进行。The installation of electric heating products must be carried out after the pipeline system is fully installed and debugged.

施工前，应先检查产品是否符合本说明中规定的各项技术指标。

Before construction, the product shall be checked for compliance with the technical specifications specified in this note.

施工后，应先检查系统的绝缘电阻，不管其长度长短均不小于20M(用500VDC摇表):系统是否有短路现象(长度较长的自限式电热带在冷态时，其阻值较小) After construction, the insulation resistance of the system should be checked first, no matter its length is not less than 20m (shaking meter with 500VDC): whether there is a short circuit phenomenon in the system (the resistance value of the long self—limiting electric tropics is small when the length is cold)

测试A:电热带母线与金属管之间Test A: between the electric tropical bus and the metal pipe

测试B:屏蔽层与金属管之间(针对加强型而言)Test B: between the shielding layer and the metal pipe (for the strengthened type)

检查无误后，通以额定电压，逐段检查发热情况和各电气参数是否正常。

After checking, check the heating condition and whether the electrical parameters are normal by rated voltage.

电伴热系统试送电运行正常后，可进行保温、防护层的施工。施工后，电伴热系统重复F、G条的检查并连续运行—昼夜。

After the trial power transmission of the electric heating system is normal, the construction of heat preservation and protective layer can be carried out. After construction, the electric heating system repeats the inspection of F and G strips and runs continuously day and night.

本总则未将先行的“电气装置安装工程施工及验收规定”及“防爆、防火规程”中有关条文包括在内，施工中仍应遵循上述技术常用规范要求，在此不作复述。

This general provision does not include the relevant provisions of the previous provisions of the Electrical installation Engineering Construction and acceptance regulations and the explosion—proof and Fire Prevention regulations, and shall still follow the requirements of the above technical specifications in the construction, and shall not be repeated here.

电热带的安装 Installation of electric tropics

安装电热带时应注意以下几点:

The following points should be noted when installing the electric tropics:

施放电热带时不要打硬折或长距离在地面拖拉。

Do not give a hard discount or drag on the ground for a long time when you release the electric tropics.

安装电热带碰到锐利的边棱要先垫上铝胶带或将其锐利处打磨光滑，以防将电热带外层绝缘划破。

Install the electric tropics to encounter sharp edges to be cushioned first. Upper aluminum tape or sharpen it smooth to prevent the insulation of the outer layer of the electric tropics from being cut.

电热带最小弯曲半径不小于其厚度的五倍。

The minimum bending radius of the electric tropics is not less than five times its thickness.

电热带应紧贴管道表面，以利散热。须特别注意电热带上发热区，确保发热部分控制在需伴热的部分。

The electric tropics should be close to the surface of the pipe to facilitate heat dissipation. Special attention should be paid to the heating area on the electric tropics to ensure that the heating part is controlled in the part where the heating needs to be accompanied.

安装电热带应用铝胶带粘贴，一则增大散热面，有利于热传导，二则方便安装。其方法是:先清楚电热带途径处的油污、水份，最好能用汽油揩清。首先每隔八十厘米，用固定胶带将电热带径向固定，然后敷设覆盖胶带，最后用布用力摸压，使电热带平整粘贴在管道表面。

The installation electric belt should be pasted with aluminum tape, one of which is to increase the heat dissipation surface, which is beneficial to heat conduction, and the other is convenient to install. The method is to first know the oil pollution and water content in the electric tropical route, and it is best to remove it with gasoline. First of all, every 80 centimeters, the electric belt is radially fixed with fixed tape, then covered tape is laid, and finally, the cloth is pressed hard to make the electric belt smooth and paste on the surface of the pipe.

安装电热带附件时，应将电热带留有一定富裕量，以便下次检修重复使用。

When installing electric tropical accessories, a certain amount of wealth should be left in the electric tropics so that they can be reused for the next overhaul.

安装恒功率电热带时，由于恒功率电热带处整个长度上是一段段发热节组合而成，剪切时须特别注意电热带上发热区，确保发热部分控制在需伴热的部分。

When installing the constant power electric tropics, because the whole length of the constant power electric tropics is composed of a section of heating section, special attention should be paid to the heating area on the electric tropics when shearing, so as to ensure that the heating part is controlled in the part where the heating needs to be accompanied.

除自限式电热带外，其余型号电热带不允许叠绕、交叉，避免造成交叉处过热。

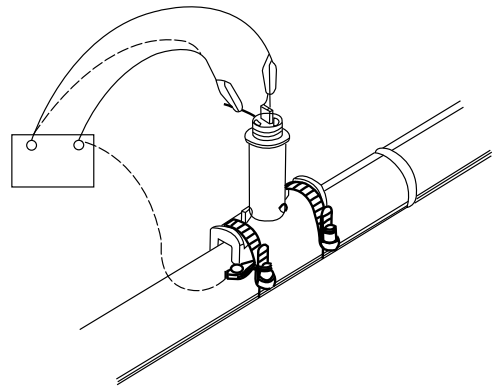
In addition to the self—limiting electric tropics, other types of electric tropics are not allowed to overlap and cross, so as to avoid overheating at the intersections.

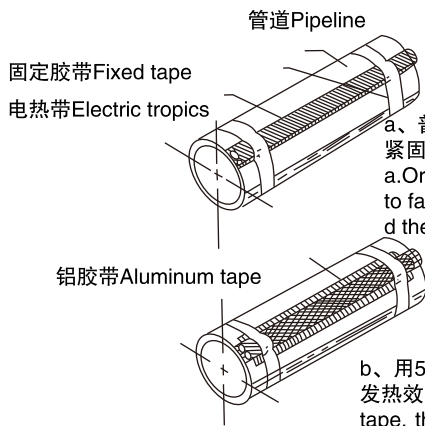
由于自限式电热带发热芯料系导电材料，在安装时电源铜线应加绝缘套管，以免短路。

Because the self—limiting electric tropical heating core is a conductive material, the insulated casing should be added to the power supply copper wire to avoid short circuit.

电热带配电系统应具有过载、短路、漏电保护功能。

The electric tropical distribution system should have the functions of overload, short circuit and leakage protection.

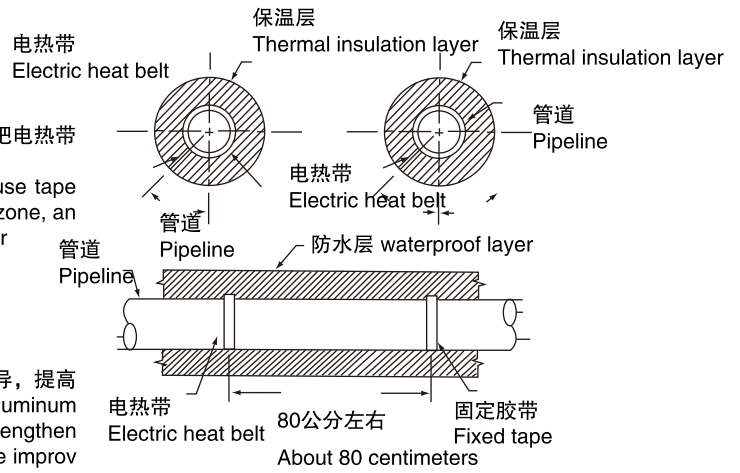




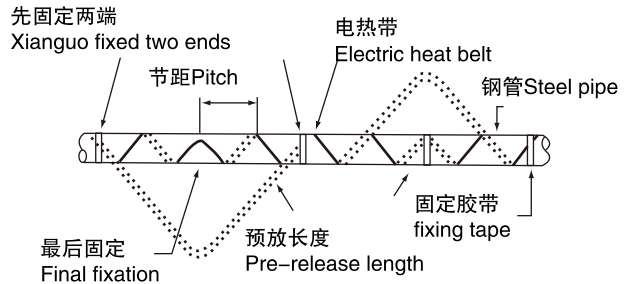
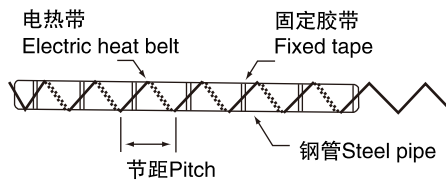
a、普通使用场合，可用胶带把电热带紧固，然后，再加复保温层
a. Ordinary use station, can use tape to fasten the electric tropical zone, and then add the insulation layer

b、用50毫米宽铝胶带能加强传导，提高发热效率
b. With 50 mm wide aluminum tape, the conduction can be strengthened and the heating effect can be improved.

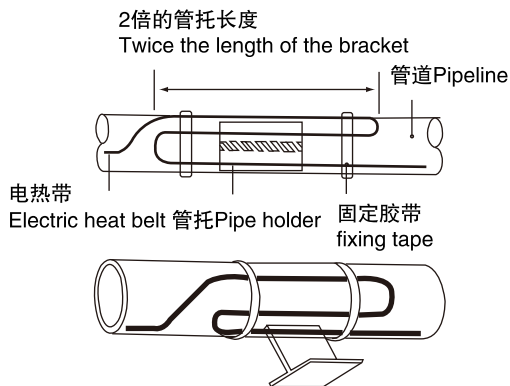
电热带缠绕管道示意图
Schematic diagram of electric tropical winding pipe



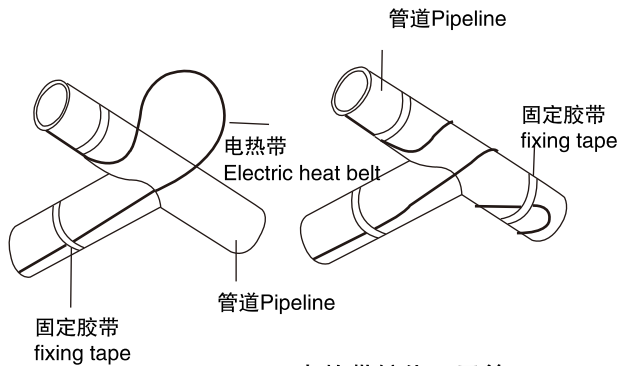
电热带安装位置
Electric tropical installation position



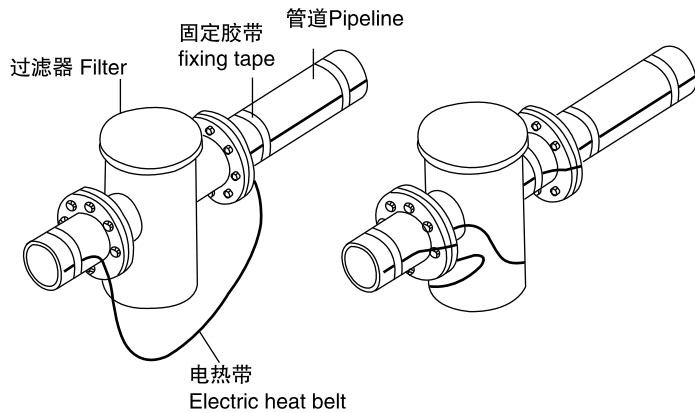
电热带螺旋缠绕管道
Electric tropical spiral winding pipe



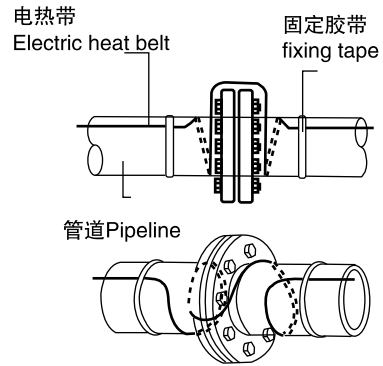
电热带过管托架
Electric tropical pipe bracket



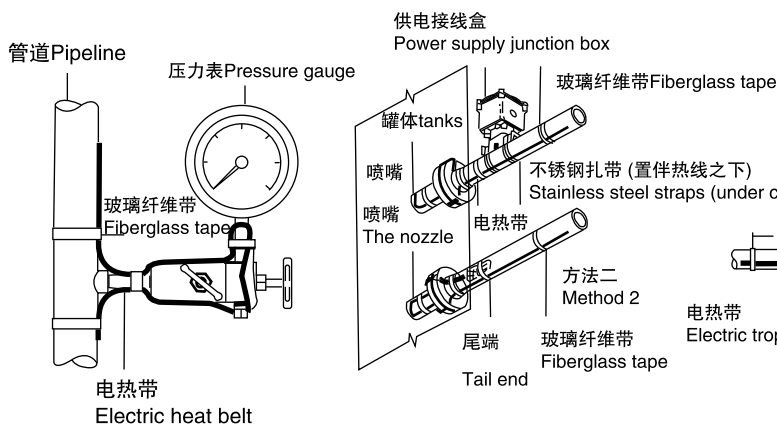
电热带缠绕三叉管
Electric tropical wound trigeminal tube



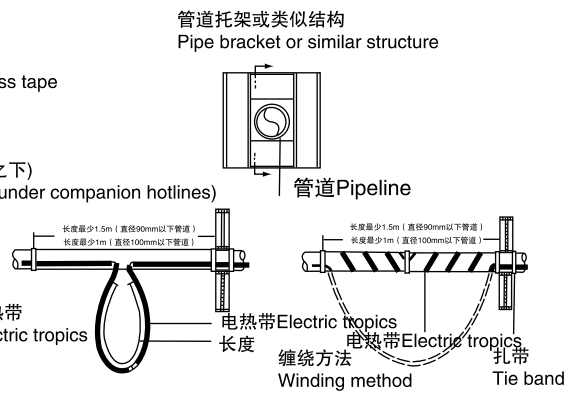
电热带缠绕过滤器
Electric tropical winding filter



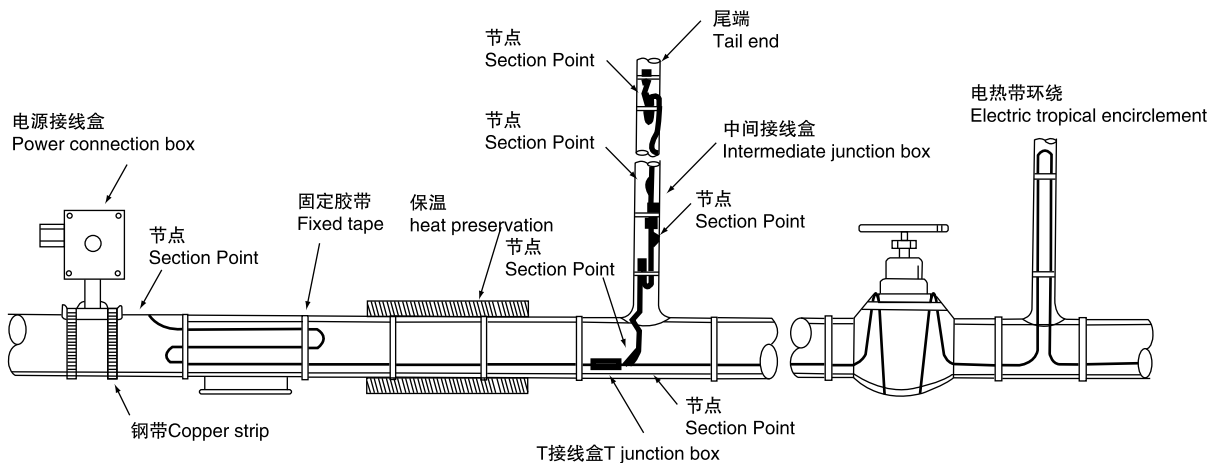
电热带缠绕法兰
Electric tropical winding flange



压力表 Pressure gauge



管道托架
Pipe bracket



恒功率电热带在管道上的典型安装
Typical installation of constant Power Electric Tropical Zone on Pipeline

电伴热选型设计原则

Design principle of Electric heating Type selection

正确计算出管道或容器罐体工艺装置的散热量，用一定规格、数量的电伴热产品所产生的等值热量进行补偿。

The heat dissipation of pipeline or container tank process device is calculated correctly, and the equivalent heat produced by certain specification and quantity of electric heating products is compensated.

管道散热量的计算 Calculation of Heat dissipation in Pipeline

要计算管道散热量，先要知道下列各参数：介质维持温度 T_j ；管道材质、公称口径（ D_N ）和长度（ m ）；最低环境气温（ T_o ）；用多厚的何种保温材料？具体计算方法有以下两种：

To calculate the heat dissipation of the pipeline, the following parameters should be known: medium maintenance temperature T_j ; pipe material, nominal caliber (DN) and length (m); minimum ambient temperature (T). What kind of thermal insulation material do you use? There are two specific calculation methods:

(1) 查表计算 (I) Table search calculation

根据 $\Delta T=T_j-T_o$ 、DN和保温层厚度，查“表3-1”可得单位长度管道标准散热量 Q_b 。

According to the thickness of $T=T-T_o$, DN and insulation layer, the standard heat dissipation Q of pipeline per unit length can be obtained by looking up Table 3-1.

(2) 计算公式 (2) calculation formula

根据下公式计算管道实际散热量

Calculation of actual heat dissipation of pipeline according to the following formula

$$Q_s = K_1 \cdot K_2 \cdot K_3 \cdot Q_b \cdot \dots \cdot (3-1)$$

式中： Q_s —单位长度管道的实际热散失量， w/m

In the formula: Q_s —the actual heat dissipation loss of unit length pipeline, w/m

Q_b —单位长度管道的标准热散失量， w/m

Q_b —Standard heat dissipation loss of pipe per unit length

K_1 —保温材料导热系数修正值，查“表3-2”

K_1 —revised value of thermal conductivity of heat preservation material, check Table 3-2

K_2 —管道材料修正系数，查“表3-3”

K_2 —Pipeline material correction coefficient, look up "Table 3" K, check "Table 3-4",

K_3 —环境条件修正系数，查“表3-4”

K_3 —Correction factor of environmental conditions, check "Table 3-4"

表3-2：保温材料导热系数及保温修正系数 k_1

Table 3-2: thermal conductivity and thermal insulation correction coefficient k of thermal insulation materials

保温材料 Thermal insulation material	10℃导热系统 ($w/m \cdot k$) 10℃ heat conduction system (w/m.k)	保温修正系数 K_1 Heat preservation correction coefficient K_1
超细玻璃纤维 (管壳、棉毡) Ultra-fine glass fiber (shell, cotton felt)	0.036	1.0
岩棉 (管壳、棉毡) Rock cotton (shell, felt)	0.044	1.22
复合硅酸盐 Composite silicate	0.035	0.97
聚氨酯泡沫塑料 polyurethane foam	0.024	0.67
矿渣棉 Slag cotton	0.038	1.06
硅酸铝 aluminum silicate	0.056	1.56
珍珠岩管壳 perlite shell	0.047	1.31
硅酸钙 Calcium silicate	0.054	1.5
聚乙烯泡沫塑料 polyethylene foam	0.035	0.97

表3-2: 管道标准散热量 (Q_b)条件: 碳钢管道、玻璃纤维保温、室外、风速9m/s。单位: w/m

Table 3-2: pipe standard heat dissipation (Q₂) conditions: Carbon steel pipe, glass fiber insulation, outdoor, wind speed 9m / s.Unit: w/m

保温厚度 Moisturizing thickness	温差℃ Temperature difference	管道内径 (mm / 英寸) Pipe inner diameter (mm / inch)															
		15	25	40	50	80	100	150	200	250	300	350	400	450	500	600	
		1/2"	1"	1.5"	2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	
10	20	7.2	10.1	13.6	16.4	23.0	28.8	41.1	52.6	64.7	76.1	93.3	94.6	105.9	117.2	139.7	
	30	11.0	15.4	20.7	24.9	35.0	43.8	62.5	80.0	98.5	115.8	126.7	143.9	161.1	178.3	212.6	
	40	14.9	20.8	27.9	33.7	47.3	59.2	84.5	108.2	133.2	156.6	171.3	194.6	217.9	214.1	297.4	
20	20	4.6	6.2	8.0	9.5	13.0	16.0	22.5	28.5	34.9	40.9	44.7	50.7	56.7	62.6	74.6	
	30	7.0	9.4	12.2	14.5	19.8	24.4	34.3	47.4	52.2	62.3	68.0	77.1	86.1	95.3	113.4	
	40	9.5	12.7	16.5	19.6	26.7	33.0	46.3	58.7	71.0	84.2	92.0	104.3	116.6	128.9	153.4	
25	60	14.7	19.6	25.5	30.2	41.2	50.9	71.4	90.5	10.8	129.9	141.8	160.8	179.7	198.7	236.5	
	20	4.1	5.3	6.9	8.0	10.9	13.4	18.6	23.5	28.7	33.5	36.5	41.4	46.2	51.1	60.7	
	30	6.2	8.1	10.4	12.3	16.6	20.3	28.3	35.7	43.6	51.0	55.6	63.0	70.3	77.7	92.4	
30	40	8.4	11.0	14.1	16.6	22.4	27.5	38.2	48.3	59.0	69.0	75.2	85.2	95.1	105.1	124.9	
	60	12.9	17.0	21.8	25.6	34.5	42.4	59.0	47.5	90.9	106.3	115.9	131.3	146.7	162.0	192.6	
	80	17.7	23.3	29.9	35.0	47.4	58.2	81.0	102.3	24.8	146.0	159.2	180.3	201.4	222.4	264.5	
35	100	22.8	30.1	38.6	45.4	61.2	75.2	104.5	132.0	61.1	188.5	205.5	232.8	260.0	287.2	341.5	
	20	3.7	4.8	6.1	7.1	9.5	11.6	15.9	20.0	24.4	28.5	31.0	35.1	39.2	43.2	51.3	
	30	5.6	7.3	9.2	10.8	14.4	17.6	24.3	30.5	37.1	43.3	47.2	53.4	59.6	65.8	78.1	
40	40	7.6	9.8	12.5	14.6	19.5	23.8	32.8	41.3	50.2	58.6	63.8	47.2	80.6	88.9	105.6	
	60	11.7	15.1	29.2	22.5	30.0	36.6	50.6	63.6	77.4	90.4	98.4	11.4	124.3	137.1	162.9	
	80	16.0	20.8	26.4	30.9	41.2	50.3	69.4	87.3	06.3	124.0	135.1	152.9	170.6	188.3	223.6	
45	100	20.7	26.8	34.1	39.8	53.2	65.0	89.7	112.8	37.2	160.2	174.5	197.4	220.3	243.1	288.7	
	120	25.6	33.2	42.2	49.3	65.9	80.4	111.0	139.6	69.9	198.3	216.1	244.4	272.8	301.0	257.5	
	140	30.8	40.0	50.8	59.4	79.3	96.8	133.5	168.0	04.4	238.6	259.9	294.0	328.0	362.1	430.1	
50	160	36.2	47.1	59.8	69.9	93.3	113.9	157.2	197.7	40.6	280.8	306.0	346.1	386.2	426.3	506.2	
	180	42.0	54.5	69.2	80.9	108.1	131.9	182.0	228.9	78.6	325.2	354.2	400.7	447.1	493.5	586.2	
	20	3.2	4.0	5.0	5.8	7.6	7.6	12.6	15.7	9.0	22.1	24.0	27.4	30.2	33.0	39.4	
55	30	4.8	6.0	7.7	8.9	11.6	11.6	191.1	23.9	28.9	33.6	36.6	41.3	45.9	50.6	60.0	
	40	6.5	8.3	10.4	12.0	15.7	15.7	25.9	32.3	39.1	45.5	49.4	55.8	62.1	68.5	80.0	
	60	10.1	12.8	16.0	18.5	24.3	24.3	39.9	49.8	60.3	70.1	46.2	86.0	95.8	105.6	125.1	
60	80	13.8	17.6	21.9	25.4	33.3	33.3	54.8	68.4	82.7	96.2	104.3	118.1	131.5	144.9	171.7	
	100	17.8	22.7	29.3	32.8	43.0	43.0	70.8	88.3	06.8	124.2	135.1	152.4	169.8	187.7	221.7	
	120	22.1	28.1	35.1	40.6	53.3	53.3	87.6	109.3	32.3	153.9	167.3	188.8	210.3	231.7	274.5	
65	140	26.5	33.8	42.2	48.8	64.1	64.1	105.4	131.5	59.1	185.1	201.2	227.1	252.9	278.7	330.2	
	160	31.2	39.8	49.7	57.4	75.4	75.4	124.1	154.8	87.3	217.9	236.9	267.3	297.7	328.1	388.7	
	180	36.2	46.0	57.5	66.5	87.3	87.3	143.7	179.3	16.9	252.2	274.3	309.5	334.7	379.9	450.1	
70	20	2.8	3.6	4.4	5.0	6.5	7.8	10.5	13.1	5.7	18.2	19.8	22.3	24.7	27.3	32.2	
	30	4.3	5.4	6.7	7.7	9.9	11.9	16.0	19.9	23.9	27.7	30.1	33.9	37.6	41.4	48.5	
	40	5.9	7.3	9.1	10.4	13.4	16.1	21.7	26.9	32.3	37.5	40.7	45.8	50.9	56.0	66.2	
75	60	9.0	11.3	14.0	16.0	20.7	24.8	33.4	41.4	49.9	57.8	62.7	70.6	78.5	86.3	102.1	
	80	12.4	15.5	19.1	22.0	28.5	34.1	45.9	56.8	68.4	79.3	86.1	96.9	107.7	118.5	140.1	
	100	16.0	20.1	24.7	28.4	36.7	44.0	59.2	73.4	88.3	102.4	111.1	125.1	139.1	153.5	180.9	
80	120	19.8	24.8	30.6	35.1	45.5	54.4	73.3	90.9	09.4	126.8	137.6	154.9	172.2	189.5	224.0	
	140	23.8	29.9	36.8	42.3	54.7	65.6	88.2	109.3	31.6	152.5	165.5	186.4	207.2	227.9	269.4	
	160	28.2	35.2	43.4	49.8	64.4	77.2	103.9	128.7	54.9	179.5	194.9	219.4	243.9	268.3	317.2	
85	180	32.5	40.7	50.2	57.6	74.6	89.4	123.3	149.0	79.4	207.9	225.6	250.0	282.4	310.7	367.2	
	20	2.3	2.8	3.4	3.8	4.8	5.7	7.4	9.0	0.7	12.3	13.3	14.9	16.4	18.0	21.1	
	30	3.5	4.3	5.2	5.8	7.3	8.6	11.3	13.7	6.3	18.7	20.2	22.6	25.0	27.4	32.1	
90	40	4.8	5.8	7.0	7.9	9.9	11.6	15.2	18.5	22.0	25.3	27.3	30.6	33.8	37.0	43.5	
	60	7.4	9.0	10.8	12.1	15.3	17.9	23.5	28.6	34.0	39.0	42.3	47.1	52.1	57.0	67.0	
	80	10.1	12.3	14.8	16.6	20.9	24.6	32.2	39.2	46.6	53.5	54.8	64.7	71.5	78.3	92.0	
95	100	13.0	15.9	19.1	21.5	27.0	31.8	42.6	50.6	60.2	69.1	74.6	83.5	92.3	101.2	118.8	
	120	16.1	19.4	23.6	26.6	33.5	39.3	51.1	62.7	74.5	85.5	92.4	103.4	114.3	125.3	147.7	
	140	19.4	23.6	28.4	32	40.3	47.3	62.9	75.4	89.6	102.9	111.2	124.4	137.5	150.7	176.9	
100	160	22.9	27.8	33.4	37.7	47.4	55.7	72.9	88.8	05.5	121.1	130.9	146.4	161.9	177.4	208.3	
	180	26.5	32.2	38.7	43.7	54.9	64.5	84.4	102.8	22.2	140.3	151.5	169.5	187.5	205.4	241.2	

表3-3:管道材料修正系数 k_2

 Table 3-3: pipeline material correction coefficient K_2

管道材料 Pipeline material	修正系数 K_2 Correction coefficient K_2
碳钢Carbon steel	1.0
铜 copper	0.9
不锈钢stainless steel	1.25
塑料plastic	1.5

 表3-3:环境条件修正系数 k_3

 Table 3-3: environmental condition correction factor k_3

环境条件 Environmental conditions	修正系数 K_3 Correction coefficient K_3
室外风速outdoor wind speed	1.10
室外风速outdoor wind speed	1.0
室外风速outdoor wind speed	0.95
室内indoor	0.9

根据管道损失公式计算: $Q_s = \frac{2\pi \cdot \lambda \cdot (T_J - T_O)}{\ln[(d + 2\delta) / d]} \dots \dots (3-2) \text{ Pipe}$

According to the formula of pipeline loss: $Q_s = \frac{2\pi \cdot \lambda \cdot (T_J - T_O)}{\ln[(d + 2\delta) / d]} \dots \dots (3-2) \text{ Pipe}$

式中: Q_s —管道实际散热量, w/m

formula: Q_s —The actual heat dissipation of the pipeline, w / m

T —介质维持温度, °C

T —medium maintenance temperature, °C

T_o —冬天最低温度, °C

T_o —winter minimum temperature, °C

λ —在 T 时保温材料的导热系数, w/m. °C

λ —thermal conductivity of thermal insulation material in T , w / m, °C.

d —管道外径

d —external warp of pipeline, mm

δ —保温层厚度

δ —thickness of insulation layer, mm

容器和罐体散热量计算

Calculation of heat dissipation in containers and tanks

1、根据容器罐体外形尺寸, 计算总表面积 S , m^2

1. According to the shape and size of container tank, the total surface area S , m^2 is calculated.

2、根据保温层材质、厚度、 T_J 和 T_O , 查“表3-5”, 求出容器罐体单位面积热损失量 Q_b , w/m^2 。如果采用非表列的保温材料, 先按“玻璃纤维”查取 Q_b , 再按“表3-2”修正。

2. According to the material, thickness, T , and T_o , of the insulation layer, the heat loss Q per unit area of the container tank is calculated. , w/m^2 . If the non-listed thermal insulation material is used, the Q is checked according to "glass fiber" and then modified by "Table 3 ≤ 2".

3、求总热损失量 Q_2 : $Q_2 = (1.2 \sim 1.5) Q_b \cdot S \dots \dots (3-3), W$

The total heat loss Q_2 : $Q_2 = (1.2 \sim 1.5) Q_b \cdot S \dots \dots (3-3), W$

式中: Q_b —单位面积的热损失, w/m^2

formula: heat loss per unit area of Q_b —, $W \leq m^2$

S —总散热表面积, m^2

S —total heat dissipation surface area, m^2 ;

4、计算所需电伴热带长度 $L_y = Q_2 / P_o + L_w \dots \dots (3-4)$

Calculate the required tropical length $L = Q_2 \leq P + W \dots \dots (3-4)$

式中: Q_2 —容器总散热量, w

Q_2 —total heat dissipation of the container, w

P_o —能适用于介质最高维持温度电热带功率, 选用时查表“2-1-2-3”

P_o —Can be applied to the maximum maintenance temperature of the medium electric tropical meter power, select the time check table "2 - 1 - 2-3"

L_w —安装长度, 视各种接线盒总数定, 一般每个接线盒线头留1~2m。

L_w —installation length, depending on the total number of various junction boxes, generally leave 1 -2m for each junction box head.

表3-5: 管道罐体热量 (Q_b)

Table 3-5: heat of pipe tank (Q_b)

单位unit: w/m

保温层 Insulation layer		维持温度 (°C) Maintenance temperature													
材料 Material	厚度mm Thickness	5	10	20	30	40	50	60	70	80	90	100	120		
聚氨酯 polyurethane	38	22.31	25.08	30.79	36.77	43.02	49.55	56.38	63.52	70.98	78.77	86.91	104.18	最低环境温度 Min ambient temperature	
	50	17.25	19.39	23.81	28.43	33.27	38.32	43.61	49.14	54.19	60.95	67.25	80.63		
	75	11.71	13.16	16.16	19.30	22.58	26.02	29.61	33.37	37.29	41.39	45.68	54.82		
	100	8.86	9.96	12.23	14.61	17.09	19.69	22.41	25.29	28.25	31.36	34.60	41.51		
	125	7.14	8.02	9.85	11.76	13.77	15.86	18.05	20.34	22.73	25.24	27.85	33.43		
	150	5.96	6.70	8.23	9.84	11.52	13.27	15.10	17.02	19.02	21.11	23.30	27.97		
玻璃纤维 glass fiber	38	35.91	40.15	48.79	57.77	66.89	76.39	80.02	95.92	106.08	116.63	127.38	149.77		最低环境温度 Min ambient temperature
	50	28.07	31.39	38.14	45.08	52.20	59.62	67.14	74.87	82.81	91.06	99.46	116.97		
	75	19.27	21.54	26.18	30.95	35.90	40.93	46.10	51.41	56.87	62.49	68.31	80.36		
	100	14.64	16.43	19.97	23.60	27.33	31.16	35.09	39.17	43.37	47.65	52.05	61.24		
	125	11.86	13.26	16.12	19.05	22.06	25.16	28.38	31.66	35.02	38.48	42.03	49.45		
	150	9.92	11.09	13.53	15.09	18.52	21.12	23.79	26.53	29.35	32.25	35.23	41.45		
矿渣棉 Slag cotton	38	44.14	49.32	59.95	70.83	81.81	93.19	104.61	116.36	128.34	140.42	152.71	178.08	最低环境温度 Min ambient temperature	
	50	34.65	38.72	47.16	55.62	64.25	73.19	82.17	91.32	100.74	110.23	120.01	139.86		
	75	23.99	28.81	32.53	38.44	44.49	50.59	56.18	63.14	69.59	76.23	82.93	96.76		
	100	18.34	20.49	24.86	29.38	34.01	38.67	43.43	48.27	53.21	58.24	63.41	73.93		
	125	14.83	16.57	20.18	23.80	27.50	31.27	35.12	39.11	43.11	47.19	51.34	59.86		
	150	12.51	13.97	16.96	20.00	23.11	26.28	29.51	32.81	36.17	39.62	43.10	50.26		
硅酸钙 Calcium silicate	38	52.62	59.00	72.38	85.96	99.95	114.59	129.45	144.73	160.56	176.68	193.01	227.48		最低环境温度 Min ambient temperature
	50	41.63	46.69	57.07	67.92	79.01	90.95	102.37	114.49	126.94	139.72	152.84	186.06		
	75	28.95	32.47	39.77	47.34	55.08	63.06	71.28	79.74	88.44	97.38	106.55	126.51		
	100	22.26	24.97	30.53	36.28	42.21	48.34	54.74	61.24	67.93	74.81	81.87	96.54		
	125	18.02	30.22	24.72	29.43	34.31	39.29	44.42	49.70	55.13	60.72	66.45	78.38		
	150	15.16	17.00	20.87	24.82	28.86	33.05	37.37	41.81	46.39	51.08	55.92	65.96		
聚氨酯 polyurethane	38	7.87	10.61	16.30	22.35	28.61	35.17	42.04	49.23	56.83	64.70	72.86	90.13	最低环境温度 Min ambient temperature	
	50	6.04	8.22	12.62	17.35	22.16	27.24	32.56	38.13	44.03	50.13	56.46	70.06		
	75	4.14	5.58	8.58	11.80	15.06	18.55	22.18	25.97	29.94	34.10	38.44	47.71		
	100	3.12	4.21	6.52	8.91	11.45	14.07	16.83	19.71	22.72	25.87	29.17	36.20		
	125	2.51	3.43	5.27	7.20	9.22	11.34	13.56	15.88	18.31	20.85	23.47	29.14		
	150	2.13	2.87	4.41	6.02	7.71	9.48	11.33	13.27	15.30	17.45	19.67	24.40		
玻璃纤维 glass fiber	38	12.13	16.42	25.16	34.00	43.25	52.61	62.24	72.27	82.47	92.95	103.72	126.31		最低环境温度 Min ambient temperature
	50	9.53	12.79	19.61	26.61	33.72	41.18	48.72	56.47	64.46	72.65	81.15	98.85		
	75	6.58	8.83	13.53	18.29	23.26	28.31	33.49	38.83	44.31	50.05	55.86	68.00		
	100	5.06	6.7	10.32	13.95	17.68	21.60	25.56	29.63	33.82	38.12	42.56	51.81		
	125	4.07	5.46	8.37	11.31	14.34	17.45	20.64	23.93	27.32	30.80	34.38	41.89		
	150	3.40	4.57	7.00	9.46	11.99	14.65	17.34	20.10	22.94	25.86	28.87	35.15		
矿渣棉 Slag cotton	38	15.01	20.12	30.51	41.27	52.33	63.57	75.05	86.63	98.41	110.62	122.84	148.06	最低环境温度 Min ambient temperature	
	50	11.65	15.881	24.07	32.57	41.14	49.97	59.01	68.12	77.39	87.00	96.93	116.49		
	75	8.21	11.01	16.69	22.49	28.52	34.58	40.84	47.15	53.68	6.23	66.91	80.61		
	100	6.23	8.35	12.77	17.27	21.82	26.46	31.24	36.07	41.07	46.09	51.20	61.69		
	125	5.10	6.84	10.37	13.97	17.65	21.48	25.38	29.24	33.22	37.29	41.42	49.96		
	150	4.27	5.72	8.68	11.79	14.89	18.06	21.29	24.58	27.93	31.35	34.82	42.00		
硅酸钙 polyurethane	38	18.3	12.39	37.39	50.90	64.82	79.21	93.88	109.18	124.71	140.78	157.28	191.24		最低环境温度 Min ambient temperature
	50	14.38	19.35	29.66	40.39	51.34	62.75	74.54	86.54	98.87	111.64	124.76	151.78		
	75	10.02	13.49	20.76	28.16	35.95	43.86	52.02	60.52	69.17	78.05	87.17	106.12		
	100	7.75	10.43	15.92	21.69	27.58	33.72	40.00	46.54	53.19	60.04	67.06	91.66		
	125	6.25	8.42	12.95	17.58	22.44	27.38	32.48	37.80	43.21	48.75	54.48	66.35		
	150	5.33	7.17	10.94	14.85	18.88	23.05	27.39	31.82	36.37	41.05	45.86	55.86		

保温层 Insulation layer		维持温度 (°C) Maintenance temperature												条件 conditions
材料 Material	厚度mm Thickness	5	10	20	30	40	50	60	70	80	90	100	120	最低环境温度 Min ambient temperature 温度: +20°C 无风速 No wind 最低环境温度 Min ambient temperature
聚氨酯 polyurethane	38				5.47	11.61	17.87	24.44	31.33	38.57	46.15	54.10	71.72	
	50				4.35	9.08	13.97	19.11	24.50	30.25	36.22	42.46	55.81	
	75				3.04	6.23	9.59	13.22	16.94	20.85	24.95	29.24	38.43	
	100				2.29	4.78	7.36	10.06	12.89	15.98	19.05	23.32	29.34	
	125				1.84	3.90	6.00	8.20	10.51	12.84	15.41	18.06	23.73	
玻璃纤维 glass fiber	150				1.54	3.26	5.01	6.85	8.78	10.81	12.93	15.15	19.90	
	38				8.23	16.71	25.45	34.45	43.73	53.30	63.42	73.61	94.95	
	50				6.37	13.16	20.05	27.32	34.74	42.33	50.16	58.45	75.40	
	75				4.48	9.26	14.10	19.08	24.41	29.75	35.24	40.90	52.56	
	100				3.51	7.13	10.86	14.69	18.65	22.95	27.13	31.37	40.45	
矿渣棉 Slag cotton	125				2.83	5.74	8.88	12.02	15.25	18.58	22.01	25.54	32.93	
	150				2.37	4.88	7.43	10.05	12.76	15.66	18.56	21.53	27.67	
	38				9.66	19.53	29.88	40.61	51.29	62.17	73.26	84.91	108.21	
	50				7.78	15.73	23.58	32.42	40.94	49.62	58.72	67.77	86.37	
	75				5.32	11.12	16.86	22.91	28.93	35.07	41.32	47.89	61.03	
硅酸钙 Calcium silicate	100				4.32	8.59	13.03	17.69	22.33	27.07	32.03	36.97	47.11	
	125				3.48	7.04	10.67	14.37	18.29	22.17	26.13	30.16	38.43	
	150				2.92	5.86	9.08	12.23	15.44	18.72	22.06	25.46	32.44	
	38				85.96	99.95	114.59	129.45	144.73	160.56	176.68	193.01	227.48	
	50				67.92	79.01	90.95	102.37	114.49	126.94	139.72	152.84	186.06	

电伴热选型 Electric heating selection

- 根据供电条件、电网负荷及电伴热带使用长度等因素来选择电伴热带的形式、电压等级，以便确定是用并联式还是串联式？是单相还是三相带？对长输管线，一般选用串联带；对管网系统则可选用恒功率三相带，如果管线较短，可选用恒功率单向带。
1. Select the form and voltage level of the electric companion tropics according to the power supply conditions, the load of the power grid and the length of the electric companion tropics, so as to determine whether the parallel type or the series type is used. Is it single-phase or three-phase? For long distance pipeline, series belt is generally used, constant power three-phase belt can be selected for pipe network system, and constant power unidirectional band can be selected if pipeline is short.
- 根据管道介质的最高工艺温度来确定电伴热的规格，即电伴热带的米功率。
2. The specification of electric heating is determined according to the highest process temperature of pipeline medium, that is, the rice power of electric heating zone.
- 根据管道或容器罐体总散热量和选定的电热带米功率，计算所需电热带总长度。由于管线带有弯头，闸门、托架等附件，因此，并联带订货长度一般增加5%~10%。
3. The total length of the electric tropics is calculated according to the total heat dissipation of the pipe or container tank and the selected electric tropical meter power. Because the pipeline has bends, gates, brackets and other accessories, the order length of the parallel belt is increased by 5% ≤ 10%.
- 根据使用场所来确定电伴热带的结构：在海边、海洋平台、埋敷地下或有腐蚀性气（液）场所，必须选加强型。
4. Determine the structure of the electric companion tropics according to the place of use: in the seaside, offshore platform, buried underground or corrosive gas (liquid) place, we must choose the enhanced type.

辅件用量计算 Calculation of dosage of auxiliary

名称Name	铝胶带aluminum tape	耐热胶带 heat-resistant tape	管卡 pipe card	防水胶 Waterproof glue	防爆胶泥Explosion proof mortar	警示标志 warning sign
用量 The dosage	按1.1-1.2倍点伴热带长度计算 Calculated according to 1.1-1.2 times of the length of the tracing band	按8-10倍管线长度和管径面积计算 Calculated by 8-10 times of pipeline length and pipe diameter area	电源接线盒、二通、三通、温控器的配二副，尾端配一副 Two pairs of power junction box, two-way, three-way, thermostat, and one pair of tail end	埋地管线每只接线盒用 For each junction box of buried pipeline	每个电缆钢管配线处用 For each cable steel pipe wiring	每隔10-100米贴一张 Paste one every 10-100m

本企业已通过IATF 16949:2016质量体系认证
中国人民财产保险股份有限公司承保388万元

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