



**JIAHONG**

# INDUSTRY ELECTRICAL TRACE HEATING PRODUCT

## TECHNICAL CATALOGUE



WUHU JIAHONG NEW MATERIALS CO., LTD.



Wuhu Jiahong New Materials Co., Ltd. was established in 2002, with a registered capital of 37.8775 million yuan.

Jiahong Intelligent Factory is located in Wuhu City, China, covering an area of 69.2 mu (approximately 4.61 hectares). It is a high-tech enterprise integrating design and development, production and sales, and engineering services. Since its establishment, the company has been dedicated to the research, development, production, sales, technical application, and engineering services of electrical heat tracing products. Our product range includes self-regulating heating cables, constant wattage heating cables, and skin-effect heating cables, along with corresponding accessories.

As a professional manufacturer of electrical heat tracing products and a system solution provider, and relying on the mature polymer material design and preparation technology, Jiahong has developed electrical heat tracing products with excellent performance and stable quality for worldwide customers, which can be widely used in industrial fields such as oil and gas, chemical industry, power energy, marine vessels, biological medicine, as well as civil and commercial fields such as thermal insulation, anti-freezing, snow melting, and underfloor heating.

Through years of technological accumulation and independent innovation, we have made breakthroughs in areas such as new material design and development, product manufacturing and testing processes, and application scenario design. As a result, we have been honored with several prestigious titles, including: “Specialized, Refined, Unique, and New Small Giant Enterprise” by the Ministry of Industry and Information Technology, “High-tech Enterprise,” and “Top 10 Enterprises in Technological Innovation.”

Jiahong has advanced experimental equipment and strong testing capability, and established the CSA witness standard laboratory together with the CSA institution in Jiahong, so as to ensure that the performance of self-regulating heating cables manufactured by Jiahong meets the requirements of IEEE515 and CSAC22.2130-16. At the same time, the laboratory has reached strategic cooperation with NEPSI, thus officially becoming the IECExOD024 standard laboratory. The IECEx certification body recognizes the results of field tests or witness tests performed using the laboratory’s experimental equipment. The electrical heat tracing products of Jiahong have obtained a number of certifications: UL (USA), CSA (Canada), ATEX (EU), IECEx (International Electrotechnical Commission), DNV.GL (Det Norske Veritas), ETL (North America), TUV (Germany), CE (EU), Rohs, UKCA (UK), EAC (Russia), CCC (China), CCS and explosive-proof certification for all series products in

















China, which symbolizes that the relevant product quality and testing capability of Jiahong have been recognized by international and domestic authorities.





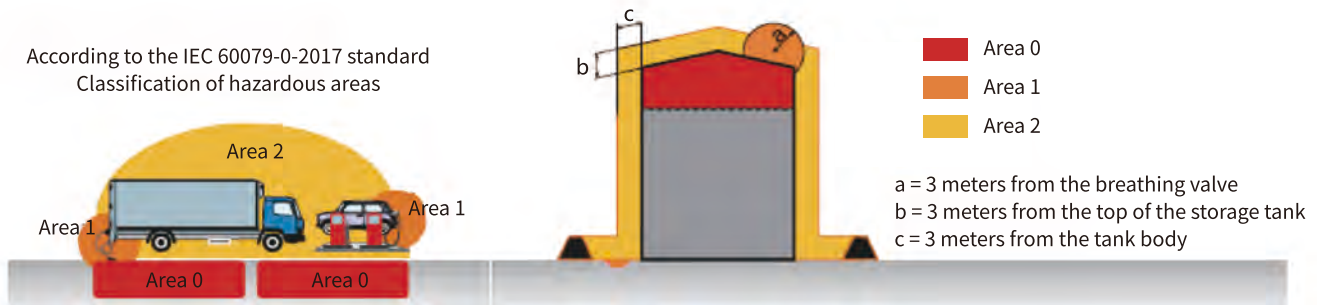
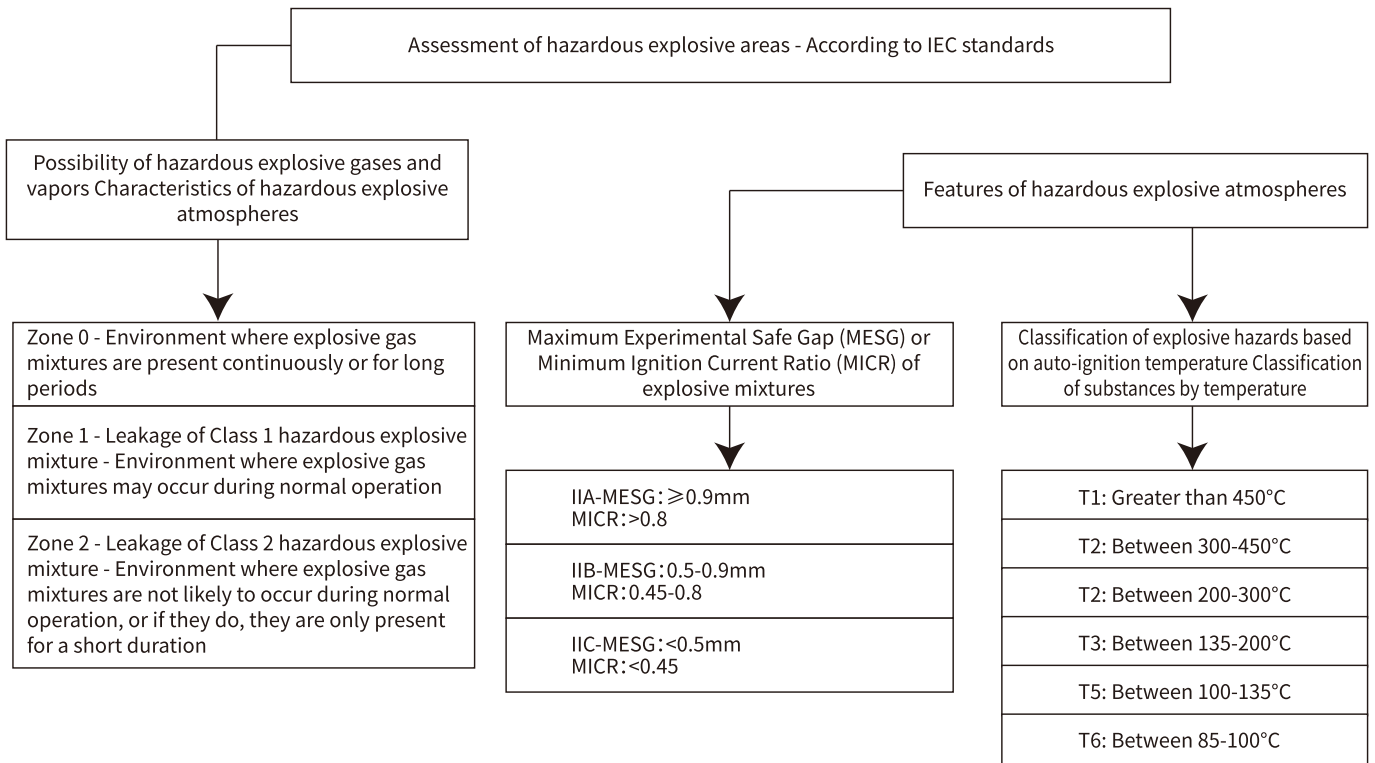
Obtained the professional contracting qualification of building electromechanical engineering project installation, completely achieving "turnkey solution" engineering service standard for customer.



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Maximum tolerance temperature range (°C)	Product	Technology	Maximum maintenance temperature (°C)	Maximum withstand temperature (°C)	Temperature rating design method		Preferred control method			Chemical resistance		Mechanical strength	
					Unconditional design	Use of temperature controller	No control	Environmental sensing control	Wide temperature range control	Narrow temperature range control	Organic chemistry	N/A	General
50-900	HTLe	Low-temperature self regulating heating cables, suitable for residential and commercial snow melting, industrial anti-freeze applications, and field termination applications.	65	85	●		●	●	●	●	●	●	●
50-900	HTR	Low-temperature self regulating heating cables, suitable for residential and commercial snow melting, industrial anti-freeze, temperature maintenance applications, and field termination applications.	65	85	●		●	●	●	●	●	●	●
50-900	HTP	Medium-temperature self regulating heating cables, suitable for industrial anti-freeze, temperature maintenance applications at moderate temperature levels, and field termination applications.	110	135	●		●	●	●	●	●	●	●
50-900	HTS	High-temperature self regulating heating cables, suitable for industrial anti-freeze, temperature maintenance applications at higher temperature levels, and field termination applications.	150	200	●		●	●	●	●	●	●	●
50-900	HTU*	Ultra-high-temperature self regulating heating cables, suitable for temperature maintenance applications at extremely high withstand levels with extremely high withstand temperature and field termination applications.	210	260	●		●	●	●	●	●	●	●
50-900	FCW	Parallel constant wattage heating cables, with stable output power, suitable for temperature maintenance applications with withstand temperature below 200°C and field termination applications.	For Design	200	●		●	●	●	●	●	●	●
50-900	ESF	Series constant wattage heating cables, with stable output power, suitable for temperature maintenance applications in long pipelines and equipment and field termination with cold lead connection	For Design	200	●		●	●	●	●	●	●	●
50-900	MSF/CuNi	Mineral-insulated heating cables, with copper-nickel alloy outer sheath, suitable for applications requiring high power output and high exposure temperature, factory-preassembled with cold ends.	For Design	200	●		●	●	●	●	●	●	●
50-900	MSF/SS	Mineral-insulated heating cables, with stainless steel outer sheath, suitable for applications requiring high power output and high exposure temperature, factory-preassembled with cold lead connection.	For Design	600	●		●	●	●	●	●	●	●
50-900	MSF/In	Mineral-insulated heating cables, with Incoloy 825 alloy outer sheath, suitable for applications requiring high power output and high exposure temperature, factory-preassembled with cold lead connection.	For Design	850	●		●	●	●	●	●	●	●



explosive Hazardous zone classification	Typical explosive gases or gas mixtures
II	Industrial gases, steam
II A	Acetone, propane, gasoline, crude oil
II B	Ethylene, winter diesel
II C	Hydrogen, Acetylene

The hazardous explosive area classification represents the difficulty of igniting the explosive gas environment with sparks or electric arcs. The temperature classification reflects the temperature at which combustion reactions may occur when in contact with heated surfaces. Each flammable gas and mixture has its auto-ignition temperature, which is the temperature at which it will ignite spontaneously.

explosive-proof electrical equipment refers to electrical equipment designed to be used in explosive atmospheres without causing combustion or explosions. explosive-proof electrical equipment is allowed to be installed in potentially hazardous explosive areas. The design and characteristics of the equipment should comply with the classification of hazardous zones and the characteristics of explosive mixtures. Based on different application areas, explosive-proof electrical equipment is divided into the following categories (IEC 60079-0-2017)

Category Number	Application Area
I	explosive-proof electrical equipment for underground coal mines
II	Electrical equipment for explosive gas environments other than coal mines and underground areas

According to the hazardous zone classification of the International Electrotechnical Commission (IEC 60079-0-2017), the installation levels for explosive-proof electrical equipment indoors and outdoors are as follows:

Zone Level Number	explosive Protection Level of Electrical Equipment	Description
2	General explosive-proof equipment	This type of explosive-proof electrical equipment guarantees explosive protection under normal operating conditions.
1	Enhanced explosive-proof equipment	This type of explosive-proof electrical equipment ensures the required level of protection, even under frequent malfunctions or equipment failures that are typically considered. (Apart from damage to the explosive-proof equipment itself)
0	Special explosive-proof equipment	This category of explosive-proof electrical equipment provides additional protection measures on top of the standard protection type.

In addition to the above, Category II explosive-proof electrical equipment is further classified based on different explosive mixtures:

Electrical Equipment Category	Subcategory	Electrical equipment that can be operated normally in the explosive mixture
II	-	IIA, IIB, IIC
	IIA	IIA
	IIB	IIA, IIB
	IIC	IIA, IIB, IIC



Subcategory	Typical explosive gases or gas mixtures
II	Industrial gases and steam
IIA	Acetone, propane, gasoline, crude oil
IIB	Ethylene, winter diesel
IIC	Hydrogen, acetylene

The classification of hazardous zones indicates the difficulty of igniting explosive gas environments by flame or electric arc. The temperature classification reflects the temperature at which combustion reactions may occur when in contact with heated surfaces. Each flammable gas and mixture has its auto-ignition temperature, which is the temperature at which it will ignite spontaneously.

The equipment is classified based on its auto-ignition temperature and maximum allowable surface temperature:

Temperature category	Auto-ignition Temperature (°C)	Representative Gases and Mixtures	Maximum Surface Temperature (°C)	Temperature Class of Electrical Equipment Protected against Explosive Mixtures
T1	>450	Acetone, hydrogen, propane	450	T1
T2	300-450	Butane, acetylene	300	T1, T2
T3	200-300	Gasoline, kerosene, turpentine, petroleum	200	T1, T2, T3
T4	135-200	Acetaldehyde, diethyl ether	135	T1, T2, T3, T4
T5	100-135	Sulfur dioxide	100	T1, T2, T3, T4, T5
T6	85-100		85	T1, T2, T3, T4, T5, T6

Explosive protection levels of electrical equipment:

The safety of explosive-proof electrical equipment can be ensured by various explosive protection types based on their design characteristics.

Zone Level	explosive-proof level	Permissible explosive Protection Type
0	Special explosive-proof equipment	Intrinsic Safety, explosive-Proof Special
1	Enhanced explosive-proof equipment	Intrinsic Safety, Isolation explosive-Proof Special, Enhanced Intrinsic Safety
2	General explosive-proof equipment	Intrinsic Safety, Isolation, Sand Filling Encapsulation, Enhanced Intrinsic Safety, explosive-Proof Special

Differences between European IEC standards and North American NEC standards in explosive protection requirements:

The National Electrical Code (NEC) was developed by the National Fire Protection Association (NFPA) in the United States. The NEC standards cover a wide range of topics, and the NEC 500 series standards define requirements related to explosive protection. However, there are significant differences between NEC 500 standards and the European IEC 60079 standards and the prevailing Chinese GB 3836 standards. NEC 500 is a purely North American standard and is not compatible with the IEC series standards. It is primarily adopted by the United States and Canada, while most European countries either adopt IEC 60079 series standards directly or have equivalent standards. The quality testing organizations for explosive-proof products in all European Union member states and regions mutually recognize the test results and certificates. IEC 60079 and NEC 500 have significant differences, while the GB 3836 series standards implemented in China are essentially equivalent to or compatible with the IEC 60079 series standards.

Description will made on some important differences between the two standard systems in three aspects below:

- Classification of hazardous locations
- Classification of explosive gases
- Classification of temperature groups

<b>Classification of hazardous locations:</b>			
The NEC standards classify hazardous locations in factories into Class I, Class II, and Class III based on the presence of flammable and explosive substances. Within each class, it further categorizes the degree of explosive hazard degree into Division 1 and Division 2 and additionally labels hazardous explosive locations in coal mines (M).			
Class I locations	Areas where there is a sufficient quantity of flammable and explosive gases or vapors present or could be present in the air, resulting in the formation of explosive or combustible mixtures.	Class I Division 1	Under normal operating conditions, Class I Division 1 locations are areas where there is a continuous, intermittent, or periodic presence of flammable and explosive gases or vapors at hazardous concentrations. These locations may also include areas where repairs, maintenance, operations, or leaks are frequent. Additionally, they may encompass areas where equipment, processes, or operations are damaged or improperly operated, leading to the potential release of flammable gases or vapors at hazardous concentrations.
		Class I Division 2	These are areas where volatile flammable liquids or gases are conveyed, processed, or used. However, these flammable gases are normally contained within containers or systems under normal circumstances, and they only escape in the event of accidents or damage. Alternatively, in normal conditions, positive pressure ventilation is used to prevent the formation of hazardous concentrations. These locations only form hazardous concentrations when the ventilation equipment fails or is operated improperly. They may also be situated near Class I Division 1 areas, where they occasionally transmit hazardous concentrations of flammable gases. Adequate positive pressure ventilation from a clean air source can prevent such transmission.
Class II locations	Areas where there is a presence of combustible dust, posing a hazardous environment.	Class II Division 1	Under normal operating conditions, Class II Division 1 locations are areas where combustible dust is continuously, intermittently, or periodically suspended or potentially suspended in the air in quantities sufficient to form explosive or combustible mixtures. These locations can also be places where combustion sources are provided due to equipment malfunctions, improper operations, electrical faults, or other reasons. Additionally, they may be areas where conductive dust may be present.
		Class II Division 2	Under normal operating conditions, Class II Division 2 locations are areas where combustible dust is not suspended in the air, or the equipment does not emit a sufficient amount of suspended particles to form explosive or combustible mixtures. However, these locations may have an accumulation of combustible dust that can impede the safe dissipation of heat from electrical equipment or create a potential for ignition by electrical sparks in areas where such combustible dust has accumulated on electrical equipment.
Class III locations	Areas where there is a risk associated with easily combustible fibers and floating fluffy. However, it is less likely for these materials to be suspended in the air in quantities sufficient to form combustible mixtures.	Class III Division 1	These are locations involved in the conveying, manufacturing, or use of easily combustible fibers or materials that generate combustible floating fluffy.
		Class III Division 2	Storage and transportation areas for easily combustible fibers.

IEC classifies the locations into three main categories based on their usage: Class I: Mining explosive-proof equipment; Class II: Factory equipment; Class III: Dust explosive-proof equipment.

IEC 60079/GB 3836	NEC 500		Hazard Level
Zone 0	Class I - Gas	Division I	High
Zone 1			Medium
Zone 2		Division II	Low
Zone 20	Class II/III - Dust/Fiber	Division I	High
Zone 21			Medium
Zone 22		Division II	Low

Classification of explosive gases: The classification of explosive gases (including dust) according to NEC standards and IEC/GB standards is as follows:

NEC 500			IEC 60079/GB 3836
Explosive Substance Category	Classification	Gas/Liquid/Dust	Classification
Class I - Gas	Groups A	Acetylene	II C
	Groups B	Hydrogen	
			Butadiene, Ethylene Oxide
	Groups C	Cyclopropane, Ethyl Acetate, Ethylene, Acetaldehyde	
Groups D	Acetone, Ethanol, Ammonia, Benzene, Butane, Gasoline, Propane	II A	
Class II - Dust	Groups E	Metal dust (such as Magnesium, Aluminum, etc.)	Explosive dust
	Groups F	Carbon black, coal or coke dust	Combustible dust
	Groups G	Flour, starch, or grain dust	

Classification of temperature groups: Ignition temperature groups for explosive gases according to NEC standards and IEC/GB standards are shown as follows:

NEC 500	Maximum Temperature (°C)	IEC 60079/GB 3836
T1	450	T1
T2	300	T2
T2A	280	
T2B	260	
T2C	230	
T2D	215	
T3	200	T3
T3A	180	
T3B	165	
T3C	160	
T4	135	T4
T4A	120	
T5	100	T5
T6	85	T6

The self-regulating trace heating cable is an important component of the electrical trace heating product family. The key feature of the self-regulating trace heating cable is that it can automatically adjust the output power of the trace heating cable based on the temperature sensed by the cable, without the need for any additional auxiliary equipment.

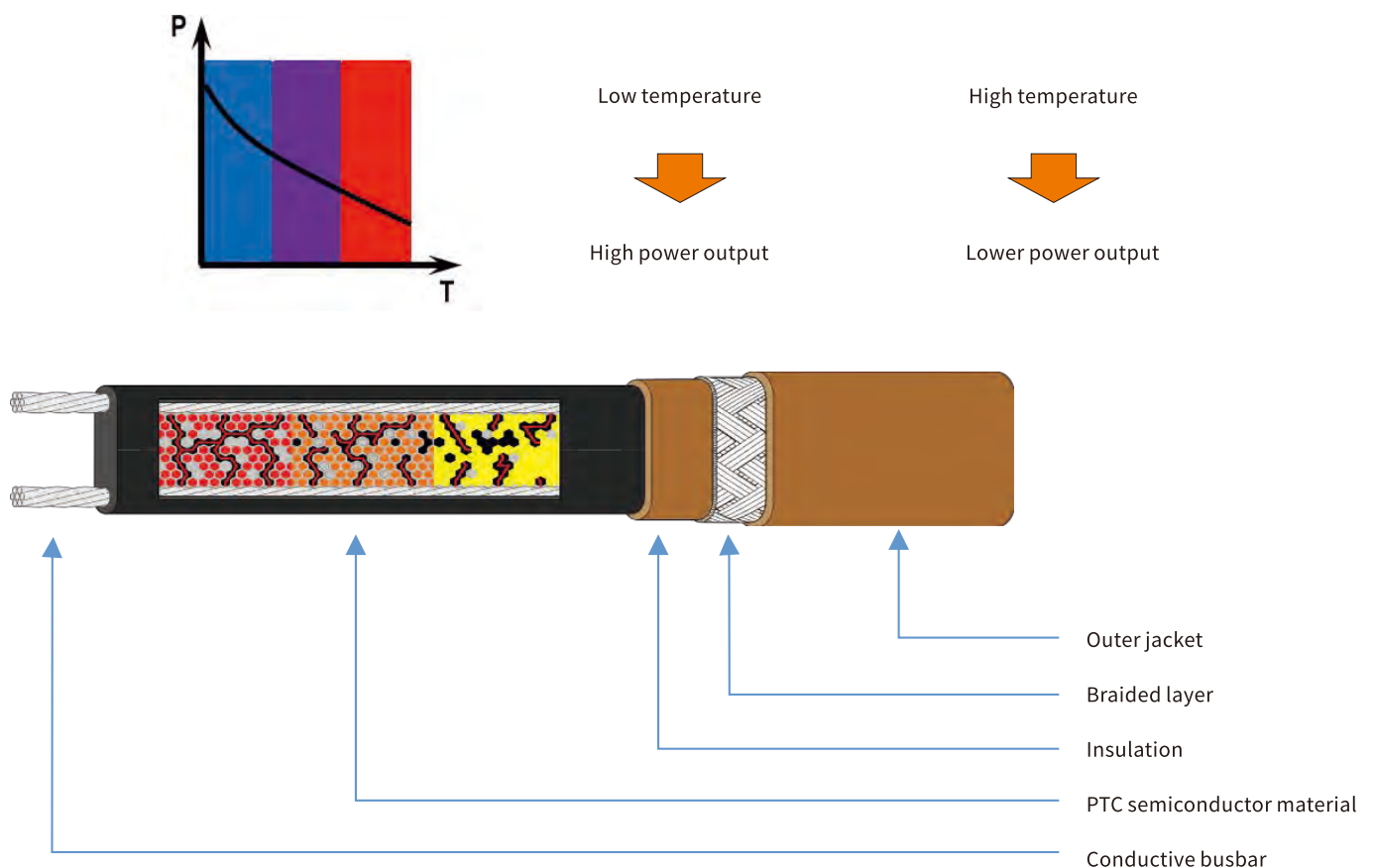
In situations where the external temperature is low, the self-regulating trace heating cable outputs high power to ensure faster compensation of heat to the trace heating object, stabilizing the temperature at the desired level. As the temperature rises and approaches the temperature balance point, the output power of the trace heating cable gradually decreases until it matches the heat loss value, which is the dynamic stability point.

Compared to Constant Power Wattage heating cables, self-regulating trace heating cable have the following advantages:

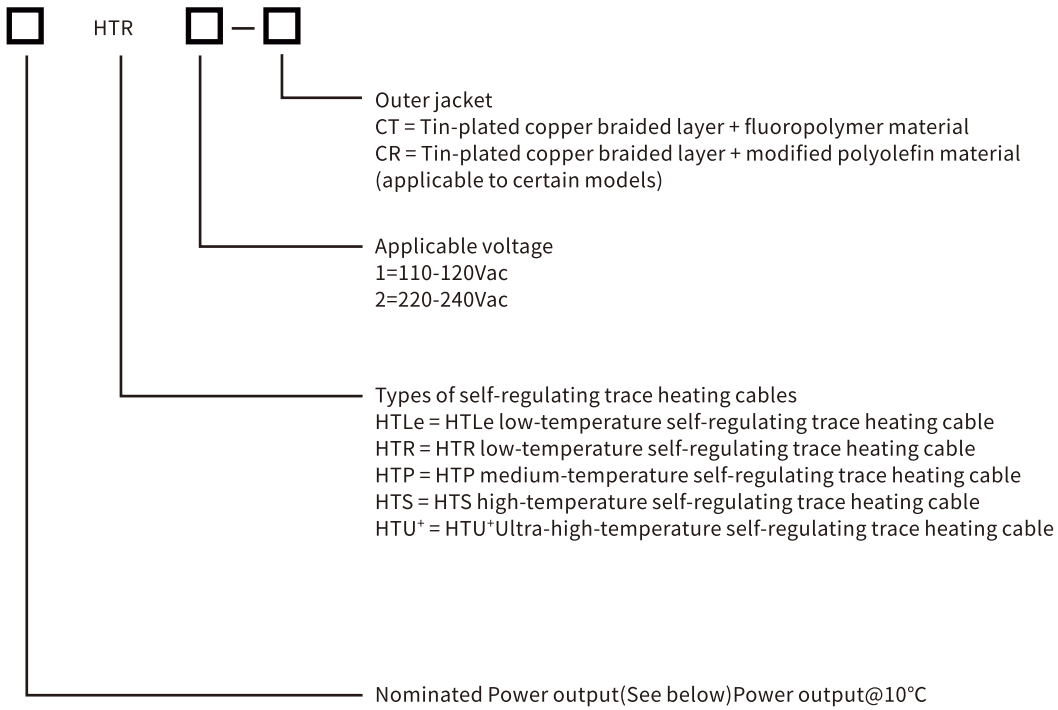
- They can be cut on-site or connected within a specified length range using connectors.
- They allow multiple overlapping without the risk of heat accumulation and damage to the trace heating cables.
- The specially designed automatic power regulation enables efficient utilization of electrical energy for the heating load, improving operational efficiency and reducing operational costs.

- Accurate temperature control can be achieved without the need for additional devices.

The common structure of a self-regulating trace heating cable is shown in the diagram below, from the innermost to the outermost layer: parallel conductive busbar, PTC semiconductor heating material, insulation layer, braided layer, and outer jacket. Based on the materials used, self-regulating trace heating cables are categorized into low-temperature, medium-temperature, high-temperature and ultra-high temperature types, suitable for different application scenarios and fields.



Currently, the domestic standards followed by self-regulating trace heating cables include GB/T-19835-2015, GB/T 19518-2017, GB/T 32348-2015, while applicable international standards include IEC62395-2013, IEEE515-2017, and others.



Nominal power for regions outside North America (unit: W/m)

HTLe	HTR	HTP	HTS	HTU*
3=10W/m	3=10W/m	5=17W/m	5=17W/m	5=17W/m
5=17W/m	5=17W/m	10=33W/m	10=33W/m	10=33W/m
6=20W/m	8=26W/m	15=49W/m	15=49W/m	15=49W/m
8=26W/m	10=33W/m	20=66W/m	20=66W/m	20=66W/m
10=33W/m	12=40W/m			25=82W/m
				30=100W/m

Nominal power for the North American region (unit: W/ft)

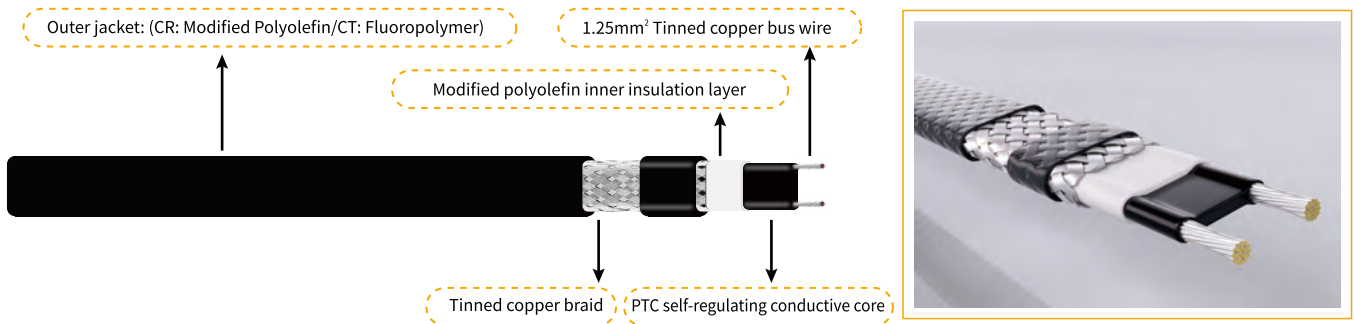
HTLe	HTR	HTP	HTS	HTU*
3=3W/ft	3=3W/ft	5=5W/ft	5=5W/ft	5=5W/ft
5=5W/ft	5=5W/ft	10=10W/ft	10=10W/ft	10=10W/ft
6=6W/ft	8=8W/ft	15=15W/ft	15=15W/ft	15=15W/ft
8=8W/ft	10=10W/ft	20=20W/ft	20=20W/ft	20=20W/ft
10=10W/ft	12=12W/ft			25=25W/ft
				30=30W/ft

## HTLe low temperature Self-regulating trace heating cable

### Overview:

Jiahong HTLe low temperature self-regulating trace heating cable can be used for pipe antifreeze (including plastic and metal pipes), roof and gutter in residential and commercial applications. No matter whether the pipeline is overhead or buried installation, HTLe heating cable can maintain the temperature and phase structure of the medium in the pipeline or vessel, and can also be used for the snow melting and de-icing on the roof of residential buildings & buildings and in the gutter area of large buildings as well as to prevent potential safety risk caused by snow; Generally, HTLe heating cable is mostly used to freeze protection and snow melting protection on water pipes, fire sprinkler pipes, grease waste pipes and similar pipes.

### Product Structure:











The extruded core tape, which made by parallel tinner copper bus wire and PTC semiconductor polymer heating material, and inner insulation layer of modified polyolefin are added to tinned copper braid and the outer jacket form a complete structure of HTLe heating cable, in which the outer jacket can be made of modified polyolefin material (CR) or fluoropolymer material (CT) according to different application or area.

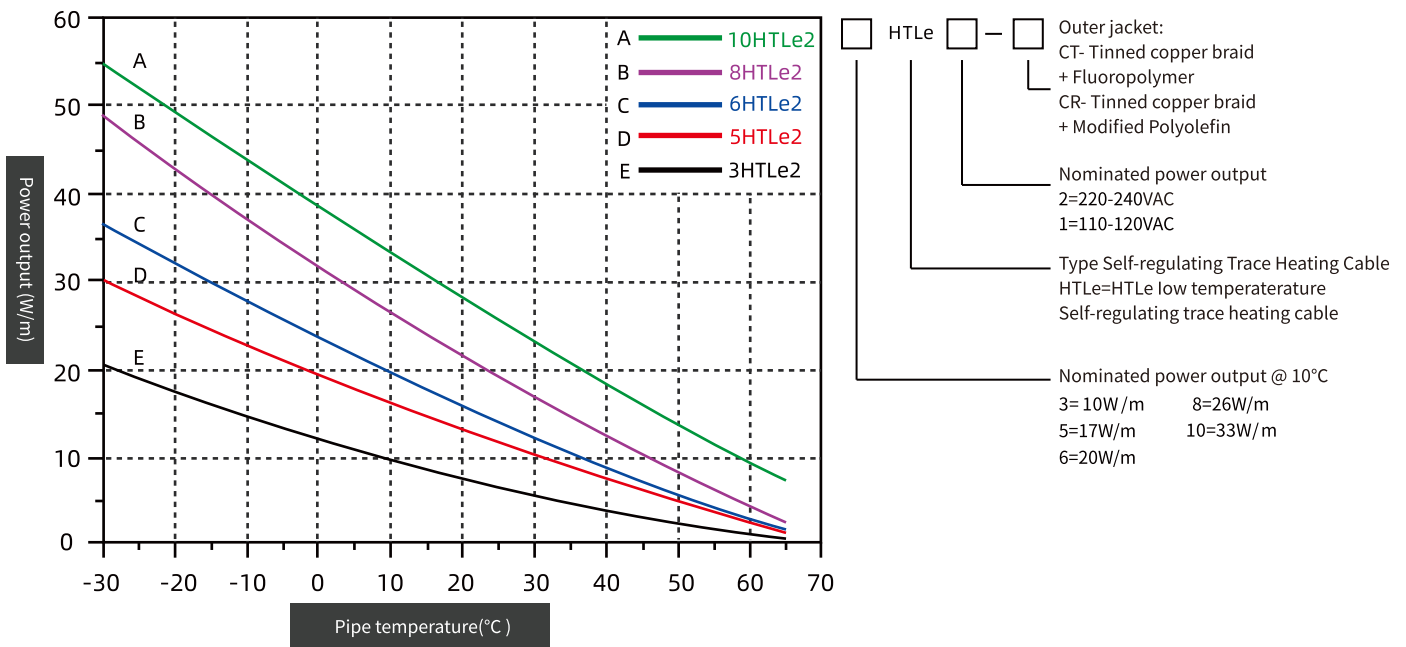
### Product Feature:

- ◆ HTLe heating cable is certified by UL laboratories, IECEx, ATEX, UL (America), NEPSI (China) and EAC (Russia), including explosive-proof application, which can be used in the explosive area and ordinary safety area.
- ◆ According to the characteristics of automatic adjustment of power output based on ambient temperature, it can avoid overheating or burning on heating cable even in the case of overlapping installation; Simultaneously this feature can increase the efficiency of the heat tracing system and reduce energy consumption.
- ◆ It is allowed to cut arbitrarily within the interval specified by the maximum circuit length and connect with compliance accessories.
- ◆ It has a complete series of accessory, including standard power box, splice/tee connection box and end seal box etc, which can ensure the long service life of the product.
- ◆ HTLe heating cable has passed a series of test including UV testing according to international standard, which is ensured that the product will not be broken or life reduction due to exposed to the air for a long time without insulation layer installation.

Technical Specification:

Nominated Voltage:	110-120V (HTLe 1) / 220-240V (HTLe 2)
Maximum maintaince temperature:	+65°C (150°F)
Maximum withstand temperaterature	+85°C (185°F)
Temperature classification:	T6
IP level:	IP66/67
Minimum installation temperature:	-60°C(-76°F)
Minimum bending radius:	30mm
Nominated power output @10°C:	10W/m, 17W/m, 20W/m, 26W/m, 33W/m
Dimension:	CR: 10.86mm(W) × 5.96mm(T) / CT: 10.26mm(W) × 5.36mm(T)
Approvals mark:	       

Approvals mark:



## 230V voltage level

Circuit breaker size (A)	Start-up temperature (°C)	Maximum circuit length (m) (Type C circuit breaker based on IEC 60898 standard)				
		3HTLe2	5HTLe2	6HTLe2	8HTLe2	10HTLe2
16	10	191	134	112	90	85
	0	187	124	103	81	76
	-10	175	119	99	74	69
	-20	164	111	93	67	64
	-40	139	91	76	59	55
20	10	191	153	128	116	106
	0	191	153	128	106	94
	-10	191	140	116	93	86
	-20	191	130	108	85	80
	-40	175	112	93	74	69
25	10	191	153	128	118	112
	0	191	153	128	118	112
	-10	191	153	128	118	108
	-20	191	153	128	118	100
	-40	191	153	128	110	87
32	10	191	153	128	118	112
	0	191	153	128	118	112
	-10	191	153	128	118	112
	-20	191	153	128	118	112
	-40	191	153	128	118	112
40	10	191	153	128	118	112
	0	191	153	128	118	112
	-10	191	153	128	118	112
	-20	191	153	128	118	112
	-40	191	153	128	118	112

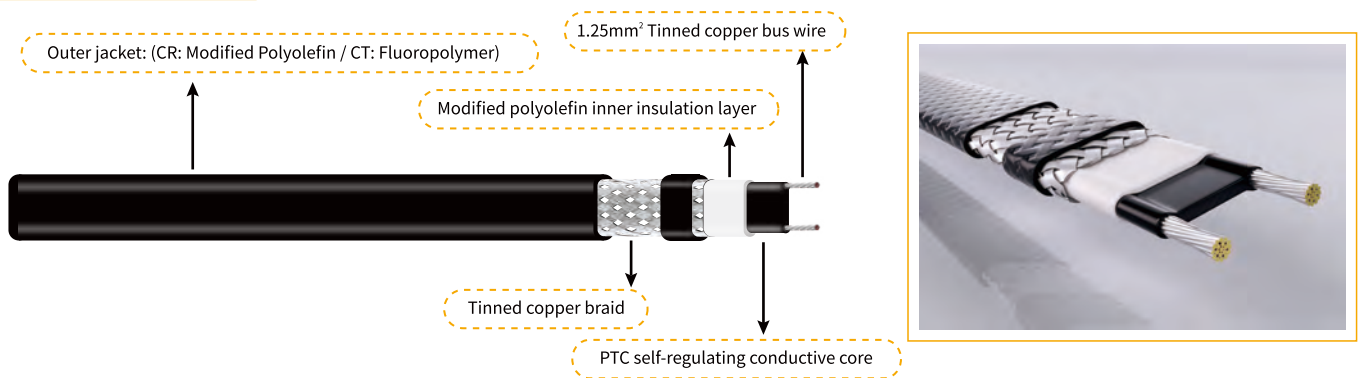


## HTR low temperature Self-regulating trace heating cable

### Overview:

Jiahong HTR low temperature self-regulating trace heating cable can be used for freeze protection application without steam purge in civil & commercial or industry area, as well as to process temperature maintenance in low level of maximum exposure temperature. The maximum maintenance temperature will be up to 65°C. No matter whether the pipeline is overhead or buried installation, HTR heating cable can maintain the temperature and phase structure of the medium in the pipeline or vessel. HTR heating cable is certified by NEPSI (China), EAC(Russia) and IECEx,ATEX for ex-proof application, as well as to be used in the area which is defined according relative standard.

### Product Structure:










The extruded core tape, which made by parallel tinned copper bus wire and PTC semiconductor polymer heating material, and inner insulation layer of modified polyolefin are added to tinned copper braid and the outer jacket form a complete structure of HTR heating cable, in which the outer jacket can be made of modified polyolefin material (CR) or fluoropolymer material (CT) according to different application or area.

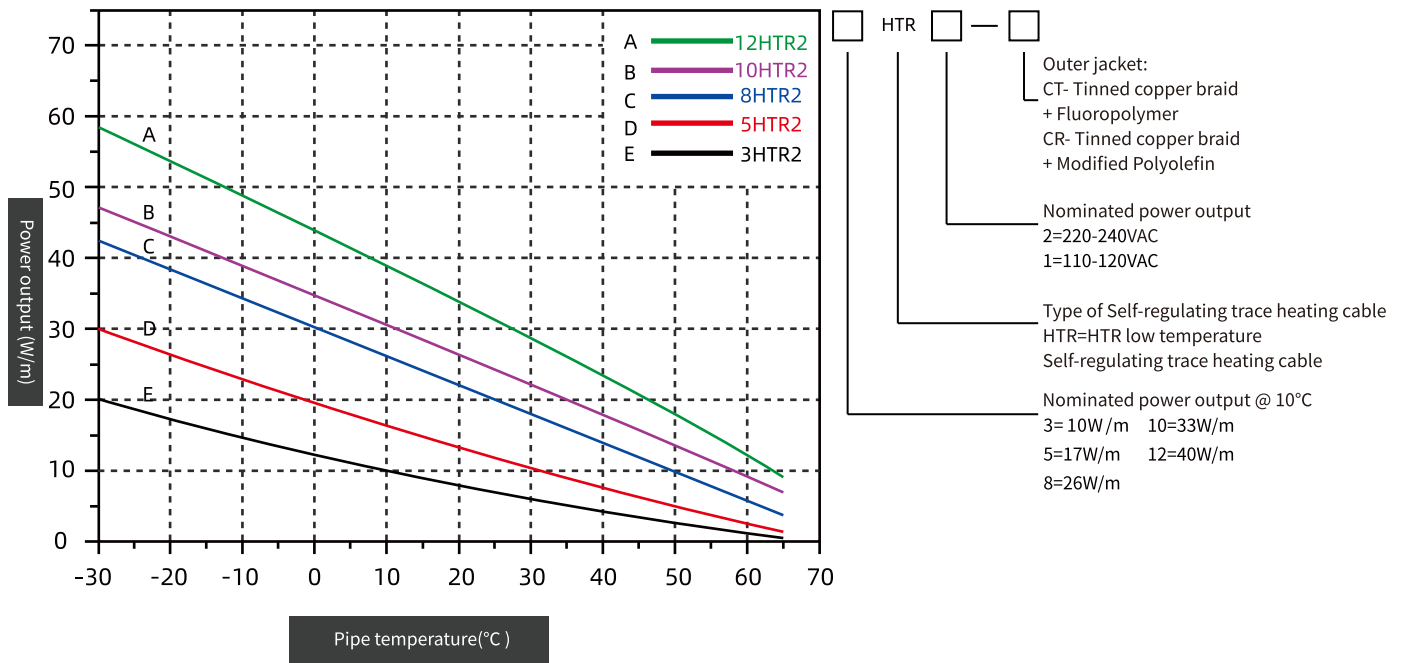
### Product Feature:

- ◆ HTR heating cable is certified by IECEx, ATEX, CSA(Canada), UL(America) NEPS (China) and EAC(Russia), including explosive-proof application, which can be used in the explosive area and ordinary safety area.
- ◆ According to the characteristics of automatic adjustment of power output based on ambient temperature, it can avoid overheating or burning on heating cable even in the case of overlapping installation; Simultaneously this feature can increase the efficiency of the heat tracing system and reduce energy consumption.
- ◆ It is allowed to cut arbitrarily within the interval specified by the maximum circuit length and connect with compliance accessories.
- ◆ It has a complete series of accessory, including standard power box, splice/tee connection box and end seal box etc, which can ensure the long service life of the product.
- ◆ HTR heating cable has passed a series of test including UV testing according to international standard, which is ensured that the product will not be broken or life reduction due to exposed to the air for a long time without insulation layer installation.

Technical Specification:

Nominated Voltage:	110-120V (HTR 1) / 220-240V (HTR 2)
Maximum maintaince temperature:	+65°C (150°F)
Maximum withstand temperature	+85°C (185°F)
Temperature classification:	T5/T6
IP level:	IP66/67
Minimum installation temperature:	-60°C(-76°F)
Minimum bending radius:	30mm
Nominated power output @10°C:	10W/m、17W/m、26W/m、33W/m、40W/m
Dimension:	CR: 12.56mm(W)x5.96mm(T) / CT: 11.96mm(W)x5.36mm(T)
Approvals mark:	      

Approvals mark:



230V voltage level

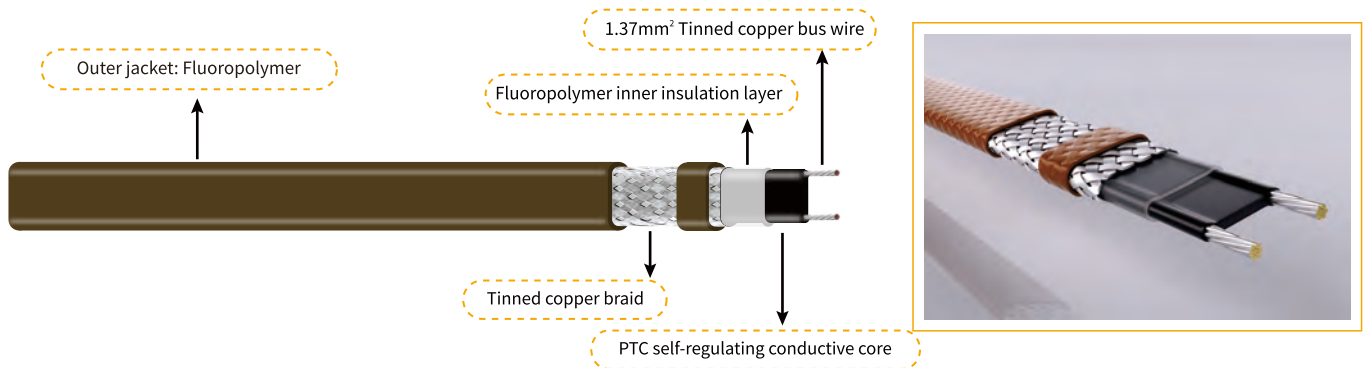
Circuit breaker size (A)	Start-up temperature ( °C)	Maximum circuit length (m) (Type C circuit breaker based on IEC 60898 standard)				
		3HTR2	5HTR2	8HTR2	10HTR2	12HTR2
16	10	200	162	108	85	60
	0	200	148	95	77	54
	-10	165	133	85	71	50
	-20	155	112	68	65	46
	-40	131	86	60	56	40
20	10	200	162	118	106	75
	0	200	162	108	96	68
	-10	200	152	95	88	62
	-20	185	141	87	81	58
	-40	165	123	76	71	50
25	10	200	162	120	115	93
	0	200	162	120	115	85
	-10	200	162	120	110	78
	-20	200	162	120	102	72
	-40	189	162	112	88	62
32	10	200	162	120	115	102
	0	200	162	120	115	102
	-10	200	162	120	115	100
	-20	200	162	120	115	92
	-40	200	162	120	115	80
40	10	200	162	120	115	102
	0	200	162	120	115	102
	-10	200	162	120	115	102
	-20	200	162	120	115	102
	-40	200	162	120	115	100

## HTP middle temperature Self-regulating trace heating cable

### Overview:

Jiahong HTP middle temperature self-regulating trace heating cable can be used for freeze protection application and process temperature maintenance within/out steam purge (or the steam purge temperature will be lower than 135°C) in industry area. The maximum maintenance temperature will be up to 110°C. No matter whether the pipeline is overhead or buried installation, HTP heating cable can maintain the temperature and phase structure of the medium in the pipeline or vessel. HTP heating cable is certified by NEPSI (China), EAC (Russia) and IECEx and ATEX for ex-proof application, as well as to be used in the area which is defined according to relative standard.

### Product Structure:









The extruded core tape, which is made by parallel tinned copper bus wire and PTC semiconductor polymer heating material, and an inner insulation layer of fluoropolymer are added to a tinned copper braid and the outer jacket to form a complete structure of HTP heating cable, in which the outer jacket can be made of fluoropolymer material (CT).

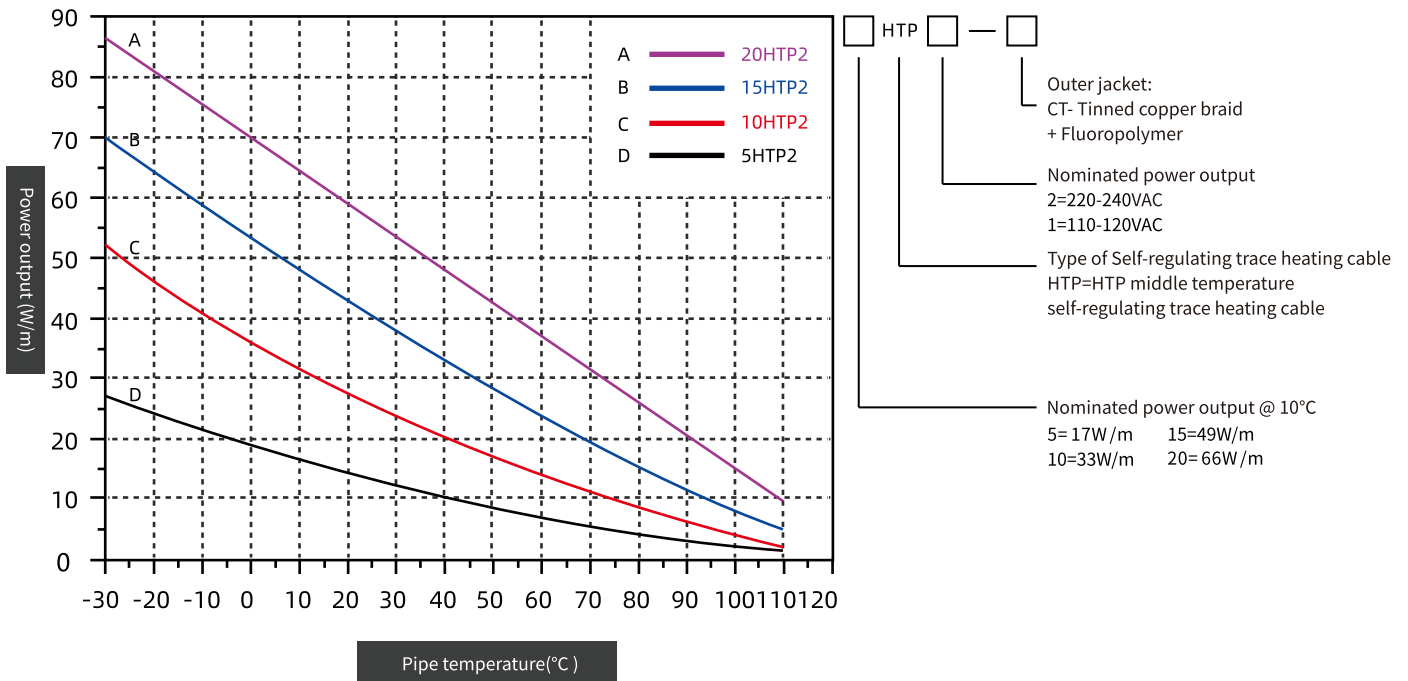
### Product Feature:

- ◆ HTP heating cable is certified by IECEx, ATEX, NEPSI (China) and EAC (Russia), including explosive-proof application, which can be used in the explosive area and ordinary safety area.
- ◆ According to the characteristics of automatic adjustment of power output based on ambient temperature, it can avoid overheating or burning on heating cable even in the case of overlapping installation; Simultaneously this feature can increase the efficiency of the heat tracing system and reduce energy consumption.
- ◆ It is allowed to cut arbitrarily within the interval specified by the maximum circuit length and connect with compliance accessories.
- ◆ It has a complete series of accessories, including standard power box, splice/tee connection box and end seal box etc, which can ensure the long service life of the product.

Technical Specification:

Nominated Voltage:	110-120V (HTP 1) / 220-240V (HTP 2)
Maximum maintance temperature:	+110°C (225°F)
Maximum withstand temperature:	+135°C (275°F)
Temperature classification:	T4
IP level:	IP66/67
Minimum installation temperature:	-60°C(-76°F)
Minimum bending radius:	30mm
Nominated power output @10°C:	17W/m、33W/m、49W/m、66W/m
Dimension:	CT: 12.36mm(W)X 4.76mm(T)
Approvals mark:	     

Approvals mark:



230V voltage level

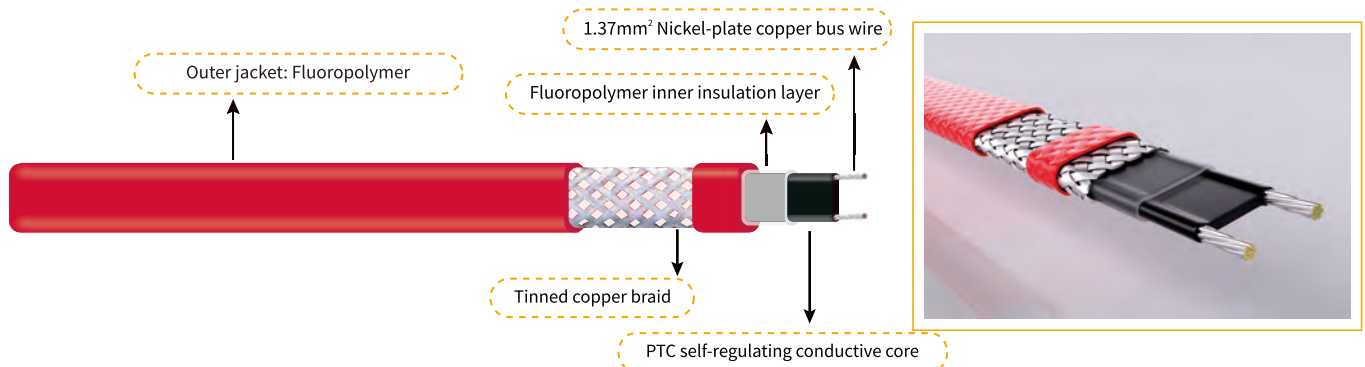
Circuit breaker size (A)	Start-up temperature (°C)	Maximum circuit length (m) (Type C circuit breaker based on IEC 60898 standard)			
		5HTP2	10HTP2	15HTP2	20HTP2
16	10	125	92	62	43
	0	116	86	58	39
	-10	107	79	53	36
	-20	98	72	49	33
	-40	85	63	42	28
20	10	148	115	77	53
	0	145	107	72	48
	-10	133	98	66	44
	-20	123	91	61	41
	-40	107	79	53	36
25	10	167	118	95	75
	0	167	118	90	68
	-10	167	118	83	63
	-20	167	113	76	58
	-40	155	98	66	50
32	10	167	118	95	83
	0	167	118	95	76
	-10	167	118	95	69
	-20	167	118	95	64
	-40	167	118	85	56
40	10	167	118	95	85
	0	167	118	95	85
	-10	167	118	95	85
	-20	167	118	95	82
	-40	167	118	95	71

## HTS high temperature Self-regulating trace heating cable

### Overview:

Jiahong HTS high temperature self-regulating trace heating cable can be used for freeze protection application and process temperature maintenance within/out steam purge (or the steam purge temperature will be lower than 200°C ) in industry area. The maximum maintenance temperature will be up to 150°C . No matter whether the pipeline is overhead or buried installation, HTS heating cable can maintain the temperature and phase structure of the medium in the pipeline or vessel. HTS heating cable is certified by NEPSI (China), EAC(Russia) and IECEx,ATEX for ex-proof application, as well as to be used in the area which is defined according relative standard.

### Product Structure:









The extruded core tape, which made by parallel nickel-plate copper bus wire and PTC semiconductor polymer heating material, and inner insulation layer of fluoropolymer are added to tinned copper braid and the outer jacket form a complete structure of HTS heating cable, in which the outer jacket can be made of fluoropolymer material (CT).

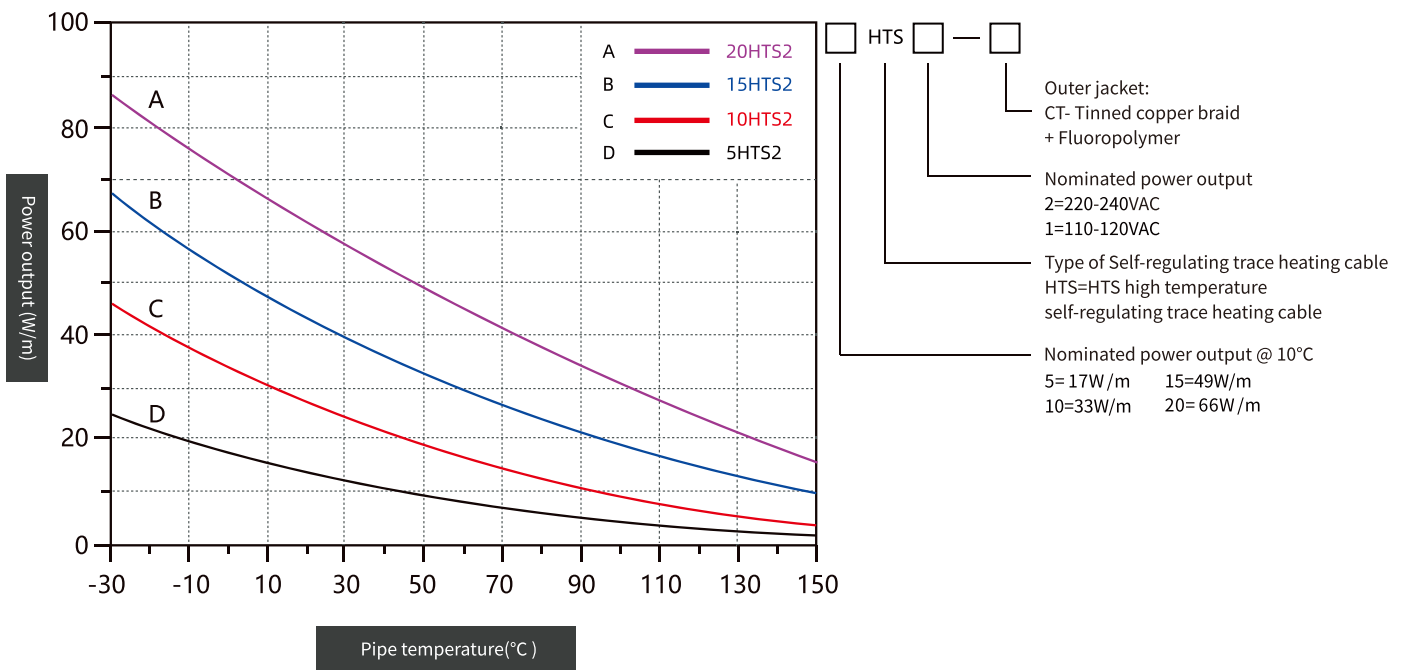
### Product Feature:

- ◆ HTS heating cable is certified by IECEx,ATEX,NEPSI (China) and EAC (Russia), including explosive-proof application, which can be used in the explosive area and ordinary safety area.
- ◆ According to the characteristics of automatic adjustment of power output based on ambient temperature, it can avoid overheating or burning on heating cable even in the case of overlapping installation; Simultaneously this feature can increase the efficiency of the heat tracing system and reduce energy consumption.
- ◆ It is allowed to cut arbitrarily within the interval specified by the maximum circuit length and connect with compliance accessories.
- ◆ It has a complete series of accessory, including standard power box, splice/tee connection box and end seal box etc, which can ensure the long service life of the product.

Technical Specification:

Nominated Voltage:	110-120V (HTS 1) / 220-240V (HTS 2)
Maximum maintaine temperature:	+150°C (302°F)
Maximum withstand temperature	+200°C (392°F)
Temperature classification:	T3
IP level:	IP66/67
Minimum installation temperature:	-60°C(-76°F)
Minimum bending radius:	30mm
Nominated power output @10°C:	17W/m, 33W/m, 49W/m, 66W/m
Dimension:	CT: 12.4mm(W)X 4.8mm(T)
Approvals mark:	     

Approvals mark:





## 230V voltage level

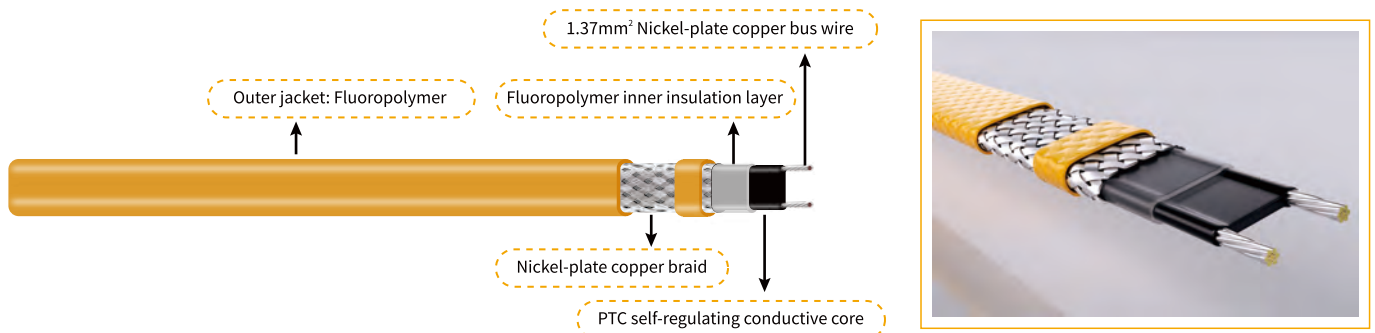
Circuit breaker size (A)	Start-up temperature (°C)	Maximum circuit length (m) (Type C circuit breaker based on IEC 60898 standard)			
		5HTS2	10HTS2	15HTS2	20HTS2
16	10	128	86	62	46
	0	122	77	61	45
	-10	112	70	56	42
	-20	103	61	51	39
	-40	90	52	45	34
20	10	154	107	77	57
	0	151	99	76	56
	-10	139	90	70	52
	-20	129	82	64	49
	-40	112	67	56	43
25	10	172	123	101	71
	0	168	119	95	70
	-10	156	111	87	65
	-20	149	95	80	61
	-40	138	83	70	54
32	10	178	123	101	90
	0	178	123	101	89
	-10	178	123	101	83
	-20	178	117	95	78
	-40	178	108	89	69
40	10	178	123	101	90
	0	178	123	101	90
	-10	178	123	101	90
	-20	178	123	101	90
	-40	178	123	101	86

## HTU<sup>+</sup> Ultra-High temperature Self-regulating trace heating cable

### Overview:

Jiahong HTU<sup>+</sup> Ultra-high temperature self-regulating trace heating cable can be used for ultra high continuous operation temperature (up to 210°C), also focus on the freeze protection and process temperature maintenance application, HTU<sup>+</sup> heating cable can withstand the exposure temperature up to 260°C, including intermittent or continuous high temperature steam purge. In another way HTU<sup>+</sup> heating cable can be installed at the minimum ambient temperature of -60°C, and there will be still high power output under high temperature condition. All of above are considered to ensure the completion of reaction or crystallization process in the production of petro-chemical and coal-chemical industry.

### Product Structure:








The extruded core tape, which is made by parallel nickel-plate copper bus wire and PTC semiconductor polymer heating material, and inner insulation layer of fluoropolymer are added to nickel-plated copper and the outer jacket form a complete structure of HTU<sup>+</sup> heating cable, in which the outer jacket can be made of fluoropolymer material (CT).

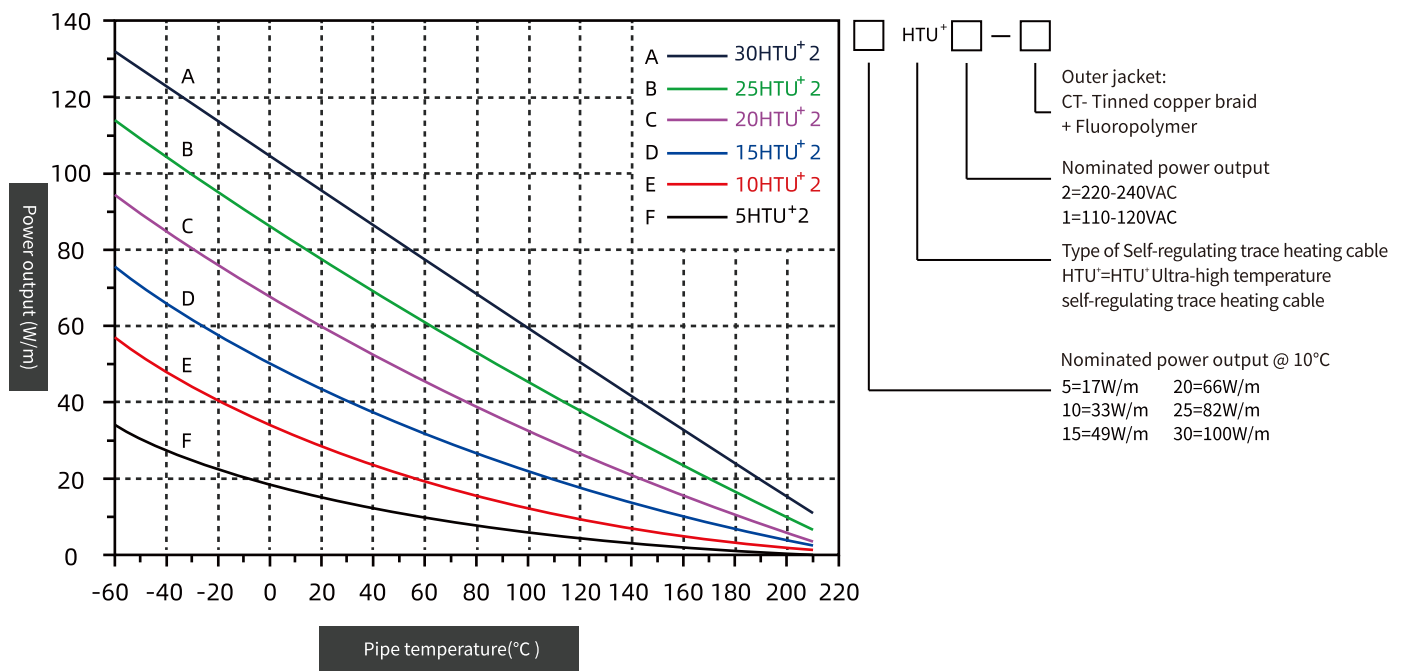
### Product Feature:

- ◆ HTU<sup>+</sup> heating cable is certified by IECEx, ATEX, NEPSI (China) and EAC Russia, including explosive-proof application, which can be used in the explosive area and ordinary safety area.
- ◆ According to the characteristics of automatic adjustment of power output based on ambient temperature, it can avoid overheating or burning on heating cable even in the case of overlapping installation; Simultaneously this feature can increase the efficiency of the heat tracing system and reduce energy consumption.
- ◆ It is allowed to cut arbitrarily within the interval specified by the maximum circuit length and connect with compliance accessories.
- ◆ It has a complete series of accessories, including standard power box, splice/tee connection box and end seal box etc, which can ensure the long service life of the product.
- ◆ Ultra-high operating temperature and withstand temperature, as well as high output power under high temperature conditions, ensure that the economic benefits can be maximized in relevant application environments.

Technical Specification:

Nominated Voltage:	110-120V (HTU <sup>+</sup> 1) / 220-240V (HTU <sup>+</sup> 2)
Maximum maintaince temperature:	+210°C (410°F)
Maximum withstand temperature:	+260°C (500°F)
Temperature classification:	T2
IP level:	IP66/67
Minimum installation temperature:	-60°C
Minimum bending radius:	30mm
Nominated power output @10°C:	16W/m, 33W/m, 49W/m, 66W/m, 82W/m, 100W/m
Dimension:	CT:12.4mm(W)×4.8mm(T)
Approvals mark:	    

Approvals mark:



## 230V voltage level

Circuit breaker size (A)	Start-up temperature (°C)	Maximum circuit length (m) (Type C circuit breaker based on IEC 60898 standard)					
		5HTU <sup>+</sup> 2	10HTU <sup>+</sup> 2	15HTU <sup>+</sup> 2	20HTU <sup>+</sup> 2	25HTU <sup>+</sup> 2	30HTU <sup>+</sup> 2
16	10	133	89	64	48	41	34
	0	127	80	63	46	39	33
	-10	116	73	58	43	38	31
	-20	108	63	53	40	36	30
	-40	94	54	46	36	33	28
20	10	160	111	80	59	52	43
	0	157	103	79	58	49	41
	-10	145	94	72	54	47	39
	-20	134	85	67	51	45	38
	-40	116	70	58	45	41	35
25	10	179	128	105	74	64	54
	0	175	124	99	72	62	51
	-10	162	115	90	68	59	49
	-20	155	99	84	63	56	47
	-40	144	86	72	56	52	43
32	10	185	128	105	94	83	69
	0	185	128	105	93	79	66
	-10	185	122	105	86	75	63
	-20	185	112	99	81	72	60
	-40	185	120	93	72	66	55
40	10	185	128	105	94	87	80
	0	185	128	105	94	87	80
	-10	185	128	105	94	87	78
	-20	185	128	105	94	87	75
	-40	185	128	105	89	83	69

Constant power wattage heating cables refer to heating cables whose output power remains relatively constant after being energized, unaffected by factors such as external temperature, insulation materials, or the heated object.

There are certain differences in power output characteristics between constant power wattage heating cables and self-regulating trace heating cables. Due to the constant power wattage heating cables inability to adjust power output with temperature changes, additional control components such as controllers and temperature limiters are often required to ensure their normal operation. This is particularly important for special environments, such as explosive-proof areas with temperature group requirements.

Constant power wattage heating cables can be roughly classified into parallel constant power wattage heating cables and series constant power wattage heating cables based on their structural types. However, due to the requirements of high-temperature environments and ultra-long pipelines, two special forms of constant power wattage heating cables have emerged from the series category. These are mineral-insulated heating cables, which are suitable for high-temperature and high-power applications, and skin-effect heating cables, which are designed for use in ultra-long pipelines.

In parallel constant wattage heating cables, the heating resistance wires are connected in parallel to the power supply. Heating is achieved by the resistance wires, generating heat and transferring it to the heated object. Two parallel nickel-plated copper conductors are encapsulated in a fluoropolymer insulation layer, serving as the power bus. Ni-Cr alloy heating wires are wound around the outer insulation layer, and the resistance wires are welded to the power bus at fixed intervals, forming a continuous parallel resistance circuit. When the power bus is energized, each parallel resistance generates heat, creating a continuous heating effect along the length of the heating cable. The cable can be easily cut to the desired length within a certain range.

In series constant power wattage heating cables, the heating resistance wires are connected in series to the power supply. Heating is achieved by the resistance wires, generating heat and transferring it to the heated object. In a series heating cable, the heating core consists of a wire with a specific resistance value. When current flows through the wire, it generates heat. The amount of heat produced is directly proportional to the square of the current, the resistance value of the wire, and the duration of the current flow. Therefore, in series constant power wattage heating cables, heat is continuously emitted as long as they are powered on, creating a continuous and uniformly heated heating cable. In series constant power wattage heating cables, the current through the heating wire is the same, and the resistance of each segment of the cable is equal. As a result, the heating is uniform along the entire length of the heating cable. The output power remains constant and is not significantly affected by environmental temperature or pipe temperature.

Overall, parallel constant power wattage heating cables are primarily used for heat tracing, anti-freezing, or maintaining process temperatures in pipeline systems, storage tanks, valves, pump bodies, and instrument pipelines in industries such as oil, chemical, power, and metallurgy. Series constant wattage heating cables are suitable for the heating requirements of longer pipelines and equipment, where the circuit length exceeds the limit of parallel constant wattage heating cables, and there are relatively fewer power supply points in long-distance pipelines.

Compared to self-regulating trace heating cables, constant power wattage heating cables have the following advantages:

- ◆ Stable power output, making them more suitable for processes that require stable power output for temperature maintenance.
- ◆ Series constant power wattage heating cables are suitable for heating objects with long distances and relatively fewer power supply points.
- ◆ Applicable for wide voltage applications.

Currently, the domestic standards for constant power wattage heating cables include GB/T 20841-2007, GB/T 19518-2017, and GB/T 32348-2015, while applicable international standards include IEC62395-2013, IEEE 515-2017.

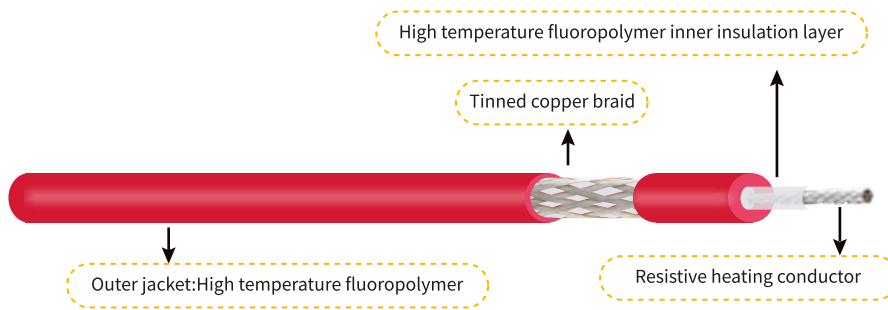
## ESF series heating cable

### Overview:

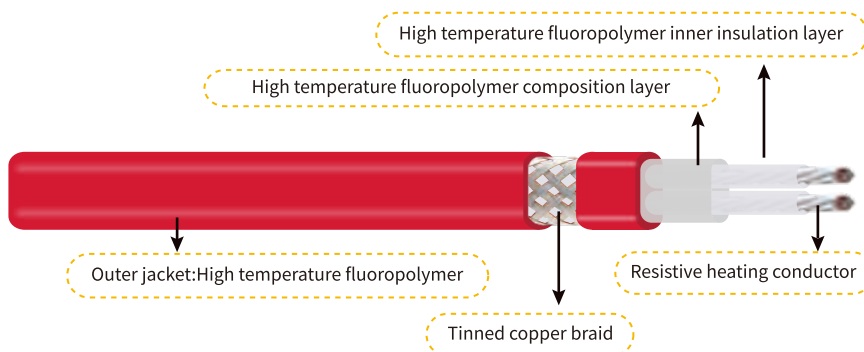
Jiahong ESF series heating cable can be normally used for pipe freeze protection and temperature maintenance, especially it is the best and economic solution for longline pipe which the length exceeded the maximum circuit length of self-regulating trace heating cables or constant power wattage heating cables output. Single-core, twin-core and triple-core which are named as 1ESF, 2ESF and 3ESF are three types of series heating cable, as well as different resistance spec, so the heating cable can be suitable for different voltage level (Shown in certification) and electrical connection, as well as to the heat tracing requirement for different type or length of pipeline and vessel.

### Product Structure:

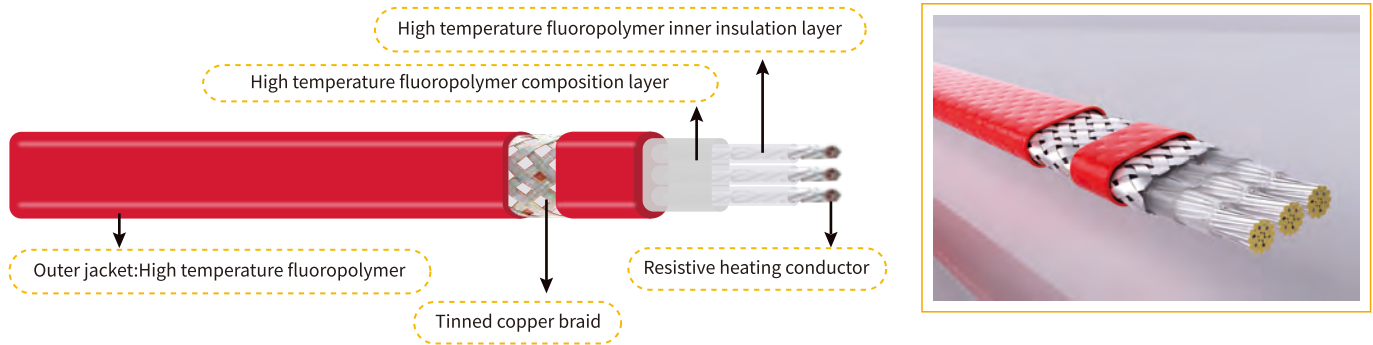
1ESF:



2ESF:



3ESF:








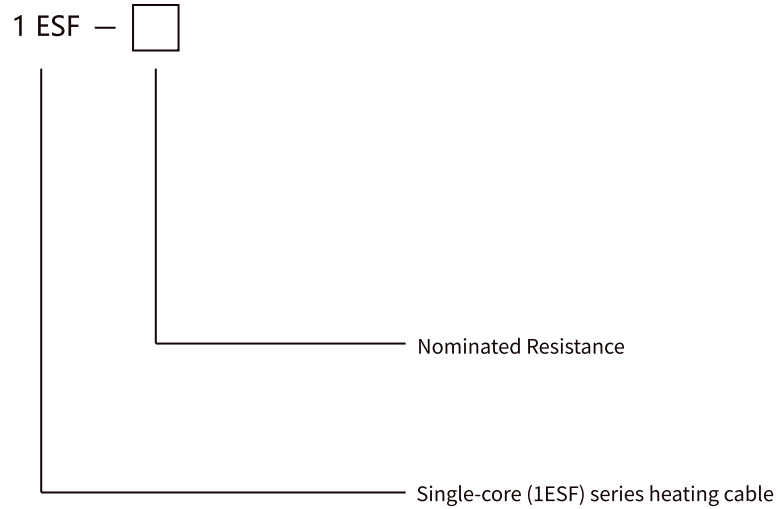
The core is resistive heating conductor, and high temperature fluoropolymer inner insulation layer, tinned copper braid, high temperature fluoropolymer are to be added to form a complete structure of ESF series heating cable, in addition there is high temperature fluoropolymer composition layer between braid and conductor in twin-core (2ESF) and triple-core (3ESF) structure.

### Product Feature:

- ◆ ESF series heating cable is certified by IECEx, ATEX, NEPSI China and EAC Russia, including explosive-proof application, which can be used in the explosive area and ordinary safety area.
- ◆ Simple installation and stable power output of unit length.
- ◆ Different electrical power connection to achieve the heat tracing requirement in most economic and optimization.
- ◆ It has a complete series of accessory, including standard power box, splice/tee connection box and end seal box etc, which can ensure the long service life of the product.

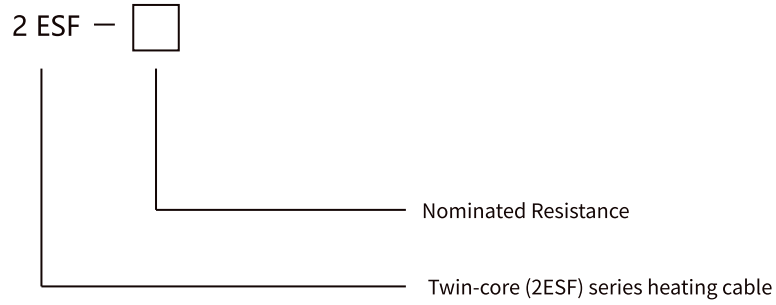
### Technical Specification:

Nominated Voltage:	220V/380V/660V
Maximum withstand temperature:	+205°C (401°F)
Minimum installation temperature:	-60°C (-76°F)
Minimum bending radius:	No lower than 5 times outer-diameter
Approvals mark:	    

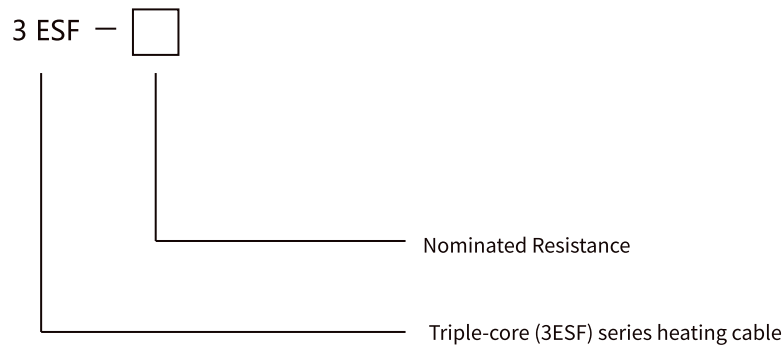


Nominated resistance specification (Table 1)					
Type	Resistance (Ω/km) @ 20°C	Refer outer diameter (mm)	Type	Resistance (Ω/km) @ 20°C	Refer outer diameter (mm)
1ESF-1.8	1.8	7.15±0.1	1ESF-36	36	3.7±0.10
1ESF-2.39	2.39	6.45±0.10	1ESF-50	50	4.1±0.10
1ESF-2.75	2.75	6.2±0.10	1ESF-65	65	3.5±0.10
1ESF-2.9	2.9	6.1±0.10	1ESF-80	80	3.8±0.1
1ESF-3.9	3.9	5.65±0.10	1ESF-100	100	3.5±0.10
1ESF-4.4	4.4	5.55±0.10	1ESF-150	150	3.7±0.10
1ESF-5.11	5.11	5.1±0.10	1ESF-200	200	3.7±0.10
1ESF-5.97	5.97	5.0±0.10	1ESF-250	250	3.32±0.10
1ESF-6	6	5.0±0.10	1ESF-700	700	3.7±0.10
1ESF-7	7	4.8±0.10	1ESF-1750	1750	3.63±0.10
1ESF-8.85	8.85	4.6±0.10	1ESF-1900	1900	3.61±0.10
1ESF-10	10	4.5±0.10	1ESF-2900	2900	3.4±0.10
1ESF-11.7	11.7	4.4±0.10	1ESF-4000	4000	3.3±0.10
1ESF-15	15	4.2±0.10	1ESF-5160	5160	3.22±0.10
1ESF-19.2	19.2	4.0±0.10	1ESF-6000	6000	3.18±0.10
1ESF-17.8	17.8	4.0±0.10	1ESF-7000	7000	3.16±0.10
1ESF-23.5	23.5	3.9±0.10	1ESF-8000	8000	3.15±0.10
1ESF-25	25	3.9±0.10			





Nominated resistance specification (Table 2)					
Type	Resistance (Ω/km) @ 20°C	Refer outer diameter (mm)	Type	Resistance (Ω/km) @ 20°C	Refer outer diameter (mm)
2ESF-3.9	3.9	10.0*6.2	2ESF-13.45	13.45	7.3*4.9
2ESF-4.4	4.4	9.8*6.1	2ESF-15.43	15.43	7.1*4.8
2ESF-5.97	5.97	9.1*5.8	2ESF-22.87	22.87	6.6*4.5
2ESF-6	6	9.1*5.8	2ESF-46.05	46.05	7.1*4.8
2ESF-19.2	19.2	7.1*4.8	2ESF-90.25	90.25	6.7*4.6
2ESF-11.7	11.7	7.8*5.1			



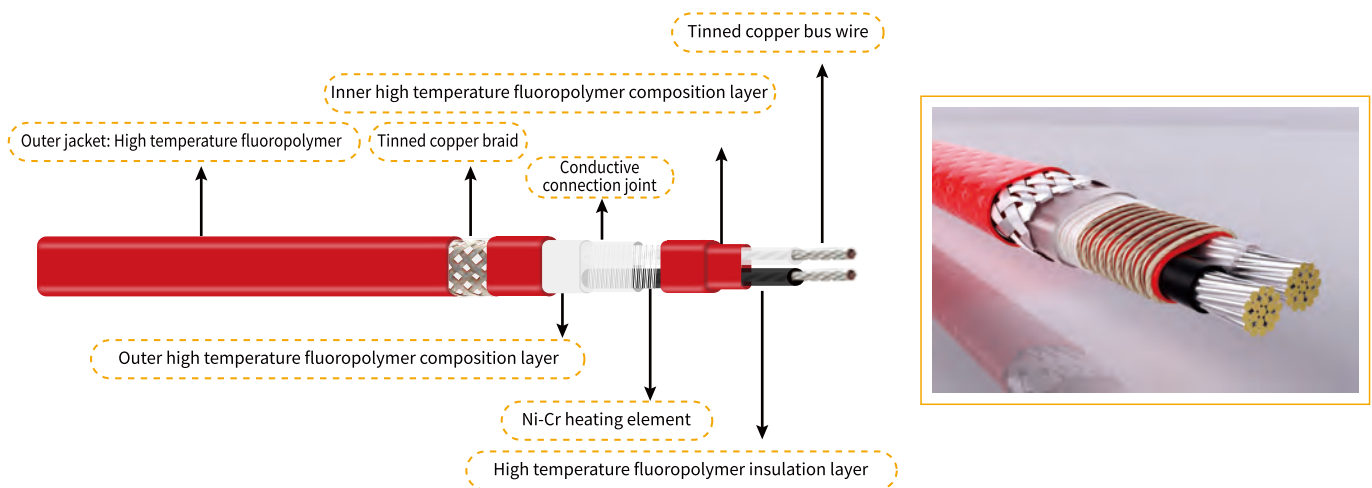
Nominated resistance specification (Table 3)					
Type	Resistance (Ω/km) @ 20°C	Refer outer diameter (mm)	Type	Resistance (Ω/km) @ 20°C	Refer outer diameter (mm)
3ESF-1.8	1.8	17.8*7.5	3ESF-11.7	11.7	10.3*5.0
3ESF-6	6	11.7*5.2	3ESF-23.5	23.5	8.9*4.6
3ESF-10	10	10.1*4.5			

## FCW Parallel Power Constant Heating Cable

### Overview:

Jiahong FCW parallel constant power heating cable are widely used for heat tracing for industry pipeline & vessel, also suitable for the freeze protection and temperature maintenance application which require the stable power output (up to 40W/m) and high exposure temperature (up to 205°C). The stable power output will keep low start-up current to prevent the current impulse to power system.

### Product Structure:








The main heating element for FCW heating cable is Ni-Cr heating conductor as above, which are connected to the bus wire sequentially via conductive connection joint as fixed length, this type of structure is to keep the stable power output consistently. Parallel conduct, core tape, and relative fluoropolymer insulation layer / composition layer are added to tinned copper braid and the outer fluoropolymer jacket form a complete structure of FCW heating cable.

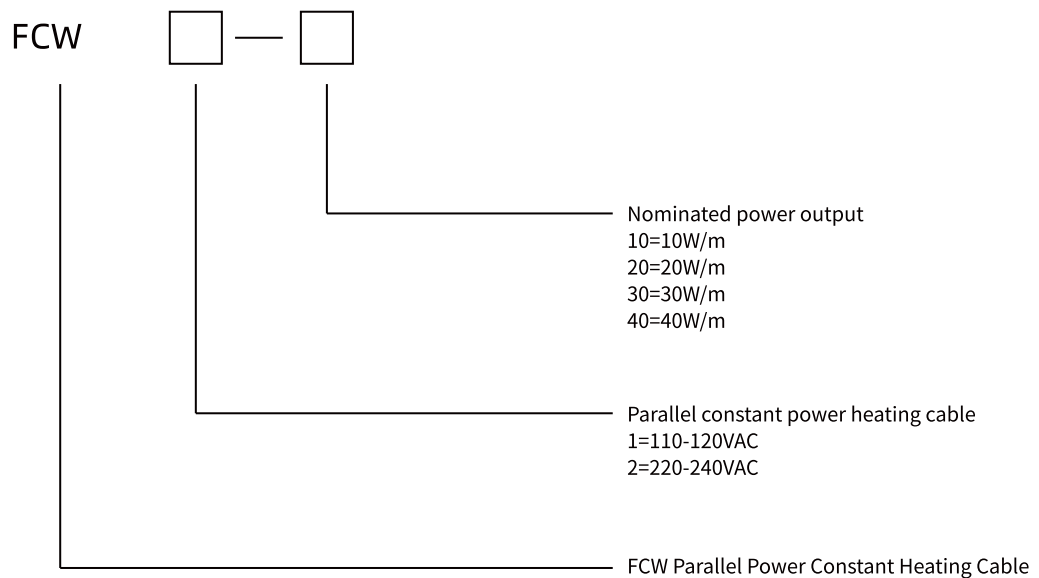
### Product Feature:

- ◆ FCW heating cable is certified by IECEx, ATEX, NEPSI (China) and EAC (Russia), including explosive-proof application, which can be used in the explosive area and ordinary safety area.
- ◆ It is allowed to cut arbitrarily within the interval specified by the maximum circuit length and connect with compliance accessories.
- ◆ It has a complete series of accessory, including standard power box, splice/tee connection box and end seal box etc, which can ensure the long service life of the product.

## Technical Specification:

Nominated Voltage:	110-120V (FCW 1) / 220-240V (FCW 2)
Maximum withstand temperature:	+205°C (401°F)
Minimum installation temperature:	-60°C (-76°F)
Minimum bending radius:	30mm
Nominated power output:	10W/m, 20W/m, 30W/m, 40W/m
Dimension:	9mm (W) x 6mm (T)
Approvals mark:	    

## Approvals mark:



Description					
Type	Power output(W/m)	Nominated Voltage(V)	Maximum maintaince temperature(°C)	Maximum Circuit Length(m)	Maximum withstand temperature(°C)
FCW-10	10	230	150	210	205
FCW-20	20	230	120	180	205
FCW-30	30	230	90	150	205
FCW-40	40	230	65	140	205

## MSF Mineral-insulated Heating Cable

### Overview:

Jiahong MSF mineral insulation heating cable are common used in the area where required high maintaince temperature,high exposure temperature and high power output,like high temperature pipeline and high exposure temperature (within/out steampurge) of pipeline and vessel.Theoretically the maximum power output for MI heating cable will be 269W/m,then the maximummaintaince temperature is about 800°C,also the maximum withstand temperature will be 800°C.Single-core (MSF-1)&twin-core (MSF-2)are both for MI heating cable,as well as different resistance spec,so the heating cable can be suitable for different voltagelevel (Shown in certification)and electrial connection,as well as to the heat tracing requirement for different type or length of pipelineand vessel.MI heating cable is protected by metal outer jacket,which can be chemical resistance and corrosion resistance.

### Product Structure:

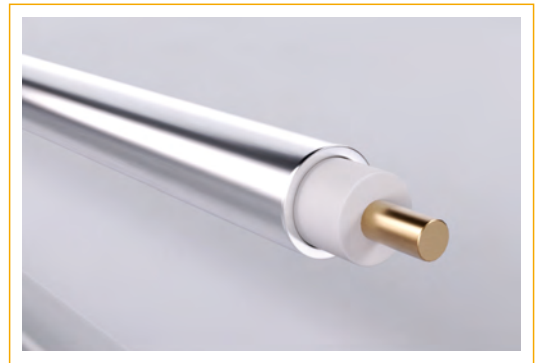
MSF-1:

Conductor, heating element: Nickel-Cr, Copper



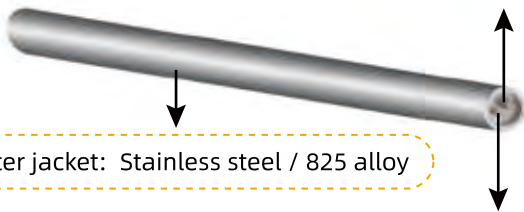
Mineral Insulation layer: Magnesium oxide , Aluminum trioxide

Outer jacket: Copper-Nickel alloy/ Stainless steel / 825 alloy



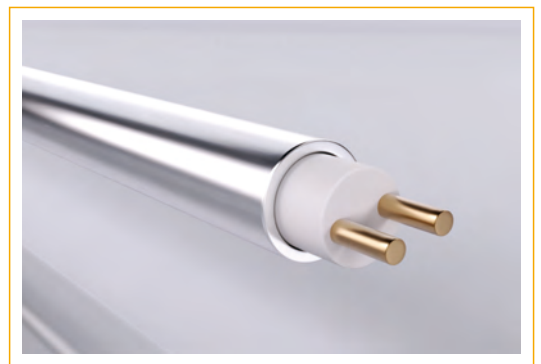
MSF-2:

Mineral Insulation layer: Magnesium oxide , Aluminum trioxide



Outer jacket: Stainless steel / 825 alloy

Conductor, heating element: Nickel-Cr, Copper








The core is heating conductor element, as well as Magnesium oxide layer and metal outer jacket are to be added to form a complete structure of MSF heating cable from inside core to outside.

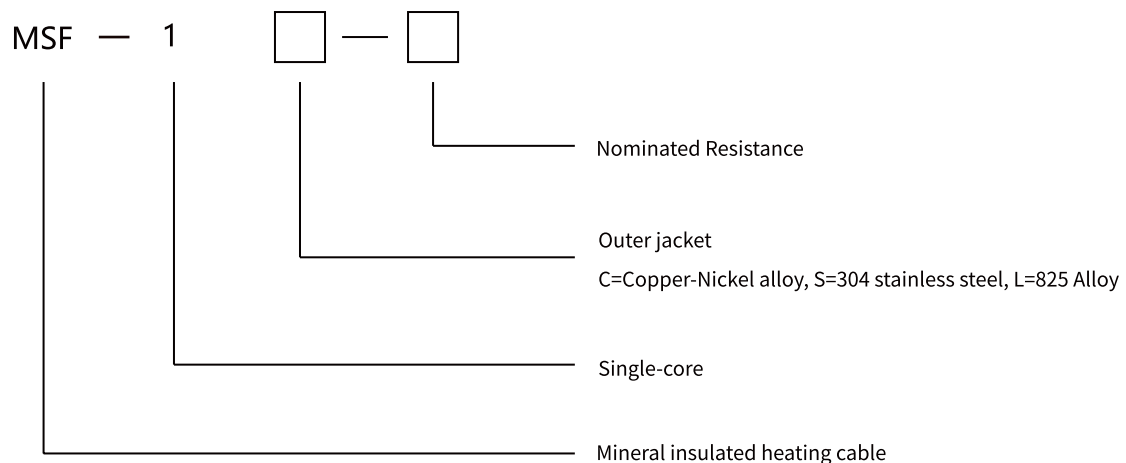
## Product Feature:

- ◆ MSF mineral-insulated heating cable is certified by IECEx, ATEX, NEPSI China and EAC Russia, including explosive-proof application, which can be used in the explosive area and ordinary safety area.
- ◆ Simple installation and stable power output of unit length.
- ◆ MSF mineral-insulated heating cable can suitable for application under the condition which needed high power output, high withstand temperature and chemical resistance and corrosion resistance.
- ◆ Different electrical power connection to achieve the heat tracing requirement in most economic and optimization.
- ◆ It has a complete series of accessory, including standard power box, splice/tee connection box and end seal box etc, which can ensure the long service life of the product

## Technical Specification:

MSF-1 Single core mineral insulation heating cable	
Maximum Voltage:	600V
Maximum withstand temperature:	+300°C (572°F-Copper-nickel alloy jacket) +600°C (1112°F- stainless steel jacket) +800°C (1472°F-825 alloy jacket)
Minimum installation temperature:	-80°C
Minimum bending radius:	No lower than 5 times outer-diameter
Approvals mark:	    

## Approvals mark:








MSF-1 Copper Nickel Outer jacket Trace Heating Cable Nominated Resistance Specification					
Type	Resistance (Ω/km) @ 20°C	Outer diameter(mm)	Type	Resistance (Ω/km) @ 20°C	Outer diameter(mm)
MSF-1 C0004	4	5.9	MSF-1 C0188	188	4.7
MSF-1 C0007	7	5.3	MSF-1 C0250	250	4.4
MSF-1 C0011	11	4.9	MSF-1 C0312	312	4.2
MSF-1 C0017	17	4.6	MSF-1 C0400	400	4.0
MSF-1 C0025	25	3.7	MSF-1 C0480	480	3.8
MSF-1 C0040	40	3.4	MSF-1 C0630	630	3.7
MSF-1 C0063	63	3.2	MSF-1 C1000	1000	3.4
MSF-1 C0082	82	5.7	MSF-1 C1600	1600	3.2
MSF-1 C0122	122	5.2	MSF-1 C2400	2400	3.1
MSF-1 C0160	160	4.9	MSF-1 C4150	4150	3.0

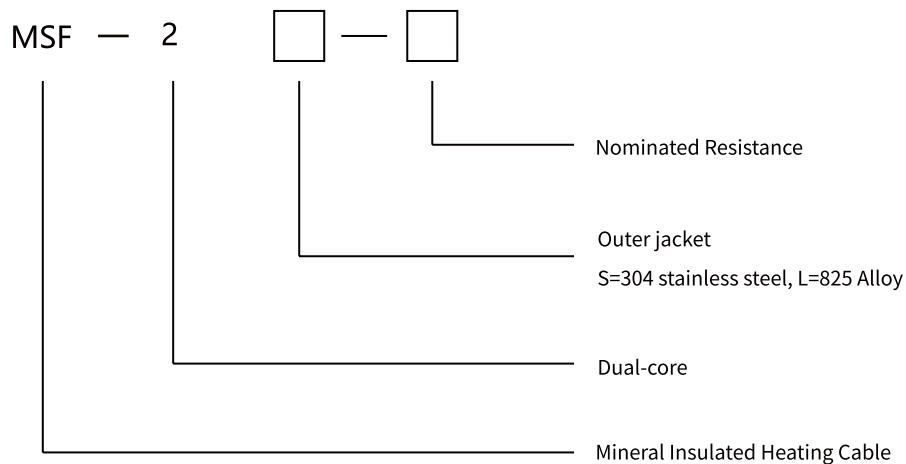
MSF-1 Stainless Steel(SS) No.1.4541 Outer Jacket Trace Heating Cable Nominated Resistance Specification					
Type	Resistance (Ω/km) @ 20°C	Outer diameter(mm)	Type	Resistance (Ω/km) @ 20°C	Outer diameter(mm)
MSF-1 S0002	2.1	6.8	MSF-1 S0100	100	4.7
MSF-1 S0003	3.4	5.9	MSF-1 S0120	120	4.5
MSF-1 S0005	5.3	5.3	MSF-1 S0153	153	4.2
MSF-1 S0007	7	5.0	MSF-1 S0160	160	6.5
MSF-1 S0008	8.5	4.8	MSF-1 S0200	200	5.9
MSF-1 S0011	11	4.5	MSF-1 S0250	250	5.3
MSF-1 S0013	13	4.3	MSF-1 S0400	400	4.7
MSF-1 S0017	17	4.2	MSF-1 S0500	500	4.5
MSF-1 S0021	21	4.0	MSF-1 S0630	630	4.3
MSF-1 S0025	25	4.7	MSF-1 S1000	1000	3.9
MSF-1 S0037	37	5.8	MSF-1 S1600	1600	3.6
MSF-1 S0040	40	5.8	MSF-1 S2500	2500	3.4

MSF-1 Stainless Steel(SS) No.1.4541 Outer Jacket Trace Heating Cable Nominated Resistance Specification					
Type	Resistance (Ω/km) @ 20°C	Outer diameter(mm)	Type	Resistance (Ω/km) @ 20°C	Outer diameter(mm)
MSF-1 S0047	47	5.4	MSF-1 S2800	2800	3.4
MSF-1 S0050	50	5.4	MSF-1 S3300	3300	3.4
MSF-1 S0060	60	5.2	MSF-1 S4000	4000	3.2
MSF-1 S0063	63	5.0	MSF-1 S5200	5200	3.2
MSF-1 S0074	74	4.8	MSF-1 S6300	6300	3.2
MSF-1 S0080	80	4.8	MSF-1 S10K0	10000	3.2
MSF-1 S0095	95	4.7			

MSF-1 825 Alloy Outer Jacket Trace Heating Cable Nominated Resistance Specification					
Type	Resistance (Ω/km) @ 20°C	Outer diameter(mm)	Type	Resistance (Ω/km) @ 20°C	Outer diameter(mm)
MSF-1 L0002	2.1	6.8	MSF-1 L0160	160	6.5
MSF-1 L0003	3.4	5.9	MSF-1 L0200	200	5.9
MSF-1 L0005	5.3	5.3	MSF-1 L0250	250	5.3
MSF-1 L08R5	8.5	4.8	MSF-1 L0400	400	4.7
MSF-1 L0013	13	4.3	MSF-1L0500	500	4.5
MSF-1 L0021	21	4.0	MSF-1 L0630	630	4.3
MSF-1 L0037	37	5.8	MSF-1 L1000	1000	3.9
MSF-1L0047	47	5.4	MSF-1 L1600	1600	3.6
MSF-1 L0050	50	5.4	MSF-1 L2500	2500	3.4
MSF-1 L0060	60	5.2	MSF-1 L2800	2800	3.4
MSF-1 L0075	75	4.8	MSF-1 L3300	3300	3.4
MSF-1 L0080	80	4.8	MSF-1L4000	4000	3.2
MSF-1 L0095	95	4.7	MSF-1 L5200	5200	3.2
MSF-1 L0100	100	4.7	MSF-1 L6300	6300	3.2
MSF-1 L0120	120	4.5	MSF-1 L10K0	10000	3.2
MSF-1 L0153	153	4.2			

## Technical Specification:

MSF-2 Dual Core mineral insulation heating cable	
Maximum Voltage:	300V / 600V
Maximum withstand temperature:	+600 C (1112 F - stainless steel jacket)/+800 C(1472 F -825 alloy jacket)
Minimum installation temperature:	-80°C
Minimum bending radius:	no lower than 5 times outer-diameter
Approvals mark:	    



MSF-2 Stainless Steel (SS) NO.1.4541 Outer Jacket Tracing Cable Nominated Resistance Specification					
Type	Resistance (Ω/km) @ 20°C	Outer diameter(mm)	Type	Resistance (Ω/km) @ 20°C	Outer diameter(mm)
MSF-2 S0008	8.4	11.8	MSF-2 S1000	1000	5.7
MSF-2 S0013	13.4	9.8	MSF-2 S1300	1300	6.2
MSF-2 S0021	21	8.8	MSF-2 S2000	2000	5.8
MSF-2 S0034	34	8.0	MSF-2 S3300	3300	5.4
MSF-2 S0054	54	7.1	MSF-2 S4600	4600	5.8
MSF-2 S0085	85	6.4	MSF-2 S8000	8000	5.4
MSF-2 S0130	130	6.0	MSF-2 S013K	13000	5.0
MSF-2 S0180	180	7.9	MSF-2 S027K	27000	4.8
MSF-2 S0260	260	7.4	MSF-2 S040K	40000	4.6
MSF-2 S0360	360	6.8	MSF-2 S060K	60000	4.4
MSF-2 S0500	500	6.4	MSF-2 S072K	72000	4.2
MSF-2 S0650	650	5.9			



MSF-2 825 Outer jacket Tracing Cable Nominated Resistance Specification					
Type	Resistance (Ω/km) @ 20°C	Outer diameter(mm)	Type	Resistance (Ω/km) @ 20°C	Outer diameter(mm)
MSF-2 L0008	8.4	11.8	MSF-2 L1000	1000	5.7
MSF-2 L0013	13.4	9.8	MSF-2 L1300	1300	6.2
MSF-2 L0021	21	8.8	MSF-2 L2000	2000	5.8
MSF-2 L0034	34	8.0	MSF-2 L3300	3300	5.4
MSF-2 L0054	54	7.1	MSF-2 L4600	4600	5.8
MSF-2 L0084	85	6.4	MSF-2 L8000	8000	5.4
MSF-210130	130	6.0	MSF-2 L013K	13000	5.0
MSF-2 L0180	180	7.9	MSF-2 L027K	27000	4.8
MSF-2 L0260	260	7.4	MSF-2 L040K	40000	4.6
MSF-2 L0360	360	6.8	MSF-2 L060K	60000	4.4
MSF-2 L0500	500	6.4	MSF-2 L072K	72000	4.2
MSF-2 L0650	650	5.9			

## ESF-P Skin-effect heating cable

### Overview:

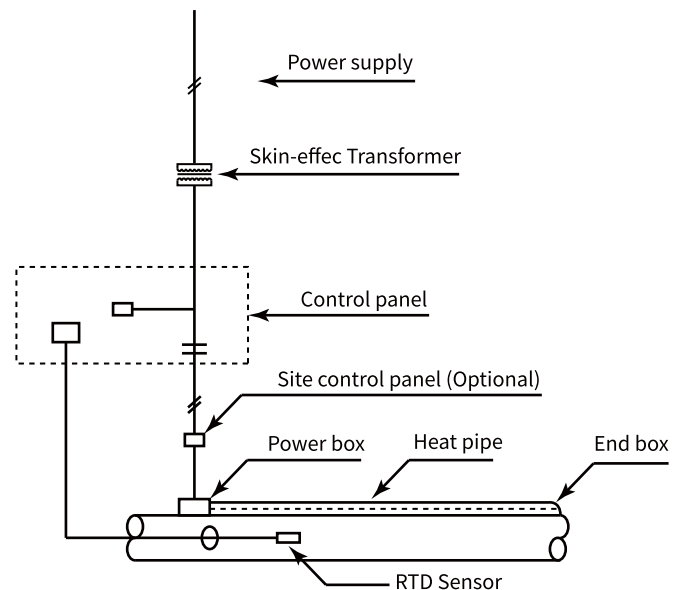
Jiahong ESF-P Skin-effect electrical trace heating system is a safe, reliable and effective electrical heat tracing solution for medium and long distance pipelines, such as the liquid medium transfer and LNG pipeline of large petrochemical industry site.

This electrical heat tracing technology has the advantages of high heat tracing efficiency, safety and reliability, long service life, convenient installation and maintenance, and automatic control as well as prefabrication in facility, then it has been gradually popularized and applied in petrochemical industry and other fields in the past several tens of years.

The working principle of skin effect is based on the "skin effect" and "proximity effect" of alternating current. Because carbon steel pipe is extremely ferromagnetic, it will still be produced significant of skin effect under power frequency voltage.

The heat generated by the system in the "heat pipe" is due to the impedance and the tracer system itself when the current flows back on the inner surface of the "heat pipe", as well as there is no voltage or current on the outer surface of the "heat pipe".

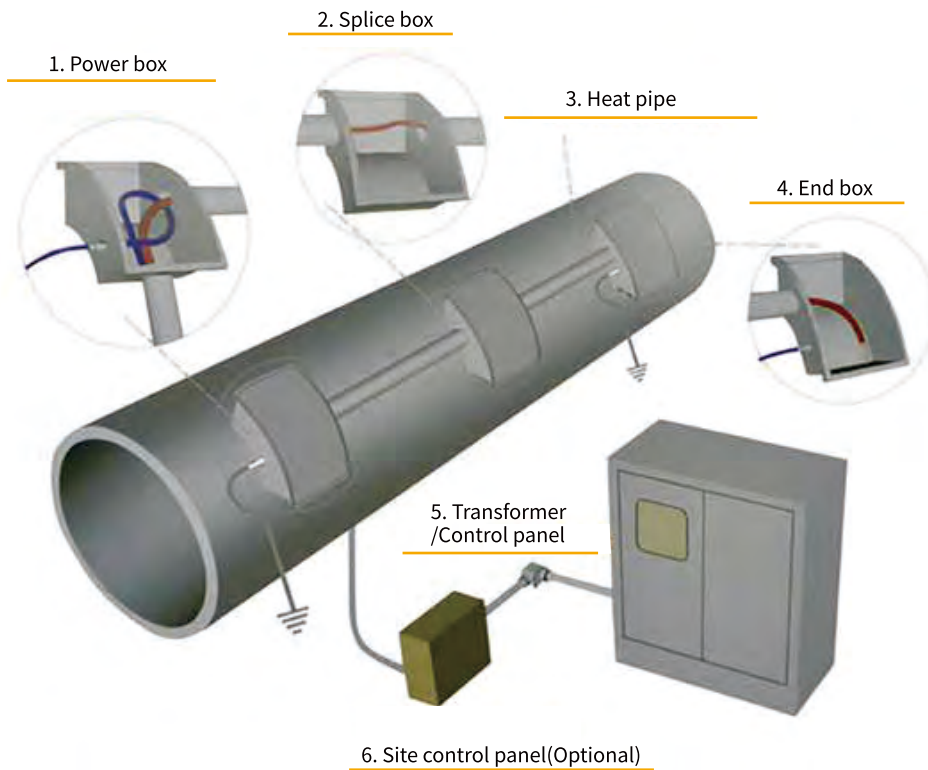
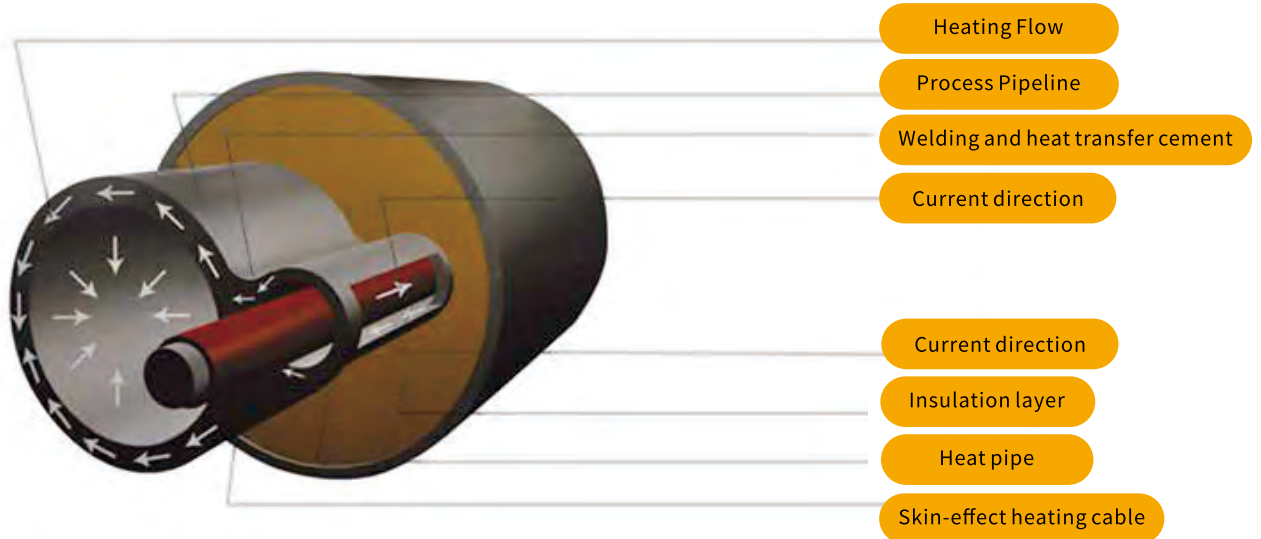
The basement Skin-effect electrical trace heating system is shown in right figure, power system and control system as well as site portion are added to be a completed skin-effect system. The power system is including incoming power and skin-effect transformer; The control portion is including High voltage/Low voltage control panel, protection system, temperature detection system and load balance device; Site portion is including power/end box, heating cable and heating pipe, etc.

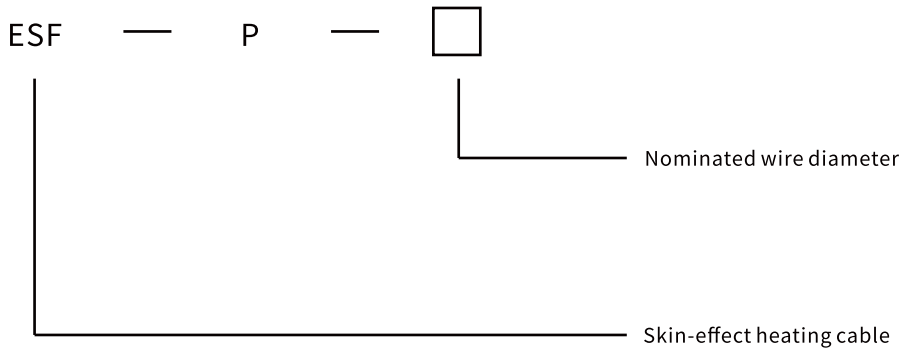


Compare with other types of heating tracing system, there has been advantages for Skin-effect electrical trace heating system.

Series Number	Comparasion	Skin-effect electrical trace heating type	Constand power wattage heating cable type	Mineral-insulated heating cable type	Self-regulating trace heating cable type
1	Trace length	Longest	Longer	Short	Short
2	Quantity of power supply	Fewest	Few	More	Many
3	Unit power output	Higher	Low	Highest	General
4	Installation type	Welding through pipe	Tape band	Stainless steel wire band	Tape band
5	Maximum voltage	<5000Vac	<660Vac	<600Vac	230Vac
6	Maintaince	Convenience	Complicated	Complicated	Complicated
7	Partly heat tracer	Worst	Convenience	Convenience	Convenience
8	Safety	Reliability	General	General	General
9	Construction difficulty	Higher	General	General	General
10	Control requirement	Highest	Higher	Higher	General
11	Life cycle	About 20 Years	5~8Years	5~10Years	3~10Years
12	Buried pipeline	Suitable	Not applicable	Not applicable	Not applicable

## Product Structure:





ESF-P Skin-effect heating cable technical spec						
Type	Conductor material	Conductor cross-section	Maximum voltage	Insulation material	Outer jacket material	Withstand temperature
ESF-P-13	Tinned copper	13mm <sup>2</sup>	6 KV	FEP	FEP	205°C
ESF-P-21		21mm <sup>2</sup>				
ESF-P-25		25mm <sup>2</sup>				
ESF-P-30		30mm <sup>2</sup>				
ESF-P-35		35mm <sup>2</sup>				

In addition to the main component, the trace heating cable, and accessories are also essential parts of an electric trace heating system. Whether it is the termination of the trace heating cable and power supply, the fixation of the trace heating cable on pipes or equipment, or the monitoring and operation of the entire heating system, the presence of accessories is necessary to ensure the normal operation of the entire system. Although the proportion of accessories is small, they play a crucial role. In electric trace heating systems, commonly used accessories can be divided into the following categories:

- ◆ Functional junction boxes
- ◆ Trace heating cable connectors
- ◆ Tapes
- ◆ Metal fastening materials
- ◆ Thread sealing parts
- ◆ Temperature sensors
- ◆ Warning mark

Functional junction boxes mainly include power junction boxes, explosive-proof splice boxes/three-way junction boxes, and explosive-proof end seals with light, which are used for the connection or crossover between the heating cable and the power supply, as well as other functions. The PTBS and PTBM series are explosive-proof junction boxes, which can be used in different models to meet the termination of different heating cables and power supply lines, as well as the crossover of power cables in explosive-proof environments. The JHS/JHT/JHE-GET series are explosive-proof splice boxes/three-way junction boxes and explosive-proof end seals with light, used for crossover of heating cables and sealing of the cable ends. The PTBS-L-GET and JHE-L-GET series, on the basis of the PTBS-GET explosive-proof power junction box and the JHE-L-GET explosive-proof end seals with light, have the added functionality of status display.

As a heating element, when connecting the heating cable to the power supply, it is not allowed to directly connect it to the junction box for safety reasons. Instead, heating cable connectors are required to guide the heating cable into the junction box and secure the terminals. Therefore, heating cable connectors have become an important component among the accessories.

Among them, the PET-HD series of explosive-proof high-current connectors used in single-core series constant power wattage heating cables is a particularly specialized application. Therefore, when selecting the model of heating cable connectors, it is necessary to consider the type of heating cable being used and its specific parameters.

Fiberglass tape, pressure-sensitive tape, and aluminum foil tape are commonly used types of tape in the category of accessories. The first two are mainly used for securing the trace heating cable to the surface of the heated object, while aluminum foil tape is applied to the surface of the trace heating cable, serving a dual purpose of securing the trace heating cable and facilitating heat transfer and dispersion. Based on the different temperature levels that tape can withstand, when selecting the appropriate tape for use, it is necessary to consider the temperature conditions of the trace heating cable and the trace heating environment in order to choose the suitable type of tape for application.

Metal fastening materials refer to the metallic materials used for the installation of trace heating cables, accessories, and other components onto the surface of the heated object in the entire electric heat tracing system. For example, when installing two-way/three-way connectors and end seals, considerations need to be given to the use of clamps (PET-SST/B) and buckles (PET-SST/B1). When installing power junction boxes, the need for junction box mounting backplates (PET-JBM series) should be considered. When installing trace heating cables on irregularly shaped equipment surfaces, especially for mineral-insulated high-temperature electrical trace heating cables, stainless steel mesh guards (PET-WM/SS) or galvanized wire mesh guards (PET-WM/Z) may be installed as required. For the installation of trace heating cables on large tanks and other regular-shaped equipment, metal spacer fixing bands (PET-SSP series) are also needed. Therefore, these types of accessories are collectively referred to as metal fastening materials.

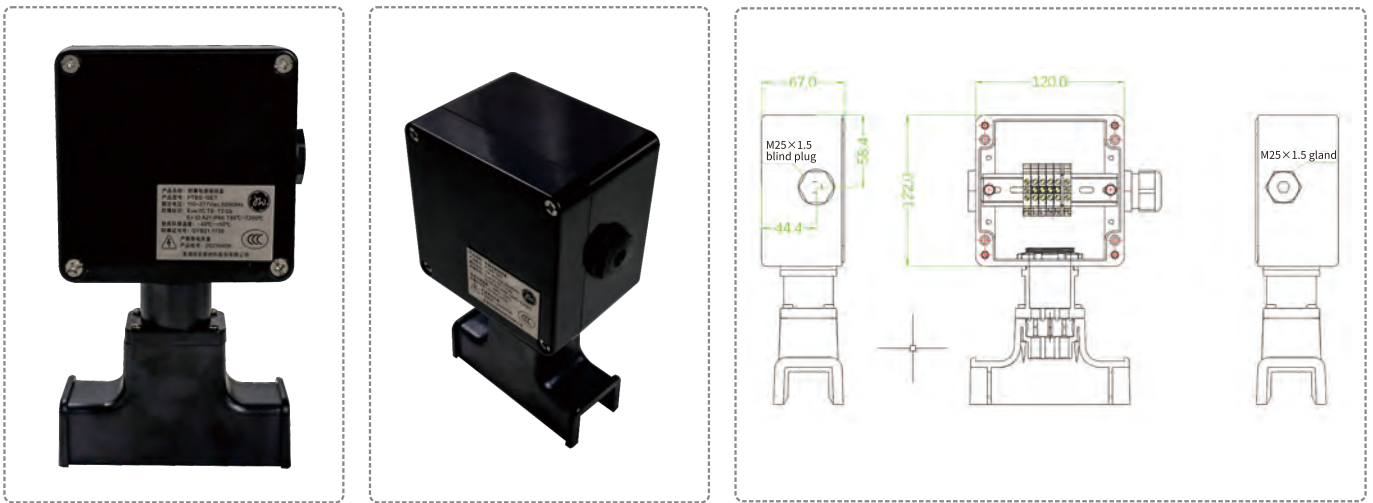
Thread sealing parts include sealing glands, blind plugs, and insulation sleeves fixed on the insulation layer protection enclosure, which are used on power junction boxes. The sealing glands and blind plugs are designed to meet the requirements for the use of power junction boxes in hazardous environments. The insulation sleeves (PET-INS/100&200) are placed on the outermost layer of the insulation layer protection shell to serve as seals when the trace heating cable core, cold lead, or other signal cables need to pass through the insulation layer. By using these sealing components, the outer jacket of the cables can be protected from being cut by the edges of the insulation layer protection enclosure.

Temperature sensors (PET-PT100/-EX) are used to collect the real-time temperature of the heated object and transmit the measured values to the controller or upper computer via signal cables. This allows for manual or automatic adjustment of the heating circuit status based on the temperature of the heated object. The use of temperature sensors must meet various requirements of the installation site, such as explosive protection and corrosion resistance.

Warning labels are used to be placed on the outer surface of the insulation layer to remind and alert relevant personnel.

- The PTBS-GET-120 series explosive-proof junction box is used to connect the power end with Protrace self-regulating trace heating cable products HTLe, HTR, HTP, and HTS. This series of junction boxes is certified for use in designated hazardous areas.
- The PTBS-GET-120 series explosive-proof junction box is equipped with a supporting base, which can be securely fastened to the pipes using stainless steel clamps and buckles. The sturdy and durable bracket can protect up to 3 heating cables from entering the junction box from the bottom of the bracket, and they are connected to the terminal block through a connection kit.
- The PTBS-GET-120 series explosive-proof junction box, when used with the S1 type base, can be used for pipes with insulation thickness not exceeding 80mm. When used with the S2 type base, it can be used for pipes with insulation thickness not exceeding 100mm.

## Structure of junction box



Model: PTBS-GET-120 series

Description: Refer to the design document.

Composition: One junction box with wiring terminals and one supporting base

Approvals mark:   

Dimensions: Body size 122\*120\*90 (in mm), excluding the supporting base

Compatible heating cables: HTLe, HTR, HTP, HTS, FCW

Protection grade: IP66

Power inlet hole: 1-M25x1.5 gland

Scope of environment temperature: -60°C~ +60°C

Minimum installation temperature: -60°C

Maximum pipe temperature: Refer to the specification

description of trace heating lines.

Maximum wire size: Refer to the design document

Rated voltage: 110~277Vac, 380Vac/660Vac 50Hz

Maximum sustained current: Refer to the design document

Case, cover and support: polyester material

Cap screw: stainless steel

Product specifications: Refer to the table below

Product Model	Product Name	Product Description	Application
PTBS-GET-120 (4mm <sup>2</sup> )	PTBS explosive-proof junction box	Polyester housing: 120mm (width) x 122mm (height) x 90mm (depth) 1-PTBS junction box with 120 specifications, with a M40x1.5 hole at the bottom and a M25x1.5 hole on each side 1-PTBS-GET-S1 support 1-M25x1.5 explosive-proof gland for incoming power (round opening, made of PA66 material) 1-M25x1.5 explosive-proof blind plug (made of PA66 material) 4-UK5N or equivalent specification terminal blocks 2-USLKG5 or equivalent specification grounding terminals	HTLe, HTR, HTP HTS, FCW
PTBS-GET-120 (6mm <sup>2</sup> )	PTBS explosive-proof junction box	Polyester housing: 120mm (width) x 122mm (height) x 90mm (depth) 1-PTBS junction box with 120 specifications, with a M40x1.5 hole at the bottom and a M25x1.5 hole on each side 1-PTBS-GET-S1 support 1-M25x1.5 explosive-proof gland for incoming power (round opening, made of PA66 material) 1-M25x1.5 explosive-proof blind plug (made of PA66 material) 4-UK6N or equivalent specification terminal blocks 2-USLKG6 or equivalent specification grounding terminals	HTLe, HTR, HTP HTS, FCW
PTBS-GET-2	PTBS explosive-proof junction box	Polyester housing: 120mm (width) x 122mm (height) x 90mm (depth) 1-PTBS junction box with 120 specifications, with a M40x1.5 hole at the bottom and a M25x1.5 hole on each side 1-PTBS-GET-S1 support 1-M25x1.5 explosive-proof blind plug (made of PA66 material) 4-UK6N or equivalent specification terminal blocks 2-USLKG6 or equivalent specification grounding terminals 1-connection kit (including cable boots * 2 + yellow-green heat shrink tubes * 2)	HTLe, HTR, HTP HTS, FCW
PTBS-GET-120H (4mm <sup>2</sup> )	PTBS explosive-proof junction box	Polyester housing: 120mm (width) x 122mm (height) x 90mm (depth) 1-PTBS junction box with 120 specifications, with a M40x1.5 hole at the bottom and a M25x1.5 hole on each side 1-PTBS-GET-S2 support 1-M25x1.5 explosive-proof gland for incoming power (round opening, made of PA66 material) 1-M25x1.5 explosive-proof blind plug (made of PA66 material) 4-UK5N or equivalent specification terminal blocks 2-USLKG5 or equivalent specification grounding terminals	HTLe, HTR, HTP HTS, FCW
PTBS-GET-120H (6mm <sup>2</sup> )	PTBS explosive-proof junction box	Polyester housing: 120mm (width) x 122mm (height) x 90mm (depth) 1-PTBS junction box with 120 specifications, with a M40x1.5 hole at the bottom and a M25x1.5 hole on each side 1-PTBS-GET-S2 support 1-M25x1.5 explosive-proof gland for incoming power (round opening, made of PA66 material) 1-M25x1.5 explosive-proof blind plug (made of PA66 material) 4-UK6N or equivalent specification terminal blocks 2-USLKG6 or equivalent specification grounding terminals	HTLe, HTR, HTP HTS, FCW
PTBS-GET-S1	PTBS explosive-proof junction box base	Standard base model	
PTBS-GET-S2	PTBS explosive-proof junction box base	Extended-height base model	

The entire PTBS-GET-120 series explosive-proof junction box does not include connection accessories and tail sealing kits. If needed, please order them separately, as they depend on the specific trace heating cable model used. Before ordering, please consult local Protrace technicians for confirmation.

For specific technical parameters, materials, and other information, please consult local Protrace technicians.

- The PTBS-GET-160 series explosive-proof junction box is used to connect the power end with Protrace self regulating heating cable products LHTR, 15HTR and HTU\*. This series of junction boxes is certified for use in designated hazardous areas.  
The PTBS-GET-160 series uses a new type of supporting base, which can be securely fastened to pipes using stainless steel clamps and buckles.
- The sturdy and durable bracket also protects up to 3 heating cables from entering the junction box from the bottom of the bracket, and they are connected to the terminal block through a connection kit.
- The PTBS-GET-160 series explosive-proof junction box, when used with the supporting base, can be used for pipes with insulation thickness not exceeding 80mm.

## Structure of junction box



Model: PTBS-GET-160 series

Description: Refer to the design document.

Composition: One junction box with wiring terminals and one supporting base

Approvals mark:   

Dimensions: Body size 160\*160\*90 (in mm), excluding the supporting base

Compatible heating cables: LHTR, 15HTR, HTU\*

Protection grade: IP66

Power inlet hole: 1-M25x1.5 gland (some models may nothave a power inlet hole)

Scope of environment temperature: -60°C~ +60°C

Minimum installation temperature: -60°C

Maximum pipe temperature: Refer to the specification

description of trace heating lines.

Maximum wire size: Refer to the design document

Rated voltage: 110~277Vac , 380Vac/660Vac 50Hz

Maximum sustained current: Refer to the design document

Case, cover and support: polyester material

Cap screw: stainless steel

Product specifications: Refer to the table below



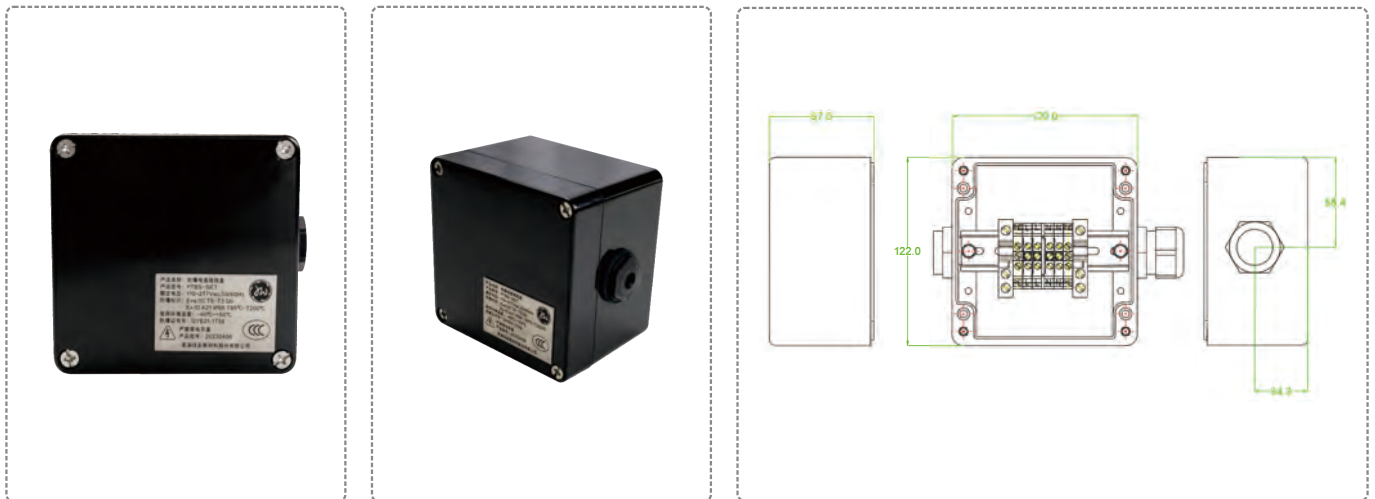
Product Model	Product Name	Product Description	Application
PTBS-GET-160SP	PTBS explosive-proof junction box	Polyester housing: 160mm (width) x 160mm (height) x 90mm (depth) 1-PTBS junction box with 160 specifications, with a M40x1.5 hole at the bottom and a M25x1.5 hole on each side 1-PTBS-GET-S3 support 1-M25×1.5 explosive-proof gland for incoming power (round opening, made of PA66 material) 1-M25×1.5 explosive-proof blind plug (made of Pa66 material) 4-UK6N or equivalent specification terminal blocks 2-USLKG6 or equivalent specification grounding terminals	HTU*
PTBS-GET-160SS	PTBS explosive-proof junction box	Polyester housing: 160mm (width) x 160mm (height) x 90mm (depth) 1-PTBS junction box with 160 specifications, with a M40x1.5 hole at the bottom 1-PTBS-GET-S3 support 2-UK6N or equivalent specification terminal blocks 1-USLKG6 or equivalent specification grounding terminals	HTU*
PTBS-GET-160ST	PTBS explosive-proof junction box	Polyester housing: 160mm (width) x 160mm (height) x 90mm (depth) 1-PTBS junction box with 160 specifications, with a M40x1.5 hole at the bottom 1-PTBS-GET-S3 support 4-UK6N or equivalent specification terminal blocks 1-USLKG6 or equivalent specification grounding terminals	HTU*
PTBS-GET-160P	PTBS explosive-proof junction box	Polyester housing: 160mm (width) x 160mm (height) x 90mm (depth) 1-PTBS junction box with 160 specifications, with a M40x1.5 hole at the bottom and a 1-M25x1.5 hole on each side 1-PTBS-GET-S4 support 1-M25×1.5 explosive-proof gland for incoming power (round opening, made of PA66 material) 1-M25x1.5 explosive-proof blind plug (made of Pa66 material) 4-UK6N or equivalent specification terminal blocks 2-USLKG6 or equivalent specification grounding terminals	LHTR, 15HTR
PTBS-GET-160S	PTBS explosive-proof junction box	Polyester housing: 160mm (width) x 160mm (height) x 90mm (depth) 1-PTBS junction box with 160 specifications, with a M40x1.5 hole at the bottom 1-PTBS-GET-S4 support 2-UK6N or equivalent specification terminal blocks 1-USLKG6 or equivalent specification grounding terminals	LHTR, 15HTR
PTBS-GET-160T	PTBS explosive-proof junction box	Polyester housing: 160mm (width) x 160mm (height) x 90mm (depth) 1-PTBS junction box with 160 specifications, with a M40x1.5 hole at the bottom 1-PTBS-GET-S4 support 4-UK6N or equivalent specification terminal blocks 2-USLKG6 or equivalent specification grounding terminals	LHTR, 15HTR
PTBS-GET-S3	PTBS explosive-proof junction box base	New integrated base (small hole)	
PTBS-GET-S4	PTBS explosive-proof junction box base	New integrated base (large hole)	

The entire PTBS-GET-160 series explosive-proof junction box does not include connection accessories and tail sealing kits. If needed, please order them separately, as they depend on the specific trace heating cable model used. Before ordering, please consult local Protrace technicians for confirmation.

For specific technical parameters, materials, and other information, please consult local Protrace technicians.

- The PTBM-GET-120 series explosive-proof junction box is used for connecting the power end with Protrace heating cable products such as HTLe, HTR, HTP, HTS, ESF, FCW, and MSF. This series of junction boxes is certified for use in designated hazardous areas.
- The PTBM-GET-120 series explosive-proof junction box is installed using a backplate, which can be securely fastened to the pipe or other fixed locations using stainless steel clamps and buckles.

## Structure of junction box



Model:PTBM-GET-120 series

Description: Refer to the design document.

Composition: One junction box with wiring terminals

Approvals mark:  

Dimensions: Body size 160\*160\*90 (in mm), excluding the supporting base

Compatible heating cables:HTLe, HTR, HTP, HTS, ESF,FCW, MSF

Protection grade: IP66

Power inlet hole: See the design document.

Scope of environment temperature: -60°C~ +60°C

Minimum installation temperature: -60°C

Maximum pipe temperature: Refer to the specification

description of trace heating lines.

Maximum wire size: Refer to the design document

Rated voltage: 110~277Vac , 380Vac/660Vac 50Hz

Maximum sustained current: Refer to the design document

Case, cover and support: polyester material

Cap screw: stainless steel

Product specifications: Refer to the table below

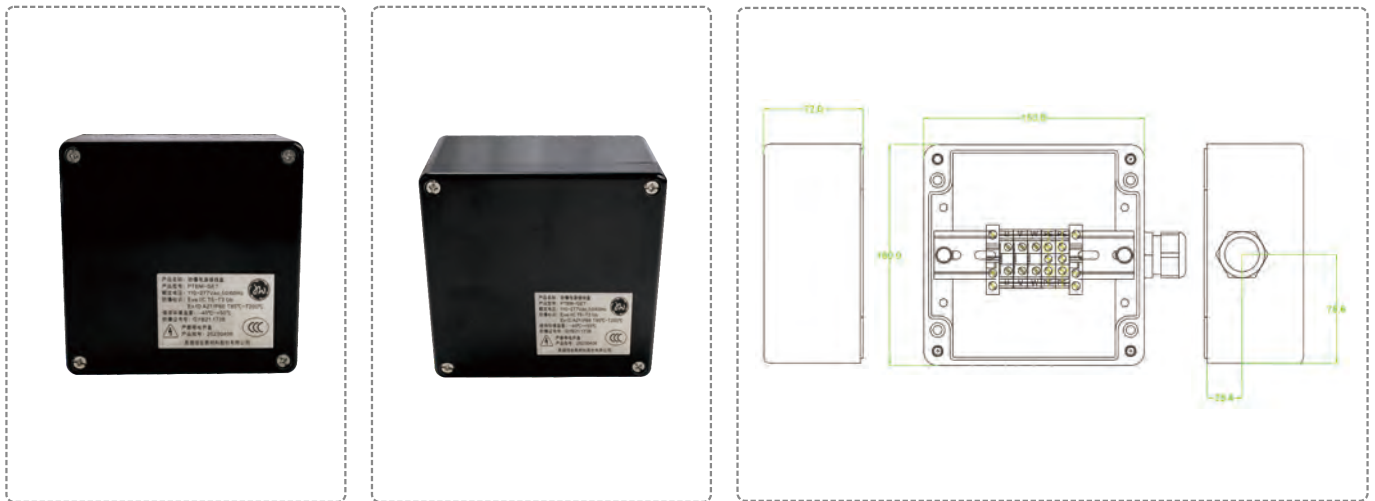
Product Model	Product Name	Product Description	Application
PTBM-GET-120A	PTBM explosive-proof junction box	<p>Polyester housing: 120mm (width) x 122mm (height) x 90mm (depth)</p> <p>1-PTBM junction box with 120 specifications, with a M25x1.5 hole at the bottom and 2-M25x1.5 hole on each side</p> <p>1-M25x1.5 explosive-proof gland for incoming power (made of PA66 material)</p> <p>1-M25x1.5 explosive-proof blind plug (made of Pa66 material)</p> <p>4-M25x1.5 explosive-proof glands for outgoing cables (flat opening, made of PA66 material)</p> <p>2-UK6N or equivalent specification terminal blocks</p>	HTR, HTP, HTS HTLe, FCW
PTBM-GET-120B	PTBM explosive-proof junction box	<p>Aluminum alloy housing: 120mm (width) x 122mm (height) x 90mm (depth)</p> <p>1-PTBM junction box with 120 specifications, with 2-M25x1.5 hole at the bottom and a M25x1.5 hole on the right side</p> <p>1-M25x1.5 explosive-proof gland for incoming power (round opening, made of 304 stainless steel)</p> <p>2-UK6N or equivalent specification terminal blocks</p> <p>2-USLKG6 or equivalent specification grounding terminals</p>	MSF-1
PTBM-GET-120C	PTBM explosive-proof junction box	<p>Aluminum alloy housing: 120mm (width) x 122mm (height) x 90mm (depth)</p> <p>1-PTBM junction box with 120 specifications, with 2-M25x1.5 hole at the bottom and a M25x1.5 hole on the right side</p> <p>1-M25x7.5 explosive-proof gland for incoming power (round opening, made of 304 stainless steel)</p> <p>2-UK6N or equivalent specification terminal blocks</p> <p>1-USLKG6 or equivalent specification grounding terminals</p>	MSF-2
PTBM-GET-120D	PTBM explosive-proof junction box	<p>Polyester housing: 120mm (width) x 122mm (height) x 90mm (depth)</p> <p>1-PTBM junction box with 120 specifications, with 3-M20x1.5 hole at the bottom and a M25x1.5 hole on the right side</p> <p>1-M25x1.5 explosive-proof gland for incoming power (round opening, made of PA66 material)</p> <p>2-M20x1.5 explosive-proof gland for outgoing cables (round opening, made of PA66 material)</p> <p>2-UK6N or equivalent specification terminal blocks</p> <p>2-USLKG6 or equivalent specification grounding terminals</p>	1ESF, 2ESF
PET-JBM120A	Installation backplate (galvanized iron)	Material: Galvanized iron	
PET-JBM120B	Installation backplate (304 stainless steel)	Material: 304 stainless steel	

The entire PTBM-GET-120 series explosive-proof junction box does not include connection accessories and tail sealing kits. If needed, please order them separately, as they depend on the specific trace heating cable model used. Before ordering, please consult local Protrace technicians for confirmation.

For specific technical parameters, materials, and other information, please consult local Protrace technicians.

- The PTBM-GET-160 series explosive-proof junction box is used for connecting the power end with Protrace heating cable products. This series of junction boxes is certified for use in designated hazardous areas.
- The PTBM-GET-160 series explosive-proof junction box is installed using a backplate, which can be securely fastened to the pipe or other fixed locations using stainless steel clamps and buckles.

## Structure of junction box



Model: PTBM-GET-160 series

Description: Refer to the design document.

Composition: One junction box with wiring terminals

Approvals mark:  

Compatible heating cables: ESF

Protection grade: IP66

Power inlet hole: See the design document.

Scope of environment temperature:  $-60^{\circ}\text{C} \sim +60^{\circ}\text{C}$

Minimum installation temperature:  $-60^{\circ}\text{C}$

Maximum pipe temperature: Refer to the specification description of trace heating lines.

Maximum wire size: Refer to the design document

Rated voltage: 110~277Vac, 380Vac/660Vac 50Hz

Maximum sustained current: Refer to the design document

Case, cover and support: polyester material

Cap screw: stainless steel

Product specifications: Refer to the table below

Product Model	Product Name	Product Description	Application
PTBM-GET-160A	PTBM explosive-proof junction box	Polyester housing: 160mm (width) x 160mm (height) x 90mm (depth) 1-PTBM junction box with 160 specifications, with 3-M20x1.5 hole at the bottom and a M25x1.5 hole on the right side 1-M25×1.5 explosive-proof gland for incoming power (round opening, made of PA66 material) 3-M25x1.5 explosive-proof gland for outgoing cables (round opening, made of PA66 material) 3-UK6N or equivalent specification terminal blocks 2-USLKG6 or equivalent specification grounding terminals	1ESF, 3ESF
PTBM-GET-160B	PTBM explosive-proof junction box	Polyester housing: 160mm (width) x 160mm (height) x 90mm (depth) 1-PTBM junction box with 160 specifications, with 3-M20x1.5 hole at the bottom 3-M20x1.5 explosive-proof gland for outgoing cables (round opening, made of PA66 material) 3-UK6N or equivalent specification terminal blocks 2-USLKG6 or equivalent specification grounding terminals	1ESF, 3ESF
PTBM-GET-160C	PTBM explosive-proof junction box	Polyester housing: 160mm (width) x 160mm (height) x 90mm (depth) 1-PTBM junction box with 160 specifications, with 6-M20x1.5 hole at the bottom 6-M20x1.5 explosive-proof gland for outgoing cables (round opening, made of PA66 material) 3-UK6N or equivalent specification terminal blocks 2-USLKG6 or equivalent specification grounding terminals	1ESF, 3ESF
PTBM-GET-160D	PTBM explosive-proof junction box	Polyester housing: 160mm (width) x 160mm (height) x 90mm (depth) 1-PTBM junction box with 160 specifications, with 3-M20x1.5 hole at the bottom and a M32x1.5 hole on the right side 1-M32x1.5 explosive-proof gland for incoming power (round opening, made of PA66 material) 3-M20x1.5 explosive-proof gland for outgoing cables (round opening, made of PA66 material) 3-UK10N or equivalent specification terminal blocks 2-USLKG10 or equivalent specification grounding terminals	1ESF, 3ESF
PTBM-GET-160E	PTBM explosive-proof junction box	Polyester housing: 160mm (width) x 160mm (height) x 90mm (depth) 1-PTBM junction box with 160 specifications, with 3-M20x1.5 hole at the bottom 3-M20x1.5 explosive-proof gland for outgoing cables (round opening, made of PA66 material) 3-UK10N or equivalent specification terminal blocks 2-USLKG10 or equivalent specification grounding terminals	1ESF, 3ESF
PTBM-GET-160F	PTBM explosive-proof junction box	Polyester housing: 160mm (width) x 160mm (height) x 90mm (depth) 1-PTBM junction box with 160 specifications, with 6-M20x1.5 hole at the bottom 6-M20x1.5 explosive-proof gland for outgoing cables (round opening, made of PA66 material) 3-UK10N or equivalent specification terminal blocks 2-USLKG10 or equivalent specification grounding terminals	1ESF, 3ESF
PTBM-GET-160G	PTBM explosive-proof junction box	Polyester housing: 160mm (width) x 160mm (height) x 90mm (depth) 1-PTBM junction box with 160 specifications, with 3-M25x1.5 hole at the bottom and a M32x1.5 hole on the right side 1-M32×1.5 explosive-proof gland for incoming power (round opening, made of PA66 material) 3-M20x1.5 explosive-proof gland for outgoing cables (round opening, made of PA66 material) 6-UK6N or equivalent specification terminal blocks 2-USLKG6 or equivalent specification grounding terminals	Power cable
PET-JBM160A	Installation of back board (galvanized iron)	Material: Galvanized iron	
PET-JBM160B	Installation of back board (304 stainless steel)	Material: 304 stainless steel	

The entire PTBM-GET-160 series explosive-proof junction box does not include connection accessories and tail sealing kits. If needed, please order them separately, as they depend on the specific trace heating cable model used. Before ordering, please consult local Protrace technicians for confirmation.

For specific technical parameters, materials, and other information, please consult local Protrace technicians.

- The PTBM-GET-260 series explosive-proof junction box is used for connecting the power end with Protrace heating cable products. This series of junction boxes is certified for use in designated hazardous areas.
- The PTBM-GET-260 series explosive-proof junction box is installed using a backplate, which can be securely fastened to the pipe or other fixed locations using stainless steel clamps and buckles.

## Structure of junction box



Model: PTBM-GET-260 series

Description: Refer to the design document.

Composition: One junction box with wiring terminals

Approvals mark:  

Compatible heating cables: ESF

Protection grade: IP66

Power inlet hole: See the design document.

Scope of environment temperature: -60°C~ +60°C

Minimum installation temperature: -60°C

Maximum pipe temperature: Refer to the specification  
description of trace heating lines.

Maximum wire size: Refer to the design document

Rated voltage: 110~277Vac, 380Vac/660Vac 50Hz

Maximum sustained current: Refer to the design document

Case, cover and support: polyester material

Cap screw: stainless steel

Product specifications: Refer to the table below

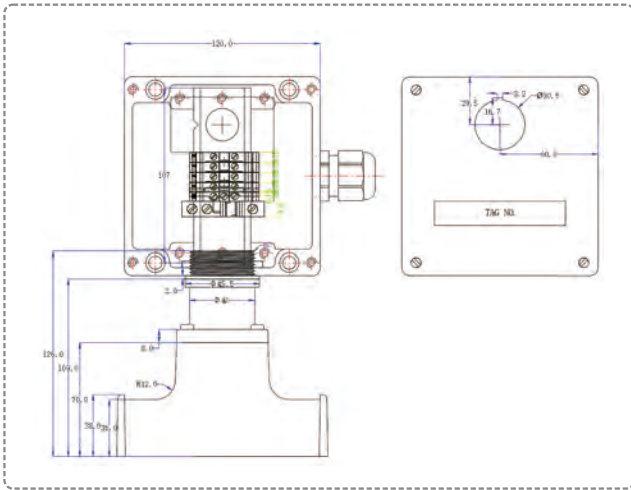
Product Model	Product Name	Product Description	Application
PTBM-GET-260A	PTBM explosive-proof junction box	Polyester housing: 260mm (width) x 160mm (height) x 90mm (depth) 1-PTBM junction box with 260 specifications, with 6-M20x1.5 hole at the bottom and a M25x1.5 hole on the right side 1-M25x1.5 explosive-proof gland for incoming power (round opening, made of PA66 material) 6-M20x1.5 explosive-proof gland for outgoing cables (round opening, made of PA66 material) 3-UK6N or equivalent specification terminal blocks 4-USLKG6 or equivalent specification grounding terminals	1ESF, 3ESF
PTBM-GET-260B	PTBM explosive-proof junction box	Polyester housing: 260mm (width) x 160mm (height) x 90mm (depth) 1-PTBM junction box with 260 specifications, with 6-M20x1.5 hole at the bottom and a M32x1.5 hole on the right side 1-M32x1.5 explosive-proof gland for incoming power (round opening, made of PA66 material) 6-M20x1.5 explosive-proof gland for outgoing cables (round opening, made of PA66 material) 3-UK10N or equivalent specification terminal blocks 4-USLKG10 or equivalent specification grounding terminals	1ESF, 3ESF
PTBM-GET-260C	PTBM explosive-proof junction box	Polyester housing: 260mm (width) x 160mm (height) x 90mm (depth) 1-PTBM junction box with 260 specifications, with 6-M25x1.5 hole at the bottom and a M32x1.5 hole on the right side 1-M32x1.5 explosive-proof gland for incoming power (round opening, made of PA66 material) 6-M25x1.5 explosive-proof gland for outgoing cables (round opening, made of PA66 material) 12-UK10N or equivalent specification terminal blocks 4-USLKG10 or equivalent specification grounding terminals	Power cable
PET-JBM260A	Installation of back board (galvanized iron)	Material: Galvanized iron	
PET-JBM260B	Installation of back board (304 stainless steel)	Material: 304 stainless steel	

The entire PTBM-GET-260 series explosive-proof junction box does not include connection accessories and tail sealing kits. If needed, please order them separately, as they depend on the specific trace heating cable model used. Before ordering, please consult local Protrace technicians for confirmation.

For specific technical parameters, materials, and other information, please consult local Protrace technicians.

- The PTBS-L-GET explosive-proof power junction box with light is designed to connect the power supply to Protrace self-regulating trace heating cables such as HTLe, HTR, and HTP. It is certified for use in designated hazardous areas. The working status of the trace heating loop can be known through the light.
- The PTBS-L-GET explosive-proof power junction box comes with a supporting base, which can be securely fastened to the pipe using stainless steel clamps and buckles. The sturdy and durable bracket also protects the heating cables from entering the junction box from the bottom of the bracket, and they are connected to the terminal block through a connection kit.
- The PTBS-L-GET explosive-proof power junction box, when used with a supporting base, can be used on pipes with insulation thickness not exceeding 80mm.


## Structure of junction box



Model: PTBS--GET

Description: explosive-proof junction box with an indicator light

Composition: 1 junction box with wiring terminal and lamp, 1 supporting base, 1 piece of glue

Approvals mark: 

Size: Refer to the design document

Compatible heating cables: HTLe, HTR, HTP

Protection grade: IP66

Inlet hole: 1-M25x1.5 gland

Scope of environment temperature: -25°C~ +55 °C

Minimum installation temperature: -40°C

Maximum pipe temperature: Refer to the specification description of trace heating lines.

Maximum wire size: Refer to the design document

Rated working voltage: 220VAC

Maximum sustained current: 32A

LED indicator light color: Green

Indicator light power consumption: <1W

Case, cover and support: polyester material

Cap screw: stainless steel

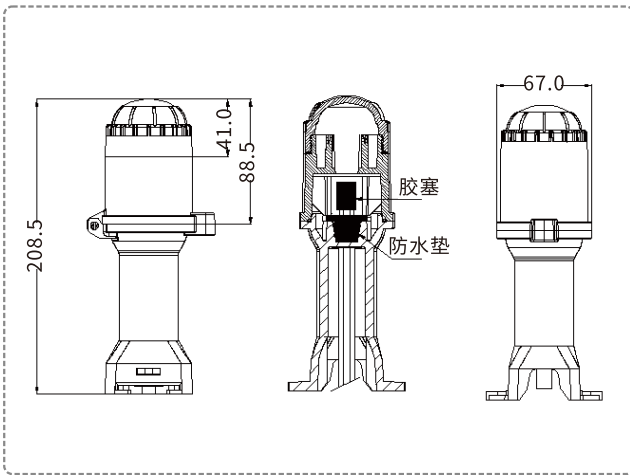
Model	Name	Features
PTBS-L-GET	explosive-proof Power Supply Junction Box with Light	Refer to the design document.

The PTBS-L-GET kit does not include connection accessories and rear end seal kit. If necessary, please order separately. As it is related to the model used, please contact with your local Protrace technician for confirmation.



- The JHE-L-GET explosive-proof junction box with a light at the tail end is designed for the terminal connection of Protrace self-regulating trace heating cables HTR, and it comes with an indicator light for status indication. It is certified for use in designated hazardous areas.
- The JHE-L-GET explosive-proof junction box with light at the tail end comes with a supporting base, which can be securely fastened to the pipe using stainless steel clamps and buckles. The sturdy and durable bracket also protects one heating cable that enters the junction box from the bottom of the bracket, and it is connected at the tail end.
- The JHE-L-GET explosive-proof junction box with light at the tail end, when used with a supporting base, can be used on pipes with insulation thickness not exceeding 80mm.

## Structure of junction box



Model: JHE-L-GET

Components: The kit includes one tail end connector with an indicator light, with a supporting base.

Approvals mark: 

Size: Refer to the design document

Compatible heating cables: HTR

Protection grade: IP65

Scope of environment temperature: -40 °C~ 65 °C

Minimum installation temperature: -40°C

Working current: 62mA

Temperature class: T5-T6

Maximum pipe temperature: Refer to the specification

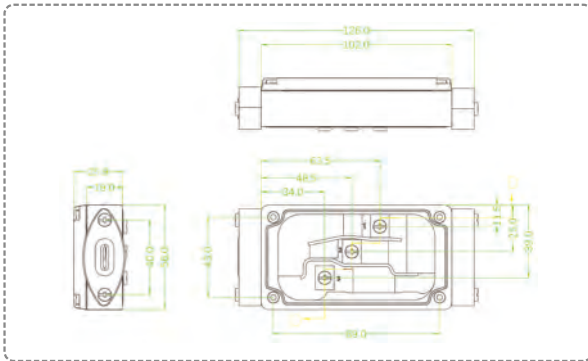
description of trace heating lines.

Maximum wire size: 6mm<sup>2</sup> multi-strand cable, 6mm<sup>2</sup> solid cable

Rated working voltage: 120V/240V

Model	Name	Features
JHE-L-GET	End anti-explosive junction box with lamp	Refer to the design document.

The JHE-L-GET kit does not include the connection accessory kit. If needed, please order it separately, as it depends on the specific model of the heating cable used. Please consult local Protrace technicians for confirmation.



### Introduction:

The JHS-GET explosive-proof splice box is suitable for the two-way connection of self-regulating trace heating cables and constant power wattage heating cables. It is installed outside the pipeline and inside the insulation layer.

JHS-GET explosive-proof three-way junction box is suitable for hazardous locations (Zone 1 and Zone 2).

### Required tools:

Tools required: Wire cutter, pliers, screwdriver, and special utility knife.

### Electric data:

Rated voltage: 220V/380V

Rated current: 40A

Approvals mark: 

Protection grade: IP66/ 67

### Installation accessories:

Fiberglass tape (PET-GAT)






Insulating tape

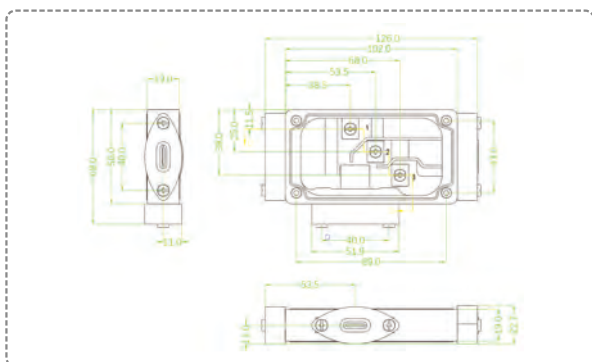
Plastic binding tape

Stainless steel clamps (PET-SST/B)

Stainless steel buckles (PET-SST/B1)

### Box internals

Component graphic example	Quantity	Content	Component graphic example	Quantity	Content
	1	Two-channel connector body		2	Two-channel connector sealing gasket
	2	Two-channel connector cover plate		2	Silicone sealing ring of two-channel connector
	2	Two-channel connector terminating			



## Introduction:

The JHT-GET explosive-proof three-way junction box is suitable for the three-way connection of self-regulating trace heating cables and constant power wattage heating cables. It is installed outside the pipeline and inside the insulation layer.

JHT-GET explosive-proof three-way junction box is suitable for hazardous locations (Zone 1 and Zone 2).


## Required tools:

Tools required: Wire cutter, pliers, screwdriver, and special utility knife.

## Electric data:

Rated voltage: 220V/380V

Rated current: 40A

Approvals mark: 

Protection grade: IP66/ 67

## Installation accessories:

Fiberglass tape (PET-GAT)






Insulating tape

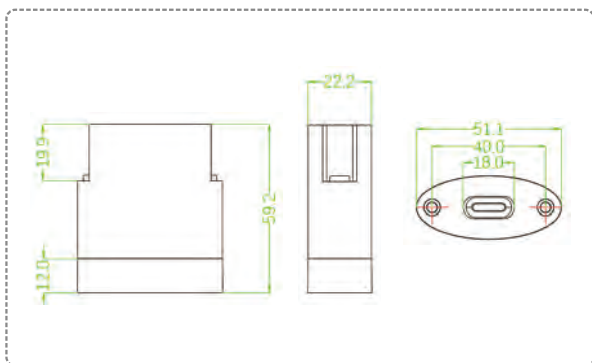
Plastic binding tape

Stainless steel clamps (PET-SST/B)

Stainless steel buckles (PET-SST/B1)

## Box internals

Component graphic example	Quantity	Content	Component graphic example	Quantity	Content
	1	Three-channel connector body		2	Three-channel connector sealing gasket
	2	Three-channel connector cover plate		3	Silicone sealing ring of three-channel connector
	3	Three-channel connector terminating			



### Introduction:

The JHE-GET explosive-proof end seal with light is suitable for the sealing of the tail end of self-regulating trace heating cables and constant power wattage heating cables. It is installed outside the pipeline and inside the insulation layer. The JHE-GET explosive-proof end seal with light is suitable for hazardous locations (Zone 1 and Zone 2).


### Tools required:

Screwdriver, cutting pliers, special tool knives

### Electric data:

Rated voltage: 220V/380V

Rated current: 40A

Approvals mark: 

Protection grade: IP66/ 67

### Installation accessories:

Fiberglass tape (PET-GAT)




Insulating tape

Plastic binding tape

Stainless steel clamps (PET-SST/B)

Stainless steel buckles (PET-SST/B1)

### Box internals

Component graphic example	Quantity	Content	Component graphic example	Quantity	Content
	1	Two-channel connector body		1	Two-channel connector sealing gasket
	1	Two-channel connector terminating			

Model	Description	Application
JHS-GET	Explosive-proof End Seal Box JHT-GET	Refer to the design document.
JHT-GET	Explosive-proof End Seal Box JHS-GET	Refer to the design document.
JHE-GET	Explosive-proof End Seal Box JHE-GET	Refer to the design document.

The above three junction boxes do not contain connecting accessories and other kits. For the relevant contents of junction box, refer to the design document. If needed, please order it separately, as it depends on the specific model of the trace heating cable used. Please consult local Protrace technicians for confirmation.



**Description:**

High-current Cable Joint PET-HD Series are used for the crimp and encapsulation connection of 1ESF single-core series constant power wattage heating cable systems in hazardous locations. The application of this new connection method can save a large number of installation time and cost. It is easy to maintain and change the trace heating belt system.

The High-current Cable Joint PET-HD Series are available in two specifications:

PET-HD-54A/E

Connect cable to 2.9Q/km (MAX 6mm), 54A

PET-HD-129A/E

Connect cable to 0.8Q/km (MAX 25mm), 129A

**Characteristics:**

- Quick and easy installation
- Resistant to chemical corrosion
- Convenient on-site assembly
- Low cost, high performance
- Suitable for Zone 1 and Zone 2

Exposive Mark: Ex eb IIC Gb  
Ex tb IIC Db

Certification:  

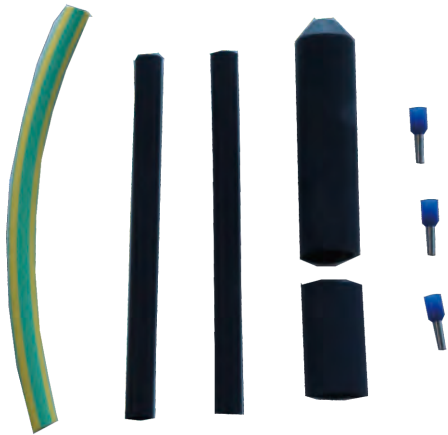
**Technical parameters:**

Rated voltage: 750V

Operating temperature : -30°C ~ 200°C

Protection level: IP65

Model	Description
PET-HD-54A/E	explosive-proof ESF HD high current connector 54A
PET-HD-129A/E	explosive-proof ESF HD high current connector 129A



Heat shrink termination kit

Suitable for general power end/tail termination of self regulating trace heating cables HTLe, HTR, HTP, HTS, HTU, and FCW in both safe and hazardous areas.

Used to connect the heating cable to explosive-proof junction boxes or junction boxes with light. It utilizes heat shrink technology and employs crimping sleeves for end-to-end encapsulation. Anti-aging, flame retardant, good insulation.

Model	Description	Application
PET-RS85	Heat shrink termination kit	HTLe, HTR, HTP, HTS, FCW
PET-RS95	Heat shrink termination kit	HTU*
PET-ES02	Heat shrink termination kit	2ESF
PET-RS03	Heat shrink termination kit	3ESF



Cold termination kit

Suitable for general power end/tail termination of self regulating trace heating cables HTLe, HTR, HTP, HTS, HTU\*, and FCW constant power wattage heating cable in both safe and hazardous areas.

Used to connect the heating cable to explosive-proof junction boxes or junction boxes with light. It utilizes the silicone adhesive method for end-to-end sealing, providing aging resistance, flame resistance, and excellent insulation.

Model	Description	Application
PET-CA-P3Si	Cold termination kit (without potting at the tail end)	HTLe, HTR, HTP, HTS, FCW
PET-CA-P2/E2	Cold termination kit (cold shrink)	HTLe, HTR, HTP, HTS, FCW
PET-CA-P4	Potting at the tail end kit	HTLe, HTR, HTP, HTS, FCW



Install the panel support kit

Model: PET-JBM\*\*\*\*

It is used to fix junction boxes and temperature controllers on pipes and containers.

Material: Stainless steel 304/galvanized Iron

Model	Description
PET-JBM****A	Galvanized iron material for installation backplate
PET-JBM****B	Stainless steel 304 material for installation backplate



Pt100 Temperature sensor

Model: PET-PT100-EX

The PT100 temperature sensor is suitable for explosive environments and features an explosive-proof structure. The probe is flexible. The sensor is a three-wire resistance temperature detector, commonly used together with monitoring systems that require precise temperature control.

Resistance: 100Ω at 0°C Sensor housing: 316L

Test Voltage: 10V-100VAC Temperature Range: -200°C~450°C

Current Measurement: ≤5mA explosive-proof Type: Ex db IIC Tb Gb

Ex tb IIIC T80°C Db



Glass fiber tape

Model: PET-GAT

Fiberglass tape is a special adhesive applied to a base of fiberglass tape. The tape is 20mm wide and each roll is 20m long. It is mainly used to fix the heat tracing tape along the radial direction of the pipeline. The length of the tape depends on the outer diameter and length of the pipeline, and the interval distance depends on the size of the pipeline diameter, which is generally 0.5mm~0.8mm. The amount of fiberglass tape used is generally calculated as the perimeter of the pipeline \* the length of the pipeline \* 8 (comprehensive factor).





Hose clamp and latch

Model: See table below

Hose clamp and latch consist of stainless steel belts and regulating screws, which are used to fix accessories such as anti-explosive power junction box on a pipeline.

The steel strip can be cut to 1.1 times the actual fixed length according to the pipe diameter. Then the front and rear ends of regulating screws are fixed respectively in the small holes at both ends, or the regulating screws are tightened.

Model	Name	Specifications
PET-SST/B	Stainless steel clamps	Material: 304 stainless steel, 10mm wide, 10m/roll
PET-SST/B1	Stainless steel buckles	Lock buckle is used with hose clamp
PET-SST-01	Stainless Steel Hose Clamp Kit	Suitable for pipes less than 1", includes hose clamp and lock buckle
PET-SST-02	Stainless Steel Hose Clamp Kit	Suitable for 1"-2" pipes, includes hose clamp and lock buckle
PET-SST-10	Stainless Steel Hose Clamp Kit	Suitable for 3"-10" pipes, includes hose clamp and lock buckle
PET-SST-20	Stainless Steel Hose Clamp Kit	Suitable for pipes over 10", includes hose clamp and lock buckle



Aluminum foil tape

Model: See table below

Aluminum tape is made of aluminum foil tape coated with a layer of special adhesive. It is used to fix the heating cable along the trend of heating cable, and the temperature wrap of temperature controller, so as to facilitate installation. Its main function is to fix the trace heating belt, increase the heat dissipation surface of trace heating belt, improve heat conduction. The amount of aluminum tape used is 1.2 times the number of electrical heating trace.

Model	Name	Specifications
PET-AT	High Temperature Aluminum Foil Tape	50mm (width) X50m (length) X0.08mm (thickness)
PET-ATW	High Temperature Aluminum Foil Tape	66mm (width) X50m (length) X0.15mm (thickness)



Insulation bushing

In some cases, the power junction box cannot be directly installed on a pipeline or device. Therefore, the trace heating line or the signal cable of temperature sensor needs to pass through the thermal insulation layer to connect to the junction box, which may be cut by the outermost metal case of the heat insulating material. In this case, the relevant insulation bushing is prefabricated on the trace heating line body, cold end, or other signal line through the outermost metal case of heat insulating material to protect the safety of line.

Model	Name	Adaptable line type
PET-INS100	M25 flat hole, Insulating bushing	Self-limiting temperature heat tracing tape other than LHTR and 15HTR, and FCW parallel constant power heat tracing tape
PET-INS200	M32 flat hole, insulation liner	LHTR and 15HTR self-limiting temperature heat tracing tape
PET-INS500	M20 round hole, insulation liner	Series constant power heat tracing tape

Warning mark



Model	Description	Application situations
PET-WL	Warning labels in both Chinese and English	Attach to the outer side of the sleeve of insulation to serve as a warning.
PET-WS	Warning labels in both Chinese and Russian	Attach to the outer side of the sleeve of insulation to serve as a warning.

Note: All accessory models are for reference only, as they are related to the type of heat trace heating tape used. Please consult with local Protrace technicians for technical confirmation and selection, and order separately.

With the wide application of electric trace heating system in industrial, civil and commercial occasions, its importance is also growing, so the reliability requirements of trace heating system are getting higher and higher. In terms of cost, the proportion of electric heat tracing in the overall investment is often not large. However, the heat insulating cable is broken, the pipeline is frozen, the medium is scrapped, the building water pipe is frozen, or deicing is not effective, it will cause great consequences. Realizing the reliability of the trace heating system depends on a complete control system.

STC and MTC thermostats are suitable for installation inside the electrical heat tracing control cabinet and used in safe areas.

If they are used in cabinets that require explosive-proof, they need to be operated through a viewing window and travel switch.

STC is a single-channel digital display temperature controller that can independently control a single circuit and automatically control the electrical heat tracing circuit by setting the temperature and other thresholds.

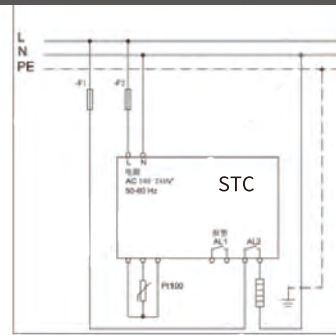
MTC is a multi-channel digital display temperature controller that can control up to 18 circuits. It can also adjust the ports through internal programming to facilitate key monitoring and measurement of some important loads.

PTDC and BJW86 are both field-installed temperature controllers. The difference is that PTDC is a digital display temperature controller with relatively high precision, while BJW86 is a mechanical temperature controller with relatively low precision.

BJW86 is a mechanical explosive-proof thermostat that can monitor environmental temperatures and the surface temperatures of heat-traced objects at the site. The temperature controller can respond to temperature changes and has an adjustable set point, so the BJW86 mechanical thermostat can be used to control a single heat tracing circuit or as a signal control unit for multiple heat tracing circuits attracted by a contactor.

PTDC, as a digital display explosive-proof thermostat, can provide more accurate temperature control for the heat tracing circuit. It uses a corrosion-resistant increased safety polyester casing, and through a specific structure, it has passed the certification and can be used in explosive-proof areas. In addition to local control functions, this explosive-proof thermostat can also achieve remote monitoring.

Considering that the control system is an important part of ensuring the reliable operation of the entire electrical heat tracing system, various control methods have been derived for different control objects and control requirements, such as self-temperature adjustment, proportional control, ambient temperature control, pipe temperature control, proportional ambient control, PID control, and so on. With the development of science and technology, the requirements for monitoring are also growing. The emergence of DCS has made the demand for centralized access to all control information and status content increasingly strong. Therefore, controller configuration has become a necessity, and the electrical heat tracing system has evolved from a single system to a trend of intensification, informatization, and networking.



(For detailed wiring diagrams, please refer to the manual)

The STC Single-channel Digital Display Controller (simplified version) is easy to operate, with a measuring accuracy of 0.3 grade, dual four-digit LED displays, suitable for detecting industrial process quantities such as temperature, pressure, flow, and humidity. It supports 4-way alarm function, supports RS485 communication interface with standard MODBUS protocol, optical isolation between input/output and power supply, power supply of 100-240VAC, standard card insertion installation, and a working environment temperature of 0°C~50°C with relative humidity of 5%~85%, no condensation.

#### Function:

- Single loop input, dual screen LED digital display
- Has upper and lower limit alarm function, with LED alarm indicator light
- Supports RS485 communication interface, adopts standard MODBUS RTU communication protocol (for some models)
- Input, output, power, and communication are optically isolated from each other
- Parameter setting password lock, setting parameter power-off permanent storage
- Sensor monitoring
- Restore factory default parameters

#### Technical parameters:

Applicable environment temperature: 0°C~50°C

Relative humidity: 5%~85%RH (avoid strong corrosive gas)

Measurement accuracy: level 0.3

Setting mode: panel touch button for digital setting, parameter settings for password lock, parameter settings for power-off permanent preservation.

Display mode: -1999~9999 measurement value display; LED working status display

Installation method: standard snap-in type

Working power: 100-240VAC, 50/60HZ

Input signal: PT100

Digital communication: It allows the display instrument to communicate with the PC or computer network system using the MODBUS RTU protocol. It is recommended to use the isolation interface board. Otherwise, interference may occur or affect communication due to different earth potentials. The wire should use shielded twisted pair (for some models).

Note: If you need to order, please consult with the local Jiahong technicians for technical confirmation and model selection.

Product Model	Product Name	Description	Remarks
STC-1	Single Channel Digital Temperature Controller	Panel size: 48X48mm, control point 1/alarm point 1, supports RS-485 communication	Suitable for use in non-explosive-proof areas, the temperature controller is for cabinet door type installation
STC-2	Single Channel Digital Temperature Controller	Panel size: 48X48mm, control point 1/alarm point 2, supports RS-485 communication	
STC-3	Single Channel Digital Temperature Controller	Panel size: 72X72mm, control point 1/alarm point 1, supports RS-485 communication	
STC-4	Single Channel Digital Temperature Controller	Panel size: 72X72mm, control point 1/alarm point 2, supports RS-485 communication	
STC-5	Single Channel Digital Temperature Controller	Panel size: 48X48mm, control point 1/alarm point 1, does not support communication	
STC-6	Single Channel Digital Temperature Controller	Panel size: 48X48mm, control point 1/alarm point 2, does not support communication	
STC-7	Single Channel Digital Temperature Controller	Panel size: 72X72mm, control point 1/alarm point 1, does not support communication	
STC-8	Single Channel Digital Temperature Controller	Panel size: 72X72mm, control point 1/alarm point 2, does not support communication	



MTC multi-channel digital display controller 1~48 universal input (configurable input selection: standard voltage, standard current, thermocouple, thermal resistance, millivolts, etc.). Can provide 18 alarm outputs or 12 analog transmission outputs, RS232/485 communication interface, Ethernet interface, micro printer interface, and USB interface, SD card socket; can provide sensor power distribution; has a powerful display function, real-time curve display, historical curve recall, bar graph display, alarm list display, etc.

Humanized appearance design, perfect function, reliable hardware quality, exquisite manufacturing technique, a higher performance-price ratio.

#### Function:

- 7-inch 800\*480 dot matrix widescreen TFT high-brightness color graphic LCD display
- Chinese and English operating screens can be switched at will, the operation is simple, the configuration is simple and reliable, and the software password lock guarantees configuration security
- Uses high-speed, high-performance 32-bit ARM microprocessor, built-in embedded operating system, real-time monitoring, display, recording, alarm
- Large-capacity FLASH memory chip saves setting parameters and historical data, data can be permanently stored after power off
- Full aluminum sealed shell to ensure the instrument works normally in harsh environments

#### Technical parameters:

Applicable environment temperature: -100°C~50°C

Minimum installation temperature: -10 °C

Relative humidity: 10%~90%RH

Control accuracy:  $\pm 0.2\%$ FS

Setting mode: Touch-type key digital setting on the panel, parameter setting value password lock, setting value power-off permanent storage

Display mode: 7-inch 800\*480 dot matrix widescreen TFT high-brightness color graphic LCD display, LED backlight, clear screen, wide viewing angle. The display content can consist of Chinese characters, numbers, process curves, bar diagrams, etc. The panel button can be used to complete the screen page turning, historical data searching, curve time scale change, etc.

Power supply voltage: 85~264VAC or 12~364VDC

Storage capacity: Internal FLASH memory capacity 64M Byte

Input signal: Up to 48 channels of isolated universal signal input, the isolation voltage between channels is greater than 250VAC, and the isolation voltage between channels and ground is greater than 500VAC.

Communication settings: Standard serial communication interface, supports ModBus-RTU communication protocol, 10M Ethernet standard blade 45 interface, supports ModBus-TCP communication protocol.

Note: If you need to order, please consult with the local Jiahong technicians for technical confirmation and model selection.

Product Model	Product Name	Remarks
MTC-4	Multi-channel digital temperature controller (4 channels)	Suitable for use in non-explosive-proof areas, the temperature controller is for cabinet door type installation
MTC-6	Multi-channel digital temperature controller (6 channels)	
MTC-8	Multi-channel digital temperature controller (8 channels)	
MTC-10	Multi-channel digital temperature controller (10 channels)	
MTC-12	Multi-channel digital temperature controller (12 channels)	

## BJW86 explosive-proof Temperature Controller



BJW86 explosive-proof temperature controller is used to control the temperature of the heat tracing medium.

BJW86 is designed and manufactured according to the requirements of explosive-proof electrical appliances. It is used in conjunction with CH universal explosive-proof junction box. The explosive-proof mark is "Ex db eb mb IIC T4 Gb; its shell is BMC composite material, which has anti-corrosion, lightweight, high mechanical strength, high insulation strength and other characteristics. The sealing part is silicone rubber, which has high temperature resistance (300°C, high voltage resistance and other characteristics, and the fasteners are stainless steel components.

### Main Technical Specifications:

Rated voltage: 220V/380V

Rated current: 40A

Temperature Control Range: 0°C~120°C, 0°C~150°C, 0°C~200°C

Temperature Control Precision:  $\pm 3^{\circ}\text{C}$

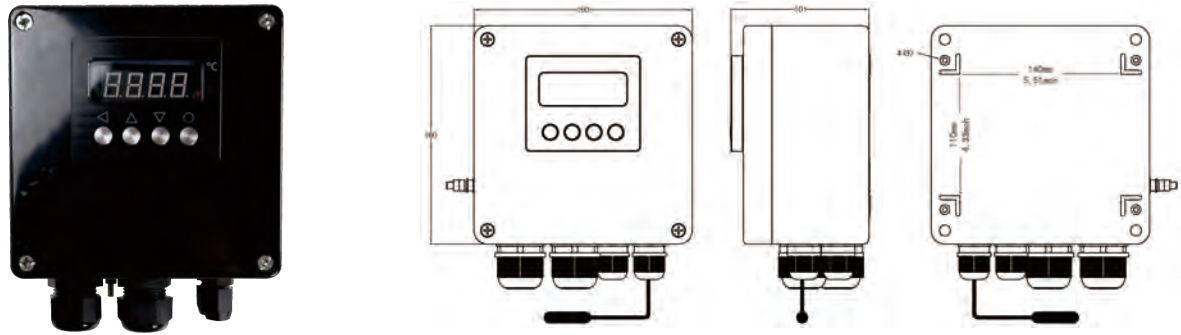
Differential On/Off Temperature:  $\leq 4^{\circ}\text{C}$

Control Cable Sealing Ring Inner Diameter:  $\Phi 14\text{mm}$

Protection grade: IP65

Product Model	Product Name
BJW86-120/25	explosive-proof Temperature Controller
BJW86-150/25	explosive-proof Temperature Controller
BJW86-200/25	explosive-proof Temperature Controller

## PTDC explosive-proof Digital Display Temperature Controller



- The PTDC explosive-Proof Digital Display Temperature Controller is a precision and reliable temperature control device for heat tracing applications, capable of local installation, display, control, as well as remote monitoring.
- This product features an anti-corrosion, enhanced safety polyester casing. The display buttons and sensor parts use intrinsically safe circuits, while the relay components are encapsulated. Certified by third-party institutions, it is suitable for hazardous areas Zone 1 and 2 (Gas) and Zone 21 and 22 (Dust), as well as non-hazardous areas.
- explosive-Proof Rating: Ex eb ib mb IICT4 Gb

### Characteristics:

- Includes an intrinsically safe sensor for temperature measurement and real-time display
- Allows setting of temperature value, control differential value, and initiation of electrical heat tracing tape below the set temperature
- Capable of detecting sensor faults
- Relay alarm signal functions are programmable
- Equipped with Modbus RTU communication
- Features a viewing window and external operation buttons
- Parameters can be set and modified in real time
- Local control of heat tracing tape output is possible (smart temperature controller)
- Maximum surface temperature of the heat tracing tape can be limited

### Basic data:

Rated voltage	Ambient temperature range	Rated current	Measurement Process Temperature	Product temperature group
AC220V	-40°C ~ 55°C	32A	-40°C~125°C	T4, T135°C

### Technical data:

Ambient Temperature Range: -40°C~+55°C  
 Relative humidity: ≤95% RH  
 Shell: Enhanced safety polyester black shell  
 Dimensions: 160mm\*160mm\*102mm (L\*W\*D)  
 Protection level: Ip66  
 Electric data:  
 Rated voltage: AC220V (-10%~+20%)  
 50Hz (47Hz~63Hz)  
 Rated current: 32A  
 Sensor Type: PT100, 3-wire  
 Measurement Range: -60°C~+200°C (-1 model) or  
 -60°C~+600°C (-2 model)

Cable Interfaces: Power supply~1 \* M25 gland  
 Heat tracing tape ~2\*M20 plugs  
 Communication/Alarm~ 1 \*M 16 gland or plug  
 Sensor~1\*M16 gland

Weight: Approx. 3.3 kg  
 Measurement Accuracy: ±11<@5°C  
 No-load power consumption: Pmax=5VA  
 Full-load power consumption: Pmax=7kVA  
 Alarm Relay Contact Capacity: 5A250Vac  
 Communication Protocol: Modbus RTU  
 Communication Hardware Form: Rs485

The PTDC Temperature Controller/Limiter does not include a connection accessory kit. If needed, please order separately as it depends on the model of heat tracing used. Confirm with local Jiahong technical personnel.

As society progresses and industrialization and informatization deepen, the electrical trace heating system has evolved from a simple single system to an integrated, informational, and networked trend. The ability to understand the status of the plant's trace heating operation without being on-site, to operate every heating circuit from the office, or to receive updates on the heating system through a smartphone is no longer a pipe dream but a feasible reality.

Jiahong's electrical trace heating monitoring system can be applied in various precise control scenarios, offering diverse, multi-level, and multifunctional control system solutions to achieve accurate control of trace heating and a decentralized centralized control system.

## Hierarchy Levels

Full platform control station/master control for the entire plant  
Monitors all information in the network completed by link configuration

## Second Level

Regional/Functional Module Control Station  
Monitors all electrical heat tracing information within its area or module and interacts with other areas or modules using configuration and certain communication protocols, also capable of communicating with the top level

## Third Level

Local control cabinet with an interactive control system  
Controls the local heating system and monitors all related information, interacting with the second level through configuration and certain communication protocols.

## Fourth Level

On-site Local Control Host  
Only controls and monitors the status of its electrical heat tracing circuit, interacting with the third level using configuration and certain communication protocols. According to the four levels of requirements, the structure diagram is as follows:  
Top Level: Upper machine/Host monitoring station  
Second Level: Regional DCS host, Large PLC systems, Regional host/Functional module host  
Third Level: Industrial touch screen + Medium-small PLC, Stand-alone temperature controller  
Fourth Level: On-site local temperature controller  
Between Top Level and Second Level: Industrial Ethernet/Serial RS485 + Profibus/Modbus and other protocols  
Between Second Level and Third Level: Industrial Ethernet/Serial RS485 + Profibus/Modbus and other protocols + Optical fiber transmission  
Between Third Level and Fourth Level: Serial RS485 + Profibus/Modbus and other protocols

## The system includes features

- support multiple network architectures, such as TCP/IP and RS-485, also support various network communication protocols and protocol conversion functions
- provide high temperature control accuracy for heat-traced objects, along with a variety of control modes
- offer a rich display of monitoring system screens, operation, parameter setting, and other human-machine interaction functions
- offer a function for querying and setting historical temperature data and trend curves, as well as importing/exporting data
- provide high and low temperature alarm functions and historical records
- provide alarms and trip functions for the monitoring of trace heating circuit current and leakage current
- realize long-distance network communication through an optical fiber network
- interact with fire-fighting, water treatment, and other functional modules



Trace heating line and main accessories pairing table		HTLe series	HTR series	HTP series	HTS series	HTU+ series	FCW series	1 ESF series	2 ESF series	3 ESF series	ESF-P series	MSF-1 series	MSF-2 series
PTBS-GET-120 series	explosive-proof junction box	●	●	●	●		●						
PTBS-GET-160 series	explosive-proof junction box					●							
PTBM-GET-120 series	explosive-proof junction box	●	●	●	●		●	●	●			●	●
PTBM-GET-160 series	explosive-proof junction box							●		●			
PTBM-GET-260 series	explosive-proof junction box							●		●			
JHS-GET	Explosive-proof Splice connection Box	●	●	●	●		●						
JHT-GET	Explosive-proof Tee connection Box	●	●	●	●		●						
JHE-GET	Explosive-proof End Seal Box	●	●	●	●		●						
PTBS-L-GET	Explosive-proof Junction Box with Light	●	●	●									
JHT-L-GET	Explosive-proof End Seal with Light	●	●	●									
PJB-130	Power junction box	●	●										
STC series	Single-channel digital display temperature controller	●	●	●	●	●	●	●	●	●		●	●
MTC series	Multi-channel digital display temperature controller	●	●	●	●	●	●	●	●	●		●	●
BJW86 series	Explosive-proof Temperature Controller	●	●	●	●	●	●	●	●	●			
PTDC	Explosive-proof Digital Display Temperature Controller	●	●	●									
PTMC	Mechanical explosive-proof temperature controller	●	●	●	●	●	●	●	●	●			
PET-PT100	Temperature sensors	●	●										
PET-PT100-Ex	explosive-proof temperature sensors	●	●	●	●	●	●	●	●	●		●	●
PET-AT	High Temperature Aluminum Foil Tape	●	●	●	●	●	●	●	●	●			
PET-ATW	High Temperature Aluminum Foil Tape	●	●	●	●	●	●	●	●	●			
PET-GAT	Glass fiber tape	●	●	●	●	●	●	●	●	●			
PET-INS/100	Insulating bushing	●	●	●	●	●	●						
PET-INS/200	Insulating bushing												
PET-INS/500	Insulating bushing							●	●	●			
PET-WL	Warning label in both Chinese and English	●	●	●	●	●	●	●	●	●	●	●	●
PET-WS	Warning label in both Chinese and Russian	●	●	●	●	●	●	●	●	●	●	●	●
PET-RS85	Heat shrink termination kit	●	●	●	●		●						
PET-PS95	Heat shrink termination kit					●							
PET-ES02	Heat shrink termination kit								●				
PET-ES03	Heat shrink termination kit									●			
PET-HD	High-current Cable Joint							●					
PET-CA-P3Si	Cold termination kit	●	●	●	●		●						
PET-CA-P2/E2	Cold termination kit	●	●	●	●		●						
PET-CA-P4	Potting at the tail end kit		●	●	●		●						

Note: All accessory models are for reference only, as they are related to the type of trace heating tape used. Please consult with local Protrace technicians for technical confirmation and selection, and order separately.

Quality products are the prerequisite for a high-quality electrical heat tracing system, and standardized installation is the key to whether the system can operate as designed for a long time. Therefore, the installation process of electrical heat tracing is crucial.

The overall installation of electrical trace heating can be divided into the following steps:

- a) Confirm whether the site conditions for installation have been met.
- b) Measure the resistance and insulation resistance of the trace heating tape
- c) Install the trace heating tape and various accessories.
- d) Install the power connection box.
- e) Measure the resistance and insulation resistance of the heat tracing tape
- f) Install insulation materials and waterproofing.
- g) Measure the resistance and insulation resistance of the trace heating tape.
- h) Repeat steps b) to g) until all electrical trace heating circuits are installed.
- i) Install the control cabinet and temperature control system.
- j) Connect the power cable and control cable.
- k) Affix warning labels to important heat tracing components.
- l) Acceptance of installation.

✓ Confirming whether the site conditions for installation have been met

The onsite installation staff should be electricians with experience in heat tracing or trained electricians.

The piping system and equipment should already be constructed, and whether the pipes have undergone pressure testing.

Rust and corrosion-resistant coatings should be dry and not interfere with heat tracing construction.

The pipeline system construction should be consistent with the design drawings.

Factors that could damage the outer sheath of the heat tracing tape, such as burrs and sharp corners, should be eliminated.

Familiarize with the related installation drawings, and check the actual measurements and specifications at the site.

✓ Measure the resistance and insulation resistance of the trace heating tape

Verify that the type and quantity of all trace heating tapes and accessories are consistent with the design quantity.

Check that all material packaging and quality are intact and undamaged.

Measure the insulation resistance of all trace heating tapes as required (500VDC test insulation resistance  $\geq 50M\Omega$ ).

The resistance of constant power trace heating tapes and mineral insulated heat tracing tapes should be measured according to design requirements, and all test data should be recorded.

✓ Install the trace heating tapes and various accessories

Cut the trace heating tape to the design length, and install it according to the heat tracing ratio, installation angle, laying method, etc. required by the design.

When cutting parallel Constant power wattage heating tape, pay attention to the heating joint. For series constant power trace heating tape and mineral insulated cables, confirm whether the cold end and connector have been prefabricated. If a tie or fixed mesh needs to be prefabricated on the pipe or equipment, it should be completed in advance.

Fix the trace heating tape with fiberglass tape, then fix the trace heating tape with aluminum foil tape to expand the heat dissipation area.

Install end connection accessories, tees, crosses, end caps, etc.

✓ Install the power box

Choose the correct power box according to the design requirements, fix it, and use a hose clamp and lock to fix it or use a back panel to fix it.

The trace heating tape that has completed the end connection is inserted into the junction box and firmly fixed according to the corresponding terminal.

## ✓ Measure the resistance and insulation resistance of the trace heating tape

The insulation resistance should be tested according to the requirements (500VDC test insulation resistance  $\geq 50M\Omega$ ), and recorded.

The resistance of self-limiting heat tracing tape can be measured, check the current room temperature as a reference.

The resistance of constant power heat tracing tape (including mineral insulation) should be measured, and compared with the design requirements. All test results should be recorded.

## ✓ Installation of insulation material and waterproofing

Confirm that the type, thickness, and specifications of the insulation material match the design requirements.

The installation of the general insulation and waterproofing should be carried out by professional insulation installers. If an additional protective layer is needed on the outermost part of the insulation material, it should be applied as well.

The insulation material must be kept strictly dry, and care should be taken during installation to avoid damage to the heat tracing line, especially when securing it with outer protective layer rivets.

If the heat tracing tape or signal wire needs to pass through the insulation to enter a junction box, a hole must be made at the appropriate location and fitted with the correct insulating sleeve.

## ✓ Measure the resistance and insulation resistance of the trace heating tape

Follow the same procedures as in the previous step.

## ✓ Installation of the control cabinet and temperature control system

Whether it's an ambient sensing thermostat or a pipe sensing thermostat, the correct thermostat must be used according to design requirements.

Connect the power supply according to the design-required voltage and check the power supply voltage level.

Any thermostats that need to be pre-installed must be prefabricated at the panel cabinet factory during the early stages.

The ambient sensing thermostat probe should be placed as close as possible to the location with the most shade, coldest temperature, highest wind speed, and least sunlight.

The pipe sensing thermostat probe should be placed as close as possible to the surface of the object being heat-traced and calibrated accordingly.

If thermostats require preset parameters, these must be set after powering the device.

The installation of the control cabinet must be carried out according to the installation requirements and type of cabinet, among other factors.

## ✓ Connect power and control cables

Check that the selection of cables meets the design requirements according to the specifications.

Connect the cables correctly between the temperature sensors, power connection boxes, and control cabinet as per design requirements.

If possible, estimate the routing of the cables in advance and plan the cable tray and wiring method.

After connecting the cables, they must be tagged with labels indicating their routing and connection points as per KKS or other standards.

## ✓ Affix warning labels to important heat tracing components

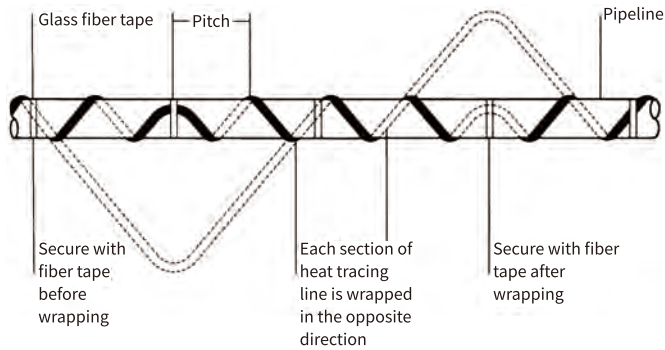
For components such as the direction of the heat tracing line, its angular position relative to pipes or equipment, and components like tees/crosses/end caps which are buried in the insulation layer and not visible, warning labels must be applied to the corresponding positions after the insulation layer installation to indicate the presence of significant heat tracing components.

## ✓ Acceptance

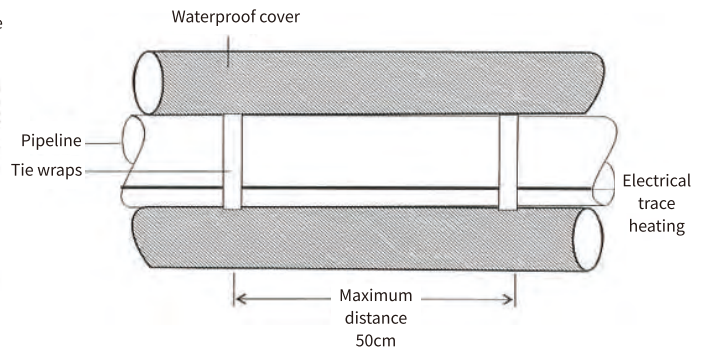
Review the recorded data from each test.

Power the entire system to perform a heat tracing system power test, recording relevant temperature, current, and other data while confirming that electrical components are functioning correctly.

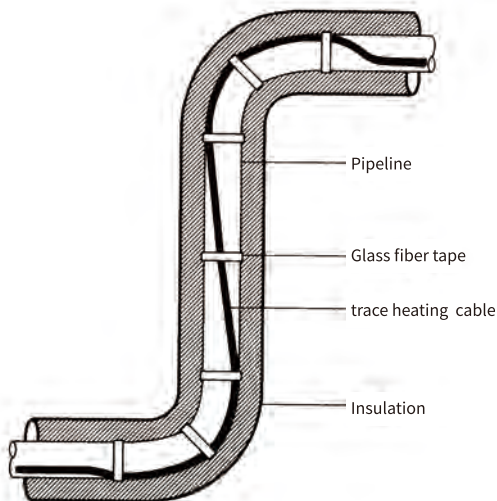
Wrapping installation of electrical trace heating tape on pipes



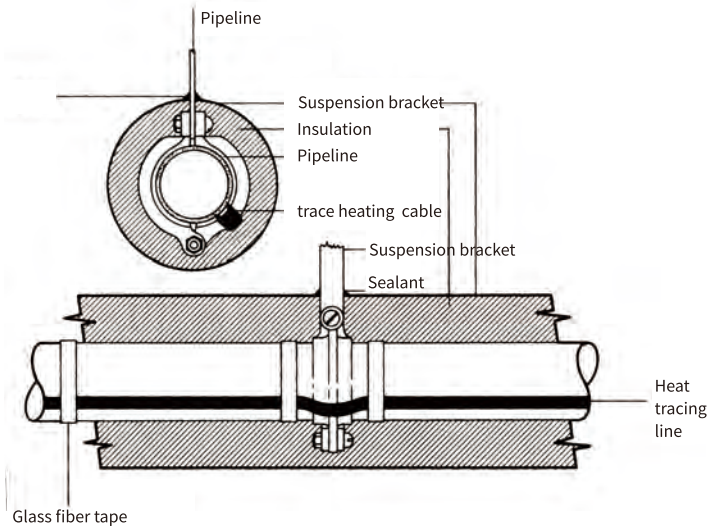
Direct laying installation of electrical trace heating tape on pipes



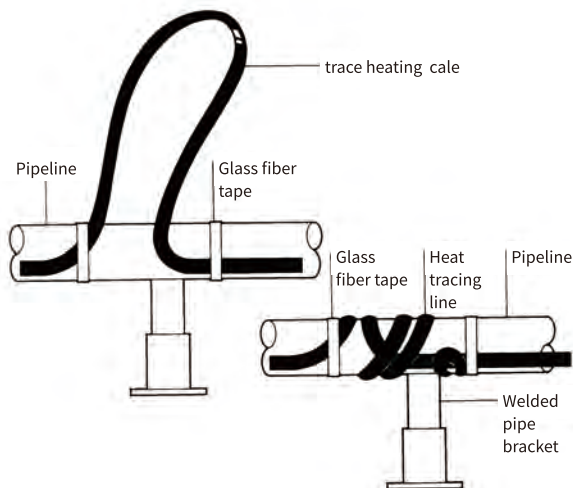
Heat tracing tape installation on pipe bends



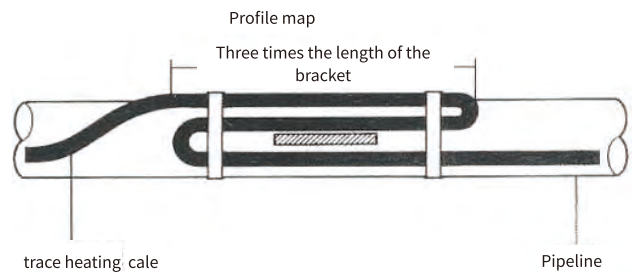
Electrical heat tracing tape installation on pipe sections passing through suspension brackets



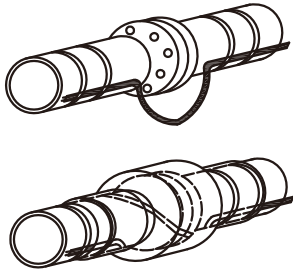
Electrical trace heating tape installation on pipe sections at welded brackets



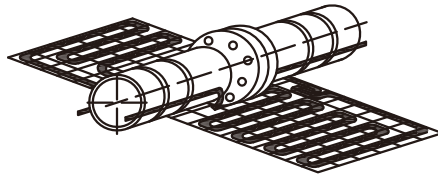
Electrical trace heating tape installation on pipe sections at bracket installation surfaces



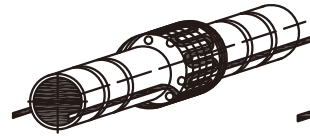
Electrical trace heating tape installation on valves, flanges, pumps, instruments, and other key points



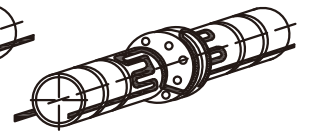
Flange



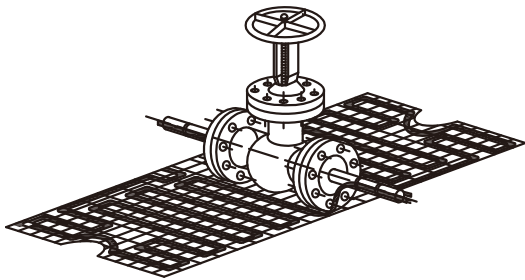
Flange



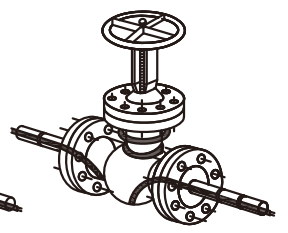
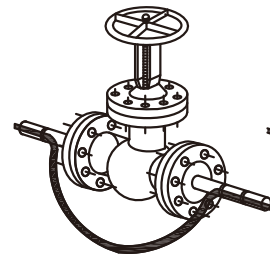
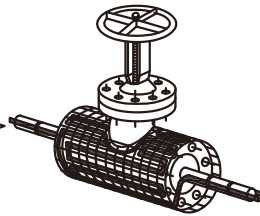
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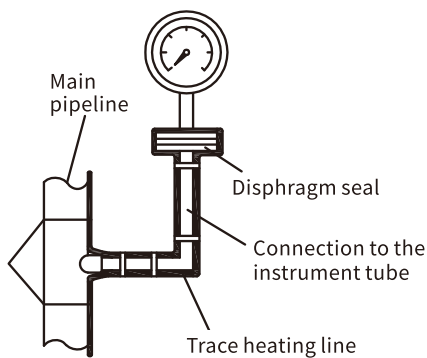
Flange



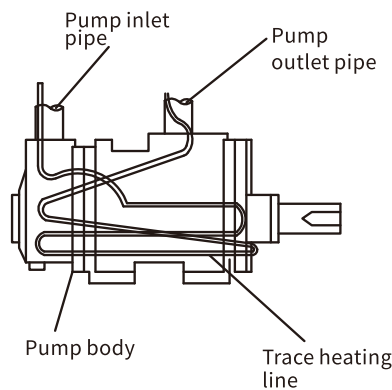
Valve



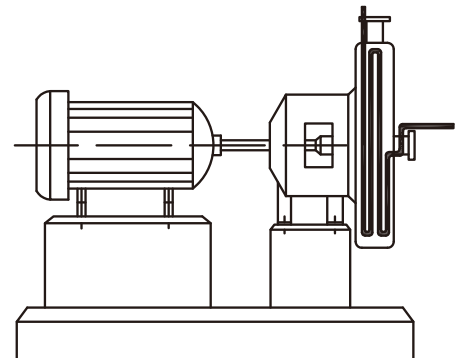
Valve



Pressure gauge



Pump



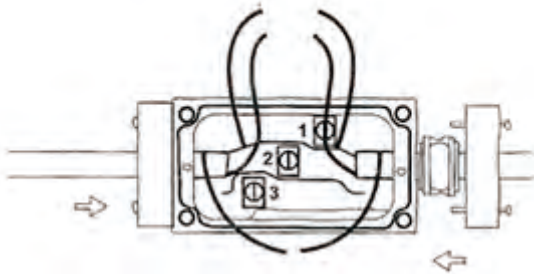
Pump

## Wiring diagram of junction box

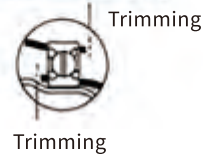
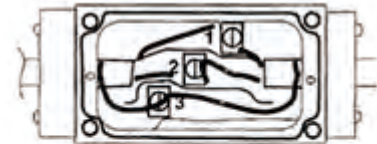
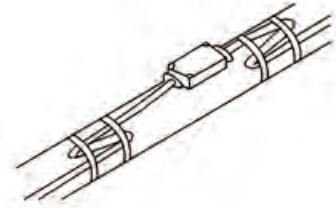
### (1) Two-way junction box

It is a two-way junction box for Self-regulating trace heating cable. During installation, it is fixed on the pipe and covered with insulation. Materials for two-way connections can all be placed inside the box.

All tools: wire cutters, needle-nose pliers, special tool knife, screws. Additional accessories required are washers and tape.



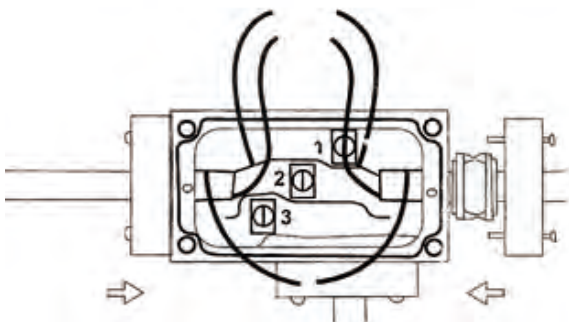
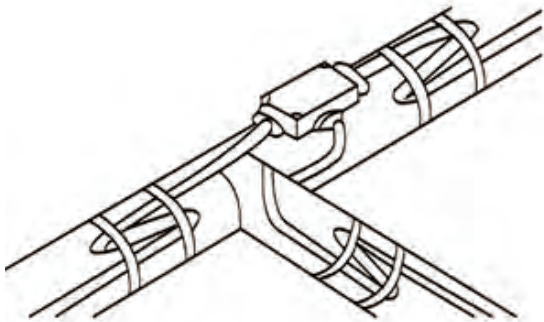
Push the heat ring into the box and secure it, tighten the screw to secure the pressure plate.



Loosen the bolt, secure the conductor to the terminal block with the anti-loose washer and pressure plate, tighten the bolt, anti-loose washer and pressure plate, trim off the excess wire.

### (2) Three-way junction box

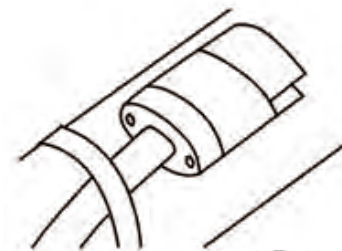
It is a three-way junction box for self-regulating trace heating cable, covered with insulation. Materials for three-way connections can all be placed inside the box.



Insert washers for cable No.1 and No.2 into the box and secure, tighten the screw to secure the pressure plate.

### (3) Terminal junction box

It is a terminal junction box for self-regulating trace heating cable. Materials needed for the installation at the heat tracing cable end can all be placed inside the box. Push the heat tracing cable completely into the terminal junction box, put on the washer and tighten the pressure plate.



**Note: Twisting the end parts of the trace heating cable is strictly prohibited.**

**Q: What is electrical trace heating? What's the difference between electrical trace heating and electrical heating?**

A: Electrical heat tracing is a form of heat compensation that uses the energy of electrical heat to supplement the heat lost by the traced body in the process, thus keeping the temperature of the medium at the most reasonable process temperature level. The difference between electrical heat tracing and electrical heating is that the former uses the energy of electrical heat to maintain the traced body at a reasonable process temperature level, while the latter uses the energy of electrical heat to increase the temperature of the heated body from a low range to a high range. Heat tracing simply uses the energy of electrical heat to compensate for the heat loss caused by the temperature difference in the traced body, maintaining the temperature at the process temperature, while heating uses the energy of electrical heat to increase the temperature of the heated body.

**Q: What parameters are needed for the design of electrical trace heating?**

- A: The shape, diameter, and length of the heat tracing object (pipe/equipment)  
 The process temperature to be maintained by the heat tracing object  
 The highest exposure temperature in the area where the heat tracing object is located  
 The lowest ambient temperature in the area where the heat tracing object is located  
 The material of the external insulation layer of the heat tracing object  
 The thickness of the external insulation layer of the heat tracing object  
 The thermal conductivity of the external insulation layer of the heat tracing object  
 The material of the heat tracing object  
 The total surface area of the heat tracing object (applicable for equipment heat tracing)  
 The maximum layout area of the heat tracing object (applicable for equipment heat tracing)  
 The number of valves/flanges/brackets/bends/instruments  
 Wind speed during outdoor installation

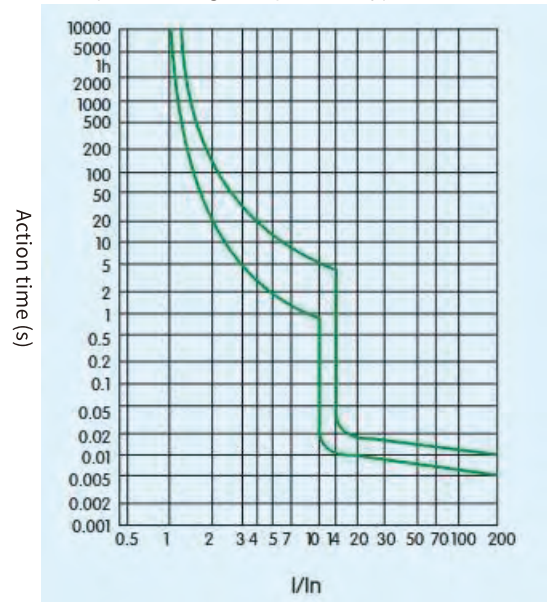
**Q: How to interpret maximum circuit length, maximum starting current, and startup time?**

- A: 1) Impact on the power distribution system  
 2) Impact on circuit breaker selection  
 3) Voltage drop  
 4) Impact on circuit protection  
 5) Interpretation of the maximum circuit length table

**Maximum Circuit Length for Type "C" Circuit Breaker Based on IEC 60898 Standard**

Maximum heat tracing circuit length @220V (with C characteristic switch)						
Switch capacity (with C characteristic switch)	Power-on temperature	3HTLe	5HTLe	6HTLe	8HTLe	10HTLe
16A	+10 °C	162m	144m	113m	96m	52m
	-20 °C	110m	99m	77m	61m	36m
25A	+10 °C	162m	144m	131m	108m	84m
	-20 °C	162m	144m	93m	74m	56m
32A	+10 °C	162m	144m	135m	108m	87m
	-20 °C	162m	144m	135m	108m	72m
40A	+10 °C	162m	144m	135m	108m	95m
	-20 °C	162m	144m	135m	108m	95m

GB/T 19835—2015 5.2.5 Start current ratio  
 Low temperature type IA/IN ≤ 3, medium temperature, high temperature type IA/IN ≤ 5,



Q: What are the components of a basic Electrical trace heating system?

A: Trace heating cable, power supply, incoming and outgoing power cables, control cables, distribution/control box, junction box, terminal kit, fixing zip ties/pressure sensitive tape, aluminum foil tape, temperature sensor, controller, etc.

Q: What are the main types of commonly used industrial electrical heat tracing systems?

A: Self-regulating electrical trace heating system  
Constant power wattage heating system  
Parallel constant power wattage heating system  
Skin-effect Electrical Trace Heating System

Q: After the onsite electrical heat tracing system installation is completed, how is it tested?

A: The test mainly includes insulation resistance test, resistance measurement, integrity check, visual inspection, photo record, current test, etc.





**Project Information**

Project name: \_\_\_\_\_

**Media Characteristics**

Name of fluid in the pipe: \_\_\_\_\_ Temperature to be maintained for the fluid: \_\_\_\_\_

Lowest ambient temperature: \_\_\_\_\_ Highest ambient temperature: \_\_\_\_\_

Limit temperature of the fluid inside the pipe: \_\_\_\_\_

**Pipeline and storage tank parameters**

Pipe length: \_\_\_\_\_ m Or storage tank height: \_\_\_\_\_ m

Pipe material: \_\_\_\_\_

Pipe diameter: \_\_\_\_\_ mm or storage tank diameter: \_\_\_\_\_ mm, please provide drawings if possible

Is there a steam purge line in the pipe: Yes \_\_\_\_\_ N/A \_\_\_\_\_

If Yes, maximum temperature during steam purge: \_\_\_\_\_ °C

Maximum possible temperature of the pipe (intermittent): \_\_\_\_\_ °C

Normal operating temperature of the pipe (continuous): \_\_\_\_\_ °C

**Insulation material**

Insulation layer material: \_\_\_\_\_ Insulation layer material: \_\_\_\_\_ W/m C @10°C

Insulation layer thickness: \_\_\_\_\_ mm

**Electrical parameters**

Power supply voltage: \_\_\_\_\_ V \_\_\_\_\_ Hz

Whether the operating environment requires anticorrosion and explosive-proof: Required \_\_\_\_\_ Not Required \_\_\_\_\_

explosive-proof rating: \_\_\_\_\_

**Operating Environment**

Required scope of supply and quotation from us (please tick):

- |                                       |  |                                |
|---------------------------------------|--|--------------------------------|
| 1. Electrical heat tracing tape _____ | 2. Control distribution box _____      | 3. Insulation material _____   |
| 4. Waterproof aluminum skin _____     | 5. Construction and installation _____ | 6. Installation guidance _____ |

Attachment: If there are multiple pipelines, please provide a list. Also, please provide the explosive-proof rating for the distribution box: \_\_\_\_\_

IP Protection level: \_\_\_\_\_



 [www.jh-trace.com](http://www.jh-trace.com)  400-0007-922  
 [jh-trace@ahjiahong.com](mailto:jh-trace@ahjiahong.com)  
 No. 86 Guandoumen Road, Jiujiang  
Economic Development Zone

