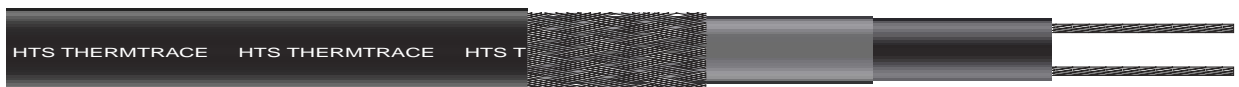




# Product Catalogue 2008



*Worldwide Specialists in Electric Heat Tracing*



# Heat Tracing Systems Product Catalogue

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**The information and recommendations of this publication are based upon research, International Standards and Regulations, information of others and ourselves and are believed to be correct.**

**We are unable to predict all conditions in which our products are being used and in which our products are used in combination with products of other manufacturers or suppliers. We do not accept liability for any application results that are based upon this information as to the suitability of our products or any other manufacturer products that may be used according to this information.**

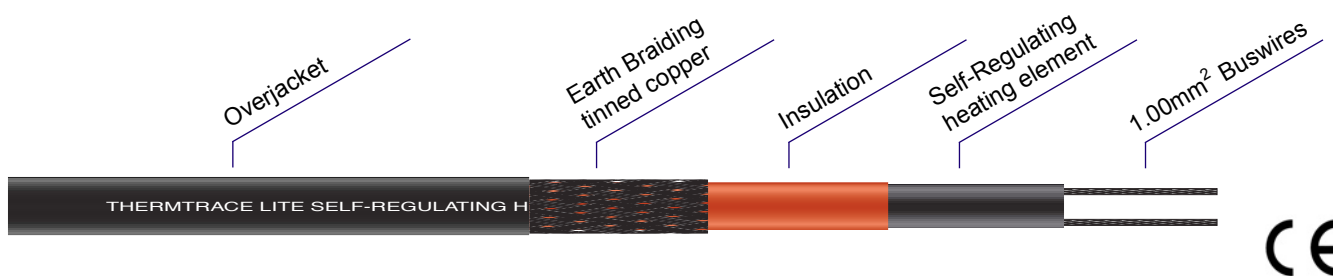
**Only use approved materials according to the application and environmental conditions.**

**The information of this publication are subject to change without notice.**

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# ThermTrace® Lite (TTL) Self-Regulating parallel heating tape

up to 85°C



## Description of heating tape

- Self-regulating
- 4 power output ranges
- Cut-to-length

### Applications:

ThermTrace® Lite is a construction / light industrial grade self-regulating heating tape that may be used for freeze protection, or low temperature maintenance of pipework and vessels.

### Function:

Self-regulating heating tapes consist of two parallel buswires, embedded in a semi-conductive self-regulating matrix. This means that the heating cable automatically responds to changes in ambient conditions.

With increase in temperature, the synthetic material expands by molecular force, and the connections between the carbon particles diminish, reducing the load. Conversely, as the temperature decreases, the load increases as the connections between the carbon particles increases accordingly.

Thus, the heating power varies according to the temperature of the surface the heating tape is applied to.

Self-regulating heating tapes will not overheat or burnout - even when overlapped.

### Technical Data:

Maximum exposure temperature (unpowered) Intermittent, 1000 cumulative hours	85°C
Maximum operating temperature (powered)	65°C
Nominal voltage	230V
Minimum bending radius	25mm
Minimum installation temperature	-30°C
Maximum resistance of braid	18 Ohms/km
Waterproof bonded insulation	optional

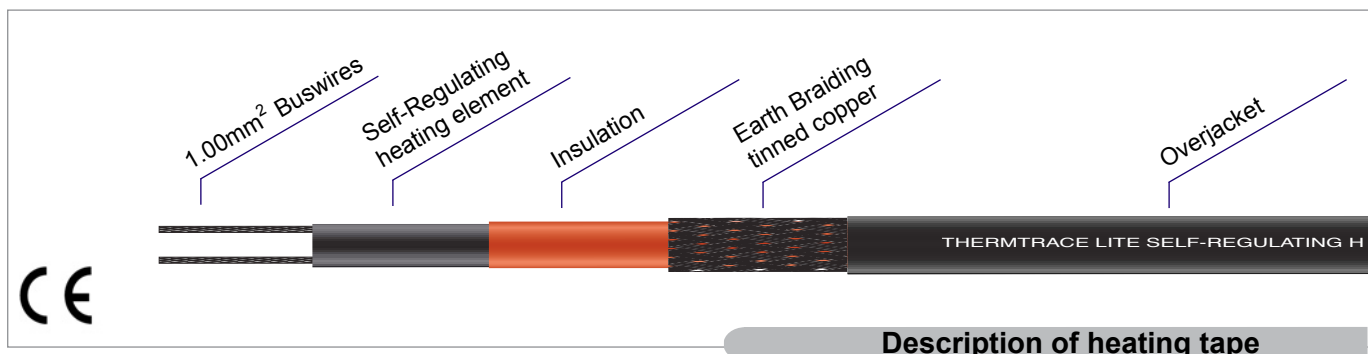
Name	Power Output on Insulated Metal Pipes at 5°C (W/m)	Maximum Permissible Temperatures powered (°C)      unpowered (°C)		Earth Braid Description	Nominal Dimensions (mm)	Nominal Weight kg/100m
12TTL-2-BO	12	65	85	tinned copper	10.5 x 6.0	10
12TTL-2-BOT	12	65	85	tinned copper	10.5 x 6.0	10
17TTL-2-BO	17	65	85	tinned copper	10.5 x 6.0	10
17TTL-2-BOT	17	65	85	tinned copper	10.5 x 6.0	10
23TTL-2-BO	23	65	85	tinned copper	10.5 x 6.0	10
23TTL-2-BOT	23	65	85	tinned copper	10.5 x 6.0	10
28TTL-2-BO	28	65	85	tinned copper	10.5 x 6.0	10
28TTL-2-BOT	28	65	85	tinned copper	10.5 x 6.0	10

BO: Braid and thermoplastic overjacket  
BOT: Braid and fluoropolymer overjacket

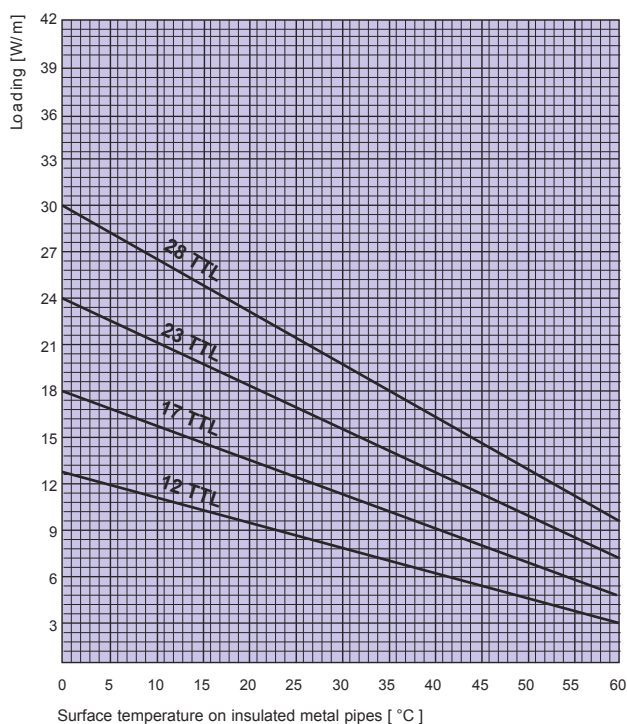


up to 85°C

# ThermTrace® Lite (TTL) Self-Regulating parallel heating tape



Temperature/Loading diagram TTL



TTL exposure up to 85°C

Catalogue Reference	Circuit Breaker	Start up Temperature			
		+10°C	0°C	-15°C	-25°C
12TTL	10A	118m	109m	90m	79m
	16A	154m	154m	139m	118m
17TTL	10A	104m	95m	78m	70m
	16A	139m	139m	122m	113m
23TTL	10A	79m	73m	62m	57m
	16A	116m	113m	97m	89m
28TTL	10A	60m	51m	45m	42m
	16A	100m	86m	72m	65m

Maximum recommended length of heating circuit at 230VAC using Type-C circuit breakers.

## Approval Details



## Product Ordering Information

Power Output TTL-Voltage-Overjacket

Example 23W/m@5°C with tinned copper braiding and flouropolymer overjacket (230V):

23 TTL-2-BOT

Example 17 W/m@5°C with insulation (115V)

17 TTL-1

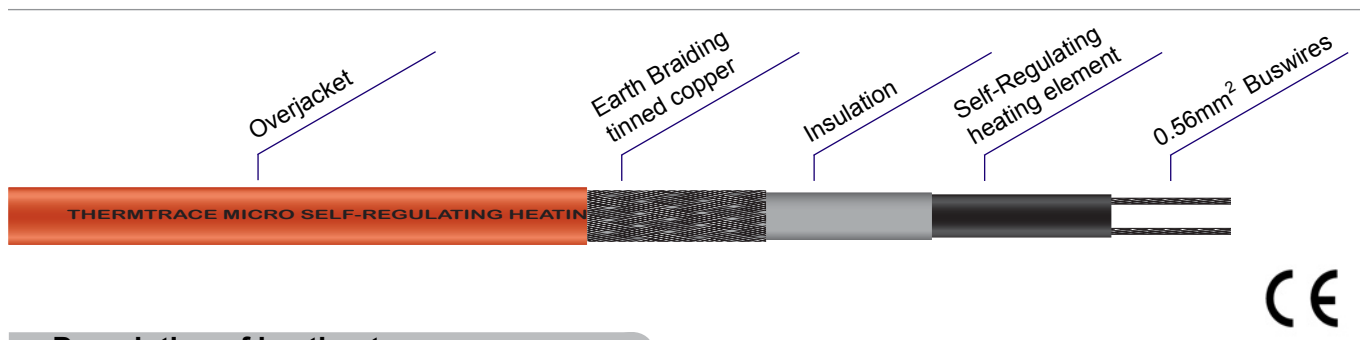
BO: tinned copper braiding and thermoplastic overjacket  
BOT: tinned copper braiding and fluoropolymer overjacket





# ThermTrace<sup>®</sup> Micro (TTM) Self-Regulating parallel heating tape

up to 65°C



## Description of heating tape

- Self-regulating
- 3 power output ranges
- Cut-to-length

### Applications:

ThermTrace<sup>®</sup>Micro is a light construction grade self-regulating heating tape that may be used for freeze protection, or low temperature maintenance of pipework and vessels.

### Function:

Self-regulating heating tapes consist of two parallel buswires, embedded in a semi-conductive self-regulating matrix. This means that the heating cable automatically responds to changes in ambient conditions.

With increase in temperature, the synthetic material expands by molecular force, and the connections between the carbon particles diminish, reducing the load. Conversely, as the temperature decreases, the load increases as the connections between the carbon particles increases accordingly.

Thus, the heating power varies according to the temperature of the surface the heating tape is applied to.

Self-regulating heating tapes will not overheat or burnout - even when overlapped.

### Technical Data:

Maximum temperature	65°C	
Nominal voltage	230V (115V available to order)	
Minimum bending radius	TTM-BO	35mm
	TTM-BOT	35mm
Minimum installation temperature	-30°C	
Moisture protected	Yes	

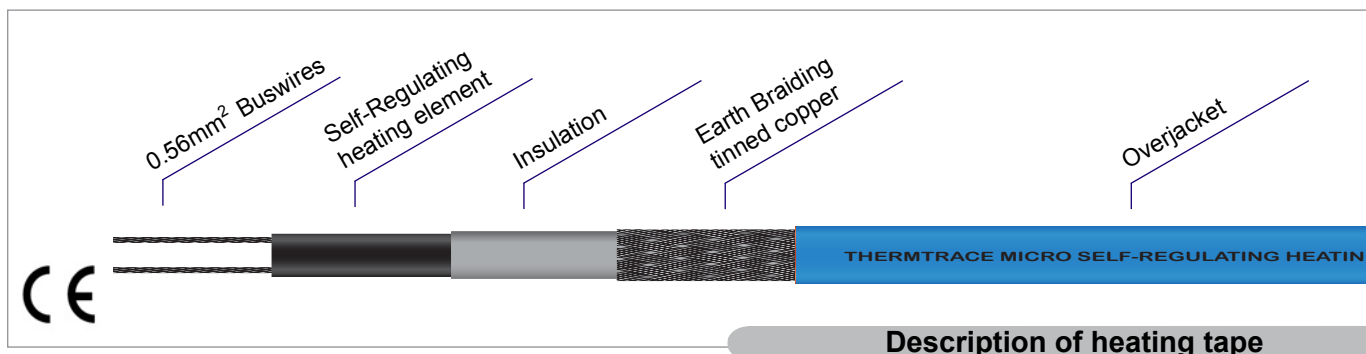
Name	Power Output On Insulated Metal Pipes at 5°C (W/m)	Maximum Permissible Temperature (°C)	Earth Braid Description	Nominal Dimensions (mm)	Nominal Weight kg/100m
11TTM-2-BO	11	65	tinned copper	7.9 x 5.6	7
11TTM-2-BOT	11	65	tinned copper	7.9 x 5.6	7
17TTM-2-BO	17	65	tinned copper	7.9 x 5.6	7
17TTM-2-BOT	17	65	tinned copper	7.9 x 5.6	7
20TTM-2-BO	20	65	tinned copper	7.9 x 5.6	7
20TTM-2-BOT	20	65	tinned copper	7.9 x 5.6	7

BO: Braid and thermoplastic overjacket  
BOT: Braid and fluoropolymer overjacket

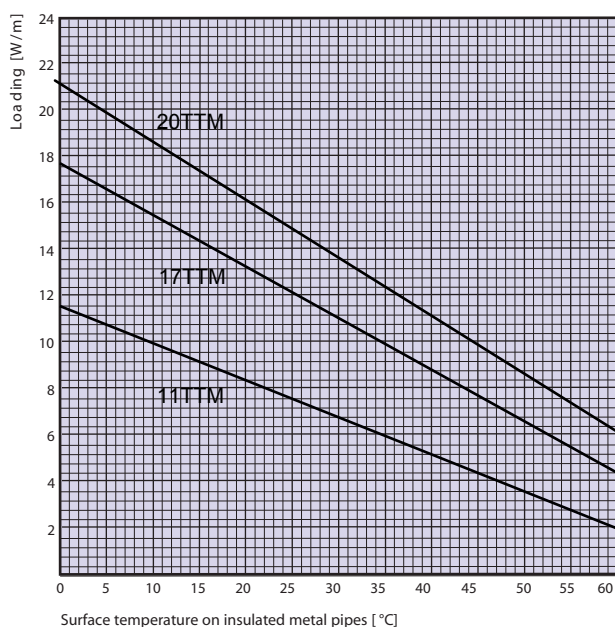


up to 65°C

## ThermTrace® Micro (TTM) Self-Regulating parallel heating tape



### Temperature/Loading diagram TTM



Maximum recommended length of heating circuit at 230VAC using Type-C circuit breakers:

Product Reference	Circuit Breaker	Start up Temperature		
		+10°C	0°C	-20°C
11TTM	10A	100m*	95m	77m
17TTM	10A	72m	66m	52m
20TTM	10A	60m	58m	41m

\* 60m maximum heating circuit for use inside drinking water pipelines (11TTM-2-BOT)

### Approval Details



### Product Ordering Information

Power Output TTM-Voltage-Overjacket

Example 11W/m @ 5°C with tinned copper braiding and flouropolymer overjacket (230V):

11 TTM-2-BOT

Example 17 W/m @ 5°C with insulation (115V)

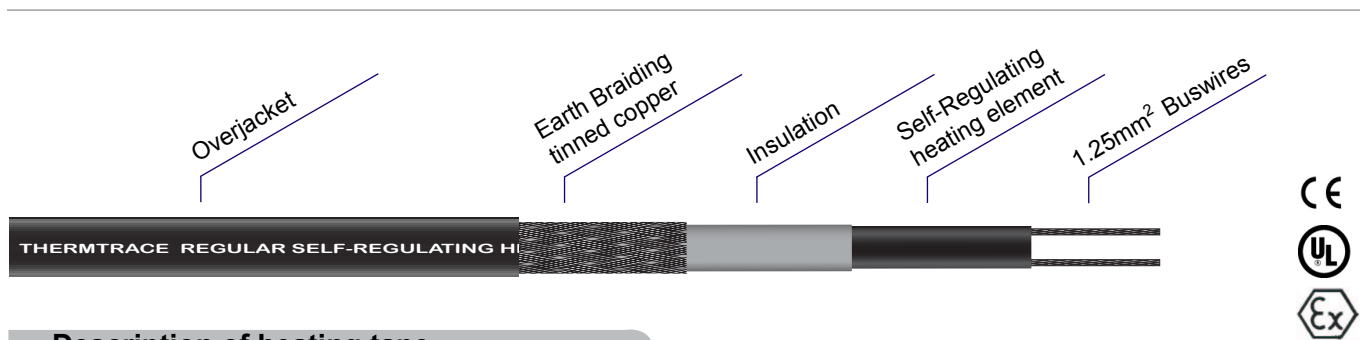
17 TTM-1

BO: tinned copper braiding and thermoplastic overjacket  
BOT: tinned copper braiding and fluoropolymer overjacket



# ThermTrace® Regular (TTR) Self-Regulating parallel heating tape

up to 85°C



## Description of heating tape

- Self-regulating
- 4 power output ranges
- Proprietary bonded jacket

### Applications:

ThermTrace®Regular is a construction and industrial grade self-regulating heating tape that may be used for freeze protection, or low temperature maintenance of pipework and vessels.

### Function:

Self-regulating heating tapes consist of two parallel buswires, embedded in a semi-conductive self-regulating matrix. This means that the heating cable automatically responds to changes in ambient conditions.

With increase in temperature, the synthetic material expands by molecular force, and the connections between the carbon particles diminish, reducing the load. Conversely, as the temperature decreases, the load increases as the connections between the carbon particles increases accordingly.

Thus, the heating power varies according to the temperature of the surface the heating tape is applied to.

Self-regulating heating tapes will not overheat or burnout - even when overlapped.

### Technical Data:

Maximum exposure temperature (unpowered) Intermittent, 1000 cumulative hours	85°C
Maximum operating temperature (powered)	65°C
Nominal voltage	230V (120V available to order)
Minimum bending radius	25mm
Minimum installation temperature	-30°C
Maximum resistance of braid	18.2 Ohms/km
Fluoropolymer Overjacket	optional
T-Rating 10,15,25 W/m	T6
T-Rating 33 W/m	T5

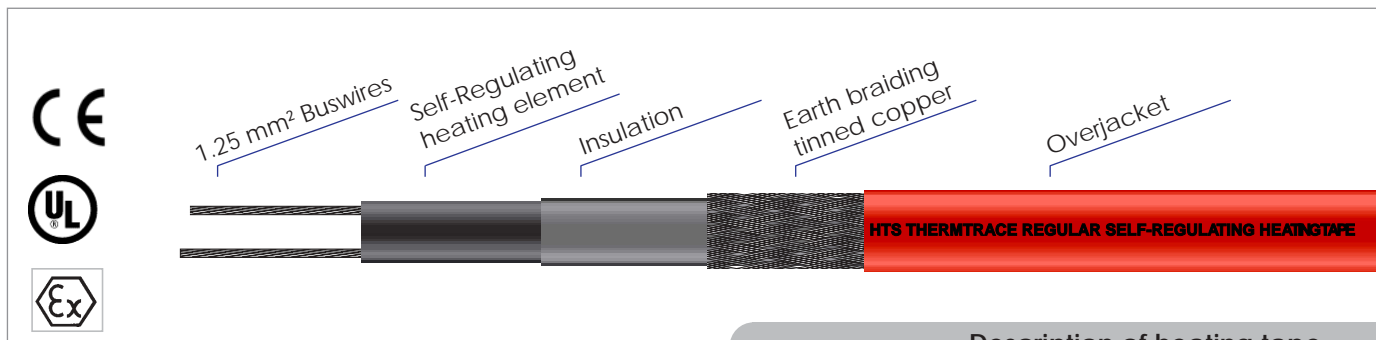
Name	Power Output on Insulated Metal Pipes at 10°C (W/m)	Maximum Permissible Temperatures powered (°C)    unpowered (°C)		Earth Braid Description	Nominal Dimensions (mm)	Nominal Weight kg/100m
10TTR-2-BO	10	65	85	tinned copper	11.5 x 5.5	12
10TTR-2-BOT	10	65	85	tinned copper	11.5 x 5.5	12
15TTR-2-BO	15	65	85	tinned copper	11.5 x 5.5	12
15TTR-2-BOT	15	65	85	tinned copper	11.5 x 5.5	12
25TTR-2-BO	25	65	85	tinned copper	11.5 x 5.5	12
25TTR-2-BOT	25	65	85	tinned copper	11.5 x 5.5	12
33TTR-2-BO	33	65	85	tinned copper	11.5 x 5.5	12
33TTR-2-BOT	33	65	85	tinned copper	11.5 x 5.5	12

BO: Braid and thermoplastic overjacket  
BOT: Braid and fluoropolymer overjacket



up to 85°C

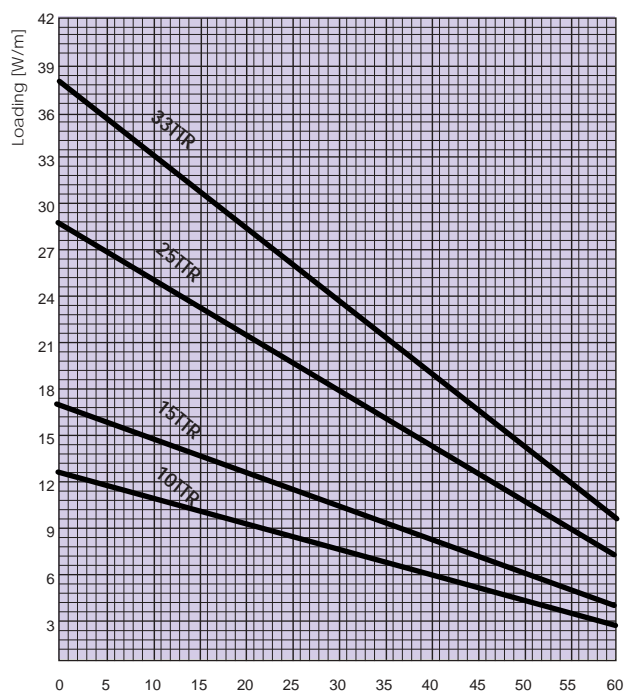
# ThermTrace® Regular (TTR) Self-Regulating parallel heating tape



Description of heating tape

## TTR exposure up to 85°C

Temperature/Loading diagram TTR



Surface temperature on insulated metal pipes [°C]

	Start-up temp.	230V			120V		
		16A	20A	30A	16A	20A	30A
10 TTR	+10	205			95		
	-15	140	186	195	69	90	95
	-25	123	165	195	60	81	95
15 TTR	+10	145	162		67	80	
	-15	93	125	160	45	61	80
	-25	82	111	160	40	54	80
25 TTR	+10	88	117	126	43	58	63
	-15	60	75	117	27	33	51
	-25	50	70	105	27	33	51
33 TTR	+10	70	90	108	33	45	54
	-15	50	65	95	25	33	53
	-25	45	58	85	22	30	43

Maximum recommended length of heating circuit at 230VAC using Type-C circuit breakers.

## Product Ordering Information

Power output + TTR-Voltage-(Overjacket)

Example 33W/m@10°C with tinned copper braiding and fluoropolymer jacket (230V):

**33 TTR-2-BOT**

Example 15W/m@10°C with only insulation (120V) :

**15 TTR-1**

B: tinned copper braid

BO: Braid and thermoplastic overjacket

BOT: Braid and fluoropolymer overjacket



# ThermTrace® Super (TTS)

## Self-Regulating parallel heating tape

up to 200°C



### Description of heating tape

- Self-regulating
- 7 power output ranges
- Cut to length

#### Applications:

ThermTrace Super is a construction and industrial grade self-regulating heating tape that may be used for freeze protection, or temperature maintenance of pipework and vessels.

#### Function:

Self-regulating heating tapes consist of two parallel buswires, embedded semi-conductive self-regulating matrix. This means that the heating cable automatically responds to changes in ambient conditions.

With increase in temperature, the synthetic material expands by molecular force, and the connections between the carbon particles diminish, reducing the load. Conversely, as the temperature decreases, so the load increases as the connections between the carbon particles increases accordingly.

Thus, the heating power varies according to the temperature of the surface the heating tape is applied to.

Self-regulating heating tapes will not overheat or burnout - even when overlapped.

#### Technical Data:

Maximum exposure temperature (unpowered)	200°C*
*maximal 1000 hours exposure time	
Maximum operating temperature (powered)	120°C
Nominal voltage	230V
	(120V available to order)
Minimum bending radius	25mm
Minimum installation temperature	-30°C
Maximum resistance of braid	18.2 Ohms/km
T-Rating	T3

Part Number	Power Output on Insulated Metal Pipes at 10°C (W/m)	Maximum Permissible Ambient Temperature energised (°C)	Maximum Permissible Ambient Temperature de-energised (°C)	Earth Braid Description	Nominal Dimensions (mm)	Nominal Weight kg/100m
10TTS-2-B	10	120	200	tinned copper	9.5 x 4.0	12
10TTS-2-BOT	10	120	200	tinned copper	10.5 x 5.0	12
15TTS-2-B	15	120	200	tinned copper	9.5 x 4.0	12
15TTS-2-BOT	15	120	200	tinned copper	10.5 x 5.0	12
20TTS-2-B	20	120	200	tinned copper	9.5 x 4.0	12
20TTS-2-BOT	20	120	200	tinned copper	10.5 x 5.0	12
25TTS-2-B	25	120	200	tinned copper	9.5 x 4.0	12
25TTS-2-BOT	25	120	200	tinned copper	10.5 x 5.0	12
30TTS-2-B	30	120	200	tinned copper	9.5 x 4.0	12
30TTS-2-BOT	30	120	200	tinned copper	10.5 x 5.0	12

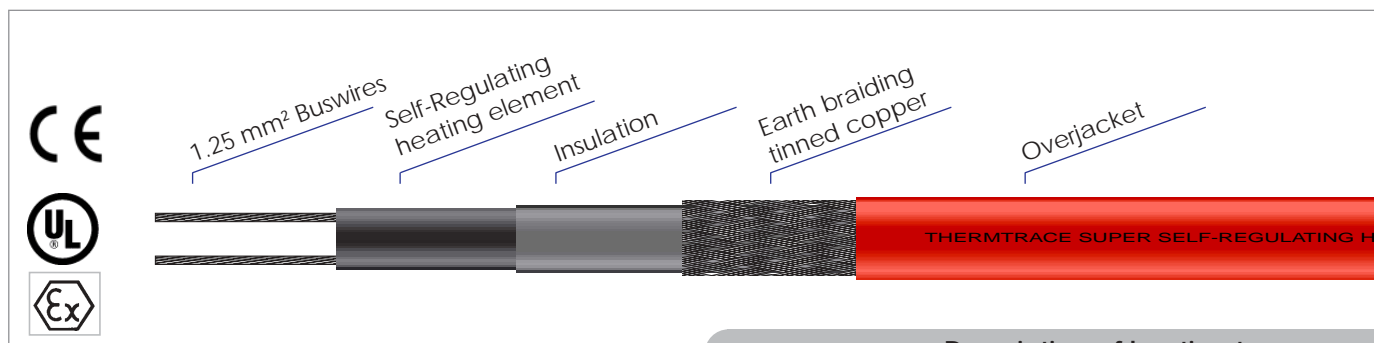
B: tinned copper braid

BOT: Braid and fluoropolymer overjacket



up to 200°C

# ThermTrace® Super (TTS) Self-Regulating parallel heating tape



## Description of heating tape

Name	Power Output on Insulated Metal Pipes at 10°C (W/m)	Maximum Permissible Ambient Temperature energised (°C)	Maximum Permissible Ambient Temperature de-energised (°C)	Earth Braid Description	Nominal Dimensions (mm)	Nominal Weight kg/100m
45TTS-2-B	45	120	200	tinned copper	9.5 x 4.0	12
45TTS-2-BOT	45	120	200	tinned copper	10.5 x 5.0	12
60TTS-2-B	60	120	200	tinned copper	9.5 x 4.0	12
60TTS-2-BOT	60	120	200	tinned copper	10.5 x 5.0	12

B: tinned copper braid

BOT: Braid and fluoropolymer overjacket

## TTS exposure up to 200°C (maximal 1000 hours exposure time)

	Start-up temp.	230V			120V		
		16A	20A	30A	16A	20A	30A
10 TTS	+10	200	235		100	120	
	-25	175	235		89	120	
15 TTS	+10	165	189		80	95	
	-25	117	152	189	56	75	95
20 TTS	+10	135	160		67	80	
	-25	100	130	160	50	65	80
25 TTS	+10	120	140		60	69	
	-25	88	120	140	44	59	69
30 TTS	+10	85	114		44	58	
	-25	69	92	114	35	45	58
45 TTS	+10	70	82		35	41	
	-25	49	66	82	24	33	41
60 TTS	+10	50	64		25	32	
	-25	38	52	64	20	25	32

Maximum recommended length of heating circuit at 230VAC using Type-C circuit breakers.

## Product Ordering Information

Power output + TTS-Voltage-(Overjacket)

Example 60W/m@10°C with tinned copper braiding and fluoropolymer jacket (230V):

**60 TTS-2-BOT**

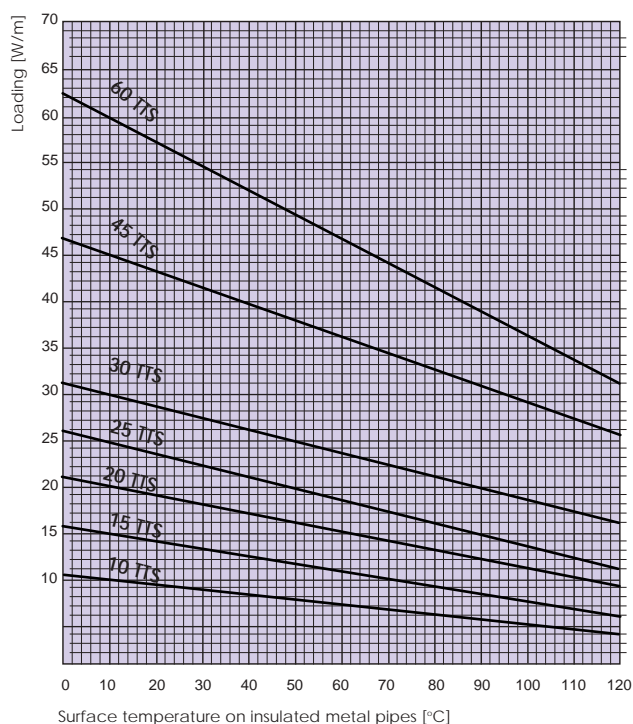
Example 15W/m@10°C with only insulation (120V):

**15 TTS-1**

B: tinned copper braid

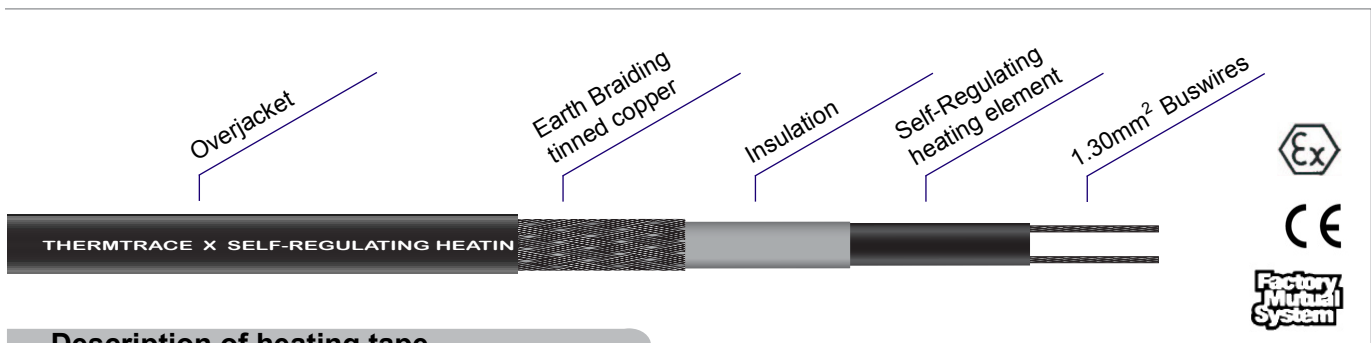
BOT: Braid and fluoropolymer overjacket

## Temperature/Loading diagram TTS



# ThermTrace® X (TTX) Self-Regulating parallel heating tape

up to 240°C



## Description of heating tape

- Self-regulating
- 6 Power Output Ranges
- Cut-to-length

### Applications:

ThermTrace X is a construction / industrial grade self-regulating heating tape that may be used for freeze protection, or temperature maintenance of pipework and vessels.

### Function:

Self-regulating heating tapes consist of two parallel buswires, embedded in a semi-conductive self-regulating matrix. This means that the heating cable automatically responds to changes in ambient conditions.

With increase in temperature, the synthetic material expands by molecular force, and the connections between the carbon particles diminish, reducing the load. Conversely, as the temperature decreases, the load increases as the connections between the carbon particles increases accordingly.

Thus, the heating power varies according to the temperature of the surface the heating tape is applied to.

Self-regulating heating tapes will not overheat or burnout - even when overlapped.

## Performance Ratings

Output wattage:

16 through 98W/m @ 10°C

Supply voltages:

230V or 115V

Continuous maintenance temperature: 190°C max

Intermittent exposure temperature :

(max. 1000 hours exposure time) 240°C max

T Rating:

16 to 49W/m: T4

65 to 98W/m: T3

Braid resistance:

Tinned copper: 0.0098 Ohm/m

Nominal dimensions: 11.75 x 5.4mm

## Approvals/Certifications

### Factory Mutual:

Ordinary locations

Hazardous locations

Class I, Div 1\*, Groups B, C, D

Class I, Div 2, Groups A, B, C, D

Class II/III, Div 1\*, Groups E, F, G

Class II/III, Div 2, Groups F, G

Class I, Zone 1\*, Group IIB + H2,

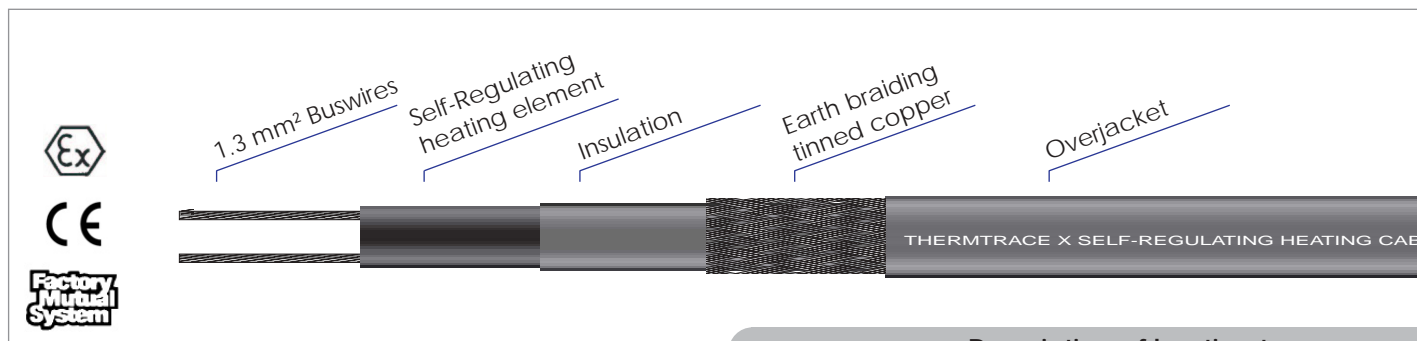
Class I, Zone 2, Group IIC





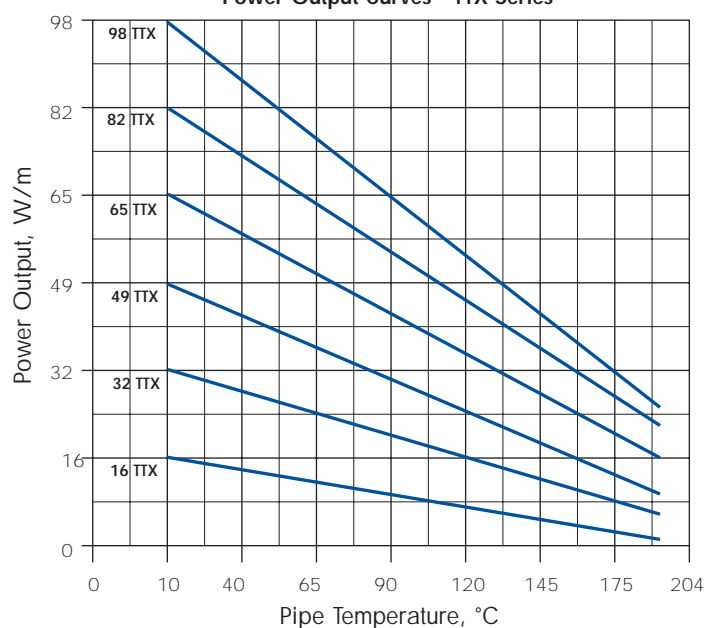
up to 240°C

# ThermTrace®X (TTX) Self-Regulating parallel heating tape



## Description of heating tape

Power Output Curves - TTX Series



Power Adjustment Factor

Part No.	208 Volts	277 Volts
32 TTX-2	.88	1.14
65 TTX-2	.94	1.08
98 TTX-2	.99	1.01

## Product Ordering Information

Power output + TTX-Voltage-(Overjacket)

Example 65W/m @10°C with tinned copper braiding and fluoropolymer jacket (240V):

**65 TTX-2-BOT**

Example 65W/m @10°C with braiding only (115V):

**65 TTX-1-B**

B: tinned copper braiding

BOT: tinned copper braid and fluoropolymer overjacket

## 120 Volt Circuit Breaker Sizing vs. Max Circuit Length (m)

Series	Starting Temp.	15A	20A	30A
16 TTX-1	10°C	54	73	102
	-20°C	50	67	100
	-45°C	65	61	91
32 TTX-1	10°C	36	48	54
	-20°C	32	42	54
	-45°C	27	36	54
49 TTX-1	10°C	24	32	41
	-20°C	21	27	41
	-45°C	18	24	36
65 TTX-1	10°C	18	27	36
	-20°C	16	21	41
	-45°C	15	19	30
82 TTX-1	10°C	13	18	26
	-20°C	12	15	24
	-45°C	12	15	24
98 TTX-1	10°C	12	15	21
	-20°C	10	13	21
	-45°C	10	13	21

## 240 Volt Circuit Breaker Sizing vs. Max Circuit Length (m)

Series	Starting Temp.	15A	20A	30A
16 TTX-2	10°C	109	146	164
	-20°C	99	131	164
	-45°C	88	117	164
32 TTX-2	10°C	73	97	109
	-20°C	70	92	109
	-45°C	68	91	109
49 TTX-2	10°C	48	64	82
	-20°C	42	56	82
	-45°C	36	48	73
65 TTX-2	10°C	35	45	70
	-20°C	33	44	67
	-45°C	32	42	64
82 TTX-2	10°C	27	36	51
	-20°C	24	30	48
	-45°C	24	30	49
98 TTX-2	10°C	24	30	42
	-20°C	21	27	42
	-45°C	21	27	42

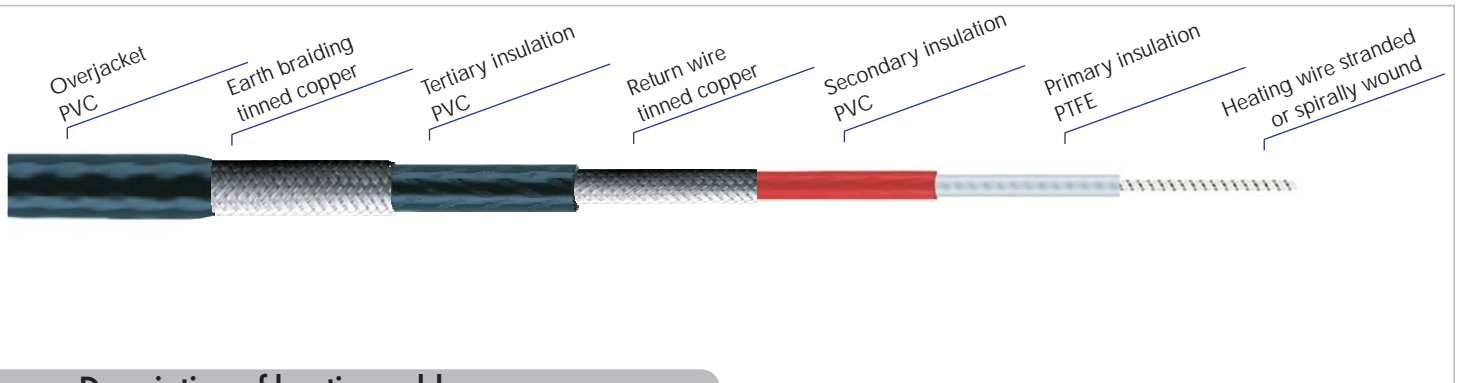
**NOTE:** Recommended circuit breakers to minimize the effect of transit start-up currents.  
Westinghouse: Types BA, EB, EHB, FB, HFB. General Electric: E100 Type TEB, E150, Types TED, THED. **Square D:** Types EH, FAIF. The National Electric Code requires ground fault protection of equipment for each branch circuit supplying electrical heating cables or devices.





# Xenius® Regular Pro (XRP) Heating Cable

up to 90°C



## Description of heating cable

- Power connection at one end
- Durable
- Economical frost protection of e.g. pipes, gutters, floors, sloping surfaces
- Economical heating systems for industrial equipment in aggressive atmosphere
- Easy to install

### Technical Data

Primary insulation . . . . . PTFE  
 Secondary insulation . . . . . PVC  
 Return wire . . . . . tinned copper  
 Tertiary insulation . . . . . PVC  
 Earth braiding. . . . . tinned copper  
 Overjacket . . . . . PVC  
 Nominal temperature. . . . . 90 °C  
 Nominal voltage . . . . . 300/500 V  
 Cross section of return wire 1.4 mm<sup>2</sup>  
 Max. loading. . . . . 20 W/m  
 Max. operating temperature 80°C  
 Min. bending radius. . . . . 30 mm  
 Min. installation temperature. . . . . + 5°C  
 Moisture protected. . . . . yes

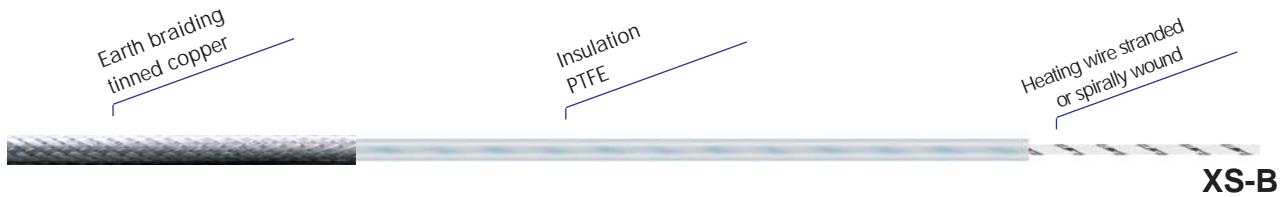
### Standards

Manufactured according to DIN VDE 0253  
 Test procedure acc. to . . . . 2.5 kV AC

Item	Resistance [Ω/m]
XRP 0.2	0.2
XRP 0.25	0.25
XRP 0.36	0.36
XRP 0.45	0.45
XRP 0.65	0.65
XRP 0.80	0.80
XRP 1	1.0
XRP 1.3	1.3
XRP 1.75	1.75
XRP 2.52	2.52
XRP 4	4.0
XRP 5.1	5.1
XRP 8	8.0
XRP 12	12
XRP 40	40
XRP 65	65
XRP 140	140

# Xenius® Super (XS) PTFE Heating cable

up to 220°C



## Description of heating cable

- Highly flexible
- For most types of industries
- Small bending radius
- Economical
- High operating temperature
- High chemical resistance
- Moisture protected

### Applications:

For use on appliances, containers, pipes, valves and many others. The small bending radius allows compact tracing on small components.

**\*\*Note:** Lower loading allows a higher operating temperature. Higher loading is possible, depending on the heat transfer.

Resistance [Ω/m]	Heating wire
0.01	stranded
0.05	stranded
0.25	stranded
0.34	stranded
0.43	stranded
0.51	stranded
1.0	stranded
1.25	stranded
1.44	stranded
2.5	stranded
3.4	stranded
5.7	stranded
6	stranded
7.2	stranded
9	spirally wound
20	spirally wound
40	spirally wound
100	spirally wound
200	spirally wound

### Technical Data

Insulation . . . . . PTFE  
 Earth braiding. . . . . tinned copper (**XS-B**)  
 Nominal temperature. . . . . 250 °C  
 Nominal voltage . . . . . 300/500 V  
 Max. loading. . . . . 30 W/m\*\*  
 Max. operating temperature\*\*  
 Min. bending radius. . . . . 10 mm  
 Min. installation temperature. . . . . -50 °C  
 Moisture protected. . . . . yes

# Xenius® Super (XS) PTFE Heating cable

up to 220°C



**XS-BO**

## Description of heating cable

- High chemical resistance
- For all types of applications
- Durable
- High operating temperature
- Can be used in liquids

### Applications:

For use on appliances, containers, pipes, valves and many others, in highly corrosive atmosphere. Except for the power connections, the cable can be installed in liquids.

**\*\***Note: Lower loading allows a higher operating temperature. Higher loading is possible, depending on the heat transfer.

### Technical Data

Insulation . . . . . PTFE  
 Earth braiding. . . . . tinned copper  
 Overjacket . . . . . PTFE  
 Nominal temperature. . . . 220 °C  
 Nominal voltage . . . . . 300/500 V  
 Max. loading. . . . . 30 W/m **\*\***  
 Max. operating temperature **\*\***  
 Min. bending radius. . . . . 20 mm  
 Min. installation  
 temperature. . . . . -50 °C  
 Moisture protected. . . . . yes

Resistance [Ω/m]	Heating wire
0.01	stranded
0.05	stranded
0.25	stranded
0.34	stranded
0.43	stranded
0.51	stranded
1.0	stranded
1.25	stranded
1.44	stranded
2.5	stranded
3.4	stranded
5.7	stranded
6	stranded
7.2	stranded
9	spirally wound
20	spirally wound
40	spirally wound
100	spirally wound
200	spirally wound



# ThermTrace® RampTrace Super Self-Regulating parallel heating tape

up to 120°C

TPE Overjacket  
Earth braiding  
tinned copper  
Fluoropolymer Insulation  
Self-Regulating  
heating element  
1.25 mm Buswires

THERMTRACE RAMPTRACE SELF-REGULATING H



## Description of heating tape

- Designed for use in concrete
- Self-regulating
- Cut to length

### Applications:

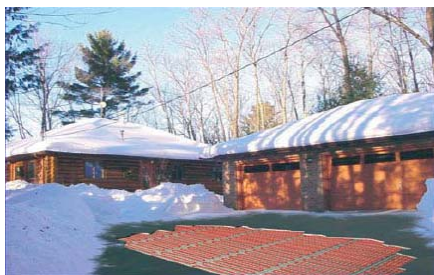
ThermTrace Ramptrace Super is a construction grade self-regulating heating tape that may be used for freeze protection of ramps built of concrete.

### Function:

Self-regulating heating tapes consist of two parallel buswires, embedded semi-conductive self-regulating matrix. This means that the heating cable automatically responds to changes in ambient conditions.

With increase in temperature, the synthetic material expands by molecular force, and the connections between the carbon particles diminish, reducing the load. Conversely, as the temperature decreases, so the load increases as the connections between the carbon particles increases accordingly.

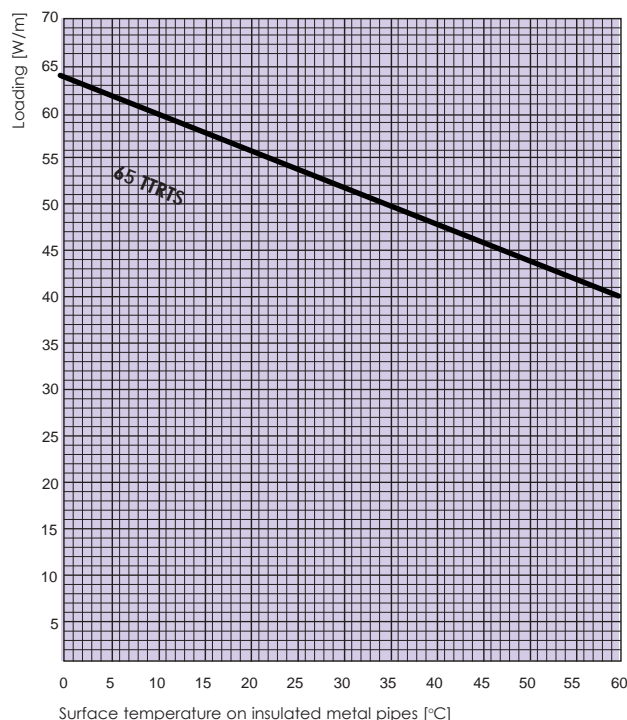
Thus, the heating power varies according to the temperature of the surface the heating tape is applied to.



### Technical Data:

Power output	65 W/m @0°C
Power output in concrete	90 W/m @0°C
Nominal voltage	230V
Maximum exposure temperature (unpowered)	120°C
Maximum operating temperature (powered)	120°C
Minimum bending radius	25mm
Minimum installation temperature	-30°C
Dimensions	10.4x4.5mm

### Temperature/Loading diagram TTRTS



Maximum recommended length of heating circuit:

Start-up temp. [°C]	65 TTRTS	Circuit Breaker (230V)		
		16A	20A	30A
+10		50m	64m	
-25		38m	52m	64m

### Product Ordering Information

Power output + 65 TTRTS-Voltage-(Overjacket)

Example with tinned copper braiding

and thermoplastic jacket (230V):

**65 TTRTS-2-BO**

\*Please note that TTRTS is only in 230V available

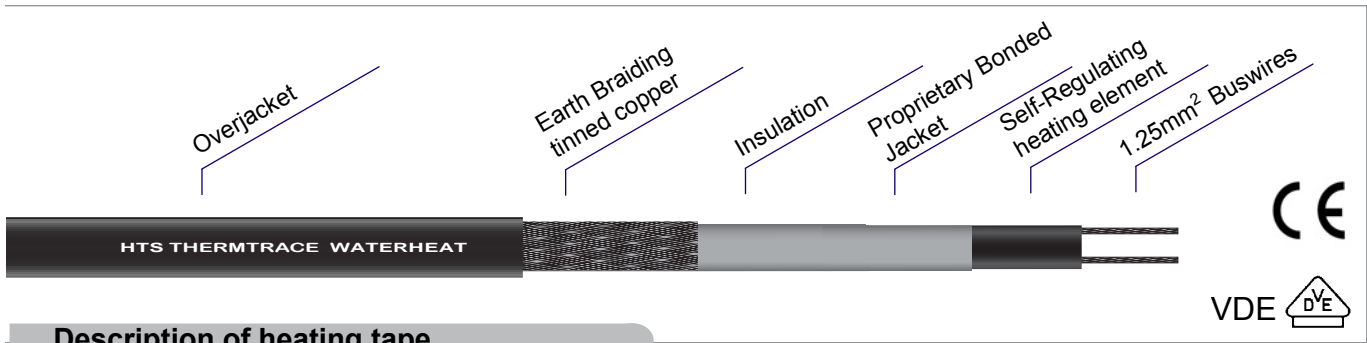
BO: tinned copper braiding and thermoplastic overjacket



# ThermTrace® WaterHeat

## Self-Regulating parallel heating tape

up to 85°C



### Description of heating tape

- Self-regulating
- 9 W/m @ 55°C or 12 W/m @ 60°C
- Cut-to-length

### Applications:

ThermTrace®WaterHeat is a construction grade self-regulating heating tape that may be used for temperature maintenance of hot water systems.

### Function:

Self-regulating heating tapes consist of two parallel buswires, embedded in a semi-conductive self-regulating matrix. This means that the heating cable automatically responds to changes in ambient conditions.

With increase in temperature, the synthetic material expands by molecular force, and the connections between the carbon particles diminish, reducing the load. Conversely, as the temperature decreases, the load increases as the connections between the carbon particles increases accordingly.

Thus, the heating power varies according to the temperature of the surface the heating tape is applied to.

Self-regulating heating tapes will not overheat or burnout - even when overlapped.

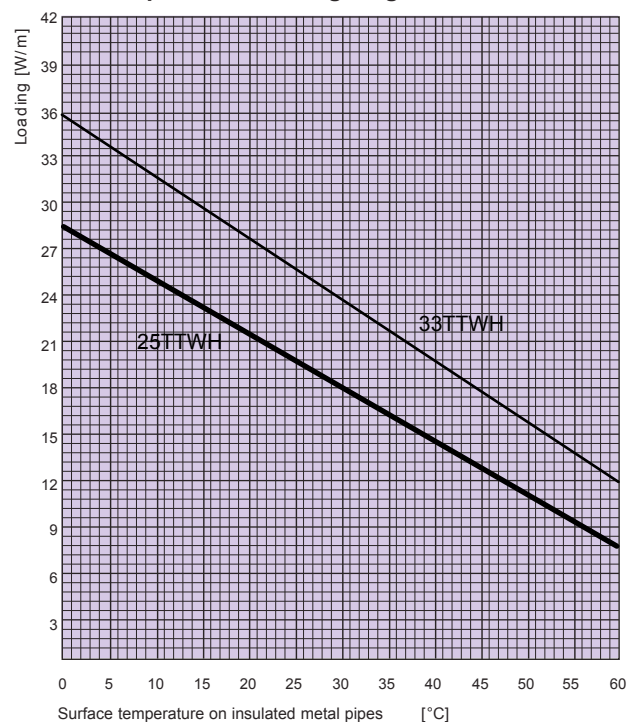
Maximum recommended length of heating circuit using Type-C circuit breakers:

Product Reference	Start up Temp.	Circuit Breaker		
		16A	20A	30A
25TTWH	+ 10°C	88m	117m	126m
33TTWH	+ 10°C	80m	90m	105m

### Technical Data:

Maximum exposure temperature (unpowered)	85°C
Intermittent, 1000 cumulative hours	
Maximum operating temperature (powered)	65°C
Nominal voltage	230V
	(120V available to order)
Minimum bending radius	25mm
Minimum installation temperature	-30°C
Maximum resistance of braid	18.2 Ohms/km

Temperature/Loading diagram WaterHeat



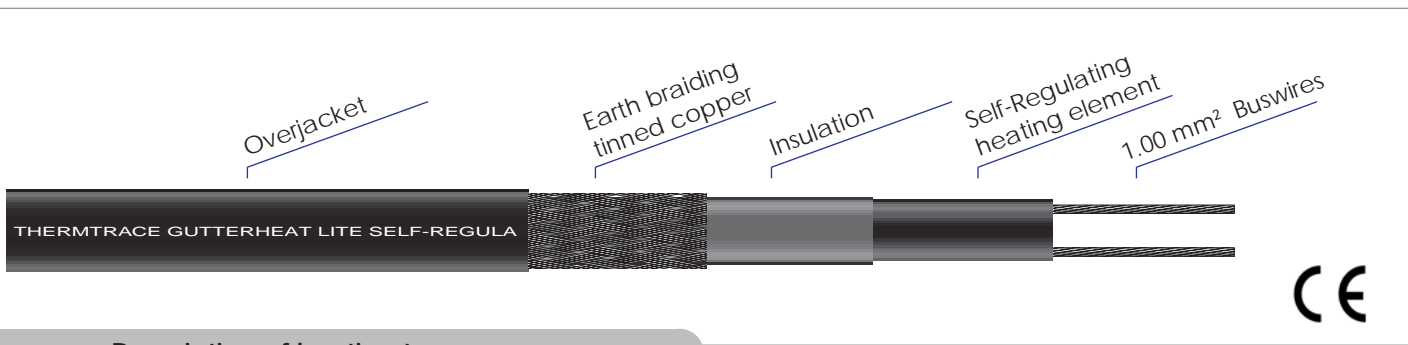
Name	Power Output on Insulated Metal Pipes at 10°C (W/m)	Power Output in typical application (W/m)	Earth Braid Description	Nominal Dimensions (mm)	Nominal Weight kg/100m
25TTWH-2-BO	25	9 W/m at 55°C	tinned copper	11.5 x 5.5	12
33TTWH-2-BO	33	12 W/m at 60°C	tinned copper	11.5 x 5.5	12

BO: Braid and thermoplastic overjacket



# ThermTrace® GutterHeat Lite (TTGHL) Self-Regulating parallel heating tape

up to 85°C



## Description of heating tape

- Self-regulating
- Black UV Resistant TPE Overjacket
- Cut to length

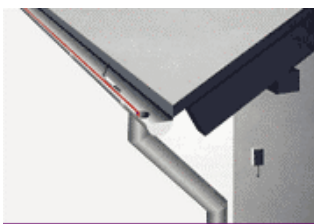
### Applications:

TTGHL is a self-regulating heating tape that may be used for freeze protection of roofs and gutters.

### Function:

Self-regulating heating tapes consist of two parallel buswires, embedded semi-conductive self-limiting matrix. This means that the heating cable automatically responds to changes in ambient conditions.

With increase in temperature, the synthetic material expands by molecular force, and the connections between the carbon particles diminish, reducing the load. Conversely, as the temperature decreases, so the load increases as the connections between the carbon particles increases accordingly.

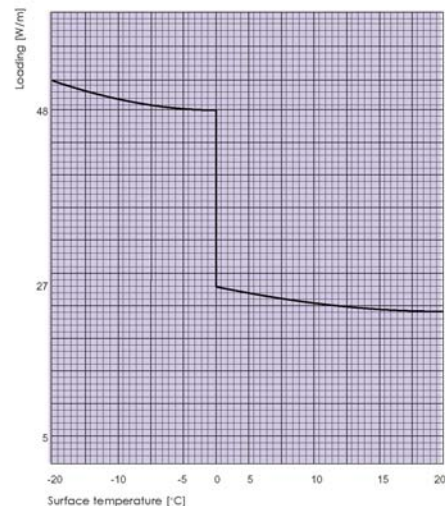


Thus, the heating power varies according to the temperature of the surface the heating tape is applied to.

Self-regulating heating tapes will not overheat or burnout - even when overlapped.

### Technical Data:

Maximum exposure temperature (unpowered)	85°C
Maximum operating temperature (powered)	65°C
Nominal voltage	230V
Minimum bending radius	25mm
Minimum installation temperature	-30°C
Maximum resistance of braid	18.2 Ohms/km



Part Number	Power Output at 230V (W/m)	Environment	Max. recommended heating circuit	Nominal Dimensions (mm)
TTGHL-2-BO	23	5°C on pipe	110 m	10.5 x 6.0
TTGHL-2-BO	25	0°C in air	90 m	10.5 x 6.0
TTGHL-2-BO	40	in ice water	50 m	10.5 x 6.0

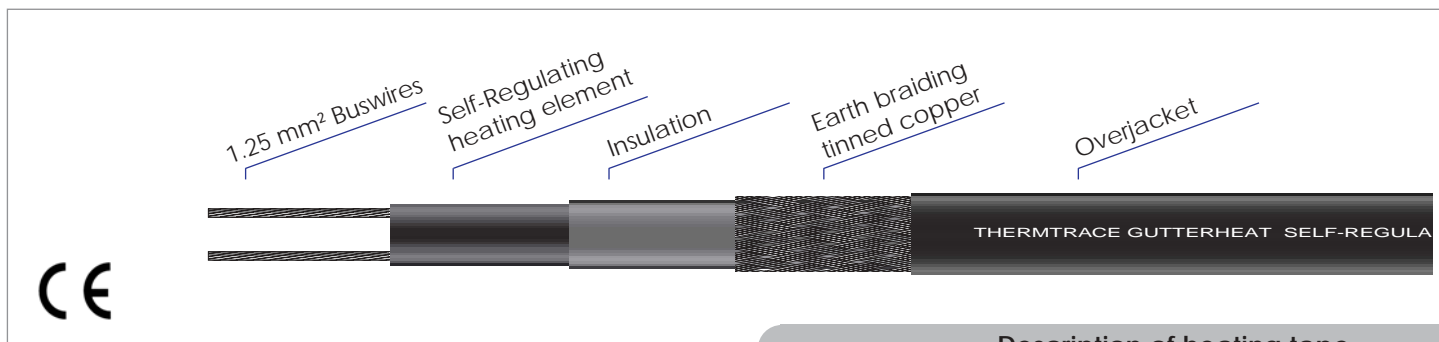
Technical information subject to change without notification!





up to 85°C

# ThermTrace® GutterHeat (TTGH) Self-Regulating parallel heating tape



## Description of heating tape

- Self-regulating
- Black UV Resistant TPE Overjacket
- Proprietary bonded jacket
- Cut to length

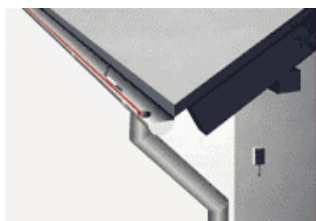
### Applications:

TTGH is a self-regulating heating tape that may be used for freeze protection of roofs and gutters.

### Function:

Self-regulating heating tapes consist of two parallel buswires, embedded semi-conductive self-limiting matrix. This means that the heating cable automatically responds to changes in ambient conditions.

With increase in temperature, the synthetic material expands by molecular force, and the connections between the carbon particles diminish, reducing the load. Conversely, as the temperature decreases, so the load increases as the connections between the carbon particles increases accordingly.

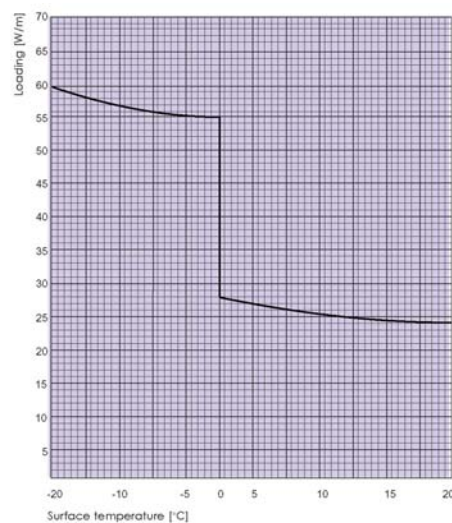


Thus, the heating power varies according to the temperature of the surface the heating tape is applied to.

Self-regulating heating tapes will not overheat or burnout - even when overlapped.

### Technical Data:

Maximum exposure temperature (unpowered)	85°C
Maximum operating temperature (powered)	65°C
Nominal voltage	230V
Minimum bending radius	25mm
Minimum installation temperature	-30°C
Maximum resistance of braid	18.2 Ohms/km



Part Number	Power Output at 230V (W/m)	Environment	Max. recommended heating circuit	Nominal Dimensions (mm)
TTGH-2-BO	25	10°C on pipe	88 m	11.5 x 5.5
TTGH-2-BO	28	0°C in air	77 m	11.5 x 5.5
TTGH-2-BO	55	in ice water	35 m	11.5 x 5.5

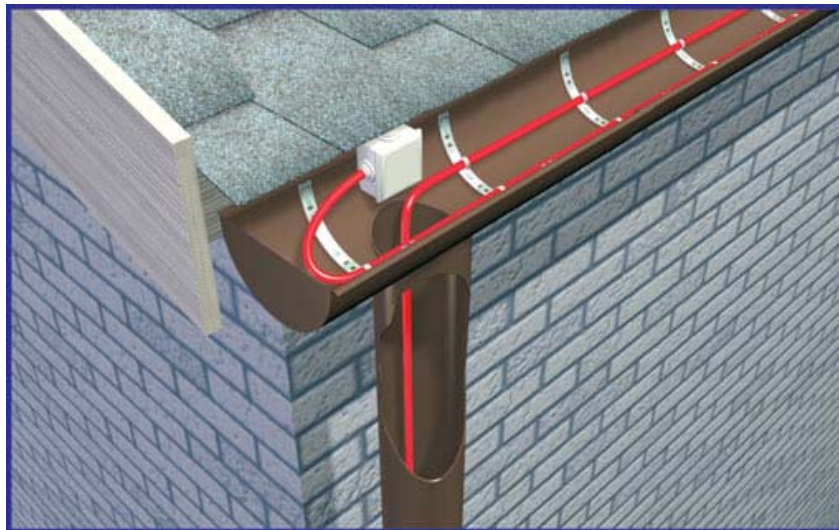


BO: Braid and thermoplastic overjacket  
Technical information subject to change without notification!



***Trace Heating Systems Serving  
Your Industrial and  
Domestic Requirements***

## **Roof and Gutter De-icing System**







# Roof and Gutter De-icing System

Gutters, roofs, and fall pipes are in danger by snowfall and long periods of cold weather. By exposure to the sun the snow melts and then the melted snow runs from the roof into cold gutters and fall pipes. The water freezes as the ambient temperature drops, forming ice layers that will build up and block the flow.

This will result that the gutters break off, or the fall pipes crack, or that unseen problems may occur. In addition to this ice-cicles may form, break off and cause damages to vehicles, plants or even injure people. Expensive structural damage may occur to outer walls, plaster and roof tiles when the water builds up on these and freezes.

UV resistant self-regulating heating tapes are use in order to prevent this from happening. Due to the characteristics of these tapes the heating output adjusts in accordance to the ambient temperature. In ice water and snow the power output of the cables is maximized. As the snow and ice melts the power output reduces somewhat until the cable has dried. As the temperature raises, the power output will sink gradually further.

Should there be colder positions, such as shaded positions that don't melt or heat up as quickly as others that may have sunlight, these positions of the heating tape will continue to provide more power output. It acts then like a heating circuit within a heating circuit.

HTS may provide the solution for your gutter or roof de-icing needs. The cut-to-length self-regulating heating cables, ThermTrace Gutter Heat Lite (TTGHL) and ThermTrace Gutter Heat (TTGH), are some of the best produced self-regulating heating tapes that are available on the Market. The UV resistance TPE over-jacket protects from the harmful sunlight, providing long years of use.

These heating tapes are safe, reliable, maintenance free and save money through reduced energy consumption. Energy is only expended when it is needed, for example when snow or ice is present. Over-heating does not occur when using self-regulating heating tapes and may even be installed in plastic gutters and fall pipes.

The design may however not be used to keep ice or snow from falling from the roof, but to prevent dams produced by frozen melt water on the roof and to keep ice in the gutters and fall pipes from blocking the flow. It is recommended that snow fences be used on the roof to prevent snow movement.



## **ThermTrace®GutterHeat Lite (TTGHL)**

Nominal Voltage:	230V
Min.bending radius:	25mm
Dimensions:	10,5 x 6,0mm
Max.exposure temp:	85°C unpowered 65°C powered
Min.Installation temp:	-30°C

Power Output	Max. Installation length (16A)
40 W/m ice water	50m
25W/m @ 0°C in air	90m
23W/m @ 5°C on pipe	110m

## **ThermTrace®GutterHeat (TTGH)**

Nominal Voltage:	230V
Min.bending radius:	25mm
Dimensions:	11,5 x 5,5mm
Max.exposure temp:	85°C unpowered 65°C powered
Min.Installation temp:	-30°C

Power Output	Max. Installation length (16A)
55 W/m ice water	35m
28W/m @ 0°C in air	77m
25W/m @ 10°C on pipe	88m

**\* Please note that information of this publication are subject to change without notice!**



# Roof and Gutter De-icing System

## Engineering and Design

### Gutter and Fall Pipe Design:

Determine the required heating tape length:

Length of gutter  
(2xlength by more than 300mm width.) \_\_\_\_\_m

+ Length of fall pipe \_\_\_\_\_m

+ 1m x each fall pipe \_\_\_\_\_m

+ 1m per outlet feeding internal gutters \_\_\_\_\_m

+ 0,25m for each power connection \_\_\_\_\_m

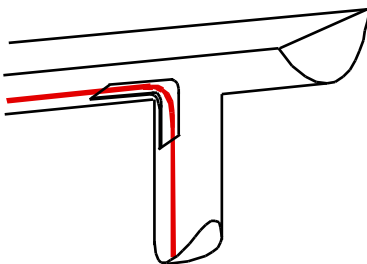
+ 1,0m per splice \_\_\_\_\_m

+ 2,5% allowance for cutting, wastage, etc. \_\_\_\_\_m

**TOTAL CABLE LENGTH** \_\_\_\_\_m

Installation Notes:

- The double amount of heating tape is necessary by installation above 2000m Sea Level.
- The distance between the heating tapes in shed gutters is 120mm.
- Special requirements are necessary by long fall pipes due to the weight of the heating tape.



### Roof Design:

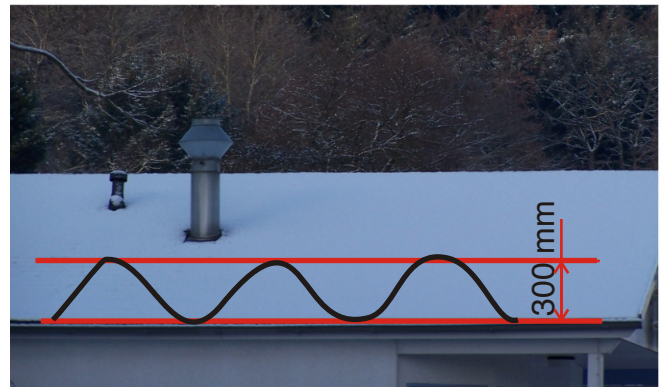
Determine the required heating tape length:

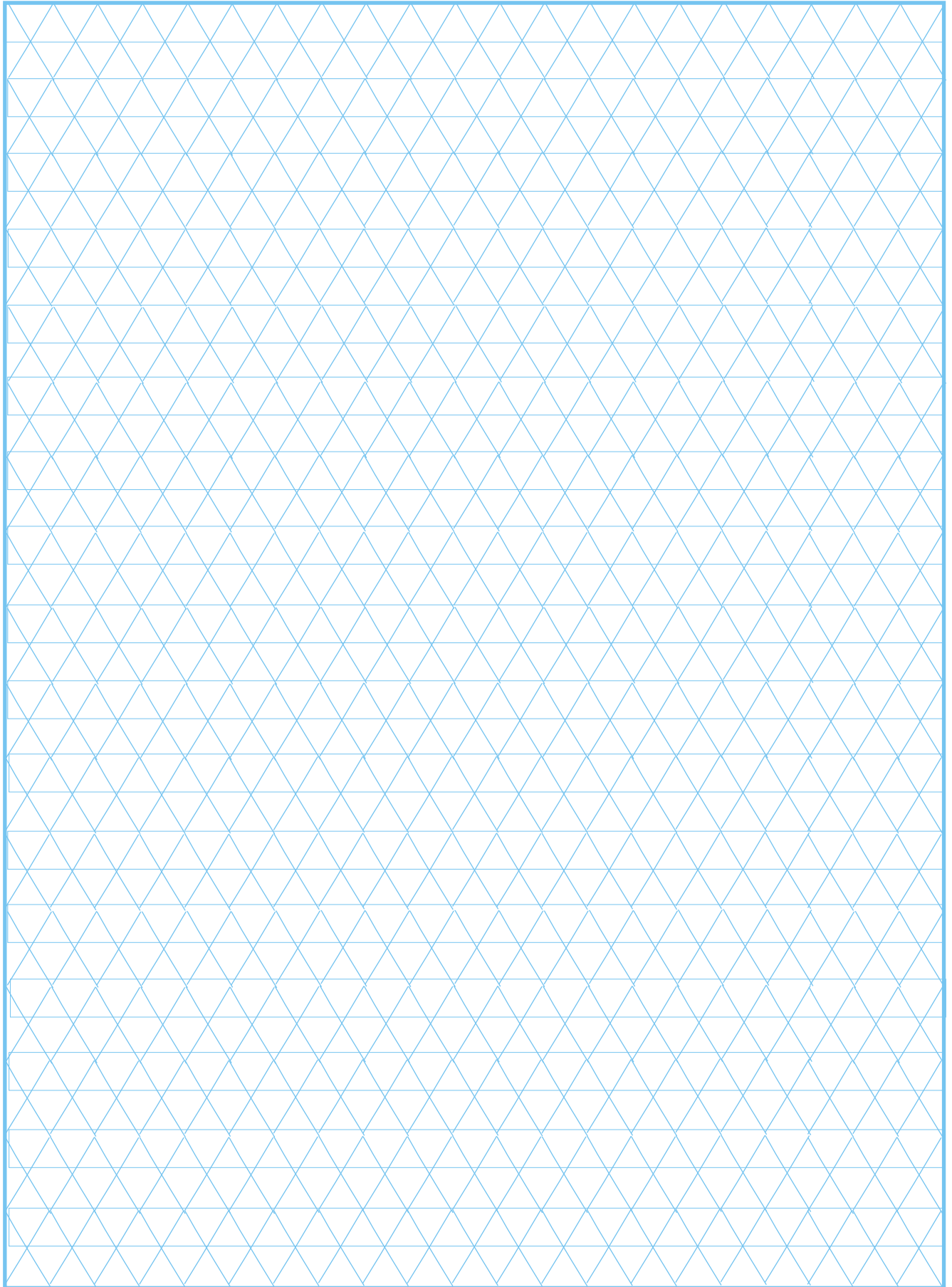
The ThermTrace GutterHeat self-regulating tapes are to be laid in a zig-zag fashion at least 300mm above the outer building wall level or 100mm above the snow fence, whichever is higher, and extended down to the gutter. This ensures a continuous run off for melted water.

General installation length requirements

Roof size in sqm. X multiplications factor = heater length in m

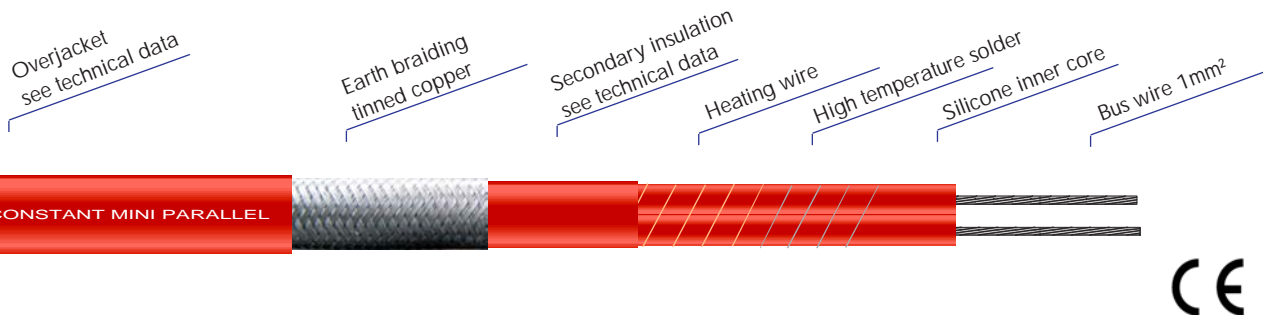
Height over Sea Level	Multiplications factor
700	3
1000	4
1500	5
2000	6
Over 2000	7





# ThermTrace® Constant Mini (TTCM) parallel heating tape

up to 225°C



## Description of heating cable

*flexible.  
Tough.  
Braid offers a earth return and screen.  
Small in size (easy to fit under insulation).  
Are easy to test for ohms & Insulation Resistance.  
Has excellent water and UV resistance.  
Lead free solder used in the construction.  
Translucent core for ease of cutting.  
Light weight for ease of handling / carriage.  
Excellent temperature withstand range.  
Manufactured in nominal lengths of 500m.*

**“TTCM Parallel Circuit Constant Wattage  
Heating Tape is a high quality Industrial Heating Tape”**

TTCM Heating Tapes were designed for general and industrial applications not just frost protection, they are ideal for use in refrigeration applications, temperature maintenance of small pipe work, gutters and gully's, tanks or any application where the specifications are suitable.

## Technical Data:

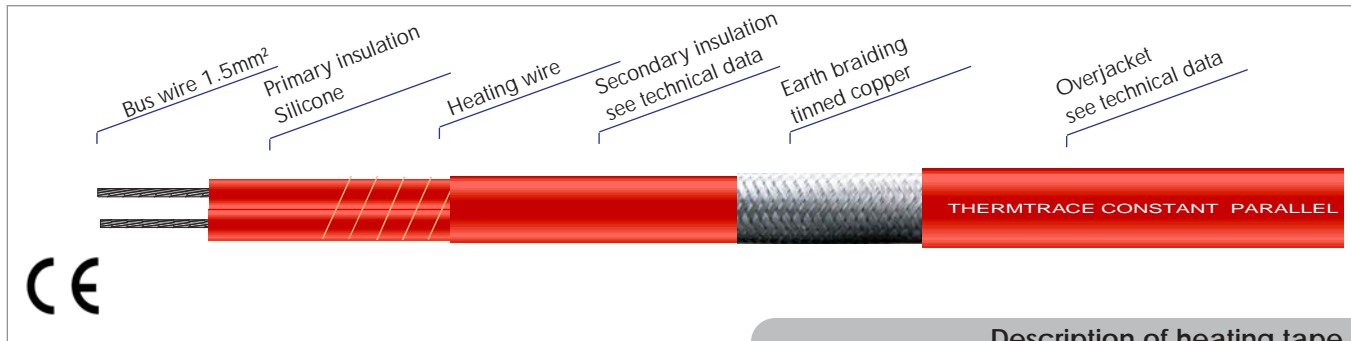
Bus wires	Tinned copper 1mm
Core	Translucent 80 Shore Silicone
Resistance element	80/20 NiCr
Solder	High temp., lead free
Primary insulation	80 Shore Silicone
Braiding	Tinned Copper
Outer insulation	80 Shore Silicone
Thickness	7.4mm
Width	11.4mm
Minimum installation temp.	-50°C
Maximum exposure temp.	+225°C
Minimal bending radius	25mm

230V TYPE	MAX LENGTH/ZONE LENGTH	110V TYPE	MAX LENGTH/ ZONE LENGTH
10 TTCM-2-BO	145m/1m	10 TTCM-1-BO	70m/1m
15 TTCM-2-BO	110m/1m	20 TTCM-1-BO	55m/1m
20 TTCM-2-BO	95m/1m	Other wattages and voltages can be manufactured to order	
30 TTCM-2-BO	78m/1m		
40 TTCM-2-BO	65m/1m		



up to 225°C

## ThermTrace® Constant (TTC) parallel heating tape



### Description of heating tape

- Connection at one end
- Full loading up to nominal temperature
- No connection cable required
- Cut to length
- Constant loading, whatever the length
- Highly flexible

TTC Heating tape is a industrial quality parallel circuit heating . The addition of the braid and silicone outer insulation makes this heating tape tough. TTC heating tape has been designed to be reliable in operation especially in arduous environments, the use of silicone rubber gives good flexibility and a excellent range of temperature withstand.

TTC can be used for many applications from frost protection to process heating temperature maintenance and temperature raising.

230V TYPE	MAX LENGTH/ZONE LENGTH	110V TYPE	MAX LENGTH/ ZONE LENGTH
10 TTC-2-BO	200m/1m	10 TTC-1-BO	95m/1m
15 TTC-2-BO	150m/1m	15 TTC-1-BO	84m/1m
20 TTC-2-BO	130m/1m	20 TTC-1-BO	73m/1m
30 TTC-2-BO	115m/1m	30 TTC-1-BO	62m/1m
40 TTC-2-BO	100m/1m	40 TTC-1-BO	50m/1m
50 TTC-2-BO	85m/1m	50 TTC-1-BO	42m/1m

### SPECIFICATION

Bus wires	Tinned Copper 1.5mm
Core	80 Shore Silicone Rubber Translucent
Resistance Element	80/20 Nickel/Chrome
Solder	High Temperature Lead Free
Outer Insulation (Both)	80 Shore Silicone Rubber Red & Translucent
Braid	Tinned Copper
Thickness	8.8 mm
Width	12.5 mm
Minimum Temperature	-50°C
Maximum Temperature	+225°C

### Function

Two Tinned Copper Bus wires (1.5mm<sup>2</sup>) are extruded into a Silicone Rubber Core, at a precise distance a Notch is automatically cut into the Silicone Rubber to expose the Tinned Copper Bus wires.

A Resistance Wire Heating Element is wrapped around the Core, this is Soldered to the Tinned Copper Bus wires with a High Temperature Lead Free Solder and Non Corrosive Flux.

A Silicone Rubber inner Insulation is extruded over the completed Core, a Tinned Copper Braid is added. Over this Silicone outer Insulation is extruded.



# ThermTwist

## connection/end termination kit for TTR, TTWH and TTWHS



- Efficient power termination
- Clamp coupling technology
- Installed in less than a minute

### Description:

The ThermTwist sets are an easy, fast and inexpensive method for power termination of ThermTrace self regulating heating tapes in non-hazardous areas. The installation times are decreased when using ThermTwist termination sets. Just slide the heating tape end through the sleeve, expose the heating tape braiding and prepare for insertion into the clamping sleeve, plug the parts together, twist the threaded power termination and sleeve together. This procedure can be used to install in less than a minute with only a small amount of experience.

### Technical data:

Supply voltages:

max. AC 250V/16A

IP rating:

acc. to EN 60 529, IP66, IP68

acc. to VDE

Exposure temperature:

continuous (power on) 80°C

intermittent (power off) 100°C

1000 h accumulative

Minimal exposure temperature:

min. -25°C



ThermTwist B-S



ThermTwist B-E



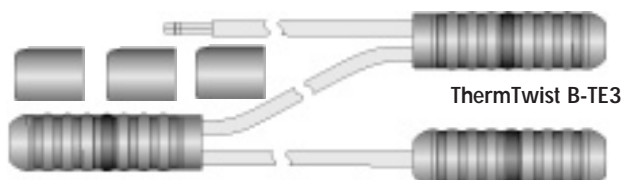
ThermTwist B-A



ThermTwist B-C



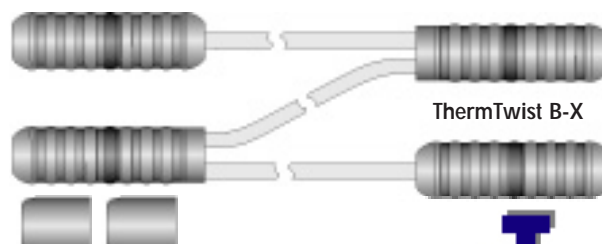
ThermTwist B-T



ThermTwist B-TE3



ThermTwist B-TE2


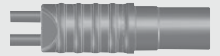








ThermTwist B-X





# ThermTwist connection/end termination kit

Parts List	ThermTwist	A	E	S	C	T	TE2	TE3	X
1		1		1		2	1	1	2
2						1	1	2	2
3		1		1	2	3	2	3	4
4		1		1	2	3	2	3	4
5		1		1	2	3	2	3	4
6		1		1	2	3	2	3	4
7					1				
8			1	1		1	2	3	2

## Note:

Only the heating cables type ThermTrace REGULAR and WATER-HEAT may be used. Each heating circuit must be incorporated into a circuit which offers personal protection. For this purpose a double pole RCD with 30 mA trip should be used for heating tapes up to 500 metres in length. An automatic fuse 16 A C-characteristic is also required.

The maximum heating circuit length is dependent upon the heating cable type and should be carefully observed. eltherm's general mounting instructions must be followed. ThermTwist has to be fixed securely. The connection cable has to be protected against any pull, push or twisting movements, e.g. with cable ties. The connection to the mains supply must be carried out by an authorised electrician.

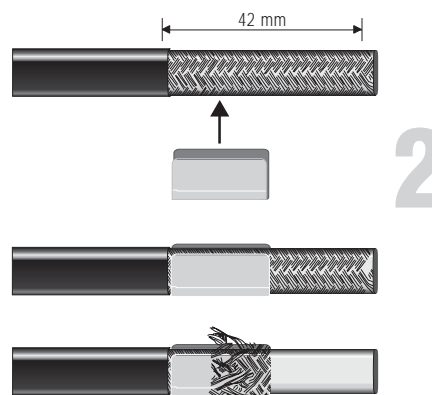


## Cable connection

Cut the cable ensuring a straight cut. Draw sleeve **3** and insertion sleeve **4** over the cable.



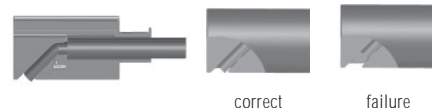
Remove 42 mm from the heat cable overjacket. Place clamp **5** over the exposed braiding and pull the rest of the braiding over the clamp.



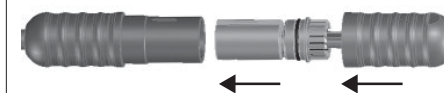
Please pay attention that the insertion sleeve **4** and the clamping sleeve **6** are lined up correctly.



Push the heating cable into the clamping sleeve **6** until the clamping sleeve 6 and heating cable are aligned.



Insert clamping sleeve **4** into the relevant sleeve of your choice (**1, 2 or 7**).



Ensure that the tip  and groove  of the antirotation key are aligned.



Screw sleeve **3** and the relevant sleeve housing (**1, 2 oder 7**)

## End termination

Cut the cable ensuring a straight cut. Remove 20mm overjacket and braiding. Shorten the exposed area to 5mm.



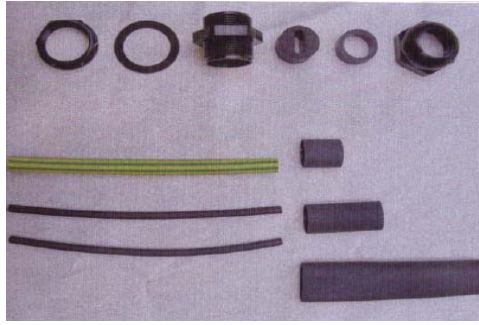
Push the cable to to it's full lenth into the end seal **8**.



## Required tools



# HTS Termination Kits



## ThermConnect Kit

The HTS ThermConnect kits are especially designed for the HTS ThermTrace® series of self-regulating heating tapes.

All kits include a plastic cable gland, shrink sleeves for buswires, braid and a shrink sleeve for the end termination.

## Available Kits

ThermConnect is available for:

- ThermTrace® Micro
- ThermTrace® Lite
- ThermTrace® Regular
- ThermTrace® Super



## Termination Kit for ThermTrace® X

For the high temperature TTX heating cable, there is a special industrial application kit available.

The termination kit is designed for the use in ordinary and Division-2 locations. The kit provides excellent resistance to ultraviolet sun-rays, as well as inorganic chemicals and most corrosives.

*The Junction Box is not included in the kit, but is available separately.*

## Kit Contents

- 1 Base
- 1 Top
- 1 Sealing Grommet (large hole)
- 1 Sealing Grommet (small hole)
- 1 Sealing gasket
- 2 Shrink tubes 31 x 140mm (black)
- 1 Shrink tube 6,3 x 140mm (green/yellow)
- 1 Shrink tube 12,7 x 38mm (white)
- 1 Lock ring
- 1 Adaptor for pipes smaller than 25mm
- 1 Stainless Steel tie wire

