

Worldwide Specialists in Electric Heat Tracing



Product Catalogue

THE HTS GROUP

The HTS Group of companies is one of the leading manufacturers of high-performance heat tracing cables in the world. From our core production unit HTS Global Production GmbH with manufacturing plants in Germany, Switzerland and the United Kingdom, we successfully cater to major and niche markets worldwide. Due to our sophisticated network of international subsidiaries and distributors, we can ensure prompt deliveries and unique customer service for the entire range of our heat tracing products. At HTS Global, we are proud to offer our customers the full spectrum of heat tracing solutions designed to meet all possible heating needs.

All of our technically advanced and innovative self-regulating heating cables fully comply with all international quality standards (CE, ATEX, IECEx, EAC). Adhering to these norms allows our customers to apply our products not only in safe areas but in challenging and hazardous environments, including in the industrial and the construction sectors.

The HTS Group is committed to customer-focused product innovation. Therefore, all of our products echo the latest technological advancements, which aids our customers to adapt to changing demands in their sectors promptly. Our specialists are just one phone call away and are always happy to assist you. According to your needs, our staff will ascertain which of our products best meets your demands and budget by reviewing environmental, technological and circumstantial requirements of your intended area of application.

Our brands

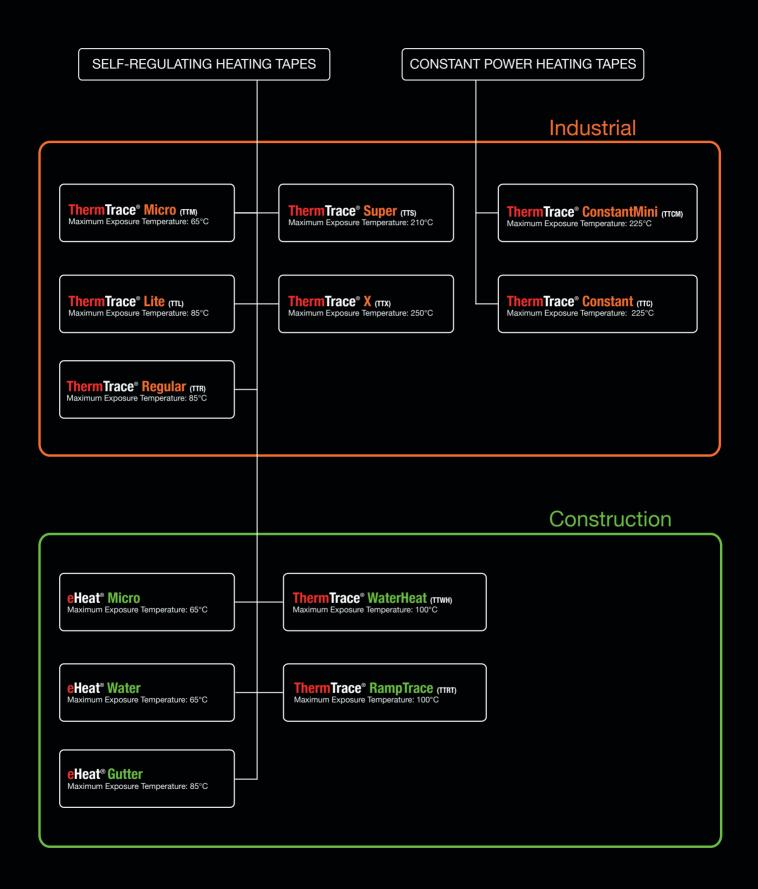
HTS ThermTrace[®]

Our ThermTrace series of high-performance self-regulating tapes offers the most advanced and reliable solutions for low to high-temperature applications. Developed for employment in harsh environments and extreme operating conditions, the ThermTrace series includes products such as heating cables for freeze protection of small piping systems or high-end industrial grade cables for temperatures up to 250°C. In addition to our self-regulating cables, we offer constant wattage heating tapes as well as abroad variety of accessories.

HTS eHeat[®]

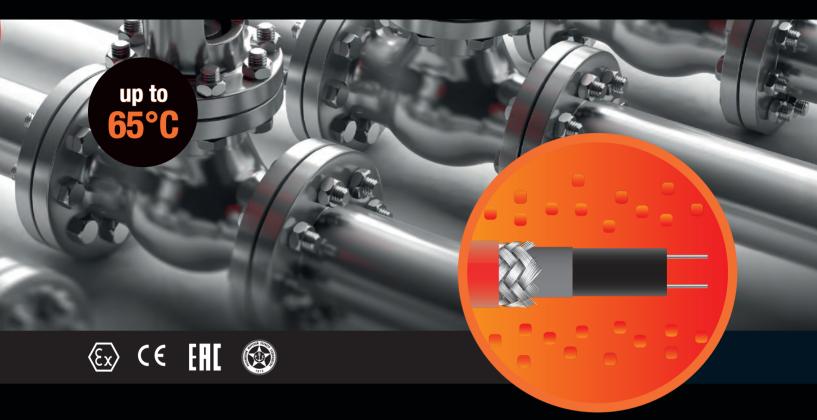
With the eHeat series, HTS Global has introduced a highly competitive and reliable product line of self-regulating heating tapes. They are particularly suitable for easy to use low-temperature applications and can be used for all major purposes in the construction sector.

Our products



ТhermTrace® Місго (ттм)

SELF-REGULATING PARALLEL HEATING TAPE



Properties

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

Applications

The ThermTrace Micro is a construction grade self-regulating heating tape that may be used for freeze protection and low-temperature maintenance of pipework and vessels up to 65°C. With its flexible properties, it can be applied where installation dimensions are small.

Technical data

Maximum exposure temperature (unpowered):	65°C
Maximum operating temperature:	65°C
Nominal voltage:	230V
Min. bending radius:	30mm
Min. installation temperature:	-45°C
Buswires:	nickel plated copper



ThermTrace® Micro (ттм)

Name	Power output on insulated metal pipes at 5°C (W/m)	Maximum permissible temperature (°C)	Nominal Dimension
11 TTM-2-BO	11	65	8.4 x 5.6
17 TTM-2-BO	17	65	8.4 x 5.6
20 TTM-2-BO	20	65	8.4 x 5.6
11 TTM-2-BOW	11	65	8.4 x 5.6

ThermTrace® Micro 11TTM-2-BOW

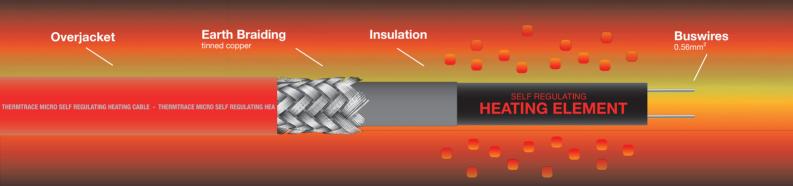
The 11TTM-2-BOW is special designed to be used inside potable water pipes. The cable has a food-safe outerjacket for internal trace heating with the following technical specification for applications inside potable water pipes:

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

Product Reference	Circuit Breaker	+10°C	0°C	-20°C
11TTM-2-BOW	10A	70m	55m	40m
11TTM-2-BOW	16A	85m	61m	47m

Product ordering information:

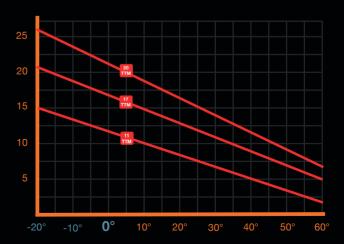
TTM-2-BO: Cable with protective braid and thermoplastic overjacket TTM-2-BOW: Cable with protective braid and food-safe overjacket



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

Product Reference	Circuit Breaker	+10°C	-10°C	-20°C
11TTM	10A	113m	95m	85m
11TTM	16A	120m	105m	98m
17TTM	10A	85m	70m	60m
17TTM	16A	100m	90m	85m
20TTM	10A	60m	53m	50m
20TTM	16A	66m	56m	53m

Temperature (°C) / Loading (W/m) diagram



ThermTrace® Lite (TTL)

SELF-REGULATING PARALLEL HEATING TAPE



Properties

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

Applications

The ThermTrace Lite is a construction and industrial grade self-regulating heating tape designed for a wide range of applications. It may be used for freeze protection or low-temperature maintenance of pipes and vessels in hazardous areas as well for roof and gutter heating in the construction sector.

Technical data

Maximum exposure temperature (unpowered):	85°C
Maximum operating temperature:	65°C
Nominal voltage:	230V
Min. bending radius:	25mm
Min. installation temperature:	-50°C
Buswires:	nickel plated copper



ThermTrace® Lite (TTL)

Name	Power output on insulated metal pipes at 5°C (W/m)	Maximum permissible temperature (°C)	Nominal Dimension
12 TTL-2	12	85	8.0 x 3.0
17 TTL-2	17	85	8.0 x 3.0
23 TTL-2	23	85	8.0 x 3.0
28 TTL-2	28	85	8.0 x 3.0
12 TTL-2-BO	12	85	10.5 x 5.6
17 TTL-2-BO	17	85	10.5 x 5.6
23 TTL-2-BO	23	85	10.5 x 5.6
28 TTL-2-BO	28	85	10.5 x 5.6

Product ordering information:

TTL-2: Cable with first insulation only

TTL-2-BO: Cable with protective braid and thermoplastic overjacket

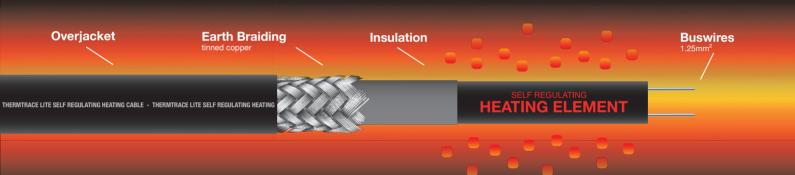
ThermTrace[®] GutterHeatLite (TTGHL)

The ThermTrace Lite 23TTL-2-BO is also available as Therm-Trace Gutter Heat Lite TTGHL-2-BO with the following technical specifications for applications in roof and gutter heating:

	Power ouput at 230VAC	Enviroment
TTGHL-2-BO	23	5°C on pipe
TTGHL-2-BO	25	0°C in air
TTGHL-2-BO	40	0°C in ice water

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

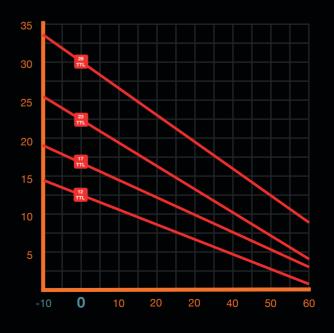
Name	16A	20A	25A
TTGHL-2-BO	104m	124m	127m
TTGHL-2-BO	90m	106m	108m
TTGHL-2-BO	50m	59m	62m



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

Product Reference	Circuit Breaker	+10°C	-10°C	-20°C
12TTL	10A	150m	115m	100m
12TTL	16A	191m	170m	158m
12TTL	20A	194m	172m	160m
12TTL	25A	197m	174m	162m
17TTL	10A	101m	70m	61m
17TTL	16A	159m	113m	98m
17TTL	20A	161m	130m	123m
17TTL	25A	162m	134m	125m
23TTL	10A	63m	46m	37m
23TTL	16A	104m	76m	62m
23TTL	20A	124m	95m	75m
23TTL	25A	127m	108m	95m
28TTL	10A	51m	39m	34m
28TTL	16A	80m	62m	55m
28TTL	20A	99m	77m	67m
28TTL	25A	115m	93m	85m

Temperature (°C) / Loading (W/m) diagram



ThermTrace[®] Regular (TTR)

SELF-REGULATING PARALLEL HEATING TAPE



Properties

- Self-regulating
- 4 power output ranges
- Cut-to-length
- Approved for use in hazardous areas
- Also available as Halogen-free version

Applications

The ThermTrace Regular is a construction and industrial grade self-regulating heating tape that may be used for freeze protection and low-temperature maintenance of pipes, vessels and tanks. It is approved for use in hazardous areas. The BOT version of the ThermTrace Regular even withstands aggressive chemicals, oil and fuel.

Technical data

Maximum exposure temperature (unpowered):	85°C
Maximum operating temperature:	65°C
Nominal voltage:	230V
Min. bending radius:	25mm
Min. installation temperature:	-45°C
Buswires:	nickel plated copper



ThermTrace® Regular (TTR)

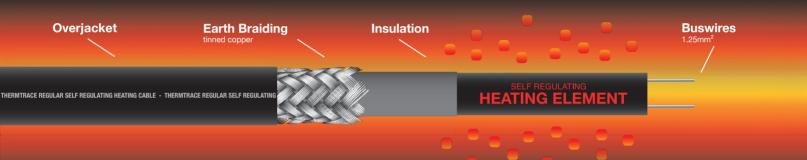
Name	Power output on insulated metal pipes at 10°C (W/m)	Maximum permissible temperature (°C)	Nominal Dimension
10 TTR-2	10	85	12.5 x 4.0
20 TTR-2	20	85	12.5 x 4.0
33 TTR-2	33	85	12.5 x 4.0
40 TTR-2	40	85	12.5 x 4.0
10 TTR-2-BO	10	85	14.0 x 5.7
20 TTR-2-BO	20	85	14.0 x 5.7
33 TTR-2-BO	33	85	14.0 x 5.7
40 TTR-2-BO	40	85	14.0 x 5.7

10 TTR-2-BOT	10	85	14.0 x 5.7
20 TTR-2-BOT	20	85	14.0 x 5.7
33 TTR-2-BOT	33	85	14.0 x 5.7
40 TTR-2-BOT	40	85	14.0 x 5.7

Product ordering information:

TTR-2: Cable with first insulation only TTR-2-BO: Cable with protective braid and thermoplastic overjacket TTR-2-BOT: Cable with protective braid and fluoropolymer overjacket

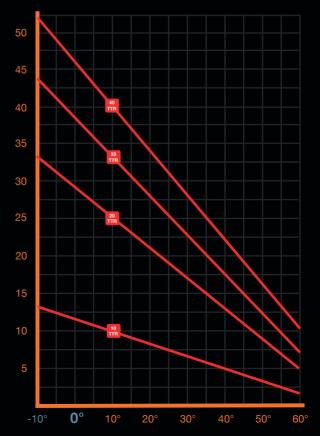
The TR is also available as Halogen-free version! Ordering Codes are: 10TTR-2-BO (hf) 20TTR-2-BO (hf) 30TTR-2-BO (hf) 40TTR-2-BO (hf)



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

Product Reference	Circuit Breaker	+10°C	-10°C	-40°C
10TTR	10A	130m	91m	60m
10TTR	16A	175m	143m	100m
10TTR	20A	177m	147m	123m
10TTR	32A	178m	150m	125m
20TTR	10A	69m	51m	35m
20TTR	16A	110m	77m	58m
20TTR	20A	125m	100m	70m
20TTR	32A	131m	112m	90m
33TTR	10A	53m	40m	27m
33TTR	16A	85m	62m	45m
33TTR	20A	105m	80m	55m
33TTR	32A	114m	100m	70m
40TTR	10A	37m	29m	20m
40TTR	16A	59m	46m	34m
40TTR	20A	70m	58m	44m
40TTR	32A	95m	85m	69m

Temperature (°C) / Loading (W/m) diagram



Worldwide Specialists in Electric Heat Tracing

ThermTrace® Super (TTS)

SELF-REGULATING PARALLEL HEATING TAPE



Properties

- Self-regulating
- 4 power output ranges
- Cut-to-length
- High chemical resistance

Applications

The ThermTrace Super is an industrial grade self-regulating heating tape for high temperatures. Its application ranges from freeze protection and temperature maintenance of pipework and vessels in a large number of industrial applications and Ex-areas such as power plants and the chemical and petrochemical industry. The ThermTrace Super withstands aggressive chemicals and oil tanks to his fluoropolymer overjacket.

Technical data

Maximum exposure temperature (unpowered):	210°C
Maximum operating temperature:	120°C
Nominal voltage:	230V
Min. bending radius:	25mm
Min. installation temperature:	-45°C
Buswires:	nickel plated copper

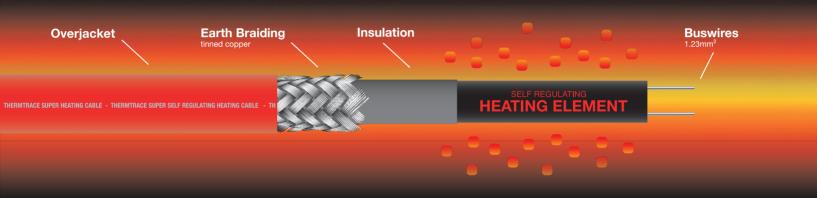


ThermTrace[®] Super (πs)

Name	Power output on insulated metal pipes at 10°C (W/m)	Maximum permissible temperature (°C)	Nominal Dimension
20 TTS-2-BOT	20	210	12.5 x 5.0
30 TTS-2-BOT	30	210	12.5 x 5.0
45 TTS-2-BOT	45	210	12.5 x 5.0
60 TTS-2-BOT	60	210	12.5 x 5.0

Product ordering information:

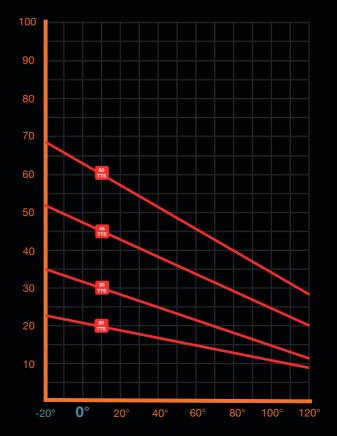
TTS-2-BOT: Cable with protective braid and fluoropolymer overjacket



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

Product Reference	Circuit Breaker	+10°C	-10°C	-20°C
20TTS	16A	120m	109m	93m
20TTS	25A	137m	128m	119m
20TTS	32A	139m	130m	120m
30TTS	16A	81m	71m	65m
30TTS	25A	109m	104m	97m
30TTS	32A	113m	107m	99m
45TTS	16A	60m	58m	43m
45TTS	25A	84m	79m	69m
45TTS	32A	90m	85m	82m
60TTS	16A	43m	39m	37m
60TTS	25A	65m	60m	57m
60TTS	32A	80m	72m	68m

Temperature (°C) / Loading (W/m) diagram



ThermTrace[®] X (TTX) SELF-REGULATING PARALLEL HEATING TAPE



Properties

- Self-regulating
- 4 power output ranges
- Cut-to-length
- Chemical resistant
- For extremely high temperaure

Applications

The ThermTrace X is an industrial grade self-regulating heating tape for extremly high temperatures. Its application range from freeze protection and temperature maintenance of pipework and vessels in a large number of industrial applications and Ex-areas such as power plants or chemical, petrochemical or oil and gas industry.

Technical data

Maximum exposure temperature (unpowered):	250°C
Maximum operating temperature:	165°C
Nominal voltage:	230V
Min. bending radius:	25mm
Min. installation temperature:	-60°C
Buswires:	nickel plated coppe

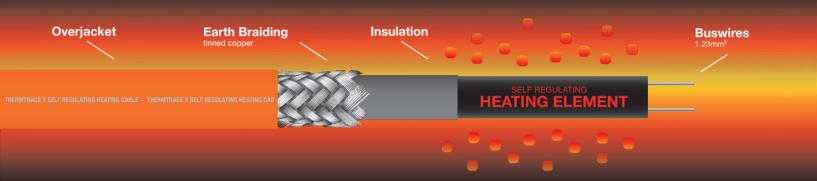


ThermTrace® X (ттх)

Name	Power output on insulated metal pipes at 10°C (W/m)	Maximun permissible temperature (°C)	Dimensions
15 TTX-2-BOT	15	250	14.0 x 5.5
35 TTX-2-BOT	35	250	14.0 x 5.5
45 TTX-2-BOT	45	250	14.0 x 5.5
70 TTX-2-BOT	75	250	14.0 x 5.5

() Product ordering information:

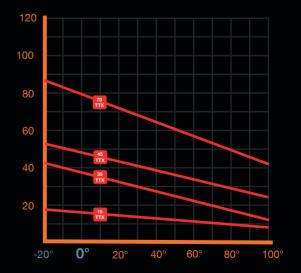
TTX-2-BOT: Cable with protective braid and fluoropolymer overjacket



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

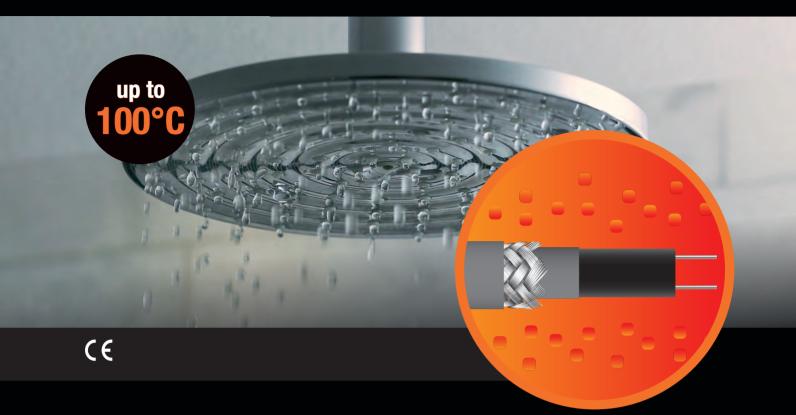
Product Reference	Circuit Breaker	-10°C	0°C	+10°C
15TTX	10A	118m	122m	128m
15TTX	20A	170m	170m	170m
15TTX	32A	173m	173m	173m
15TTX	40A	173m	173m	173m
35TTX	10A	47m	51m	53m
35TTX	20A	95m	99m	105m
35TTX	32A	107m	107m	107m
35TTX	40A	108m	108m	108m
45TTX	10A	33m	34m	36m
45TTX	20A	66m	70m	73m
45TTX	32A	96m	98m	99m
45TTX	40A	98m	99m	100m
70TTX	10A	17m	18m	19m
70TTX	20A	33m	36m	38m
70TTX	32A	54m	58m	61m
70TTX	40A	67m	72m	74m

Temperature (°C) / Loading (W/m) diagram



ThermTrace® WaterHeat (ттwн)

SELF-REGULATING PARALLEL HEATING TAPE



Properties

- Self-regulating
- 2 power outputs
- Cut-to-length
- Moisture proof
- Heat tracing of fat lines

Applications

The ThermTrace WaterHeat is a construction grade self-regulating heating tape that is special designed for hot water systems. It serves for frost protection, temperature maintenance and prevention of legionella formation. The 33 TTWH is frequently used to heat oil and fat lines, for example in the food processing industry.

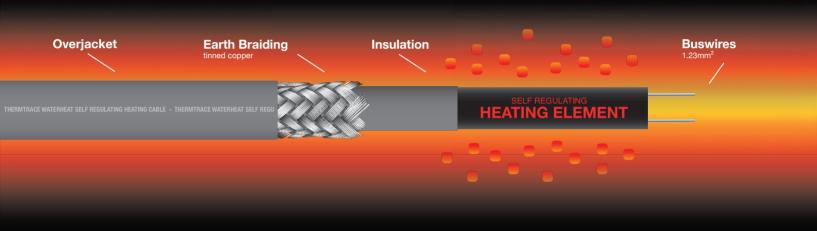
Technical data

Maximum exposure temperature (unpowered):	100°C
Maximum operating temperature:	80°C
Nominal voltage:	230V
Min. bending radius:	20mm
Min. installation temperature:	-20°C
Buswires:	nickel plated copper



ThermTrace® WaterHeat (ттwн)

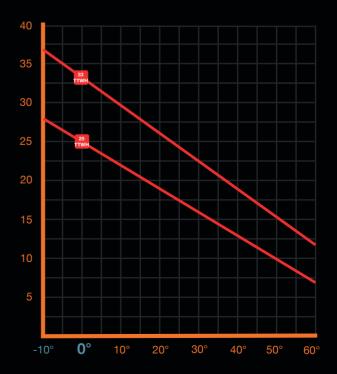
	Power output in typical application (W/m)	Maximum permissible temperature (°C)	Nominal Dimension
25 TTWH-2-BO	9 W/m at 55°C	100	13.0 x 5.0
33 TTWH-2-BO	12 W/m at 60°C	100	13.0 x 5.0



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

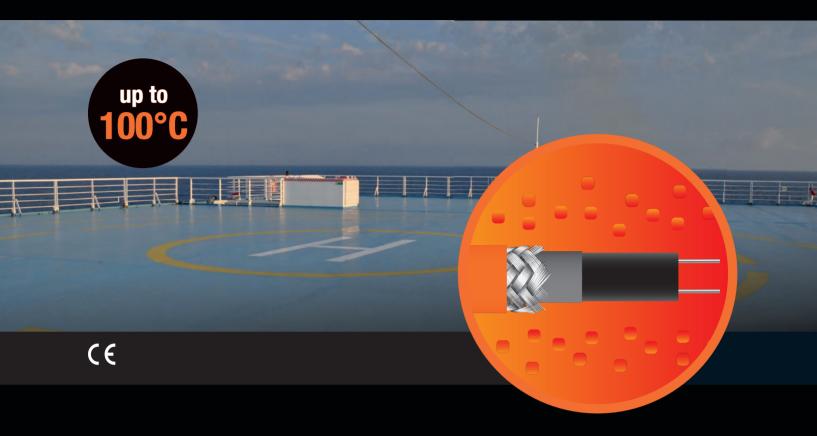
Product Reference	Circuit Breaker	+10°C	0°C	-10°C
25TTWH	10A	72m	61m	56m
25TTWH	16A	115m	98m	90m
25TTWH	20A	125m	120m	100m
25TTWH	25A	129m	123m	115m
25TTWH	32A	133m	125m	120m
33TTWH	10A	46m	40m	36m
33TTWH	16A	75m	68m	62m
33TTWH	20A	90m	82m	74m
33TTWH	25A	100m	95m	90m
ззттwн	32A	108m	101m	97m

Temperature (°C) / Loading (W/m) diagram



ThermTrace[®] RampTrace (TTRT)

SELF-REGULATING PARALLEL HEATING TAPE



Properties

- Self-regulating
- Special designed for use in concrete
- Cut-to-length
- Highly robust

Applications

The ThermTrace RampTrace is a construction grade self-regulating heating tape applicable for snow and ice melting of ramps, stairs, walkways and helicopter landing platforms. To ensure a high mechanical load capacity, the ThermTrace RampTrace is especially robust.

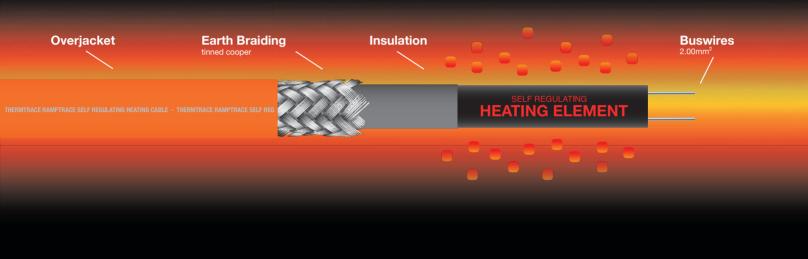
Technical data

Maximum exposure temperature (unpowered):	100°C
Maximum operating temperature:	85°C
Nominal voltage:	230V
Min. bending radius:	40mm
Min. installation temperature:	-30°C
Power output at 0 °C	80 W/m



ThermTrace[®] RampTrace (TTRT)

	on insulated	Maximum permissible temperature (°C)	Nominal Dimension (mm)
TTRT-2-BO	55	100	17.3 x 9.1



Maximum recommended length of heating circuit at 230 VAC using Type-C circuit breakers for use in concrete:

Product Reference	Circuit Breaker	+10°C	0°C	-10°C	-20°C
TTRT	30A	55m	46m	40m	35m
TTRT	50A	70m	64m	55m	49m

Temperature (°C) / Loading (W/m) diagram



eHeat[®] Micro

SELF-REGULATING PARALLEL HEATING TAPE



Properties

- Self-regulating
- 2 power output ranges
- Cut-to-length
- · Economical solution for small pipes
- Small dimensions

Applications

The eHeat Micro is a construction grade self-regulating heating tape that may be used for freeze protection and low-temperature maintenance of pipework and vessels up to 65°C. With its flexible properties, it can be applied where installation dimensions are small.

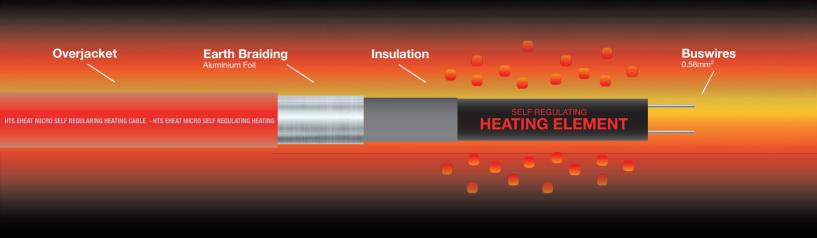
Technical data

Maximum exposure temperature (unpowered):	65°C
Maximum operating temperature:	65°C
Nominal voltage:	230V
Min. bending radius:	35mm
Min. installation temperature:	-30°C



eHeat[®] Micro

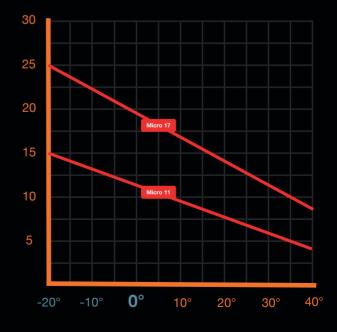
Name	Power output on insulated metal pipes at 5°C (W/m)	Maximum permissible temperature (°C)	Nominal Dimension
eHeat Micro 11	11	65	8.0 x 5.0
eHeat Micro 17	17	65	8.0 x 5.0



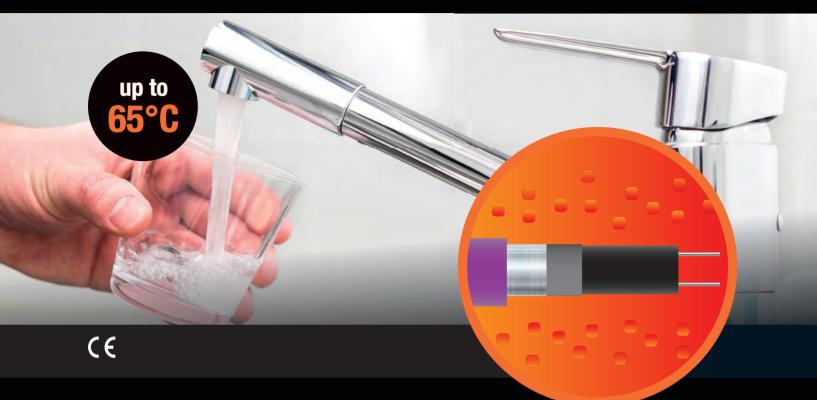
Maximum recommended length of heating circuit at 230VAC using Type-C circuit breakers for use on a metal pipe:

Product Reference	Circuit Breaker	+10°C	0°C	-10°C	-20°C
eHeat Micro 11	10A	115m	104m	89m	73m
eHeat Micro 11	16A	120m	108m	98m	87m
eHeat Micro 17	10A	80m	74m	65m	61m
eHeat Micro 17	16A	103m	96m	84m	73m

Temperature (°C) / Loading (W/m) diagram



eHeat[®] Water SELF-REGULATING PARALLEL HEATING TAPE



Properties

- Self-regulating
- Cut-to-length
- Special food-safe outerjacket
- Small dimensions

Applications

The eHeat Water is a construction grade self-regulating heating tape featuring a special food-safe outerjacket which is approved for use in potable water pipes. The eHeat Water can be installed inside a pipe.

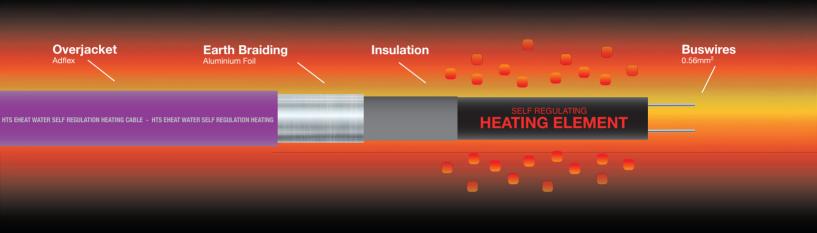
Technical data

Maximum exposure temperature (unpowered):	65°C
Maximum operating temperature:	65°C
Nominal voltage:	230V
Min. bending radius:	35mm
Min. installation temperature:	-30°C



eHeat[®] Water

	on insulated	Maximum permissible temperature (°C)	Nominal Dimension
eHeat Water	11	65	8.0 x 5.0



Maximum recommended length of heating circuit at 230VAC using Type-C circuit breakers for use inside potable water pipes:

Product Reference	Circuit Breaker	+10°C	0°C	-20°C
eHeat Water	10A	70m	61m	55m
eHeat Water	16A	85m	78m	70m

Temperature (°C) / Loading (W/m) diagram



eHeat® Gutter

SELF-REGULATING PARALLEL HEATING TAPE



Properties

- Self-regulating
- UV protected overjacket
- Moisture proof
- Cut-to-length

Applications

The eHeat Gutter is a construction grade self-regulating heating tape for roof and gutter heating. For this purpose, this tape comes with a UV protected outer jacket.

Technical data

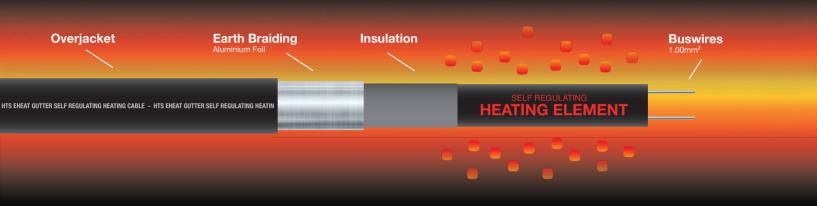
Maximum exposure temperature (unpowered):	85°C
Maximum operating temperature:	65°C
Nominal voltage:	230V
Min. bending radius:	35mm
Min. installation temperature:	-30°C



eHeat[®] Gutter

	on insulated	Maximum permissible temperature (°C)	Nominal Dimension
eHeat Gutter	20*	85	10.5 x 5.9

* 40W/m at 0°C in ice water



Temperature (°C) / Loading (W/m) diagram



- A: In snow and ice water, the heating tape will operate at full power
- B: As the snow melts and the water drains off, the heating tape self-regulates to half power while it dries

C: As it gets warmer, the heating tape reduces its power output further in correspondence to the outside temperature

Maximum recommended length of heating circuit at 230 VAC using Type-C circuit breakers for use in ice water environment:

Product Reference	Circuit Breaker	0°C	-10°C	-20°C
eHeat Gutter	16A	58m	50m	45m
eHeat Gutter	20A	78m	64m	58m
eHeat Gutter	30A	115m	90m	80m

ThermTrace® ConstantMini (ттсм)

PARALLEL CONSTANT POWER HEATING TAPE



Properties

- Connection at one end
- Cut-to-length
- Constant loading
- Highly flexible
- High temperature withstand

Applications

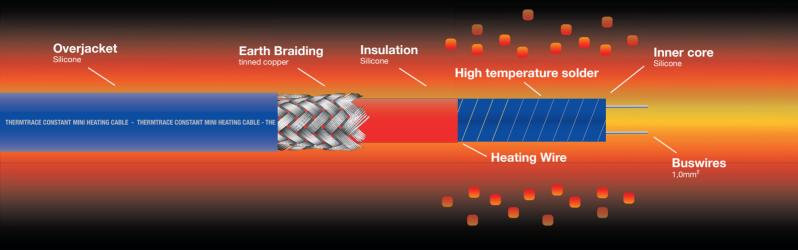
The ThermTrace ConstantMini is a construction and industrial grade parallel constant wattage heating tape. It has especially been designed for frost protection and temperature maintenance of pipes, gutters and tanks as well as for use in refrigeration applications.

Technical data

Maximum exposure temperature (unpowered):	225°C
Nominal voltage:	230V
Min. bending radius:	25mm
Min. installation temperature:	-60°C
Buswires:	tinned coppe



ThermTrace® ConstantMini (TTCM)



Name	Max. length	Zone length	Dimensions	Max. operating temperature
10TTCM-2	145m	1m	8.7 x 4.8	180°C
15TTCM-2	110m	1m	8.7 x 4.8	170°C
20TTCM-2	95m	1m	8.7 x 4.8	150°C
30TTCM-2	78m	1m	8.7 x 4.8	135°C
40TTCM-2	65m	1m	8.7 x 4.8	110°C
10TTCM-2-BO	145m	1m	11.4 x 7.4	180°C
15TTCM-2-BO	110m	1m	11.4 x 7.4	170°C
20TTCM-2-BO	95m	1m	11.4 x 7.4	150°C
30TTCM-2-BO	78m	1m	11.4 x 7.4	135°C
40TTCM-2-BO	65m	1m	11.4 x 7.4	110°C

Other wattages and voltages can be manufactured to order

Product ordering information:

TTCM-2: Cable with first insulation only TTCM-2-BO: Cable with protective braid and silicone overjacket

ThermTrace[®] Constant (TTC)

PARALLEL CONSTANT POWER HEATING TAPE



Properties

- Connection at one end
- Cut-to-length
- Constant loading
- Highly flexible
- High temperature withstand

Applications

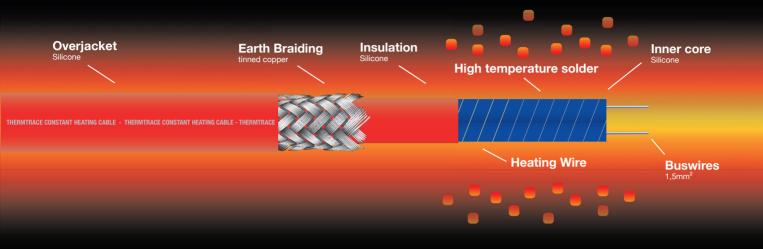
The ThermTrace Constant is a construction and industrial grade parallel constant wattage heating tape. It has especially been designed for frost protection and temperature maintenance of pipes, gutters and tanks as well as for use in refrigeration applications.

Technical data

Maximum exposure temperature (unpowered):	225°C
Nominal voltage:	230V
Min. bending radius:	25mm
Min. installation temperature:	-60 °C
Buswires:	tinned coppe



ThermTrace® Constant (TTC)



Name	Max. length	Zone length	Dimensions	Max. operating temperature
10TTC-2	200m	1m	10.0 x 5.9	180°C
15TTC-2	140m	1m	10.0 x 5.9	170°C
20TTC-2	130m	1m	10.0 x 5.9	150°C
30TTC-2	115m	1m	10.0 x 5.9	135°C
40TTC-2	100m	1m	10.0 x 5.9	110°C
50TTC-2	85m	1m	10.0 x 5.9	95°C
60TTC-2	70m	1m	10.0 x 5.9	70°C
10TTC-2-BO	200m	1m	12.5 x 8.8	180°C
15TTC-2-BO	140m	1m	12.5 x 8.8	170°C
20TTC-2-BO	130m	1m	12.5 x 8.8	150°C
30TTC-2-BO	115m	1m	12.5 x 8.8	135°C
40TTC-2-BO	100m	1m	12.5 x 8.8	110°C
50TTC-2-BO	85m	1m	12.5 x 8.8	95°C
60TTC-2-BO	70m	1m	12.5 x 8.8	70°C

Other wattages and voltages can be manufactured to order

Product ordering information:

TTC-2: Cable with first insulation only TTC-2-BO: Cable with protective braid and silicone overjacket



Worldwide Specialists in Electric Heat Tracing