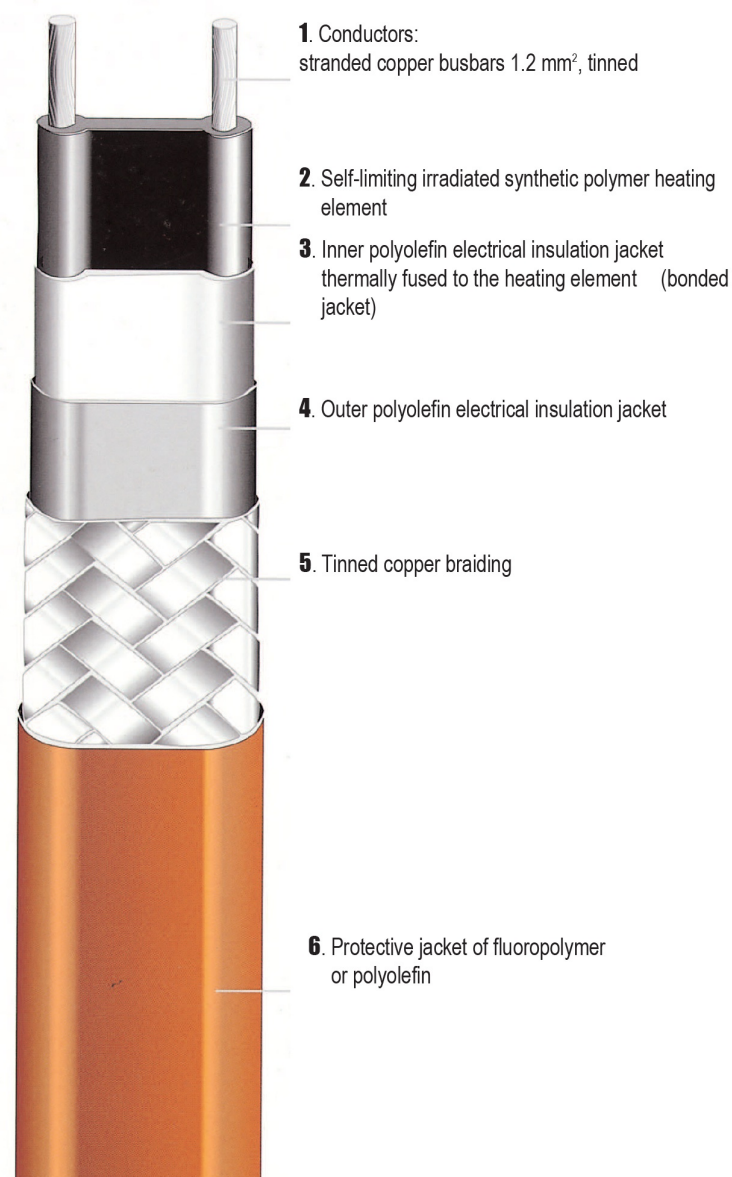




Self-limiting parallel heating cable PSB



Features

- Self-limiting
- Can be used in explosive atmospheres without temperature limiter (subject to 'T' class)
- Can be cut at random length thanks to its parallel circuit configuration
- Corrosion-proof and resistant to effects of chemicals thanks to its protective outer sheath
- Electrically and mechanically protected by a tinned copper braid
- Simple installation thanks to its high flexibility and favourable dimensions
- Easy on-site cutting and terminating, even in Ex areas

Description

A temperature-dependant resistive element between two parallel copper conductors regulates and limits the heat output of the heating cable according to the ambient temperature. If the ambient temperature rises, the heat output of the heating cable is reduced. This self-limiting property prevents overheating even when the cables are overlapped. A temperature limiter is not generally necessary not even for Ex areas (also not in explosion hazard zones).

Thanks to the parallel power-supply over the entire heating circuit the heating cable can be cut and installed to any required length. BARTEC selflimiting heating cable is available with different power output range and protective insulation. The protective outer jacket of either fluoropolymer or polyolefin protects the inner copper braiding from corrosion and chemical attack.

The copper braiding serves as an earth conductor in accordance with VDE 0100 and also increases the mechanical stability of the cable. Under the protective braiding are two synthetic jackets providing electrical insulation. The inner of the two jackets is thermally fused to the heating element (bonded jacket).

Areas of application

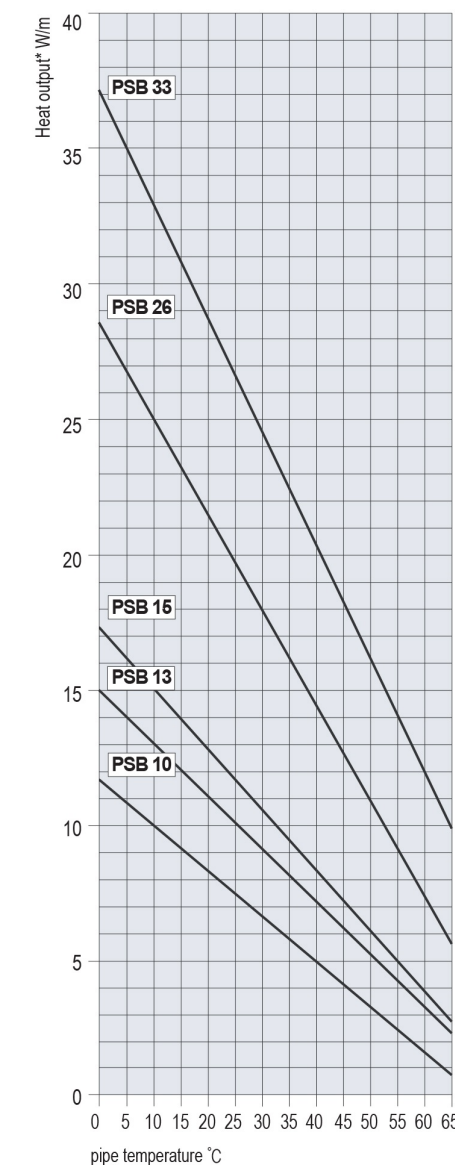
PSBL with polyolefin insulation jacket

- if the heating cable is exposed to aqueous, inorganic chemicals.
- if high mechanical requirements are set for the cable.

PSBL with fluoropolymer protective jacket

- if the heating cable is exposed to high levels of humidity organic chemicals such as hydrocarbons or solvents.
- where the cable must meet high mechanical requirements.

PSB characteristics



* Heat output on insulated steel pipes at 230V under nominal conditions.

Explosion protection

Ex protection type

- II 2G Ex e II T5, T6
- II 2D Ex tD A21 T 95° C, T 80°C

Certification

- KEMA 02 ATEX 2326 U
- KEMA 08 ATEX 0111
- IECEX KEM 07.0047 U
- CSA 1862457

Max. resistance of protective braid

< 18.2 Ω /km

Dimensions

- with protective braid and protective outer jacket of fluoropolymer 11.6 x 5.6 mm
- with protective braid and protective outer jacket of polyolefin 11.8 x 5.8 mm

Min. bending radius

25 mm



Technical data

Nominal voltage

AC 208 V to 254 V
AC 110 V to 120 V

Power setting at +10°C					
Heating output	PSB 10	PSB 13	PSB 15	PSB 26	PSB 33
at AC 230 V	10 W/m	13 W/m	15 W/m	25 W/m	33 W/m
at AC 120 V	10.6 W/m	13.7 W/m	15.8 W/m	25.8 W/m	33.6 W/m

Permissible ambient temperature

Cut-in heating cable +65°C
Cut-off heating cable (cumulative 1000 h) +85°C

Minimum installation temperature

-55°C

Minimum cut-in temperature

-40°C

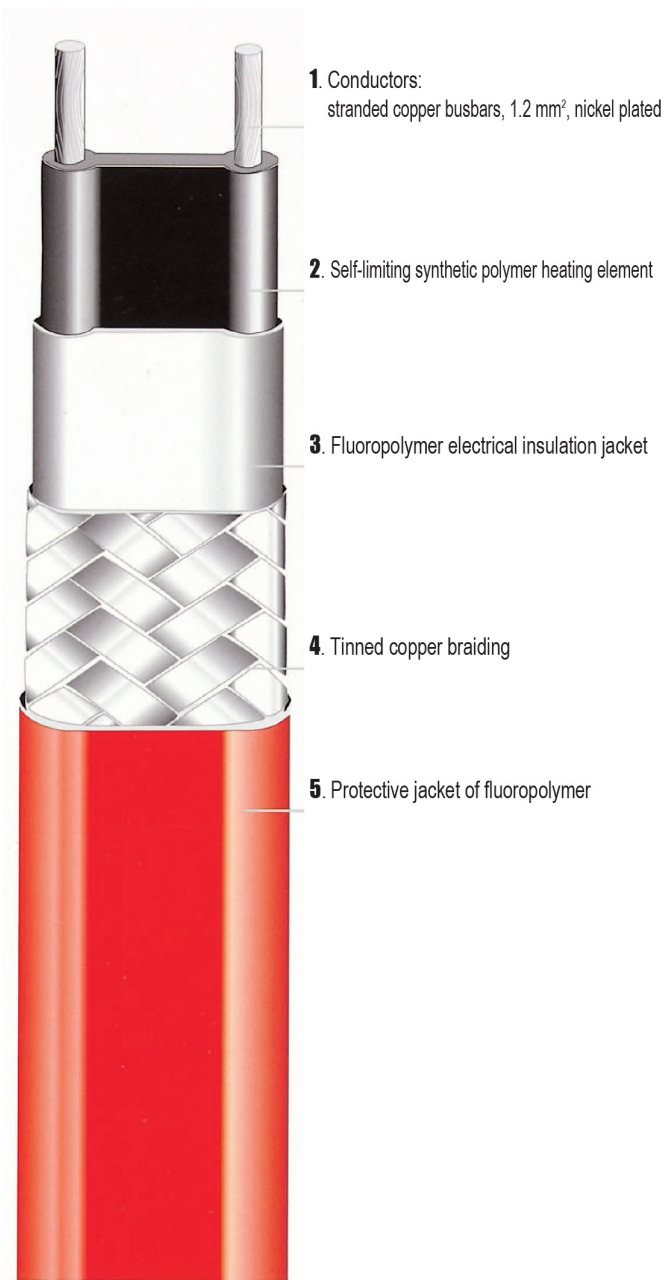
Max. length of heating circuit at 254 V (for automatic circuit-breakers with C characteristic)

Fuse	PSB 10	PSB 13	PSB 15	PSB 26	PSB 33
16 A, cut-in temperature +10°C	205m	169m	145m	88m	70m
16 A, cut-in temperature -15°C	139m	111m	93m	58m	49m
16 A, cut-in temperature -30°C	120m	94m	77m	45m	43m
20 A, cut-in temperature +10°C	205m	179m	162m	117m	90m
20 A, cut-in temperature -15°C	186m	149m	125m	75m	64m
20 A, cut-in temperature -30°C	150m	124m	106m	74m	52m
32 A, cut-in temperature +10°C	195m	174m	160m	126m	108m
32 A, cut-in temperature -15°C	195m	174m	160m	117m	95m
32 A, cut-in temperature -30°C	195m	174m	160m	100m	82m

Max. length of heating circuit at 120 V (for automatic circuit-breakers with C characteristic)

Fuse	PSB 10	PSB 13	PSB 15	PSB 26	PSB 33
16 A, cut-in temperature +10°C	95m	78m	67m	43m	33m
16 A, cut-in temperature -15°C	69m	55m	45m	30m	25m
16 A, cut-in temperature -30°C	58m	47m	39m	26m	21m
20 A, cut-in temperature +10°C	95m	86m	80m	58m	45m
20 A, cut-in temperature -15°C	90m	72m	60m	38m	32m
20 A, cut-in temperature -30°C	75m	59m	49m	31m	26m
32 A, cut-in temperature +10°C	95m	86m	80m	63m	54m
32 A, cut-in temperature -15°C	95m	86m	80m	55m	45m
32 A, cut-in temperature -30°C	95m	86m	80m	53m	43m

Self-limiting
parallel heating cable HSB



Features

- Steam cleaning possible
- Self-limiting
- Can be used in explosive atmospheres without temperature limiter
- Can be cut to length at random thanks to its parallel circuit configuration
- Simple installation thanks to its high flexibility and favourable dimensions
- Easy on-site cutting and terminating, even in Ex areas
- Corrosion-proof and resistant to chemical attack thanks to its protective outer jacket

Description

A temperature-dependant resistive element between two parallel copper conductors regulates and limits the heat output of the heating cable.

This output regulation is carried out automatically along the entire length of the heating cable according to the prevailing ambient temperature. As the ambient temperature rises, the heat output of the cable is reduced. This self-limiting property prevents overheating even when the cable are overlapped. A temperature limiter is not required (not even in explosion hazard zones).

Thanks to the parallel power supply the heating cable can be cut to any required length. This feature considerably simplifies project planning and installation. The heating cable is cut and terminated in accordance with the local requirements directly on the construction site. In cases where the cable may become damaged, it is not necessary to replace the whole circuit but only the affected part.

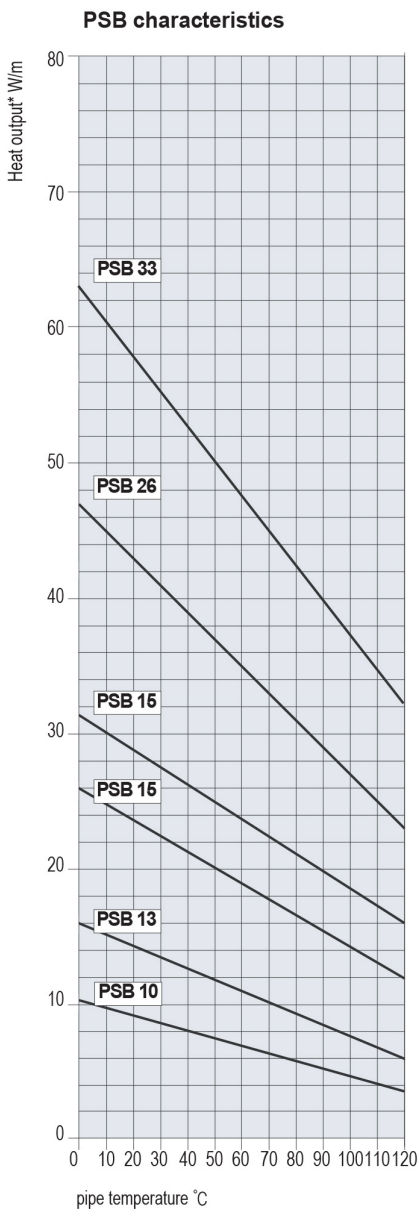
BARTEC-HEAT HSB is available in different versions and with different power outputs.



Areas of application

HSB with fluoropolymer protective jacket

- if the heating cable is exposed to high levels of humidity organic chemicals such as hydrocarbons or solvents.
- where the cable must meet high mechanical requirements.



* Heat output on insulated steel pipes at 230V under nominal conditions.

Explosion protection

Ex protection type

- II 2G Ex e II 200°C (T2), T3, T4
- II 2D Ex tD A21 IP 65 T 200°C , T 195°C , T 130°C

Certification

- KEMA 02 ATEX 2327 U
- KEMA 08 ATEX 0110
- IECEX KEM 07.0048 U
- CSA 1862457

Max. resistance of protective braid < 18.2 Ω /km

Dimensions

- with protective braid and protective outer jacket of fluoropolymer
- 10.2 x 4.8 mm

Min. bending radius 25 mm

Technical data

Nominal voltage	AC 208 V to 254 V					
	AC 110 V to 120 V					

Power setting at +10°C						
Heating output	HSB 10	HSB 15	HSB 25	HSB 30	HSB 45	HSB 60
at AC 230 V	10 W/m	15 W/m	25 W/m	30 W/m	45 W/m	60 W/m
at AC 120 V	10.8 W/m	16.1 W/m	26.6 W/m	31.8 W/m	47.1 W/m	62.0 W/m

Permissible ambient temperature	
Cut-in heating cable	+120°C
Cut-off heating cable (cumulative 1000 h)	+190°C

Minimum installation temperature	-60°C
Minimum storage temperature	-60°C
Minimum cut-in temperature	-60°C

Max. length of heating circuit at 254 V (for automatic circuit-breakers with C characteristic)						
Fuse	HSB 10	HSB 15	HSB 25	HSB 30	HSB 45	HSB 60
16 A, cut-in temperature +10°C	200m	165m	110m	85m	70m	50m
16 A, cut-in temperature -25°C	175m	117m	88m	69m	49m	38m
16 A, cut-in temperature -60°C	165m	110m	80m	65m	45m	35m
20 A, cut-in temperature +10°C	235m	189m	140m	114m	82m	64m
20 A, cut-in temperature -25°C	235m	152m	120m	92m	66m	52m
20 A, cut-in temperature -60°C	225m	144m	114m	86m	62m	48m
32 A, cut-in temperature +10°C	235m	189m	189m	114m	82m	64m
32 A, cut-in temperature -25°C	235m	189m	189m	114m	82m	64m
32 A, cut-in temperature -60°C	235m	189m	189m	110m	78m	60m

Max. length of heating circuit at 120 V (for automatic circuit-breakers with C characteristic)						
Fuse	HSB 10	HSB 15	HSB 25	HSB 30	HSB 45	HSB 60
16 A, cut-in temperature +10°C	100m	80m	60m	44m	35m	25m
16 A, cut-in temperature -25°C	89m	56m	44m	35m	24m	20m
16 A, cut-in temperature -60°C	82m	52m	40m	32m	22m	17m
20 A, cut-in temperature +10°C	120m	95m	69m	58m	41m	32m
20 A, cut-in temperature -25°C	120m	75m	59m	45m	33m	25m
20 A, cut-in temperature -60°C	120m	75m	55m	41m	26m	21m
32 A, cut-in temperature +10°C	120m	95m	69m	58m	41m	32m
32 A, cut-in temperature -25°C	120m	95m	69m	58m	41m	32m
32 A, cut-in temperature -60°C	120m	95m	69m	58m	41m	32m

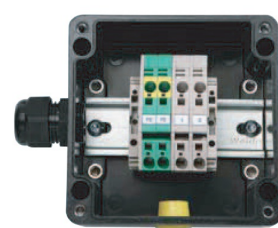
Self Regulating Cable



Heating cable HSB



Junction box



Installation kit



System overview HSB

Features

- Simple project planning
- BARTEC HELOC calculation and design - Software - Free Download
- Safe, self-limiting, without overheating while overlapping, thermostat not mandatory
- Easy installation, cutting and terminating on-site, random length possible and use of up-to-date connection technology
- Installation also in Ex-area, maximum admissible work-piece temperature of +120°C (power ON) and +190°C (power OFF, cumulative 1000 h)
- Certificate for complete system EN 60079-30 und CSA C22.2 No.130-3
- Hard environment conditions, junction boxes made of polyester, stainless steel and aluminium available

Description

Typical applications are frost protection, maintaining temperature and heat-up in pipes, tanks, vessels or at surfaces in non-ex areas and in explosive atmospheres for process industry. The BARTEC electric trace heating system type HSB offers the optimum solution for requirements following Ex II 2G Ex e II 200°C (T2), T3, T4 and Ex II 2 D Ex tD A21 IP 65 T 200°C, T 195 °C, T 130°C.

The self-limiting heating cable Type HSB is available with various nominal power ratings from 10 W/m to 60 W/m at 10 °C (maximum admissible work-piece temperature of +120°C, power ON and +190°C power OFF, cumulative 1000 h). The standard outer insulation jacket is made of fluorine polymer plastic for special applications which require chemical resistance and mechanical strength. Dependant on the cut-in temperature and respectively the cut-in current and the supplied voltages a maximum heating circuit length about 200 m is possible.

System overview

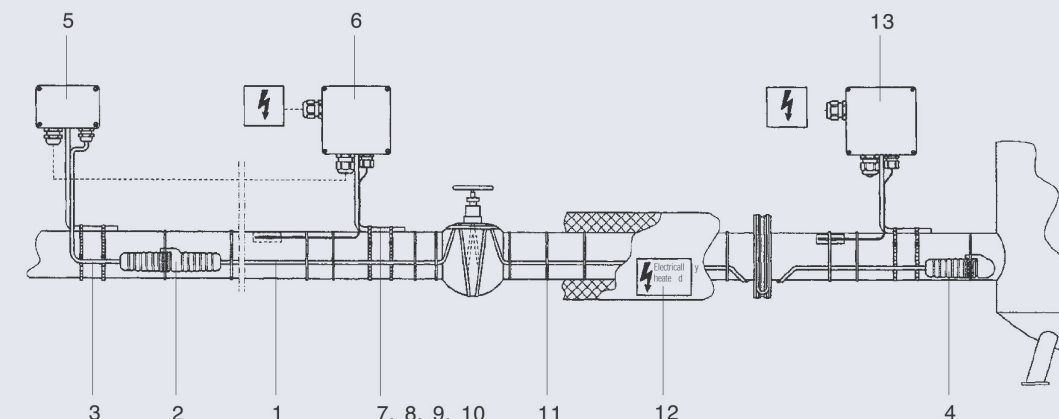
- Self-limiting parallel heating cable type HSB (AC 110 to 120 V, AC 208 to 254 V)
- Heat shrink technology or silicone cold applied technology or plug & socket for connection and terminating (ambient temperature -50°C up to +55°C, IP 65)
- Junction box made of polyester, stainless steel and aluminium
- Option: mechanical or electronic control systems
- Flexible connection by using a cold lead into the junction box (indirect) made of PLEXO plug & socket technology
- Direct connection of the heating cable into a junction box with heat shrink technology
- Direct connection of the heating cable into a junction box with silicone cold applied technology
- Connection with PLEXO plug & socket technology

Explosion protection

Certification

KEMA 08 ATEX 0110
CSA 1862457

HSB heating circuit with system PLEXO-H in an Ex area (typical example)



- | | | |
|--------------------------------------|-----------------------------------|---|
| 1 Parallel circuit HSB heating cable | 5 Ex e junction box | 9 Fixing strap for mounting bracket |
| 2 PLEXO-H plug and socket connection | 6 BSTW Safety temperature monitor | 10 Buckles for fixing strap |
| 3 Silicone-sheathed cable | 7 Mounting bracket | 11 Self adhesive glass-fibre fixing tape |
| 4 PLEXO-H remote end termination | 8 Mounting plate | 12 "Electrically Heated" caution label |
| | | 13 BSTW Safety temperature monitor as an extra alarm (optional) |

Self Regulating Cable



Self-limiting parallel heating cable HTSB



1. Conductors: stranded copper busbars
1.8 mm², nickel plated

2. Self-limiting irradiated synthetic polymer heating
element

3. Fluoropolymer electrical insulation jacket

4. Tinned copper braiding

5. Protective jacket of fluoropolymer or alternatively
polyolefin

Applications

Construction

Order no. 07-5809-...W
The cable is used with Cu braiding and an
insulation jacket made of fluoropolymer if it is
exposed to excessive humidity, aggressive
chemical influences or additional mechanical
stresses.

Chemical resistance

with insulation fluoropolymer jacket resistant
to: acids, alkalis, salts, seawater, oils and other
hydrocarbon liquids.

Features

- High level of steam cleaning is possible
- Self-limiting
- Can be used in explosive atmospheres without
temperature limiter (subject to 'T' class)
- Can be cut to length at random thanks to its
parallel circuit configuration
- Simple installation thanks to its high flexibility
- Easy on-site cutting and terminating
- Corrosion-proof and resistant to effects of
chemicals thanks to its protective outer sheath

Description

A temperature-dependent resistive element
between the parallel copper conductors regulates
and limits the heating cable's heat output. This
power setting occurs automatically at every point
of the heating cable depending on the ambient
temperature prevailing there. If the ambient
temperature increases, the cable's heating output
is reduced. This self-limitation prevents the heating
cables overheating even where cables overlap.

There is no need for a temperature limiter. The
parallel supply of power allows the heating cable to
be cut to any length. This makes planning and
installation easier. The heating cable is cut from
the roll on the construction site according to the local
conditions. If the cable gets damaged, only the part
concerned has to be replaced, not the entire
heating cable.

BARTEC HTSB is available in various power
ratings and versions.

Technical data

Available outputs

with 230 V 16, 49, 65, 98 W/m
with 120 V 16, 49, 65, 98 W/m

Supply voltage

AC 208 V up to AC 254 V
AC 110 V up to AC 120 V

Permissible ambient temperature

Cut-in heating cable +190°C
intermittently turned off +232°C

Min. Installationtemperatur

-40°C

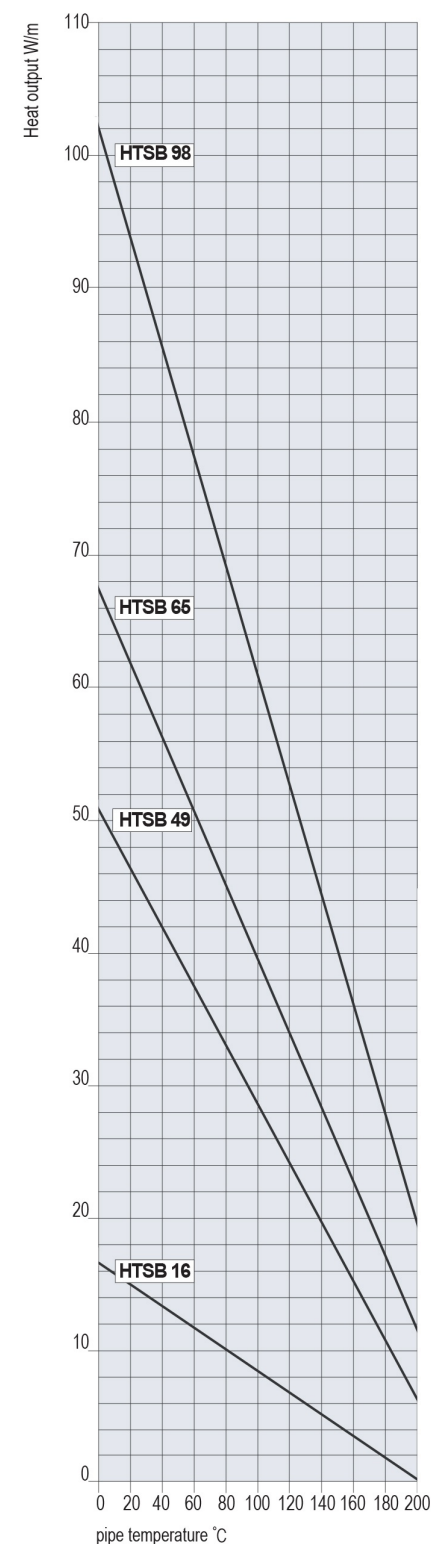
Dimension

12.3mm x 5.0mm

Minimum bend radius

25mm

HTSB-characteristics



Max. length of heating circuit at 230 V (for automatic circuit-breakers with C characteristic)

Type of heating cable	HTSB 16	HTSB 49	HTSB 65	HTSB 98
16 A, cut-in temperature +10°C	109m	50m	36m	24m
16 A, cut-in temperature -20°C	98m	44m	34m	22m
16 A, cut-in temperature -40°C	88m	37m	33m	22m
25 A, cut-in temperature +10°C	158m	76m	55m	35m
25 A, cut-in temperature -20°C	152m	76m	53m	35m
25 A, cut-in temperature -40°C	137m	58m	51m	35m
32 A, cut-in temperature +10°C	163m	84m	72m	44m
32 A, cut-in temperature -20°C	163m	84m	69m	44m
32 A, cut-in temperature -40°C	163m	75m	66m	44m

Max. length of heating circuit at 120 V (for automatic circuit-breakers with C characteristic)

Type of heating cable	HTSB 16	HTSB 49	HTSB 65	HTSB 98
16 A, cut-in temperature +10°C	59m	26m	20m	13m
16 A, cut-in temperature -20°C	54m	23m	18m	11m
16 A, cut-in temperature -40°C	49m	20m	16m	11m
25 A, cut-in temperature +10°C	92m	40m	34m	19m
25 A, cut-in temperature -20°C	84m	34m	27m	17m
25 A, cut-in temperature -40°C	76m	31m	25m	17m
32 A, cut-in temperature +10°C	109m	44m	39m	23m
32 A, cut-in temperature -20°C	107m	44m	36m	23m
32 A, cut-in temperature -40°C	98m	39m	33m	23m

Selection chart heating cable HTSB 230 V

Type	Order no.
HTSB 16	07-5809-216W
HTSB 49	07-5809-249W
HTSB 65	07-5809-265W
HTSB 98	07-5809-298W

Selection chart heating cable HTSB 120 V

Type	Order no.
HTSB 16	07-5809-116W
HTSB 49	07-5809-149W
HTSB 65	07-5809-165W
HTSB 98	07-5809-198W

Self Regulating Cable