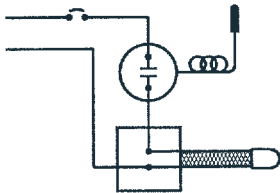


TTS™ Self-Regulating Heating Cable for Pipe Freeze Protection

Thermostatic Control:

While these five steps provide the considerations required to plan the materials list and/or specify a TTS self-regulating heat tracing system, some type of control will typically be needed. The type of control and level of sophistication needed will depend entirely on the application of the piping being heat-traced. Self-regulating heating cables can, under some design conditions, be operated without the use of any temperature control; however, some method of control is generally used and the two most common methods are ambient sensing and pipewall sensing. Each method has its own benefits, and various options are available within each method.

Ambient Sensing: An adjustable thermostat, designed for mounting in an exposed environment, senses the outside air temperature. When this temperature falls below the set point,



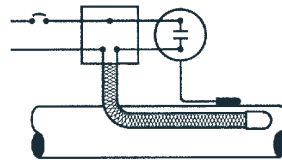
a set of contacts close and energize the heating cable(s).

Should the electrical load of the heating circuit exceed the rating of the thermostat switch, a mechanical contactor can be used. An entire power distribution panel, feeding dozens of heat tracing circuits, can be energized through an ambient sensing thermostat.

The primary application for ambient sensing control of electric heat tracing is freeze protection (winterization) of water and water-based solutions. A benefit of ambient sensing control for freeze protection is that pipes of varying diameters and insulation thicknesses can be controlled as a single circuit.

By controlling heat tracing with ambient sensing control, the status (flowing or nonflowing) of the heated pipe needs no consideration.

Pipewall Sensing: While a self-regulating cable adjusts its heat output



to accommodate the surrounding conditions, the most energy-efficient method for controlling heat tracing is a pipewall sensing thermostat.

This is because a flowing pipe will typically not need any additional heat to keep it at the proper temperature. Where a piping system has tees and therefore multiple flow paths, more than one thermostat may be required. Situations where more than one thermostat could be necessary include:

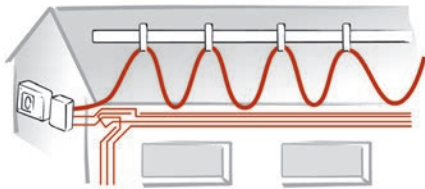
- Pipes of varying diameters or insulation thicknesses.
- Varying ambient conditions such as above/below ground transitions and indoor/outdoor transitions.
- Flowing versus nonflowing conditions within the interconnected piping.
- Applications involving temperature-sensitive products.

Note: Pipewall sensing required for non-metallic piping.

Table 1.5.1 Attachment Tape Allowance (BTape)

Pipe Size	½"-1"	1¼"	1½"	2"	3"	4"	6"	8"	10"	12"	14"
Feet of Pipe/Roll of Tape - 180' roll of tape	360'	260'	220'	180'	150'	120'	90'	70'	60'	50'	40'

TTS™ Self-Regulating Heating Cable for Roof & Gutter Snow & Ice Melting



Certifications / Approvals:

Canadian Standards Association
Ordinary (Non-Classified) Locations
Hazardous (Classified) Locations
Class I, Division 2, Groups A, B, C and D
Class II, Division 2, Groups F and G
Meets or exceeds - IEEE 515.1 - UL 1588
CSA 130.3



Description:

Cut-to-length TTS self-regulating heating cables are designed to provide snow and ice melting for roof and gutter applications. Whether the application is a small project or a complex network, designing an electric heat trace system is easy with TTS heating cables. Please refer to the guide for Roof and Gutter on page 17 of this catalogue for full details.

TTS heating cables are approved for use in ordinary (non-classified) and hazardous (classified) areas

Areas of Application:

- Asphalt, shingle, or metal roof surfaces
- Metal or plastic gutters and downspouts

Ratings:

Heating Cable Output	
In Snow and Ice.....	39 W/m @ 0°C (12 W/ft @ 32°F)
In Dry Air.....	20 W/m @ 0°C (6 W/ft @ 32°F)
Supply Voltages.....	110-120 or 208-240 V
Minimum installation temperature.....	-51° C (-60° F)
Minimum bend radius.....	32 mm (1.25")
T-rating.....	T6 85° C (185° F)

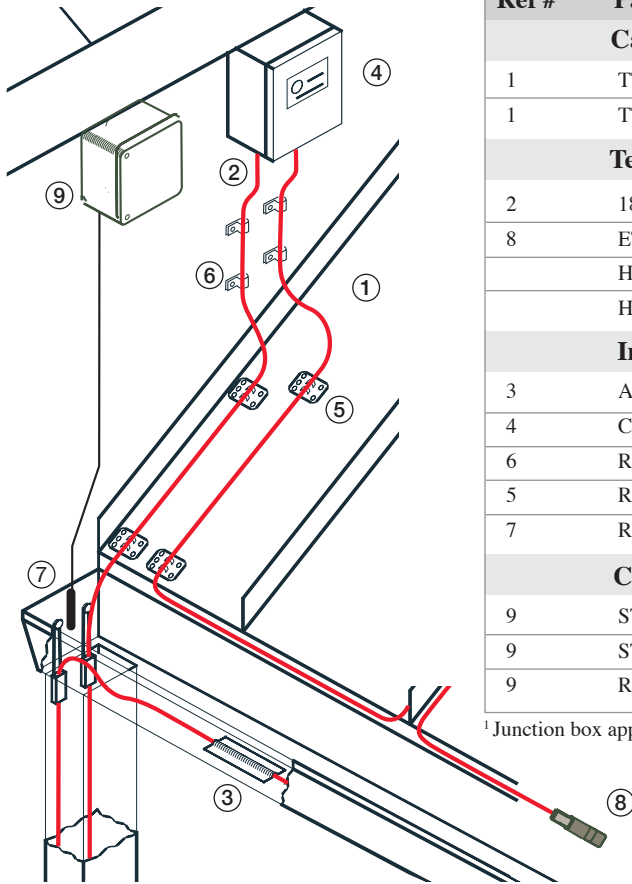
Diagram shown above is for illustration purposes only, it is not to scale.



TTS™ Self-Regulating Heating Cable for Roof & Gutter Snow & Ice Melting

Basic Components:

A TTS self-regulating roof and gutter snow and ice melting heat tracing system will typically include heating cable and components shown in the illustration and TTS cable ordering information below.



Ref #	Part Number	Description
Cable		
1	TTS-8-1-OJ	8 W/FT @ 120V
1	TTS-8-2-OJ	8 W/FT @ 240V
Termination Kits		
2	18-SXG-Kit ¹	Power Connection Gland Kit w/o Junction Box
8	ET-4S	End Termination Kit
	HS-PBSK	Inline Splice with Heat Shrink
	HS-TBSK	T-Splice with Heat Shrink
Installation Accessories		
3	AL TAPE	3M™ Aluminum Tape (2" X 180') in gutter
4	CL	Caution Labels (25 Per Pack)
6	RG-CMC	"P" Style Roof, Cable Mounting Clips (100/Bag)
5	RG-CRF	Roof Clips, Cable Roof Fastener (25/Bag)
7	RG-DCH	Downspout Cable Hanger
Controls		
9	STC-DS2B	Snow and Ice Sensor, Pole Mounted
9	STC-DS-8	Snow and Ice Sensor with a 10' Remote Lead Wire
9	RC3-0120-DP	Weatherproof Indoor / Outdoor Thermostat

¹ Junction box appropriate for the application to be supplied by the installer.