WARMZONE
PREMIER RADIANT HEATING

Roof De-icing

SELF-REGULATING HEAT TRACE CABLE AND LOW-VOLTAGE ELEMENT

Self-Regulating Heat Cable Comparison

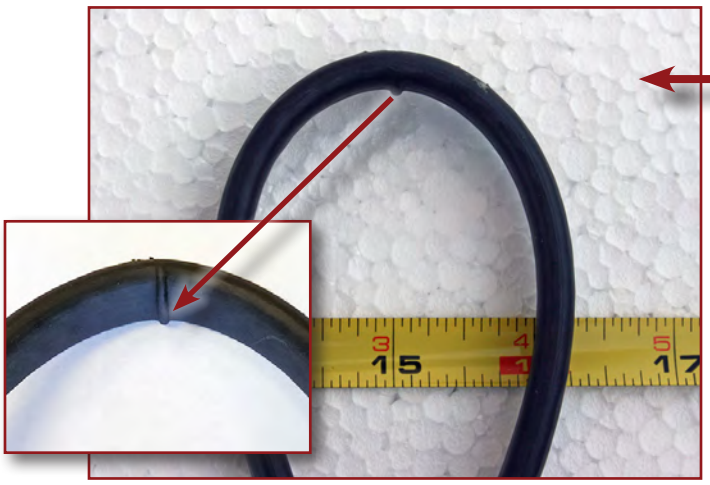
Warmzone self-regulating heat cable features a more flexible outer jacket and more durable carbon core than other leading brands of self-reg cable. These features provide more consistent performance, longer lifespan, and easier installation in cold temperatures.

Key Features of Warmzone Self-regulating Heat Cable vs. Other Cable Brands

Outer Jacket Quality

Typical self-regulating heat cable

The outer jacket of typical self-reg cable tends to "bubble" or separate from the cable core when the cable is manipulated for turns. These irregularities create stress points on the cable that can result in water reaching the core, leading to erratic heating and eventual cable failure.



Other Leading Brands of Self-regulating Cable

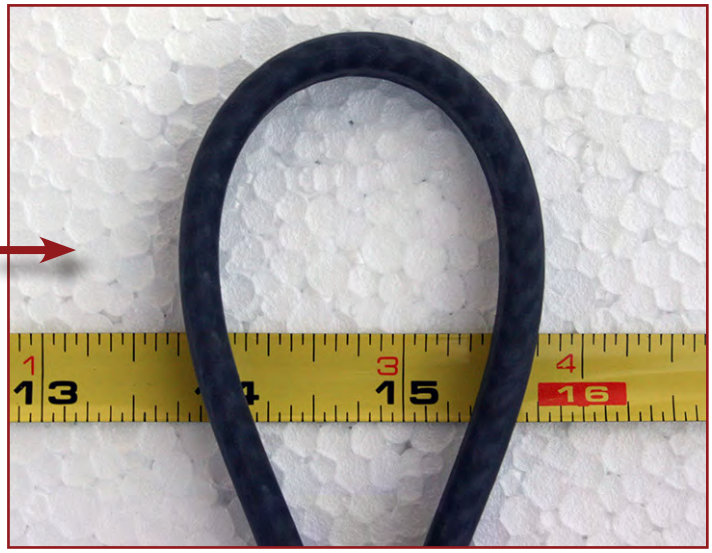
The outer jacket of most self-regulating heat cable separates from the core at a typical bend radius of 2 inches.

Warmzone Self-regulating Heat Cable

Warmzone self-regulating heat cable does not "bubble" at an even tighter bend radius of 1½ inches.

Warmzone Self-regulating Heat Cable

Warmzone self-regulating heat cable features a higher quality outer jacket that does not "bubble". This reduces the chances of water seepage and cable failure.



Installation at Low Temperatures

Typical Self-regulating Heat Cable

Typical self-regulating cable has a minimum installation temperature of 32-40°F. This is because the carbon in the cable becomes brittle and can easily break when bent or manipulated at low temperatures.

The outer jacket also becomes stiff, making the securing of cable to the roof, gutter, or pipes difficult during cold weather installations. The outer jacket tends to "pucker" and pull away from the core when making bends, compromising the cable's integrity and leading to cable failure. Therefore installing most self-regulating heat cable at temperatures below 40°F is not recommended.

Warmzone self-regulating heat cable and plug with GFCI.

Warmzone Self-regulating Heat Cable

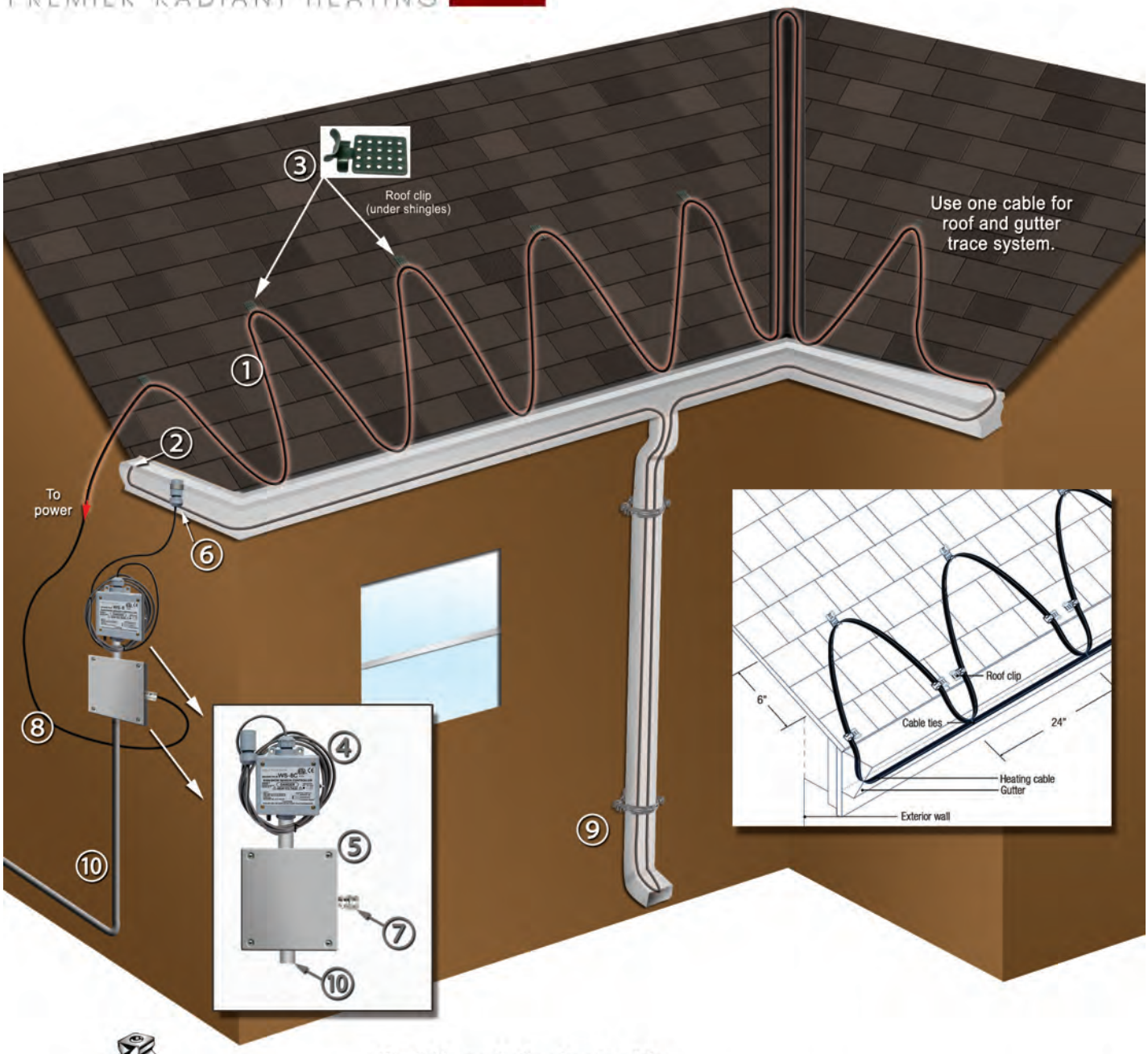
Warmzone self-regulating cable features a higher quality carbon center that is more resilient in low temperatures, thereby allowing the cable to be safely installed at temperatures as low as 0°F.

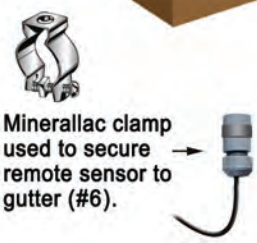
The higher quality outer jacket also remains flexible at low temperatures, resulting in more reliable performance and easier installation when securing to roofs, gutters, and pipes.

"In all the years I've been installing roof heating systems, I've noticed that "bubbles" in the outer jacket of the cable almost always result in a point of failure. The superior outer jacket of Warmzone's self-reg cable helps to eliminate this problem."

– Eric W., Roofing Contractor

Self-Regulating Heat Cable System Overview





Minerallac clamp used to secure remote sensor to gutter (#6).

① Self-regulating heat cable
② End seal (termination) kit
③ Roof cable clips, manufactured for superior performance (under shingles)
④ Snow sensor or thermostat (WS-8 sensor with inline sensor shown)
⑤ Mulberry or Bell weatherproof junction box
⑥ Remote sensor (secured with Minerallac clamp)
⑦ Power connection kit
⑧ Drip loop (prevents water from trailing into the junction box)
⑨ Double or single downspout hanger
⑩ Conduit to home

RoofHeat

SELF-REGULATING HEAT CABLE

Self-regulating Roof Heat and Gutter Trace Cable

Most roof de-icing applications are best served by using Warmzone's self-regulating heat cable. The heat cable can be installed in gutters and downspouts to keep structures safe from ice damage and frost erosion.

The self-regulating heat cable features an irradiated conductive core that increases its heat output as the ambient temperature falls, and decreases its output when the temperature rises.

Features and Benefits

- Will not overheat or burnout when overlapped
- Superior quality outer jacket and carbon core
- Features advanced technology that results in highly effective, energy efficient operation
- Can be cut to length in the field
- Fully automated
- Maintenance free
- Protects roofs by preventing ice dams and ice buildup

Several roof heating options are available. Warmzone roof and gutter de-icing systems are compatible with the following standard materials:

Roof Materials:

- Shake / Shingle
- Rubber / Tar
- Wood / Metal

Gutter/Downspout:

- Metal
- Plastic
- Wood

Self-regulating heat trace cable installed in the gutters of a large commercial facility.

Heated roof valley and edges.

Warmzone pre-terminated self-regulating heat cable with and without a ground fault circuit interupter (GFCI).

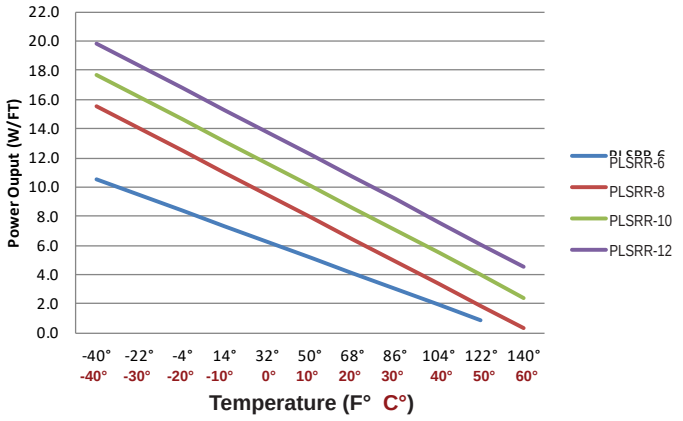
PLSRR Heat Trace Cable Data Sheet

PLSRR is self-regulating heat cable that can be used for roof / gutter heating and pipe tracing applications. The cable features a flexible, UV stabilized thermoplastic elastomer over-jacket that protects the durable carbon core for wet applications and exposure to the sun. The parallel heating cable is designed for a variety of industrial applications and environments, including explosion-hazardous and nonhazardous areas, and can be used for plastic or metal pipe freeze protection and temperature maintenance of pipes, tanks, and valves. The cable includes a NON-PRORATED 10-year warranty.

Technical Data for PLSRR Heat Cable	
Service voltage	110-120V, 220-277V
Maximum maintain or continuous exposure temperature (power on)	+149°F (65°C)
Maximum intermittent exposure temperature 1000 hours (power on/off)	+185°F (85°C)
Minimum installation temperature	-40°F (-40°C)
Protective braid resistance	<.006Ω/ft.
Bus wire gauge	16AWG
Approvals	cULus, hazardous, CSA, ATEX, IECEx
Warranty	10 years (Not prorated)
Certifications	Class I, Div.2 Groups A, B, C, D Class II, Div.2 Groups E, F, G Class III

Power Output Curves

Watts per Foot vs. Temperature



PLSRR Cable Dimensions

Type	Dimensions	Minimum Bend Radius
PLSR-CR	12.6 x 6.0mm	1.4 inches (36mm)

Maximum Length (feet) vs Circuit Breaker Size

Cable	Startup Temp.	120 V				240 V			
Breaker Size		15A	20A	30A	40A	15A	20A	30A	40A
PLSRR-6-1 and PLSRR-6-2	50°F (+10°C)	230	270	270	270	460	540	540	540
	32°F (0°C)	230	270	270	270	460	540	540	540
	14°F (-10°C)	180	210	270	270	360	420	540	540
	0°F (-18°C)	140	190	270	270	285	380	540	540
	-20°F (-29°C)	125	165	250	270	250	330	500	540
	-40°F (-40°C)	110	145	220	270	220	295	440	540
PLSRR-8-1 and PLSRR-8-2	50°F (+10°C)	150	200	210	210	300	400	420	420
	32°F (0°C)	150	200	210	210	300	400	420	420
	14°F (-10°C)	140	150	205	210	280	300	410	420
	0°F (-18°C)	100	130	200	210	200	265	400	420
	-20°F (-29°C)	85	115	175	210	175	235	350	420
	-40°F (-40°C)	80	105	155	210	155	210	315	420
PLSRR-10-1 and PLSRR-10-2	50°F (+10°C)	120	160	180	180	240	315	360	360
	32°F (0°C)	105	140	170	180	210	280	340	360
	14°F (-10°C)	95	125	165	180	190	250	330	360
	0°F (-18°C)	80	110	160	180	160	215	325	360
	-20°F (-29°C)	70	95	140	180	145	190	285	360
	-40°F (-40°C)	60	85	125	170	125	170	255	340
PLSRR-12-1 and PLSRR-12-2	50°F (+10°C)	80	140	150	150	160	270	310	310
	32°F (0°C)	75	130	145	150	150	260	290	310
	14°F (-10°C)	70	115	142	150	140	230	285	310
	0°F (-18°C)	60	80	140	150	120	160	280	310
	-20°F (-29°C)	50	65	110	150	105	140	225	310
	-40°F (-40°C)	45	60	90	140	90	125	190	280

Ordering Information

PLSRR- ☐ - ☐ - ☐ (PLSRR-8-2-CR)

Outer jacket
CR=Thermoplastic

Supply Voltage
1=110-120VAC;
2=208-277VAC

Output Power (at 40°F)

Example: PLSRR-8-2-CR = 8 watt,
208-277V,
Thermoplastic outer jacket

Approvals:

Roof De-icing

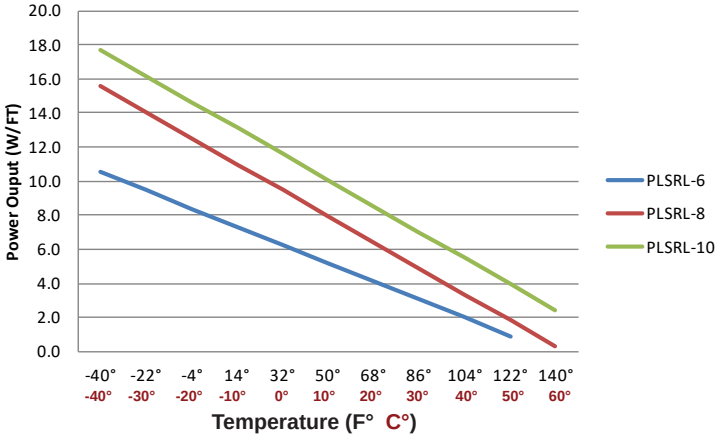
PLSRL Heat Trace Cable Data Sheet

Warmzone's PLSRL self-regulating heat cable is the cable of choice for roof heating and gutter trace applications. The UL listed cable features a flexible outer jacket and durable carbon core, providing consistent performance, long lifespan, and easy installation in cold temperatures.

Technical Data for PLSRL Heat Cable	
Service voltage	110-120V, 220-277V
Maximum maintain or continuous exposure temperature (power on)	+149°F (65°C)
Maximum intermittent exposure temperature 1000 hours (power on/off)	+185°F (85°C)
Minimum installation temperature	-40°F (-40°C)
Protective braid resistance	<.006Ω/ft.
Bus wire gauge	16AWG
Approvals	cULus; CE, ATEX, IECEx, EAC
Warranty	2 years (Not prorated)

Power Output Curves

Watts per Foot vs. Temperature



Maximum Length (feet) vs Circuit Breaker Size

Cable	Startup Temp.	120 V				240 V			
Breaker Size		15A	20A	30A	40A	15A	20A	30A	40A
PLSRL-6-1 and PLSRL-6-2	50°F (+10°C)	230	270	270	270	460	540	540	540
	32°F (0°C)	230	270	270	270	460	540	540	540
	14°F (-10°C)	180	210	270	270	360	420	540	540
	0°F (-18°C)	140	190	270	270	285	380	540	540
	-20°F (-29°C)	125	165	250	270	250	330	500	540
	-40°F (-40°C)	110	145	220	270	220	295	440	540
PLSRL-8-1 and PLSRL-8-2	50°F (+10°C)	150	200	210	210	300	400	420	420
	32°F (0°C)	150	200	210	210	300	400	420	420
	14°F (-10°C)	140	150	205	210	280	300	410	420
	0°F (-18°C)	100	130	200	210	200	265	400	420
	-20°F (-29°C)	85	115	175	210	175	235	350	420
	-40°F (-40°C)	80	105	155	210	155	210	315	420
PLSRL-10-1 and PLSRL-10-2	50°F (+10°C)	120	160	180	180	240	315	360	360
	32°F (0°C)	105	140	170	180	210	280	340	360
	14°F (-10°C)	95	125	165	180	190	250	330	360
	0°F (-18°C)	80	110	160	180	160	215	325	360
	-20°F (-29°C)	70	95	140	180	145	190	285	360
	-40°F (-40°C)	60	85	125	170	125	170	255	340

Ordering Information

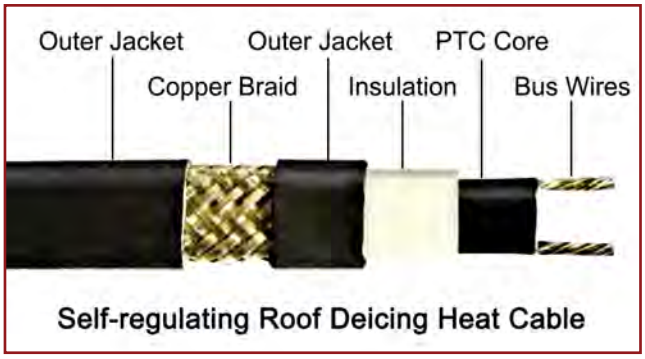
PLSRL- ☐ - ☐ - ☐ For example: PLSRL-6-2-CR

Outer jacket
CR=Thermoplastic

Supply Voltage
1=110-120VAC; 2=208-277VAC

Output Power (at 40°F)

Example: PLSRL-6-2-CR =
6 watt, 208-277V,
Thermoplastic outer jacket



PLSRL Cable Dimensions

Type	Dimensions	Minimum Bend Radius
PLSRL-CR	10.9 x 6.0 mm	1.4 inches (36 mm)

Approvals:

Warmzone self-regulating heat cable.

Roof Heating

Cable Accessories and Connections

PLSR12 - End seal kit

A Heat shrinkable tubes (2) **B** Woven braids (2)
C Heat shrink end caps (2)

VHBPad - Pad for metal roof

A Double-sided 3x2-inch VHB Pad for metal roofs - (25 per package)

PLSR14 - Roof clips

A Roof clips - 50 per bag

PLSR15 - Downspout hanger kit

A Hanger bracket
B Clamp ties

PLSR10 - Splice / tee kit - with single end seal kit

A Clamp tie
B Mastic strips (1½" long x 1" wide)
C Heat-shrinkable tube (8" long x 1" diameter)
D Heat-shrinkable tube (1" long x ⅛" diameter)
E Heat-shrinkable tube (1" long x ½" diameter)
F Uninsulated braid crimp
G Cable ties
H Insulated bus wire crimps
I Black cloth tape (6" long)
J Heat-shrinkable cap
K Heat-shrinkable tube for ground

PLSR00 - Power connection kit - with single end seal kit

A Black-shrinkable tube (2) (5½" long x ⅛" diameter)
B Green-shrinkable tube (6" long x ¼" diameter)
C Black heat-shrinkable tube (1" long x ½" diameter)
D Seal fitting and black grommet
E Mounting bracket for piping
F Gasket
G Lock nut
H Grommet
I Wire nuts (3)
J Labels (4)

PLSR Cable Accessories and Controls

Item Number	Description
PLSR00-Power	Power connection kit
PLSR08	Plug-in cord set, 120 V GFCI, 100 ft. maximum run length
PLSR10	Splice / tee kit
PLSR12	End seal kit (2 end seals)
PLSR14	Roof clips - 50/bag
VHBPad	3"x2" pad - 25/pack
PLSR15	Downspout hanger kit
WS-115	Air sensing NEMA 4X outdoor thermostat 120/240 V
WS-115R	Surface sensing NEMA 4X outdoor thermostat
WS-8C	Aerial mounted snow switch with remote moisture sensor (30 amps; 120-277 V)
WS-IET	Industrial electronic temperature controller

Commercial offices with the low-voltage roof heating system installed to heat the roof valleys and along the roof edges.

Self-Regulating Heat Cable Specs

Technical Data

Service voltage	110-120, 208-277 V
Maximum maintain or continuous exposure temperature (power on)	149°F (65°C)
Maximum intermittent exposure temperature 1,000 hours (power on or off)	-40° to 185°F (-40° to 85°C)
Minimum installation temperature	-40°F (-40°C)
Protective braid resistance	< 18.2Ω/km
Bus wire gauge	16 AWG
Approvals	CSA; ordinary and hazardous
Certifications	Class I, Div.2 Groups A,B,C,D Class II, Div.2 Groups E,F,G Class III

For information about Warmzone roof heating cable accessories, refer to the information on page 25.

For additional information, please contact a Warmzone representative at 888.488.9276.

PLSR Cable Accessories and Controls

Item Number	Description
PLSR00-Roof	Power connection kit
PLSR03-Aluminum	Aluminum application tape
PLSR03-Fiberglass	Fiberglass application tape
PLSR08	Plug-in cord set, 120 V GFCI, 125 ft. maximum run length
PLSR10	Splice / tee kit
PLSR12	End seal kit
PLSR-JHE-L	End seal with light (can be used at beginning or end)
PLSR13	Roof clips - 10/bag
PLSR14	Roof clips - 50/bag
PLSR15	Downspout hanger kit
TF-115	Air sensing NEMA 4 outdoor thermostat 120/240 V
TRF-115	Surface sensing NEMA 4 outdoor thermostat
WS-8C	Aerial mounted snow switch with remote moisture sensor (30 amps; 120-277 V)

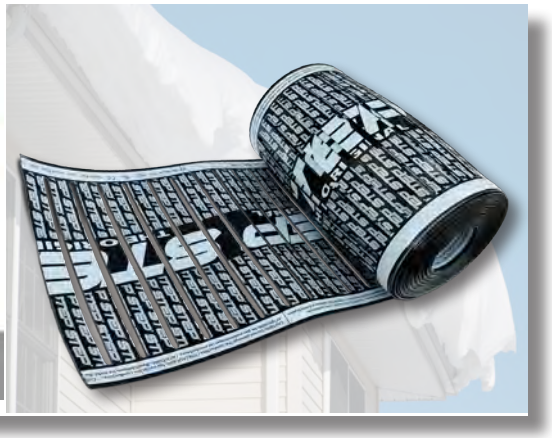
Warmzone Roof Heating Cable Ordering Information

Pre-Terminated Self-Regulating Cable (Pipe, Roof and Gutter)

Item Code	Description	Length (feet)	Output @ 50°F	Voltage
PLSR-120-50	Pre-terminated self-regulating heat cable	50	6W/ft.	120
PLSRT-120-75	Pre-terminated self-regulating heat cable	75	6W/ft.	120
PLSRT-120-100	Pre-terminated self-regulating heat cable	100	6W/ft.	120
PLSRT-120-50 GF	Pre-terminated self-regulating heat cable with ground fault protection	50	6W/ft.	120
PLSRT-120-75 GF	Pre-terminated self-regulating heat cable with ground fault protection	75	6W/ft.	120
PLSRT-120-100 GF	Pre-terminated self-regulating heat cable with ground fault protection	100	6W/ft.	120
Self-Regulating Cable (Pipe, Roof and Gutter)				
PLSR-120-5	Self-regulating heat cable	250’/500’/1000 ft.	5W/ft.	120
PLSR-120-8	Self-regulating heat cable	250’/500’/1000 ft.	8W/ft.	120
PLSR-120-10	Self-regulating heat cable	250’/500’/1000 ft.	10W/ft.	120
PLSR-120-12	Self-regulating heat cable	250’/500’/1000 ft.	12W/ft.	120
PLSR-240-5	Self-regulating heat cable	250’/500’/1000 ft.	5W/ft.	208-277
PLSR-240-8	Self-regulating heat cable	250’/500’/1000 ft.	8W/ft.	208-277
PLSR-240-10	Self-regulating heat cable	250’/500’/1000 ft.	10W/ft.	208-277
PLSR-240-12	Self-regulating heat cable	250’/500’/1000 ft.	12W/ft.	208-277
*Cut fee	*Cut fee for non 250/500/1000-foot rolls			

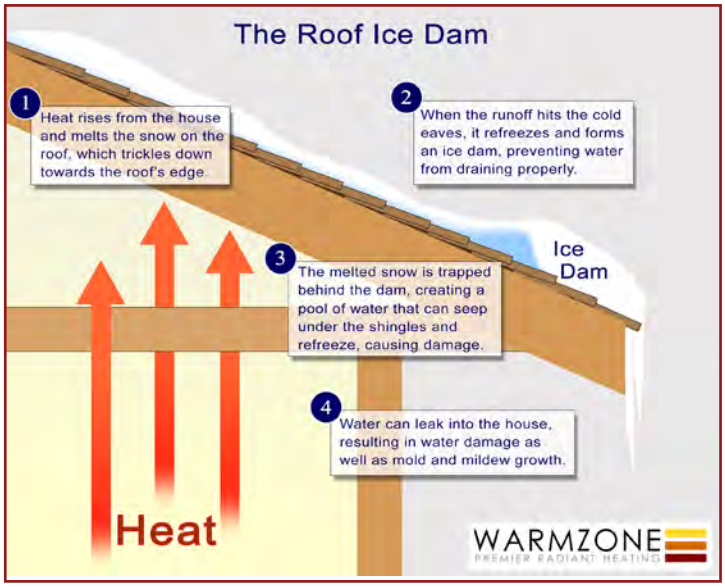
RoofHeat

STEP Low-voltage Roof Deicing Systems



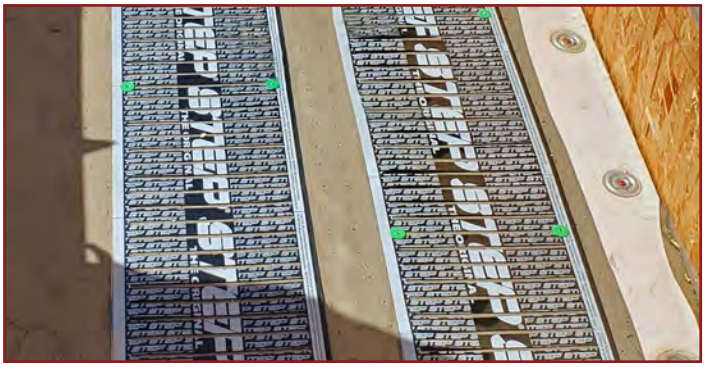
Low-Voltage Roof De-icing System

Warmzone's innovative low-voltage roof de-icing systems feature a unique, self-regulating, semi-conductive polymer heating element that is very thin and can be cut on site and discreetly nailed or stapled under shingles for quick, easy installation. The advanced heating element is polypropylene fused during fabrication to achieve water proofing.

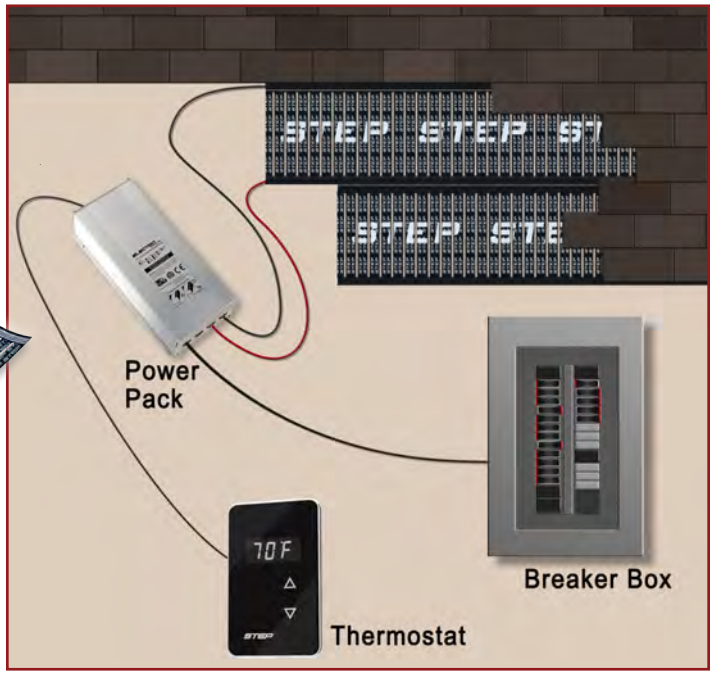


How ice dams form on roof edges.

Warmzone low-voltage roof heating element installed in roof valley.



Heating element being installed under a metal roof at a public library.



Overview of Warmzone low-voltage roof heating system with element being installed under the shingles at the building's edge.

Low-voltage Roof De-icing System

Automated Roof De-icing System

How it Works

Warmzone's roof de-icing systems involve three main components: the polymer heating element, a step-down transformer, and an activation device (i.e., an aerial-mount snow switch and/or temperature sensor) that automatically triggers the system when weather conditions warrant.

The transformer is responsible for a specific section of the de-icing system, and can step down from high voltage to low voltage (60 V or less). It is the source for monitoring the power and output to the system's heating element to ensure safe, accurate performance of the roof de-icing system.

The activation device/snow sensor (typically mounted at the roof's edge) signals the control panel when weather conditions warrant. The sensor detects moisture and temperature, so when snow begins to fall and the temperature is below the set point (usually 39°F), the sensor signals the controller, which then sends power to the heating element to warm the roof.

Features and Benefits

- **Extremely Thin Profile** – The flexible heating element is just 3/64-inch, allowing for simple, discreet installation under roofing.
- **Self Regulating** – When the ambient temperature rises, the electrical resistance increases and the consumption of electricity decreases, preventing the element from overheating and ensuring energy-efficient operation.
- **Maintenance Free** - The system has no moving parts and is maintenance free.
- **Easy Installation** – Roll out the flexible heating element and cut to size while on the job site for a perfect fit.

  Unlike many other roof heating systems, the low-voltage polymer heating element can be nailed or stapled through, simplifying the installation process.
- **Versatile** - Warmzone's low-voltage system can be safely installed under most roofing materials, including metal.
- **Power Options** - The system operates on 24 volts (AC/DC) and can also be connected to a wind or solar power supply.
- **Protective Polypropylene Fabrication** – The product is polypropylene fused during fabrication to achieve water proofing.
- **Energy Efficient** - The roof heating system requires minimal power consumption. For even greater energy savings when heating metal roofs, use a heat retention mat.

Mountain cabin with low-voltage roof de-icing system installed at the roof edges.

RoofHeat STEP Roof De-icing System Specs

The thin RoofHeat STEP polymer heating element comes in widths of 3, 9 and 12-inches and can be nailed or attached with fasteners or screws under a a variety of roofing materials, including shingles and metal.

The fully automated maintenance-free roof de-icing system is one of the most advanced and efficient roof de-icing systems available. The PTC nano-technology allows the elements to heat with maximum power in cold environments and use less electricity as they warm up. This minimizes power consumption and can reduce roof de-icing costs by 30 to 60 percent compared to conventional cable systems.

RoofHeat STEP Power Supply Technical Data

Low-voltage dry type isolation power supply
Extruded aluminum profile enclosure with heat sink
120, 208, 240 VAC primary and 24 VAC secondary
Primary and secondary circuit protection
RoHS compliant interface board
2-year warranty

Heating element being installed under shingles.

Heating Element Technical Data

Heating technology	Positive temperature coefficient (PTC) semi-conductive polymer
Width	12 inches (305mm); Also available in widths of 3, 9 inches.
Thickness	3/64 inch (1.2mm)
Length	Cut to order (maximum per strip: 32 feet (9.75 meters)
Secondary draw per foot	24 volts @ 68°F (20°C): 45 amps 24 volts @ 32°F (0°C): 54 amps
Warranty	10 years
Approvals	ETL listed; hazardous
Certifications	Class I, Div.2 Groups A,B,C,D Class II, Div.2 Groups F,G Class III

WARMZONE ROOFHEAT STEP ORDERING INFORMATION

Heating Element

Item Code	Description (width)	Output @ 68°F	Output @ 32°F	Voltage
MEP-30-36W	12-inch wide heating element	11.0 W/ft.	13 W/ft.	120, 208-240
MEP-30-70W	12-inch wide heating element	21.3 W/ft.	24 W/ft.	120, 208-240
MEP-23-36W	9-inch wide heating element	11.0 W/ft.	13 W/ft.	120, 208-240
MEP-23-80W	9-inch wide heating element	24.0 W/ft.	27 W/ft.	120, 208-240
MEP-7-30W	3-inch wide heating element	9.5 W/ft.	11 W/ft.	120, 208-240

Power Supply

Item Code	Description	Amperage	Voltage
EPI-LX-R-250	Power supply w/regulator, 250 W	1 x secondary circuit 25A	120, 240
EPI-LX-R-500	Power supply w/regulator, 500 W	1 x secondary circuit 25A	120, 208-240
EPI-LX-R-1000	Power supply w/regulator, 1000 W	2 x secondary circuit breakers	120, 208-240
EPI-LX-R-1500	Power supply w/regulator, 1500 W	2 x secondary circuit breakers	120, 208-240

Controls

Item Code	Description	Voltage
EPI-LX-TC	Thermostat Touch sensor - 24V	120, 208-240
EPI-LX-TS	External Sensor (for EPI-LX-TC)	

Accessories

Item Code	Description
T-Block	Terminal block 2-bar
TBE-4	Terminal enclosure
TBE-6	Terminal enclosure
MEP-C&T	Factory connections with 7' of 12 AWG
C&T-10	Connector & tape kit (10 pieces per pack)
CON-DB	Connector DB TCU (priced per piece)
TAPE-R	Roll of sealant tape
TCU14-Black/White	Tinned copper wire, 14 AWG (priced per foot)
TCU12-Black/White	Tinned copper wire, 14 AWG (priced per foot)
TCU10-Black/White	Tinned copper wire, 14 AWG (priced per foot)
3-Conductor	Signal wire from power supply (priced per foot)
TOOL-PRO	Crimp tool
PET-TAPE-10	Roll of double coated tape - 3 inches x 30 feet
PET-TAPE-5	Roll of double coated tape - 3 inches x 15 feet
OMNI-1.4	Polyurethane padding (priced per 100 square feet)

Warmzone low-voltage heating element with heat retention pad being installed on roof of commercial facility.

WARMZONE
PREMIER RADIANT HEATING

Roof and Gutter Trace Controls

Self-regulating Heat Trace Cable

Warmzone radiant roof de-icing systems are custom designed to best serve the needs of each specific installation. In addition to the custom heating cable layout, users also have activation device/controller options for operating the system.

WS-8C Aerial Mount Sensor - The WS-8C activation device is designed for gutter, downspout, and roof ice melting and small satellite antenna de-icing. The totally sealed, low voltage, remote-mount precipitation sensor allows the user to install the small sensor head in a downspout, the back of a gutter, or at the end of an antenna boom, up to 10 feet away from the unit so that the main controller can be installed in a more convenient outdoor location.

The unit is housed in a two gang PVC enclosure. The overall dimensions of the WS-8C are 4¾" (120 mm) x 7" (178 mm) x 2¾" (70 mm). The unit weighs 2 pounds. The user may access all electronics by removing the four front cover screws.

TF-115 Outdoor Ambient Sensing Thermostat - The TF-115 ambient sensing thermostat is designed to sample temperature changes in the air. The TF-115 can be used in a wide range of heating applications and can serve as a high limit backup for "sensitive" applications. The NEMA 4X rain-tight enclosure provides adequate protection in most environments. The TF-115 thermostat has a temperature range of 40°F to 110°F and can handle up to 22 amps at 277 VAC.

TRF-115 Outdoor Surface Sensing Thermostat - The TRF-115 surface sensing thermostat samples temperature changes in the surface. The sensor is typically used as a line sensing control for pipes, vessels and other types of electric heat tracing applications. Suitable for use in agricultural, industrial and commercial environments. The NEMA 4X rain-tight enclosure provides adequate protection in most environments.

TF-115 and TRF-115 Features

- Rugged weather resistant enclosure made of corrosion resistant materials for long life.
- Stainless steel remote bulb provides rapid response to temperature change.
- Low mass, high surface area of stainless steel coiled sensor provides rapid response to temperature change.
- Large, readily visible dial with 0°F - 120°F temperature range.
- One control for both heating and cooling applications.
- Multi-positional mounting offers flexibility in either new or existing installations.
- Complies with NEC 547 and NEMA 4X requirements.

TRF-115 Outdoor Surface Sensing Thermostat - The IET is a microprocessor-based temperature controller designed to provide on/off control for commercial heating, cooling, air conditioning and refrigeration applications. Its comprehensive functionality makes the IET is one of the most versatile temperature controls available.

The IET features a lockable front-panel touchpad and a Liquid Crystal Display (LCD) for viewing the temperature and status of other functions. The digital display and keypad allow precise temperature settings.

When not in the programming mode, the display provides a constant readout of the sensor temperature. Annunciators on the liquid crystal display indicate when the relay is energized. The IET is also equipped with diagnostic programs that check for hardware, software or system problems and display different error codes to indicate the problem and its location.