GutterGlove IceBreaker • IceArmour Heat Panels

Operation Guide

To Maximize Performance:

- Pre-Heat the system 24-36 hours before a snow event depending on ambient temperatures.
  Optimum melting temperatures are 15 degrees Fahrenheit and above.
  Note: Actual performance will depend on ambient temperatures, snowfall, and wind chill conditions.
- Keep downspout extensions free of snow or ice buildup.
- In spring, summer and fall periodically brush debris from IceBreaker.

Troubleshooting:

If no heat to system:

- Check breaker at panel to see if tripped.
- Have electrician check to see if power is flowing at the junction box.

Icicles forming at edge of gutter:

- System may not have power or breaker may have tripped.
- System not turned on early enough. If heavy ice and snow are present before the system is turned on it may take 24 hours of longer to fully melt, dependent on the outside ambient temperature, snow conditions, and wind chill factors.
- Temperature may be below 15 degrees or excessive wind chill conditions. Optimum melting temperature is above 15 degrees Fahrenheit.

Important note:

- All electrical trouble shooting should be performed by a licensed electrician.

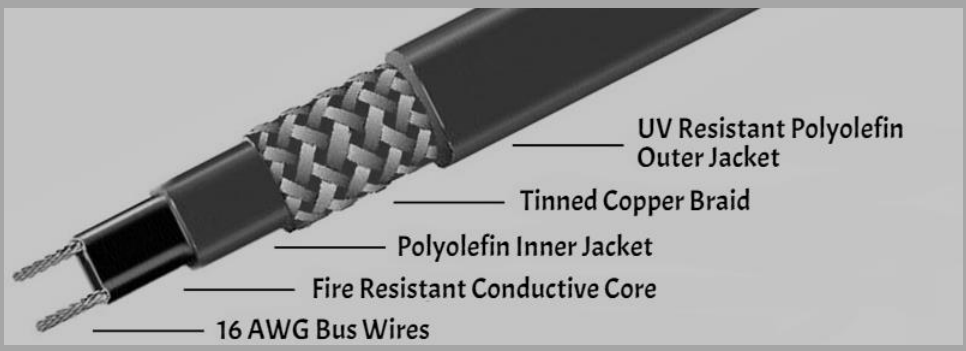
SELF-REGULATING HEAT CABLE DATA SHEET

ALL WEATHER ARMOUR

All Weather Armour self-regulating roof and gutter de-icing cables are designed for commercial and residential (hazardous and non-hazardous) applications to create drain paths needed to prevent ice dams and ice build-up that can cause extensive damage to roof and gutter systems, without consuming excess energy. The power output will increase as ambient temperature decreases in the presence of ice or snowfall.

Features

- **Regulates power output in response to changes in the ambient conditions**
- **Cable can overlap across itself without risk of overheating and/or burnout for easy installation around roof, gutters, and downspouts**
- **Cable can be cut or extended to required length on jobsite for ultimate versatility**
- **Cable can also be used for pipe freeze protection applications**



START UP TEMPERATURES		120 VOLT CIRCUIT SIZE				240 VOLT CIRCUIT SIZE			
		15 AMP	20 AMP	30 AMP	40 AMP	15 AMP	20 AMP	30 AMP	40 AMP
-4 F	-20 C	85'	110'	150'	150'	145'	195'	295'	310'
GAUGE WIRE FROM PANEL		14 GA	12 GA	10 GA	10 GA	14 GA	12 GA	10 GA	10 GA

CAUTION: MUST STAY WITHIN THE MAXIMUM FOOTAGE ALLOWED FOR CIRCUIT SIZE TO PREVENT LOAD TRIPS

SELF-REGULATING HEATING CABLE

Model Numbers

AWA13FP10W1 - 10W 120 Volt
AWA13FP10W2 - 10W 240 Volt

Output per/foot @ 32°F

15 watts - AWA13FP10W1&2

Output per/foot @ 0°F

30 watts - AWA13FP10W1&2

Voltage

120V (100V -130V)
240V (208V -277V)

Cable Dimensions

0.51 inches x 0.22 inches
(13.1mm x 5.6mm)

Minimum Bend Radius

1.18 inches (30mm)

Maximum Exposure Temp.

150°F (66°C)

Warranty

10 Years – If recorded within 30 days

Ground-fault Protection

All Weather Armour and National Electrical Codes require 30-mA equipment ground-fault protection on each heating cable branch circuit to reduce the danger of fire caused by continuous electrical arcing resulting from improper installation or damage to the heating cable. Conventional circuit protection may not be suitable for preventing electrical arcing.

Controls

The self-regulating cable can operate safely without the use of thermostats or controls but use of thermostats or controls is recommended to improve energy efficiency. Please contact your All Weather Armour Representative for more information on our sensors and controls.

C SA US

UL LISTED

Drexan Energy Systems Inc.

SPECIFICATION

Self-Regulating Heating Cable

MultiTrace®

CONTENTS

1. SCOPE

This specification covers the requirements for self-regulating heating cables for pipe tracing and roof de-icing applications.

2. PRODUCTS

2.1 OVERVIEW

2.1.1 Self-regulating heating cable shall vary its power output relative to the temperature of the surface of the pipe or vessel. The cable shall be designed such that it can be crossed over itself and cut to length.

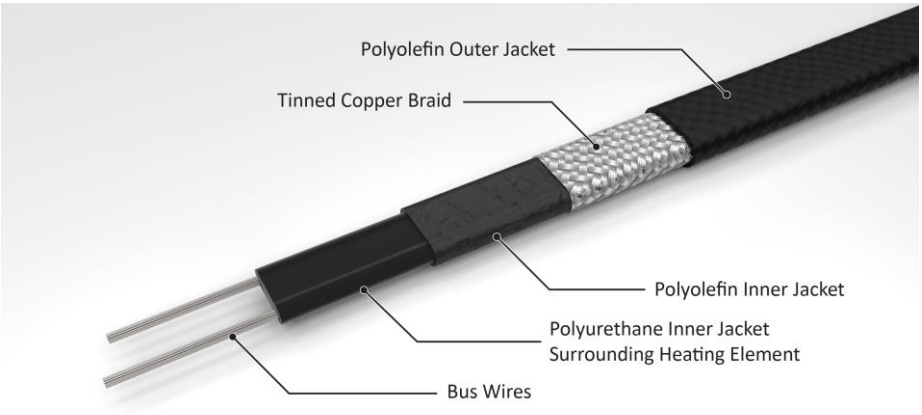
2.1.2 All cables shall be capable of passing a 1.5 kV dielectric test for one minute after undergoing a 7 J impact (CSA C22.2. No. 130-03, 6.2.10).

2.1.3 The heating cable shall be MultiTrace self-regulating heater, with the continuous exposure (maintain) capacity up to 150°F/65°C and intermittent exposure capability up to 185°F/85°C.

2.2 CONSTRUCTION

2.2.1 The heating cable shall consist of two 16 AWG or larger tin-plated copper bus wires, embedded in a self-regulating polymeric core that controls power output so that the cable can be used directly on plastic or metal pipes. Cables shall have a temperature identification number (T-rating) of T6 (185°F/85°C) without use of thermostats. The heating cable shall have a tinned copper braid with a resistance less than the heating cable bus wire resistance as specified in ASTM B193 (CSA, C22.2, No. 130-03 Clause 4.3.4.1)

2.2.2 The braid shall be protected from chemical attack and mechanical abuse by a modified polyolefin outer jacket



2.3 PRODUCT CHARACTERISTICS

2.3.1	Minimum bend radius @ 68˚F/20˚C	1.18 in. (30 mm)
2.3.2	Weight (nominal)	0.84 lb./10 ft. (125 g/m)
2.3.3	Cable dimensions	0.51 x 0.22 in. (13.0 x 5.7 mm)
2.3.4	Bus wire size	16 AWG
2.3.5	Outer jacket color	Black
2.3.6	Supply Voltage	
	• MT-1	100 - 130 VAC
	• MT-2	208 - 277 VAC

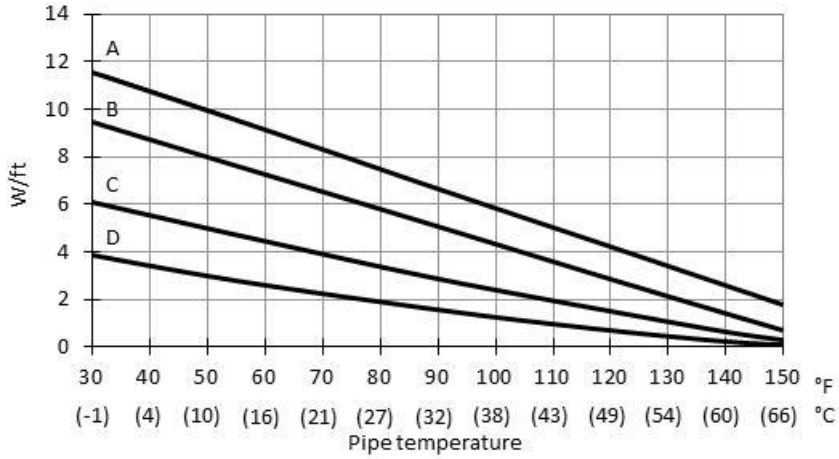
2.4 TEMPERATURE RATINGS

2.4.1	Maximum Continuous Exposure Temperature (power on)	150˚F/65˚C
2.4.2	Maximum Intermittent Exposure Temperature, 1000 hrs (power-on)	185˚F/85˚C
2.4.3	Temperature ID Number (T-Rating)	T6: 185˚F/85˚C Temperature ID numbers are consistent with applicable electrical codes
2.4.4	Minimum Installation Temperature	-40˚F/-40˚C

2.5 NOMINAL POWER OUTPUT RATING AT 120V/240V

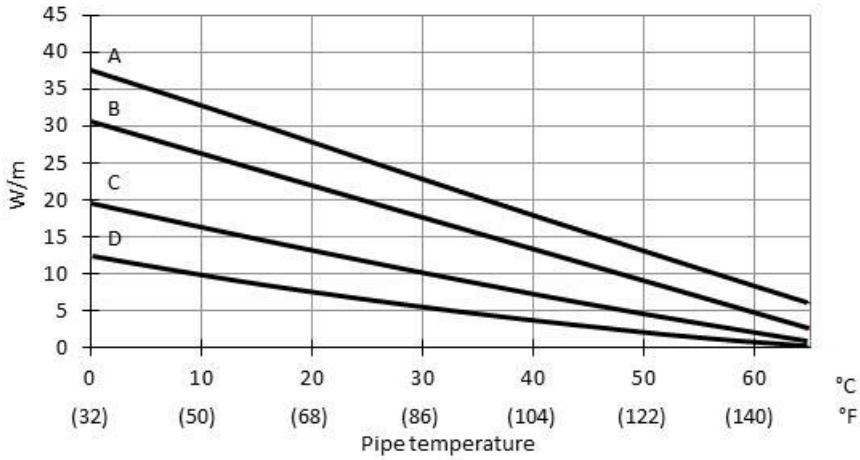
[A] 10-1, 10-2
10.0-12.2 W/ft. @ 50˚F
33-40 W/m @ 10˚C

[B] 8-1, 8-2
8.0-9.8 W/ft. @ 50˚F
26-32 W/m @ 10˚C



[C] 5-1, 5-2
5.0-6.4 W/ft. @ 50˚F
16-21 W/m @ 10˚C

[D] 3-1, 3-2
3.0-4.0 W/ft. @ 50˚F
10-13 W/m @ 10˚C



2.6 ADJUSTMENT FACTORS

	Power Output	Circuit Length
208V		
3-2	0.82	0.96
5-2	0.89	0.93
8-2	0.94	0.89
10-2	0.96	1.06
277V		
3-2	1.21	1.06
5-2	1.14	1.09
8-2	1.07	1.11
10-2	1.07	0.94

2.7 MAXIMUM CIRCUIT LENGTH BASED ON CIRCUIT BREAKER SIZES

For on metal pipes

Maximum continuous circuit length per circuit breaker (feet)

	START-UP AMBIENT TEMP		120V				240V			
	˚F	˚C	15A	20A	30A	40A	15A	20A	30A	40A
MT3	50	10	335	335	335	335	665	665	665	665
	32	0	295				590			
	14	-10	245	330			495	660		
	0	-18	215	290			435	580		
	-20	-29	185	245			370	495		
	-40	-40	160	215	320		320	430	645	
MT5	50	10	225	275	275	275	455	550	550	550
	32	0	190	255			385	510		
	14	-10	165	220			330	440		
	0	-18	145	195			295	395		
	-20	-29	125	170	255		255	340	515	
	-40	-40	110	150	225		225	300	450	
MT8	50	10	145	195	215	215	215	285	430	435
	32	0	125	170			185	250	375	
	14	-10	110	145			165	220	335	
	0	-18	100	135	200		150	205	305	410
	-20	-29	90	120	180		135	185	275	370
	-40	-40	80	105	160		125	165	250	335
MT10	50	10	100	130	185	185	100	135	200	265
	32	0	90	120	180		90	120	180	245
	14	-10	80	110	165		85	110	165	225
	0	-18	75	100	155		75	105	155	210
	-20	-29	70	90	140		70	95	145	195
	-40	-40	60	85	125	170	65	90	135	180

3. TESTING

3.1 INSPECTION ITEM AND FREQUENCY

- Product code — All
- Product length — All
- Appearance — All
- Cable dimension (width and thickness) — Each lot
- Power Output — Each coil
- Dielectric withstand — All
- Insulation resistance — All

3.2 INSPECTION REPORT

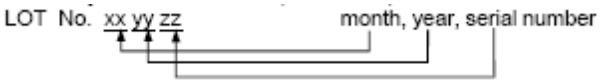
The inspection report, that is written with the test results (as described above) is attached to the product for each shipment.

4. MARKINGS

DREXAN VANCOUVER CANADA V6E 4L7 HEATTRACER MULTITRACE w-v PARALLEL HEATING CABLE MAX xxxVAC 32A vW/FT @50F (zzW/M@10C) [CSA] CUS ORDINARY AREA CLASSIFICATION T6 –G,-WS, CE 2503 12ATEX3095X Ex II 2G Ex e IIC T6 Gb MIN INSTALL -40C WARNING: REFER TO INSTALLATION INSTRUCTIONS LOT No. xxyyzz ####M I (####FT on other side)

- The address and trademark is "DREXAN VANCOUVER CANADA V6E 4L7 HEATTRACER"
- The model and reference number, as:
  (a) MT: "MULTITRACE **w-v** PARALLEL HEATING CABLE" (see chart)
- The rated voltage and the rated current, as "MAX xxxVAC 32A" (see chart)
- The rated wattage, as "yW/FT @ 50F (zzW/M @ 10C)" (see chart)
- The CSA trademark, class and division as:
  (a) MT: "[CSA monogram] CUS ORDINARY AREA CLASSIFICATION"
- The Maximum surface temperature code as "T6"
- The environmental classifications as:
  (a) MT: "-G, –WS"
- ATEX 2014/34/EU markings as: CE 2503 12ATEX3095X Ex II 2G Ex e IIC T6 Gb
- The Minimum install temperature as: MIN INSTALL -40C
- The words "WARNING: REFER TO INSTALLATION INSTRUCTIONS"
- The month and year of manufacture, date code, as "LOT No. xxyyzz".

Note:



- The spool length index as "####M I" (####FT I on the other side)

Model	**w-v**	**xxx** VAC	**y** W/ft.	**zz** W/m
3-1	3-1	120	3	10
5-1	5-1		5	16
8-1	8-1		8	26
10-1	10-1		10	33
3-2	3-2	277	3	10
5-2	5-2		5	16
8-2	8-2		8	26
10-2	10-2		10	33

5. PACKING

Ends of each product must be covered by end caps. For packaging, customer specified label must be applied to the carton box.

6. GENERAL

Furnish, install and commission a complete AMSI/IEEE Std. 515 (US) CSA/CUS Std. C22.2 No. 130-03 certified trace heating system comprising self-regulating heating cables, connection components, and control for the purposes of roof and gutter de-icing applications.

6.1 MULTITRACE SELF-REGULATING HEATER CABLE

a. The cable shall be Drexan HeatTracer MultiTrace self-regulating cable consisting of two (2) 16 AWG nickel copper bus wires encased in a semi-conductive, self-regulating polymeric that changes its wattage output as it responds to temperature along the cable length. Wattage output tolerances of the cable shall be -0 / +20%. Cables with negative wattage output tolerances shall not be used. The core shall be encased in a radiated cross-linked, modified polyolefin dielectric jacket. The dielectric jacket shall have a tinned copper wire shield (braided) encased in an outer jacket of modified polyolefin.

b. The cable shall be capable of operating at 120, 208, 220, 240 and 277 volts without use of a transformer.

c. The cable shall be capable of being cut to length in the field with all connection components field installed.

6.2 COMPONENTS

Drexan HeatTracer power connections, splices and end seals must be used with Drexan HeatTracer Cables in accordance with the installation instructions, to ensure product performance criteria and to comply with requirements of warranty, codes and approvals.

The connection components shall be one of the following varieties:

a. Heat Shrinkable

b. Metallic assemblies

c. Polymeric quick connections

6.3 CONTROL [CHOOSE OPTION A, B, OR C]

a. Automatic Snow Controller **(Recommended)**
The system shall be controlled by a snow/ice sensor mounted in the bottom of the gutter.

b. Manual Switch **(Acceptable Alternative)**
The system shall be controlled by a manual switch either directly or through an appropriate contactor.

c. Thermostat Control **(Acceptable Alternative)**
A fixed set-point thermostat shall be installed to control the heater either directly or through a contactor. The thermostat may be either ambient or line-sensing.

7. INSTALLATION AND COMMISSIONING:

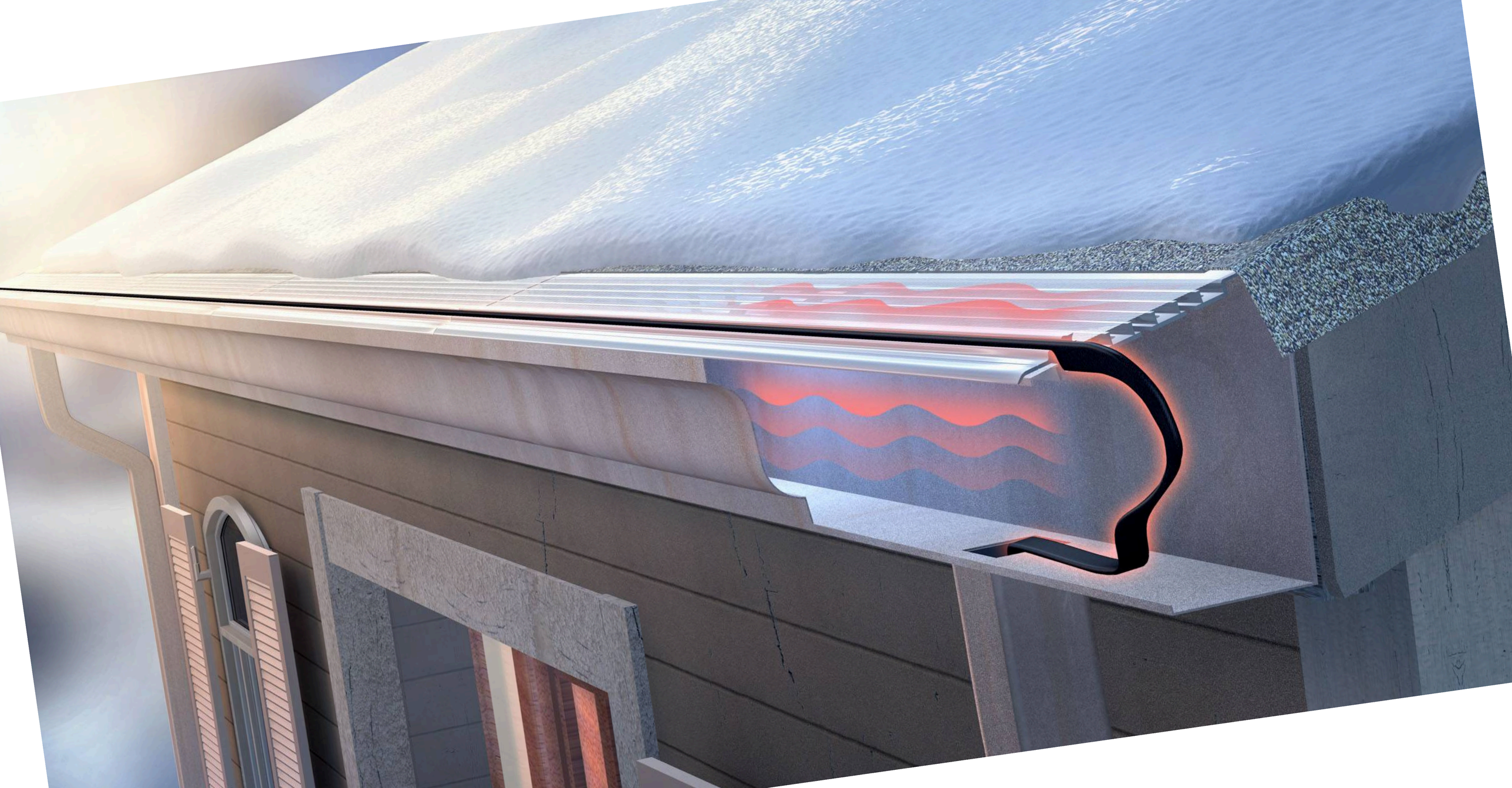
7.1 Trace heating cable and cable connection components shall be installed in accordance with Manufacturer's Installation Instructions, including compliance with maximum circuit lengths for the selected breaker size and the design ambient start up conditions.

7.2 Heating cable shall be affixed to bottom of gutter using TAPE-AL aluminum foil, chloride free tape. Cable fastened to the roof shall be fastened by clips and methods dependent on the roof surface material.

7.3 The system shall be considered acceptable when all of the following conditions are met:

a. Heating cable has been correctly installed.
b. Connection components have been correctly installed.

Note: The heating cable circuit shall be protected with ground fault equipment in accordance with Global and Canadian Electrical Codes.



PERFORMANCE

Engineered to provide maximum heat transfer, IceArmour™ Valley Panels eliminate the dangers of accumulating ice and snow.

LOW COST - ENERGY EFFICIENT

Save money and reduce your impact on the environment with the superior energy IceArmour™ Valley Panels. Our unique design maximizes heat transfer while reducing energy consumption.

ELEGANT DESIGN

The sleek design of IceArmour™ Valley Panels enhances the naturalbeauty of your home. Homebuilders, Architects and homeowners now have an elegant alternative to the traditional unsightly and inferior performing zig-zag heat cables used to melt ice in sub- freezing temperatures.

DURABILITY

IceArmour™ Valley Panels utilizes the most durable materials. Aluminum extrusions provide the best heat transfer and strength to survive the coldest environments. The Kynar 500/Hylar 5000 paint finish insure against chipping or fading.

SAFETY

Protect your business, your home and family - they are worth it. IceArmour™ Valley Panels provide guaranteed safety by eliminating the dangers of melting ice on entranceways, walkways and high traffic areas.

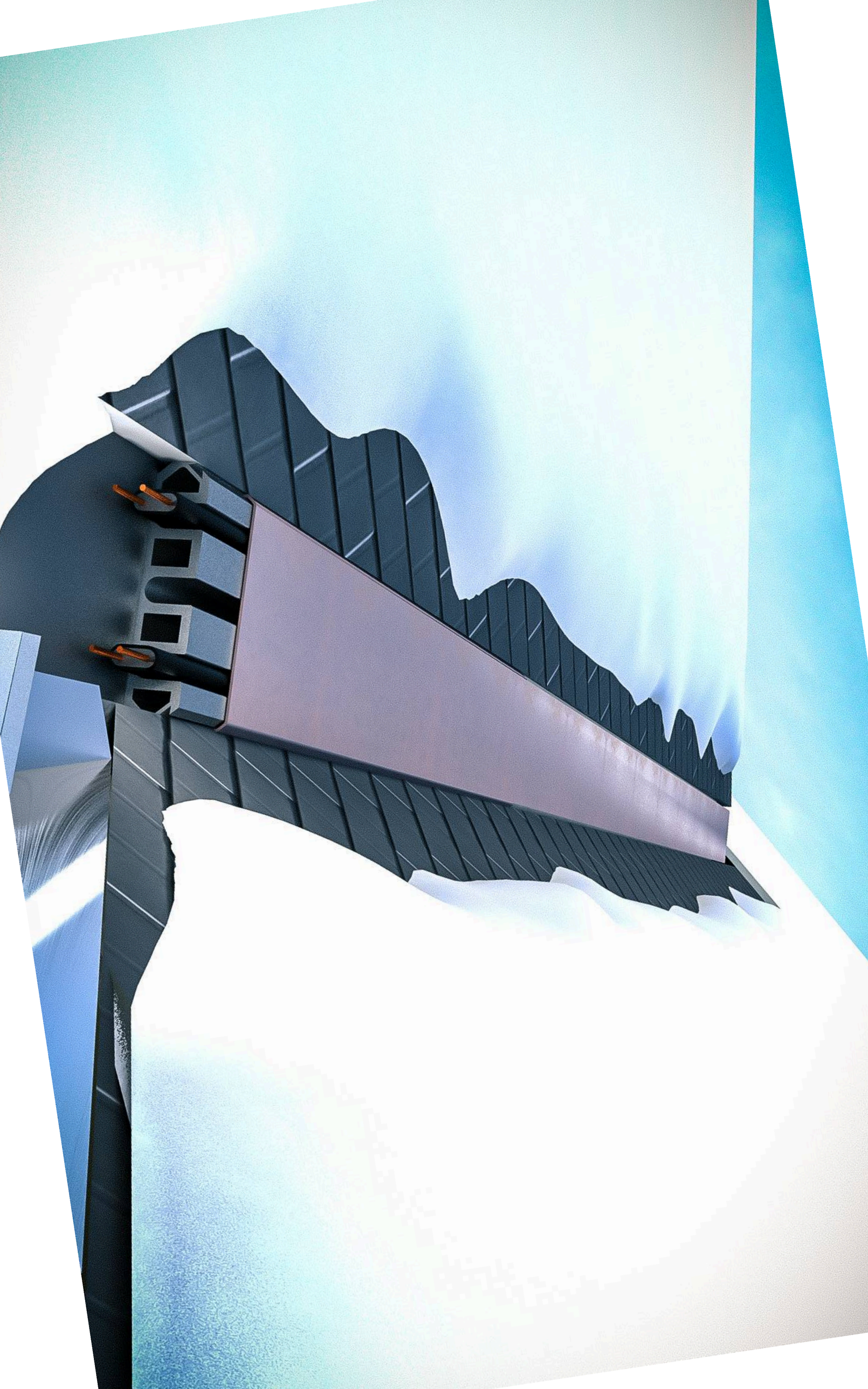
SAVE MONEY

IceArmour™ Valley Panels Systems are low cost and provide year round protection. Our advanced technology eliminates the expensive repairs due to large ice formations.

ICE ARMOUR™

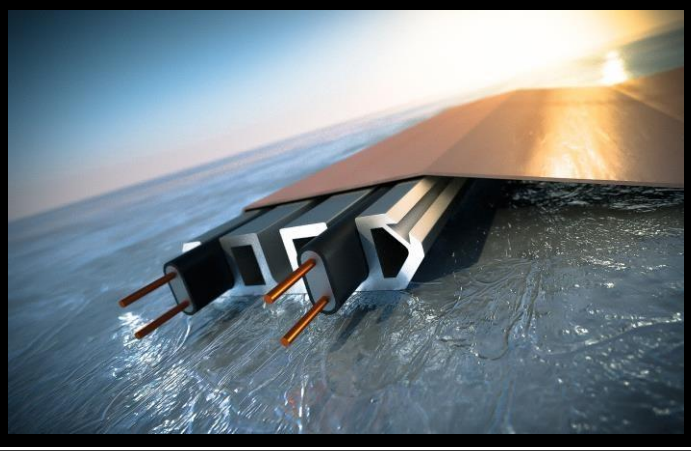
VALLEY HEAT PANEL

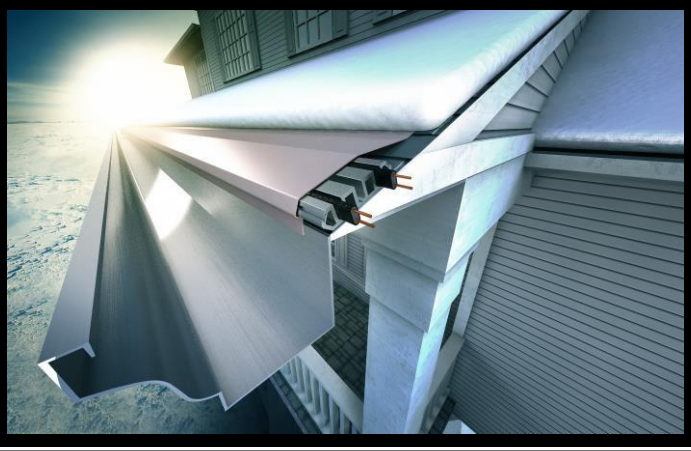
One of the most vulnerable areas of the roof are the valleys. Due to the nature of the design, ice and snow will accumulate and cause leaking into the home. The IceArmour™ Valley Panels are designed to eliminate this potential problem. The heavy extruded aluminum panels are glued in place using a rubberized adhesive and covered with durable aluminum Kynar 500 covers. IceArmour™ Valley Panels are not only energy efficient and durable but are elegant in design.



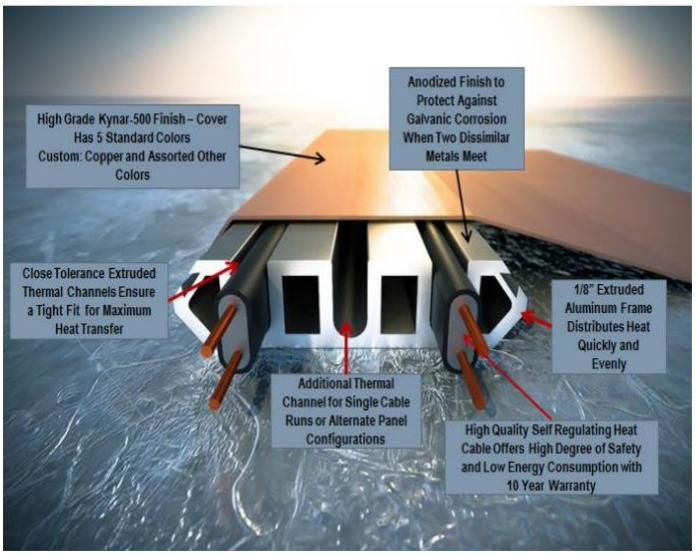
IceArmour™ Eave Panel I

Dealer Opportunities Available
For Information: 888.654.4942





STOP ICE DAMS PERMANENTLY



All Weather Armour – Ice Melt Roof and Gutter Systems protect roofs of all types from the harmful effects of debris and ice accumulation.

Performance

The IceArmour™ Eave Panel I provide the largest heat transfer amounts while eliminating the risks associated with snow and ice accumulations.

Low Cost - Energy Efficient

The IceArmour™ Eave Panel I fits almost every budget while reducing environmental impact. Our unique design maximizes heat transfer and at the same time reduces energy consumption.

Elegant Design

Say good-bye to unsightly zig-zag heating cables! Now melt ice in sub-freezing temperatures with the elegant design of the IceArmour™ Eave Panel I. The first choice of homebuilders and architects, this system enhances the look of any exterior.

Durability

The IceArmour™ Eave Panel I use aluminum extrusions to offer the best heat transfer and strength for survival in the coldest of environments. The Kynar 500/Hylar 5000 paint finish protects against fading and chipping.

Safety

Ice covered and melting entranceways and high traffic areas pose a serious threat. IceArmour™ Eave Panel I provide the guaranteed safety for these areas.

Save Money

Save money and maintain year-round protection with the IceArmour™ Eave Panel I. This is the ideal system to avoid expensive repairs from large ice accumulations.

ALL WEATHER ARMOUR

Any Climate - Any Season - We Have a Solution - Just Right for You

ALL WEATHER ARMOUR

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SAVE MONEY

Save money and maintain year-round protection with the IceArmour™ Eave Panel I. This is the ideal system to avoid expensive repairs from large ice accumulations.

IceArmour™ Eave Panels prevent ice dams and icicles formations by providing the right amount of heat to the roof's edge. For Eaves with 12" - 18" overhangs the IceArmour™ Eave Panel I will stop all ice dams from forming. For Eaves with 24" and over using the patent pending ArmourLoctm Fastener, the IceArmour™ Eave Panel II is the right choice.

Single–Point Freeze Protection Heat–Trace Control
MODEL FPT 130
Installation and Operation Manual

Table of Contents

Pilot Duty

The FPT 130 Automatic Heat–Trace Control with GFEP cannot be used for Pilot Duty applications.

Resistive Load Usage Only

This product is not for use with Inductive loads. Inductive loads may create nuisance tripping of the Ground–Fault Equipment Protection circuit.

Abnormal Odor or Smoke

In the event of smoke or a burning or abnormal odor, immediately interrupt power to the unit by turning off the circuit breaker protecting the unit.

Electrical Shock / Fire Hazard

Any installation involving electric heater wiring must be grounded to earth to protect against shock and fire hazard. Suitable ground fault detection and interrupting systems must be in use at all times to reduce shock and fire hazard and to protect equipment.

Electric wiring to heating elements must be installed in accordance with National Electrical Code (NEC)/ Canadian Electrical Code requirements, as well as all other local and applicable electrical codes and any third-party standards. This product is intended for commercial and industrial applications. Follow the installation instructions contained in this manual and those provided by the heater manufacturer.

Size the circuit breaker appropriately for the expected load and inrush current. The maximum rated current for the FPT 130 is 30 amps with resistive load.

Heater loads and their controls should not share a circuit branch with other types of equipment. A shared circuit may result in electromagnetic interference that can affect system operation.

Make certain that the heater shield is properly grounded. Failure to do so may result in damage to the equipment or fire.

Following installation and prior to beginning system operation, refer to and perform the Post-Installation Test described in this manual.

Items included

Quantity	Description	Part Number
1	MODEL FPT 130 Single-Point Freeze Protection Heat–Trace Control	25169
1	Temperature Sensor	25076
1	FPT 130 Installation Sheet	25298
1	FPT 130 Installation and Operation Manual (this document)	25165

FPT 130 Overview

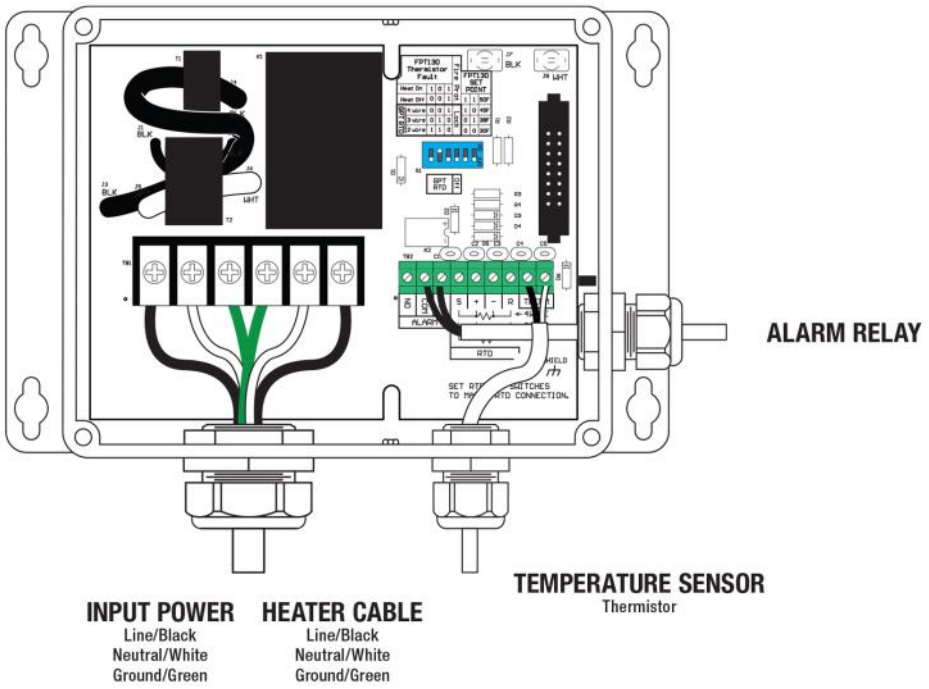
The FPT 130 Heat–Trace Control is a single–point microprocessor–based heat–trace control thermostat. It is ideal for applications which require Ground–Fault Equipment Protection (GFEP). Ideal uses include freeze protection, and other temperature monitoring and control applications. The FPT 130 and its heater load can be powered with an available line voltage source of 100 – 277 V ac. The controller and heater load share the same supply connection. The internal load contactor is rated to switch up to 30 A resistive. The Integral GFEP provides safety in compliance with national and local electrical codes. The unit's housing is a NEMA 4X IP66 weather–resistant enclosure for enhanced durability.

Features and Benefits

- Adjustable temperature set point of 30 °F, 38 °F, 45 °F, or 50 °F (–1.1 °C, 3.3 °C, 7.2 °C, or 10 °C) for various freeze protection applications
- Can use an NEC Class 2 temperature sensor with up to 2,000 ft. cable for enhanced installation options
- Thermistor temperature sensor with 20 ft. cable included for applications of –40 °F to 230 °F (–40 °C to 110 °C)
- Ground–Fault Equipment Protection with manual and automatic test function
- Alarms for excess ground fault current, low load current, and temperature
- Alarms indicated with panel LED lights and relay contact for remote signaling
- A Fault Mode setting which can be set to energize or de-energize the heaters during a sensor failure
- Fire Protection Mode maintains heater operation for use in critical fire protection systems
- Durable weather–resistant NEMA 4X IP66 enclosure permits indoor or outdoor installation

The FPT 130 is permanently connected equipment and does not have an internal disconnect device. The installer must provide an accessible disconnect device, with short circuit and overcurrent protection.
When power is applied, the system will start.

Figure 1.
The FPT 130 wiring layout



Installation

The FPT 130 Automatic Heat–Trace Control should be installed by a qualified, licensed electrician. Installation must conform to all applicable local and national electrical codes and laws. The unit's NEMA 4X IP66 enclosure allows for indoor or outdoor applications.

The FPT 130 controller has an ambient operating temperature range of –40 °F to 131 °F (–40 °C to 55 °C). To avoid potential internal condensation mount the unit out of direct sunlight.

Install the FPT on a fixed, flat, vertical surface using the unit's mounting flanges. The mounting flanges accommodate 1/4" or 6.3 mm fasteners.

The FPT 130's nonmetallic enclosure has one 1.046" hole for conduit entry; this can hold both power and load wiring.

Use only Listed Type 4X IP66 liquid–tight conduit hubs or cable glands. Connect the hub to the conduit system before connecting the hub to the enclosure.

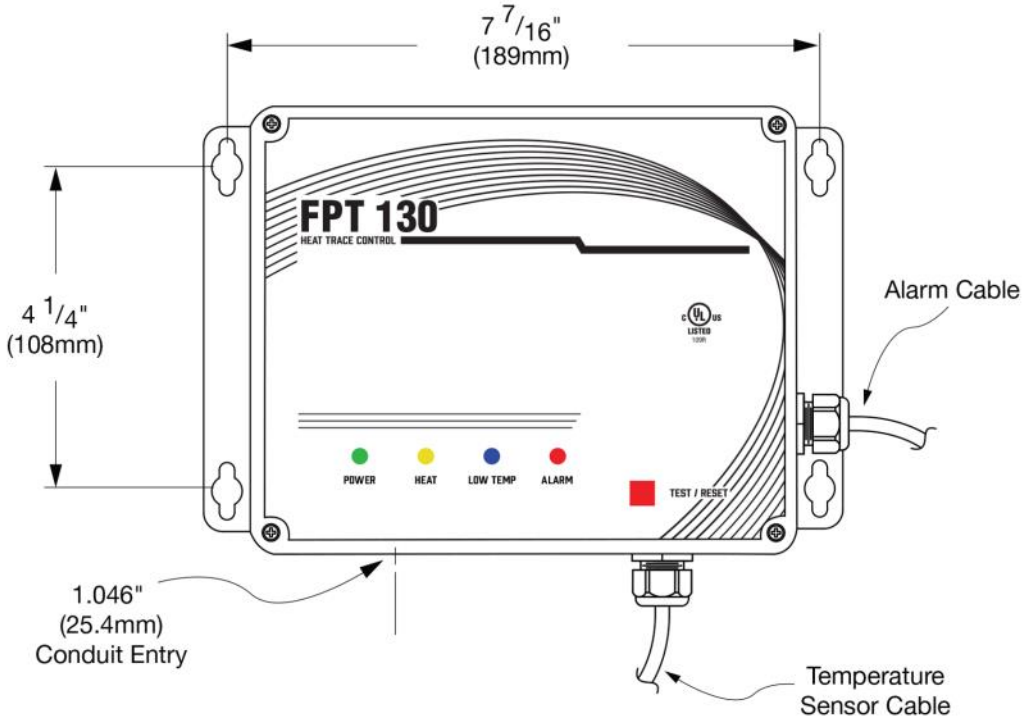
The unit comes with two installed liquid–tight cable glands. One of these fittings is for the temperature sensor cable, and the other is for the alarm relay cable.

The cable glands can accommodate cable diameters 0.08" to 0.24" (2 mm to 6 mm). The temperature sensor may be located up to 2,000' (610m) from the FPT.

There is a removable electrical insulation divider that must be in place when there is power applied to the unit.

All leads should be terminated; no unsecured leads should be left inside the wiring compartment.

Figure 2.
Mounting dimensions



Power Source and Contactor Connections

Supply Voltage

The FPT 130 operates from 100 – 277 V ac at 50/60 Hz. This control and its heater load should not share a circuit branch and circuit breaker with other types of equipment. A shared circuit may result in electromagnetic interference that can affect system operation. For line supply and load connections, use 10 AWG wires rated for at least 194 °F (90 °C). The connections are shown in Figure 3 and Figure 4.

Contactor Ratings

The heater contactor provides dual Form A (DPST) contacts rated for heater loads up to 30 amps and 277 volts ac. The dual contacts on the contactor are used to control both legs of the input power (Line and Neutral).

Manual Load Test

To manually energize the load, hold Test/Reset pushbutton for five seconds. The output will switch on and stay on for five minutes, or until Test/Reset pushbutton is pressed again. A manual load test is recommended upon installation to verify the heater function and load current.

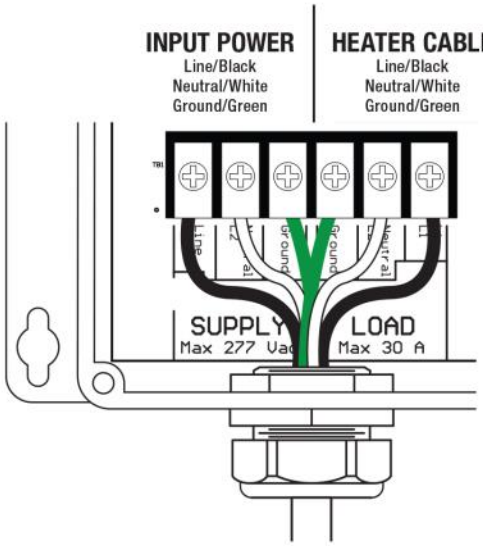


Figure 3.
Contactor connections

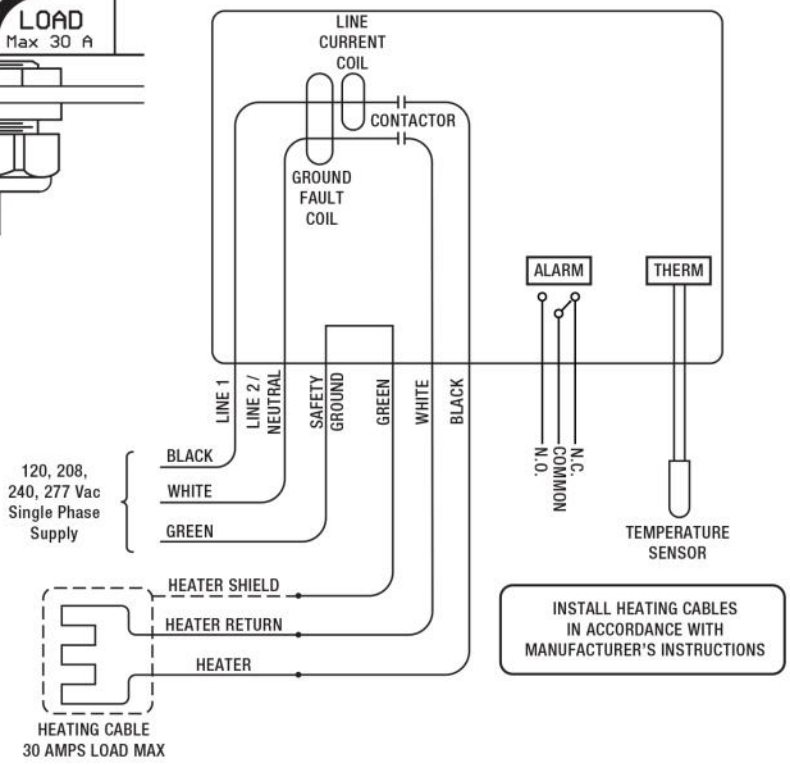


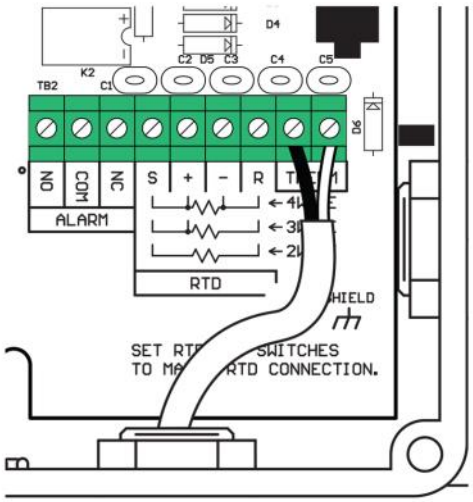
Figure 4.
Connection schematic

Temperature Sensor

Thermistor (25076)

The FPT 130 comes with a thermistor temperature sensor with a 20 ft. jacketed cable that has an operating range of –40 °F to 230 °F (–40 ˚C to 110 ˚C). See Figure 5 for proper wiring for the thermistor sensor.

Figure 5.
Thermistor sensor connection



External Alarm

Alarm Connections

An alarm or power–off condition can be communicated by either opening or closing a relay contact. It is important to make the proper alarm relay connections to achieve the desired result. The middle terminal labeled COM (Common) is used in both wiring configurations. Connect one alarm relay lead to the COM terminal.

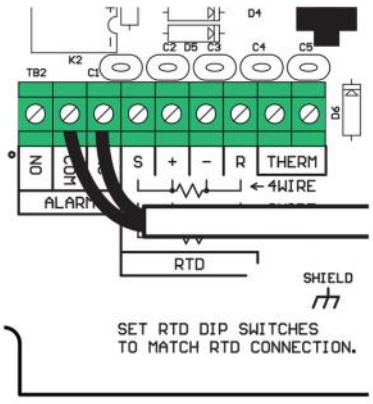
If the system needs a contact to close to signal an alarm or power–off condition, connect the other alarm relay lead to the **NC (Normally Closed) terminal.** See Figure 6.

If the system needs a contact to open to signal an alarm or power–off condition, then connect the other alarm relay lead to the **NO (Normally Open) terminal.**

If the unit has power, and there are no alarm conditions then the NO and COM terminals will be connected. If the unit loses power or an alarm condition occurs then the NC and COM terminals will be connected.

Note: The "Normally" condition of the relay is the alarm condition for the unit.

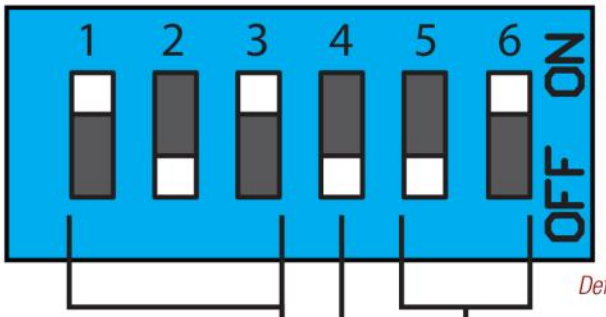
Figure 6.
External alarm connection



Wiring to Normally Closed alarm contact

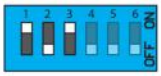
Dip Switch Settings

Figure 7.
FPT 130 DIP switch identification

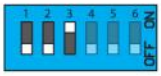


Default settings

Temperature
Sensor Fault Mode

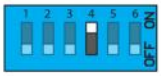


Energize Heaters
if the sensor fails

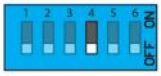


De-energize Heaters
if the sensor fails

Fire Protection Mode



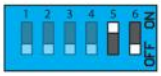
Fire Protection ON



Fire Protection OFF

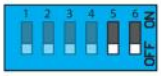
Temperature Setpoint

50 °F



45 °F

38 °F



30 °F

Note: The DIP switches are read at power-up. If any DIP switch is changed while the unit is on, then the power needs to be turned off and on again for the new setting to take effect.

FPT130 Thermistor Fault				Fire Prot	FPT130 SET POINT		
Heat On	1	0	1				
Heat Off	0	0	1		1	1	50F
GPT RTD 4 wire	0	0	1	Lock	1	0	45F
GPT RTD 3 wire	0	1	0	Lock	0	1	38F
GPT RTD 2 wire	1	1	0	Lock	0	0	30F

Operation

The FPT 130 can maintain temperatures at setpoints of 30 °F, 38 °F, 45 °F, or 50 °F (–1.1 °C, 3.3 °C, 7.2 °C, or 10 °C). The heater will energize when the temperature drops below the designated setpoint. The heater will de-energize when the temperature reaches 2 °F (1 °C) above the setpoint.

The FPT 130 features ETI's patented self–testing GFEP, which switches the system off when it detects excessive ground current leakage (unless Fire Protection Mode is on). The GFEP eliminates the extra expenses associated with having to provide external GFEP.

The FTP 130 also features a Low Current Alarm, which switches the system off when it detects a load current below 0.1 amps (unless Fire Protection Mode is on). The load current is checked during each ground fault test, and whenever the load is on. Note: the low-current alarm takes five seconds of low current to activate.

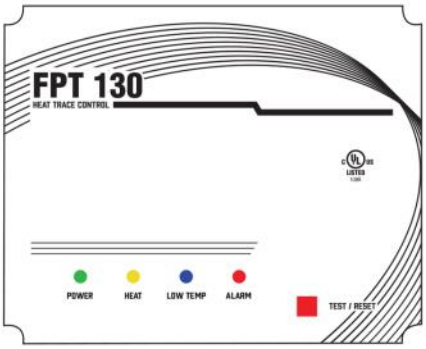


Figure 8.
FPT 130 front panel

FTP 130 Front Panel

Refer to Figure 8.

INDICATOR LIGHTS

- POWER indicator – This green LED lit solid indicates that the FPT 130 is receiving power.
  - – Blinking indicates a calibration error.
- HEAT indicator – This yellow LED lit solid indicates when the heater is energized.
  - – Blinking asymmetric (1/2 sec off × 1–1/2 sec on) – Low Current Alarm, heater relay closed.
  - – Blinking asymmetric (1/2 sec on × 1–1/2 sec off) – Low Current Alarm, heater relay open.
  - – Blinking fast – Stuck relay.
- LOW TEMP indicator – This blue LED lit solid indicates when the temperature falls to 32 °F (0 °C) for all setpoints except the 30 °F (-1.1 °C) setpoint. For the 30 °F (-1.1 °C) setpoint the LOW TEMP alarm will indicate when the temperature drops to 28 °F (-2.2 °C).
  - – Blinking indicates sensor fault.
  - – Blinking fast – indicates High Temperature alarm.
- ALARM indicator – This red LED lit solid indicates when there is a high ground fault current.
  - – Blinking indicates a GFEP circuit failure (this light will also blink while system is preforming a self–test).

PUSHBUTTON

- TEST/RESET pushbutton – This red pushbutton has the following functions:

– To test the ground fault detector circuit itself AND to test for a ground fault when the heat load is not energized (the heater will energize during the test). Note: whenever the heat is on, the unit is continuously checking for a ground fault.

– To reset the system after a ground fault. If the ground fault no longer exists, then normal operation will resume.

– To reset the low-current alarm. If the load current is still below 0.1 amps then the alarm will recur in five seconds. Note: the low-current alarm takes five seconds of low current to activate.

– Energizes heater for system testing or troubleshooting. Pressing this pushbutton for five seconds will energize the heater for five minutes. Pressing the pushbutton again will de-energize the heater and resume normal operation.

Note: Because the unit has no ON/OFF power switch, power runs to the unit as soon as facility power is connected to it. When the unit has power, the green POWER indicator will be lit.

Disabling the LOW TEMP Alarm LED

The blue LOW TEMP alarm LED indicates the presence of Low Temperature, High Temperature, or a bad thermistor. When disabled this blue LED will only indicate for the presence of a bad thermistor.

HOW TO DISABLE THE LOW TEMP ALARM LED

- Hold down the red TEST/RESET pushbutton for approximately ten seconds.
  - After the first five seconds the unit will go into Manual Mode, energizing the heater cable if it is not all ready energized.
  - After the second five seconds the unit will enter the LOW TEMP blue LED edit mode. This is indicated by the blue LED flashing rapidly. Release the button at this point. (The unit will exit Manual Mode.)

  Note: The blue LED may flash for a couple of seconds after releasing the red TEST/RESET pushbutton.

- The blue LED will indicate whether the LOW TEMP Alarm is currently disabled or not.
  - If the blue LED remains on the LOW TEMP Alarm is currently enabled.
  - If the blue LED goes off the LOW TEMP Alarm is currently disabled.
  - To keep the setting as it is wait five seconds and the unit will resume normal operation.
  - To change this setting press the red TEST/RESET pushbutton within five seconds. The new status of this setting will show for three seconds before the unit resumes normal operation.

  Note: The blue LED will flash rapidly before exiting the LOW TEMP blue LED editing mode and resuming normal operation.

Specifications

General	
Certifications	UL 60730–1, UL 1053, CSA E60730–1:13
Environmental	
Area of use	Nonhazardous locations
Operating temperature	–40 °F to 131 °F (–40 °C to 55 °C)
Enclosure	
Dimensions	8 1/8" (W) x 5 1/2" (H) x 4 3/8" (D) 207 mm (W) x 140 mm (H) x 112 mm (D)
Ingress protection	NEMA 4X, IP66
Cover attachment	Polycarbonate cover, plastic screws
Cable entries	Two liquid-tight cable glands installed for sensor and alarm leads, cable diameter 0.08" to 0.24" (2 mm to 6 mm) One 1.046" hole to accommodate a ¾" conduit fitting for power wiring connection
Material	Polycarbonate
Weight	2.7 lb. (1.22 kg)
Mounting	Wall mount with flanges
Wiring Connector Ratings	
Power	Barrier Strip Terminals for Line, Neutral, and Ground; use 10 AWG wires rated for at least 194 °F (90 °C)
Sensors	Terminal Block, rising cage clamp, 12–28 AWG leads
Alarm relay	Terminal Block, rising cage clamp, 12–28 AWG leads
Parameter Settings	
Temperature setpoints	30 °F, 38 °F, 45 °F, or 50 °F (–1.1 °C, 3.3 °C, 7.2 °C, or 10 °C)
Low–temperature threshold	32 °F (0 °C) for 38 °F, 45 °F, or 50 °F (3.3 °C, 7.2 °C, or 10 °C) setpoints 28 °F (-2.2 °C) for 30 °F (-1.1 °C) setpoint
Low–current alarm threshold	0.1 A
Low–current alarm delay	5 s
Ground fault limit current	30 mA
Self–test interval	24 h

User Interfaces	
Pushbutton	Test / Reset
DIP switches	Temperature setpoint Thermistor fault mode Fire protection mode
Remote Interface	
Alarm relay	Isolated SPDT 1 AMP Class 2 contact
Indicators	
Status indicator	Power to the unit (Green solid) Calibration error (Green blinking) Call for heat (Yellow solid) Low current alarm (Yellow blinking) Stuck relay (Yellow blinking fast) Low temperature (Blue solid) Sensor fault (Blue blinking) Ground fault (Red solid) GFEP circuit failure (Red blinking)
Summary alarm relay reporting	Low load current High ground fault current Sensor fault Internal fault
Control Ratings	
Temperature accuracy	+/– 2 °F (1 °C)
Temperature Sensors	
Temperature input	(Included) Thermistor, 100k ohms at 25 °C, range –40 °F to 230 °F (–40 °C to 110 °C), 20ft Lead (25076)
GFEP (Ground–Fault Equipment Protection)	
Threshold	30 mA
Automatic self–test range	Verifies GFEP functionality every 24 hr. and when the load is turned on
Power	
Supply voltage	100 – 277 V ac 50/60 Hz
Controller power consumption	5 W maximum, 2 W idle
Load rating	30 A, 100 – 277 V ac resistive

Specifications are at 77 °F (25 °C) unless otherwise stated and are subject to change without notice.

Ordering Information

Description	Part Number
MODEL FPT 130 Single-Point Freeze Protection Heat–Trace Control	25169
Temperature Sensor	25076
FPT 130 Installation Sheet	25298
FPT 130 Installation and Operation Manual (this document)	25165

ArmourGuard/IceArmour - AWA IceBreaker Limited Warranty

Limited Parts Warranty – All Weather Armour, LLC *(herein referred to as AWA)* warrants to the original owner*(s)* that its specially designed gutter guard called ArmourGuard Supreme, ArmourGuard Ice, ArmourGuard Standard, AWA IceBreaker or IceArmour Heat Panels will not be defective in manufactured parts, and agrees that it will, at its option only, either repair the defect or replace the defective part thereof with a new or reconditioned equivalent. This Limited Warranty is valid for 40 years on parts and does not include cost of labor for installation. All of the above named items are subject to the following terms and conditions. No other warranty is expressed or implied in this Limited Warranty. THESE WARANTIES GIVE YOU SPECIFIC LEGAL RIGHTS. YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE. This Limited Warranty is valid for only 10 years *(not 25/20 years)* if ArmourGuard Supreme, ArmourGuard Ice, ArmourGuard Standard AWA IceBreaker or IceArmour Heat Panels are installed directly by the end user *(homeowner or their handyman installer)* and not a Certified AWA Installer.

Coverage Exclusions and Limitations - The above mentioned warranties are void if any of the following conditions occur: Improper installation of ArmourGuard Supreme, ArmourGuard Ice, ArmourGuard Standard, AWA IceBreaker or IceArmour Heat Panels; settlement of structure; Structural shrinkage or distortion of structure *(Example: warping of roof or gutter over time etc…);*Vandalism; Hail; Fire; Tornado; Windstorm; Earthquakes; Lightning; Protective liquids or any type of roof preservation product applied to roof tops to extend the life of a roof; Maintenance Procedures are not followed properly; Tree sapping on mesh; Insect/bird droppings on mesh; Accidental damage; Acts of God; Misuse or abuse of the gutter guard or heat panels; Mildew accumulation; Paint overspray; Moss accumulation; Impact of foreign objects; Normal weathering; Caustic atmospheric conditions *(Example: Acid rain, harmful chemicals, etc)* or any other causes beyond the control of AWA. IT IS THE OWNER*(S)* RESPONSIBILITY TO UNCLOG THE MESH IN THE EVENT IT GETS CLOGGED! NOTE: Icicles can form in extreme cold weather where snow is present on the unheated versions of AWA IceBreaker or AWA IceArmour Heat Panels.

These warranties cover only ArmourGuard Supreme, ArmourGuard Ice, ArmourGuard Standard, AWA IceBreaker or IceArmour Heat Panels and do not cover the gutter or any part of the building structure or AWA Heat Cable (See AWA Heat Cable Warranty). AWA reserves the right to withdraw this warranty from the market at any time. Any and all warranties in effect at the time of removal will not be affected by the withdrawal, and will remain in effect until their expiration. This warranty is not transferable to a new owner in the event you sell your home or building structure. AWA cannot and will not be liable to you or any subsequent owner*(s)* for a breach of any written or oral express warranties, such as those given to you by an AWA dealer, contractor, sub-contractor or installer of ArmourGuard Supreme, ArmourGuard Ice, ArmourGuard Standard, AWA IceBreaker or IceArmour Heat Panels.

ANY IMPLIED WARRANTIES IMPOSED BY LAW, SUCH AS THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED IN TIME TO THE DURATION OF THIS EXPRESS WARRANTY. AWA SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL DAMAGES for breach of any express, written, oral, or implied warranty on any ArmourGuard Supreme, ArmourGuard Ice, ArmourGuard Standard, AWA IceBreaker or IceArmour Heat Panels. Your EXCLUSIVE REMEDY shall be repair or replacement solely at AWA's option, only on terms stated in the warranties. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES AND SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.

Send Original to along with proof of purchase within 30 days to:

All Weather Armour, LLC
W2355 US Highway 18
Sullivan, WI 53178

Customer Installation Company_____
Name of Customer: _____
Address: _____
City, State, Zip: _____
Phone Number: _____
Email Address: _____
Product Installed and Footage: _____

Date of Installation: _____

All Weather Armour Heat Cable Warranty

All Weather Armour, LLC warrants AWA Self Regulating Heat Cable that is installed to be free from defects in material and workmanship effective on the date of the purchase by the original purchaser and shall remain effective for a period of ten (10) years from the date of purchase. The maximum liability of the company is limited to the cost of the original AWA Self Regulating Heat Cable multiplied by the percentage of the warranty period remaining.

Exclusions

The following items are not covered by this warranty:

- Any incidental or consequential damage.
- Any failure that results from an accident, abuse, neglect, or failure to operate or install the product in accordance with the instructions provided in the installation manual and installed by a qualified electrician.
- This warranty may not be transferred and is exclusively to the sole benefit of the original purchaser.

Please note the following warranty conditions:

- AWA Self Regulating Heat Cables must be on a dedicated circuit and protected by a ground fault circuit interrupter (GFCI or GFEP).
- AWA Self Regulating Heat Cables must be tested with a digital ohmmeter before, during and after the installation. The MeggerReadings must be recorded in the printed installation instructions.
- AWA Self Regulating Heat Cables must be installed and connected according to the specifications set out in the US National Electric Code, Part 1 of the Canadian Electric Code and all local/municipal electrical regulations and standards.
- A certified electrician familiar with residential/commercial electrical installation codes and practices must connect AWA Self Regulating Heat Cables to power.

ALL WEATHER ARMOUR

Online Cable Warranty Card Information

Please complete and return this warranty registration card within 10 days to validate your warranty. Note all fields are required except where indicated.

Company (optional)_____

First Name_____

Last Name_____

Phone_____

Email (required)_____

Street Address_____

Address Line 2 (optional)_____

City_____

Province/State_____

Postal/Zip Code_____

Country_____

Dealer Purchased From_____

City Purchased From_____

Purchase Date_____

Megger Test Reading Before Install_____

Megger Test Reading After Install but Before Power Up_____

Megger Test Reading After Power Up_____

ALL WEATHER ARMOUR

How To Claim This Warranty

Contact the installation company to provide details relating to the nature of the defect, the installation and operation of the AWA Self Regulating Heat Cable System, and the date of purchase of the AWA Self Regulating Heat Cable System. After examination of the information provided, the company may advise the owner to proceed as follows:

Deliver or ship the AWA Self Regulating Heat Cable System covered under the warranty to the dealer from whom it was originally purchased, the company's local representative, or direct to the manufacturer.

A retail sales receipt or proof of purchase should accompany the returned AWA Self Regulating Heat Cable System

Freight costs, if any, will be prepaid by the owner.

Disclaimer

This warranty gives you specific legal rights and you may also have some legal rights which may vary from state to state or province to province. All Weather Armour, LLC hereby disclaims, and it is a condition of the sale, that there are no implied warranties. Some states and provinces do not allow limitations on an implied warranty so the above limitation may not apply to you.

Manufacturer
All Weather Armour, LLC
W2355 US Hwy 18
Sullivan, Wisconsin 53178