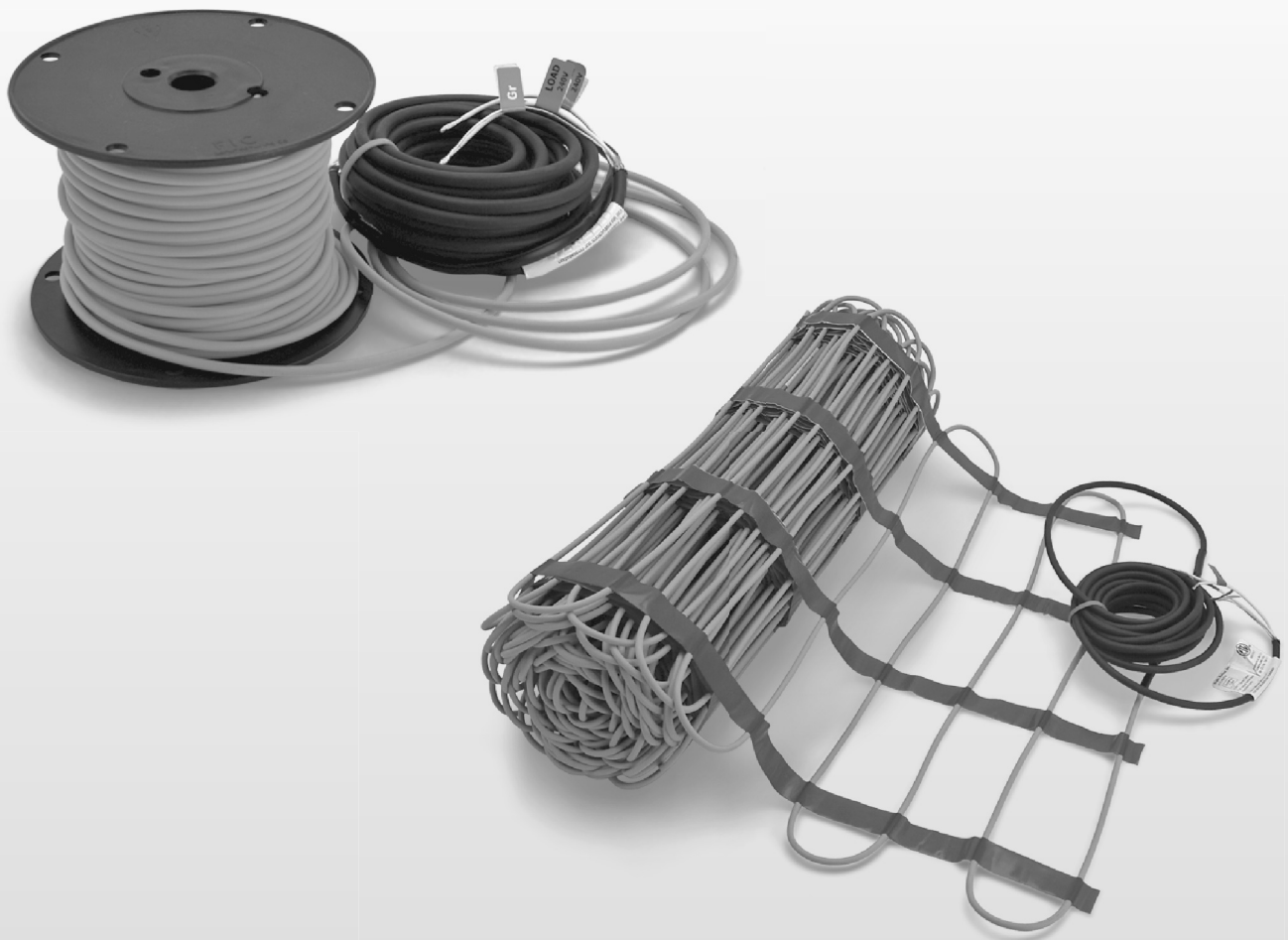


# ProMelt<sup>®</sup>

## Electric Snow Melting Mats & Cables

### Installation Manual



Series SM  
& SC



#### **⚠ WARNING**

Please be aware local codes may require this product and/or the control to be installed or connected by an electrician. Please leave this manual with the end user.

**⚠ WARNING**



Read this Manual BEFORE using this equipment.

Failure to read and follow all safety and use information can result in death, serious personal injury, property damage, or damage to the equipment.

Keep this Manual for future reference.

# Welcome to ProMelt Electric Snow Melting

ProMelt products are a simple way to eliminate snow and ice from surfaces. This instruction manual is provided as a guide to installing ProMelt Mat and ProMelt Cable, including design considerations, mat and cable installation, control installation, precautions, and surfacing guidelines.

## Specifications for ProMelt Mat:

ProMelt Mat is a complete heating mat consisting of a series resistance heating cable and a single power lead for easy single-point connection. The heating cable is pre-formed into a mat to provide consistent spacing and quick roll-out installation on the job site. The heating mat length cannot be cut to fit.

**Sizes:** Widths 2, 3 feet (61, 91 centimeters) Lengths 5 up to 56 feet (1.5 to 17 meters)

**Voltages:** 120, 208, 240, 277 VAC, 1-phase

**Watts:** 50 W/ft<sup>2</sup> (170 Btu/h/ft<sup>2</sup>) and 38 W/ft<sup>2</sup> (130 Btu/h/ft<sup>2</sup>)

**Maximum heater current:** 24 amps (see table 1)

**Maximum circuit load:** 50 amps

**GFEP** (ground fault equipment protection) required for each circuit

**Listing:** ETL Listed for U.S. and Canada under UL 515, IEEE 515.1, and CAN/CSA C22.2 No. 130-03

**Listing file number:** 3151992

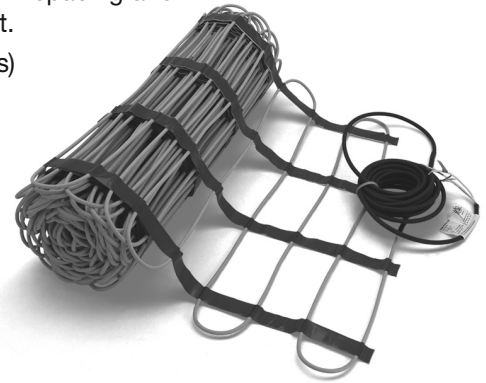
**Application:** Outdoor use only, embedded in concrete, asphalt, sand (see Step 1.1)

**Minimum bend radius:** 1 inch (25mm)

**Maximum exposure temperature (continuous and storage):** 221°F (105°C)

**Maximum exposure temperature (short-term for asphalt covering):** 285°F (140°C)

**Minimum installation temperature:** 40°F (4.5°C)



## Specifications for ProMelt Cable:

ProMelt Cable is a complete heating cable consisting of a series resistance heating cable and a single power lead for easy single-point connection. The heating cable length cannot be cut to fit.

**Voltages:** 120, 208, 240, 277 VAC, 1-phase

**Watts:** 50 W/ft<sup>2</sup> (170 Btu/h/ft<sup>2</sup>), spaced at 3 inches on-center. 38 W/ft<sup>2</sup> (130 Btu/h/ft<sup>2</sup>), spaced at 4 inches on-center (Cable is designed to operate at approximately 12.5 W/linear foot of cable at rated voltage.)

**Maximum heater current:** 24 amps (see table 1)

**Maximum circuit load:** 50 amps

**GFEP** (ground fault equipment protection) required for each circuit

**Listing:** ETL Listed for U.S. and Canada under UL 515, IEEE 515.1, and CAN/CSA C22.2 No. 130-03

**Listing file number:** 3151992

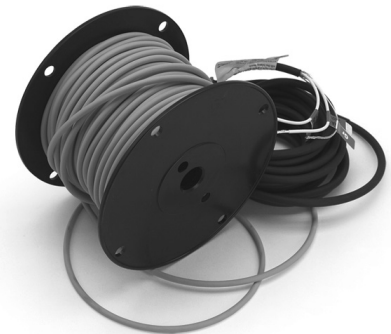
**Application:** Outdoor use only, embedded in concrete, asphalt, sand (see Step 1.1)

**Minimum bend radius:** 1 inch (25 mm)

**Maximum exposure temperature (continuous and storage):** 221°F (105°C)

**Maximum exposure temperature (short-term for asphalt covering):** 285°F (140°C)

**Minimum installation temperature:** 40°F (4.5°C)



**⚠ WARNING**

Installation must be performed by qualified persons, in accordance with local codes, ANSI/NFPA 70 (NEC Article 426) and CEC Part 1 Section 62 where applicable. Prior to installation, please consult the local codes in order to understand what is acceptable. To the extent this information is not consistent with local codes, the local codes should be followed. However, electrical wiring is required from a circuit breaker or other electrical circuit to the control. It is recommended that an electrician perform these installation steps. Please be aware local codes may require this product and/or the control to be installed by an electrician.

# Table of Contents

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## Important Safety Information



This is a safety-alert symbol. The safety alert symbol is shown alone or used with a signal word (DANGER, WARNING, or CAUTION), a pictorial and/or a safety message to identify hazards.

When you see this symbol alone or with a signal word on your equipment or in this Manual, be alert to the potential for death or serious personal injury.



This pictorial alerts you to electricity, electrocution, and shock hazards.

### ⚠ WARNING

This symbol identifies hazards which, if not avoided, could result in death or serious injury.

### ⚠ CAUTION

This symbol identifies hazards which, if not avoided, could result in minor or moderate injury.

### NOTICE

This symbol identifies practices, actions, or failure to act which could result in property damage or damage to the equipment.

### ⚠ WARNING



As with any electrical product, care should be taken to guard against the potential risk of fire, electric shock, and injury to persons. The following cautions must be observed:

**NEVER** cut or modify the heating cable. The power lead may be cut shorter if necessary, but never removed from the heating cable.

**NEVER** overlap or cross over the heating cable on itself, or place heating cable closer than 2 inches from another heating cable or power lead cable.

**NEVER** pull any of the heating cable or factory splices into any conduit.

**NEVER** attempt to repair a damaged cable. Contact the factory for assistance.

**NEVER** install the mat/cable on or under non-masonry stairs or decks made of wooden or composite materials.

**NEVER** install the mat/cable in the deck around a pool, in-ground hot-tub, or similar

**ALWAYS** de-energize all circuits before installing or servicing.

**ALWAYS** completely embed the heating cable and factory splices in concrete, sand, or asphalt.

**ALWAYS** avoid placing the heating cable any closer than 2 inches from other items such as underground cable or piping to keep from overheating them.

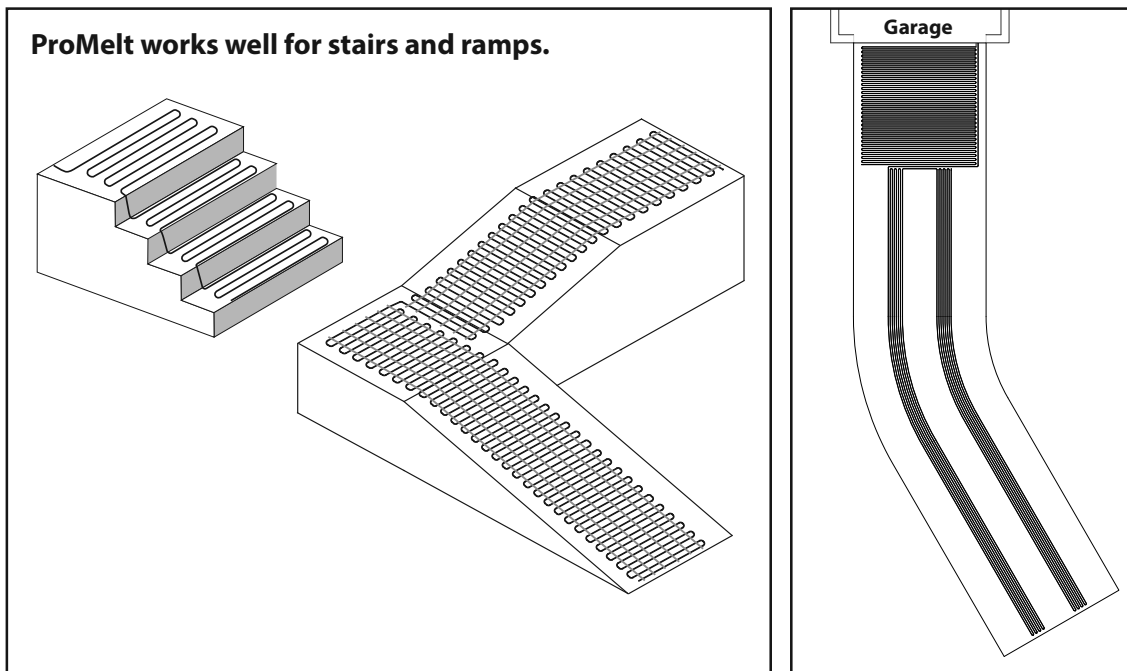
**ALWAYS** keep ends of the power leads dry before, during, and after installation.

**ALWAYS** provide ground fault protection (GFEP) for the snow melting system. This may be at the circuit breaker or the control.

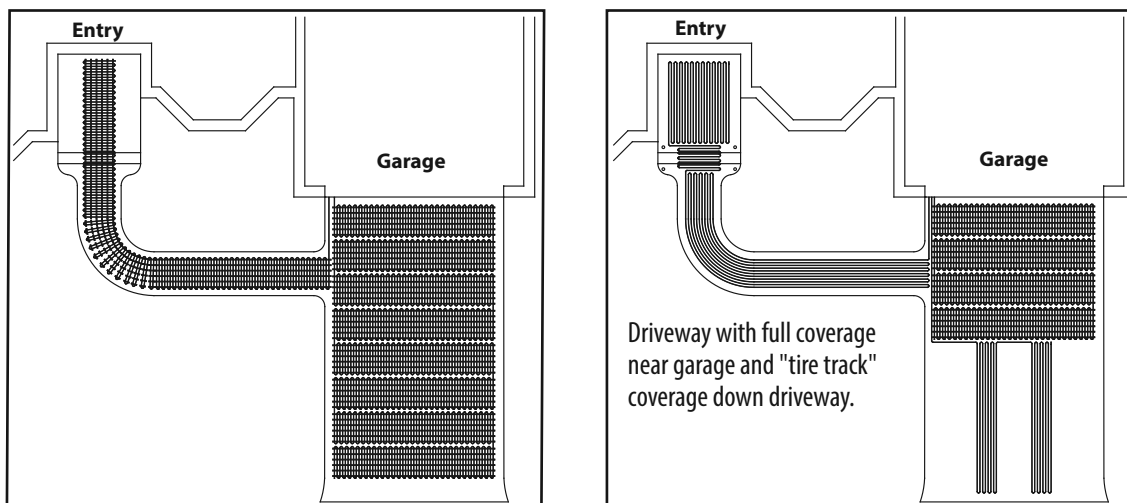
**ALWAYS** pay close attention to voltage and amperage requirements of the circuit breaker, control, and snow melting system.

**ALWAYS** install in accordance with all local codes and the National Electrical Code (ANSI/NFPA 70 especially Article 426) and Section 62 of the Canadian Electrical Code (CEC) Part I.

# Some Typical ProMelt Installations



**ProMelt Mats and Cables can be used in combination to fit a variety of areas.**



## Phase 1: Designing the System

### STEP 1.1

#### Determine general areas where you want to install ProMelt Mat/Cable

Applications include driveways, walkways, patios, permanent ramps, masonry steps and benches, shipping docks, under garage door seals and more. The ProMelt Mat/Cable can be used anywhere outdoors in residential or commercial locations where snow or ice accumulates. The ProMelt Mat/Cable must be completely embedded in concrete, sand, thick mortar bed, or asphalt.

#### **⚠ WARNING**

ProMelt Mat/Cable cannot be installed indoors, in industrial locations, or areas with hazardous classifications. It cannot be used for gutter or pipe freeze protection or roof snow melt. Do not install the mat/cable on or under non-masonry stairs or decks made of wooden or composite materials. Do not install the mat/cable in the deck around a pool, in-ground hot-tub, or similar. See National Electrical Code article 680 and consult your local inspector for further details.

ProMelt Mat/Cable may be used to heat an outdoor area, such as a patio. This application requires special installation considerations and controls. See Step 1.6 for important control details. Only install mat/cable in concrete or mortar slab and then apply finish coverings. Never install directly in sand or similar to avoid poor performance and reduced life of the cable due to poor conductivity of dry sand and higher application temperatures.

## Heating performance is never guaranteed.

The amount of heat required to melt snow is dependent on many factors such as air and ground temperature, wind speed, solar exposure and humidity. When designing a snow melting system, consider the expected level of performance. Systems can be designed to meet either average, or extreme weather conditions for the installation location. When determining the number of Watts per ft<sup>2</sup> required, location specific calculations are recommended. The ASHRAE 2007 handbook is a good reference for this, with tables that include flux & Watts/ft<sup>2</sup> data for locations throughout the USA.

If you have any questions regarding expected performance in your application, please contact the factory.

### STEP 1.2

Measure the area where you want snow melting to occur and make a drawing. Eliminate those areas where ProMelt cannot be installed, keeping in mind the following obstructions and allowances:

- For most applications, the base under the mat/cable must be a minimum of 2 inches of masonry, asphalt, or similar material. The mat/cable must be completely covered by a minimum of 1-1/2 inches of material. (See Phase 4 Finish Surfaces for more details.)
- For a deck or similar elevated application, the mat/cable must have a minimum of 1 inch of masonry below and a minimum of 1 inch of material covering the entire mat/cable. (See Phase 4 Finish Surfaces for more details.)
- Mat/Cable cannot be laid within 6 inches of the edges of slabs. In asphalt, this is increased to 12 inches from the edge where no curb is provided.
- Avoid crossing expansion joints in a slab, unless proper technique and protection steps are followed (see Step 3.14).
- Avoid placing the heating cable any closer than 2 inches from other items such as underground cable or piping to keep from overheating them.
- Allow at least 2 inches between adjacent cables, but not more than 4 inches, between adjacent cables or sections of a mat where the mat tape is cut and turned to fill the area.
- Mat/Cable must be laid such that the surface will not have other obstructions placed on top, capturing heat or allowing potential damage from mounting brackets, bolts, or similar (pedestals, support columns, walls, light posts, hand rails, or similar)

#### **⚠ WARNING**

THE HEATING CABLE CANNOT BE CUT TO LENGTH. Order the correct size mat or cable to fit the area. Modifying the heating cable is not allowed and may lead to overheating, damage, and fire hazard.

- The heating cable and factory splices of ProMelt Mat/Cable must be completely embedded in the concrete, sand, or asphalt. Never try to use up excess heating cable in surrounding soil, walls, or other unprotected applications.
- Never overlap the heating cable on itself or place heating cable closer than 2 inches from other heating cable.
- Only the power lead may exit this area. It will be pulled through conduit to protect it up to a junction box. NEVER pull any of the heating cable or factory splices into any conduit.

**See typical installations on page 4.**

### STEP 1.3

**Determine where junction box(es) may be placed** to receive the ProMelt Mat/Cable power leads. This is important to ensure the mat(s) and/or cable(s) you select fill the area correctly and with the best connection locations.

It is best to locate junction boxes on a wall indoors and within the distance of the power leads on the mat/cable. ProMelt mat/cable comes standard with 20-foot long power leads, but may be custom ordered up to 50 feet long if necessary.

If a junction box must be located outdoors, it is recommended it be installed above grade and be properly Listed for rain tight use outdoors. If it must be installed at or below grade, use properly Listed watertight items and follow box manufacturer guidelines for protection and connection seals.

## STEP 1.4 (ProMelt Mat Only)

Select the ProMelt Mat(s) you need. (for ProMelt Cable sizes see next page)

**WATTAGE:** Decide what heat output is required. Your design must consider weather conditions and how critical it is to clear the heated area.

- Mat with 50 watts per square foot heat output are sufficient to clear most moderate and heavy snowfall rates.
- Mat with 38 watts per square foot heat output are sufficient to clear most light to moderate snowfall rates.

**SIZE:** ProMelt Mat is manufactured in a variety of sizes as shown in Table 1. If the exact size of mat is not found in the Table, select the next smaller mat size.

**AMPS and VOLTS:** Pay careful attention to the amps to make sure your controls, circuit breaker panel, and wiring will have the proper capacity. Design everything to handle 125 percent of heating mat load:

- 20 amp circuit for load up to 16 amps
- 30 amp circuit for load up to 24 amps
- 40 amp circuit for load up to 32 amps
- 50 amp circuit for load up to 40 amps
- 70 amp circuit for load up to 50 amps

## Table 1 (mat sizes)

Site specific design calculations are recommended to ensure the system performs as expected. 38 Watt/ft<sup>2</sup> mats are typically used in milder climates. 50 Watt/ft<sup>2</sup> mats are better for colder climates & critical melting applications.

### 120 VAC ProMelt Mats (38 Watts/ft<sup>2</sup>)

	Size (L x W)	Ft <sup>2</sup>	Model#	Amps	Ohms	Watts
2' Wide	5' x 2'	10	SM3812000524	3.2	42-53	380
	10' x 2'	20	SM3812001024	6.3	20-25	760
	15' x 2'	30	SM3812001524	9.5	13-17	1140
	20' x 2'	40	SM3812002024	12.7	7-10	1520
	25' x 2'	50	SM3812002524	15.8	6-8	1900
	30' x 2'	60	SM3812003024	19.0	4-6	2280

### 240 VAC ProMelt Mats (38 Watts/ft<sup>2</sup>)

	Size (L x W)	Ft <sup>2</sup>	Model#	Amps	Ohms	Watts
2' Wide	10' x 2'	20	SM3824001024	3.2	65-81	760
	20' x 2'	40	SM3824002024	6.3	31-39	1520
	30' x 2'	60	SM3824003024	9.5	20-26	2280
	40' x 2'	80	SM3824004024	12.7	14-19	3040
	50' x 2'	100	SM3824005024	15.8	11-15	3800
	60' x 2'	120	SM3824006024	19.0	9-13	4560

### 208 VAC ProMelt Mats (50 Watts/ft<sup>2</sup>)

	Size (L x W)	Ft <sup>2</sup>	Model#	Amps	Ohms	Watts
2' Wide	7' x 2'	14	SM5020800724	3.4	59-74	700
	11' x 2'	22	SM5020801124	5.3	40-50	1100
	14' x 2'	28	SM5020801424	6.7	28-35	1400
	18' x 2'	36	SM5020801824	8.7	23-29	1800
	20' x 2'	40	SM5020802024	9.6	17-22	2000
	24' x 2'	48	SM5020802424	11.5	15-20	2400
	28' x 2'	56	SM5020802824	13.5	13-17	2800
	34' x 2'	68	SM5020803424	16.3	10-13	3400
	38' x 2'	76	SM5020803824	18.3	9-12	3800
	42' x 2'	84	SM5020804224	20.2	8-11	4200
	48' x 2'	96	SM5020804824	23.1	7-10	4800

### 240 VAC ProMelt Mats (50 Watts/ft<sup>2</sup>)

	Size (L x W)	Ft <sup>2</sup>	Model#	Amps	Ohms	Watts
2' Wide	8' x 2'	16	SM5024000824	3.3	68-84	800
	12' x 2'	24	SM5024001224	5.0	43-54	1200
	16' x 2'	32	SM5024001624	6.7	32-40	1600
	20' x 2'	40	SM5024002024	8.3	26-32	2000
	24' x 2'	48	SM5024002424	10.0	21-27	2400
	28' x 2'	56	SM5024002824	11.7	18-23	2800
	32' x 2'	64	SM5024003224	13.3	15-19	3200
	36' x 2'	72	SM5024003624	15.0	13-17	3600
	40' x 2'	80	SM5024004024	16.7	12-15	4000
	44' x 2'	88	SM5024004424	18.3	11-14	4400
	48' x 2'	96	SM5024004824	20.0	10-13	4800

### 277 VAC ProMelt Mats (50 Watts/ft<sup>2</sup>)

	Size (L x W)	Ft <sup>2</sup>	Model#	Amps	Ohms	Watts
2' Wide	9' x 2'	18	SM5027700924	3.2	77-95	900
	14' x 2'	28	SM5027701424	5.1	51-63	1400
	18' x 2'	36	SM5027701824	6.5	36-45	1800
	24' x 2'	48	SM5027702424	8.7	31-39	2400
	28' x 2'	56	SM5027702824	10.1	24-31	2800
	32' x 2'	64	SM5027703224	11.6	20-26	3200
	36' x 2'	72	SM5027703624	13.0	17-22	3600
	40' x 2'	80	SM5027704024	14.4	15-19	4000
	44' x 2'	88	SM5027704424	15.9	13-17	4400
	48' x 2'	96	SM5027704824	17.3	12-16	4800
	52' x 2'	104	SM5027705224	18.8	11-14	5200

	Size (L x W)	Ft <sup>2</sup>	Model#	Amps	Ohms	Watts
3' Wide	5' x 3'	15	SM5020800536	3.6	64-80	750
	10' x 3'	30	SM5020801036	7.2	30-38	1500
	15' x 3'	45	SM5020801536	10.8	14-19	2250
	20' x 3'	60	SM5020802036	14.4	11-15	3000
	25' x 3'	75	SM5020802536	18.0	9-12	3750
	30' x 3'	90	SM5020803036	21.6	7-9	4500

	Size (L x W)	Ft <sup>2</sup>	Model#	Amps	Ohms	Watts
3' Wide	5' x 3'	15	SM5024000536	3.1	64-80	750
	10' x 3'	30	SM5024001036	6.3	30-38	1500
	15' x 3'	45	SM5024001536	9.4	20-25	2250
	20' x 3'	60	SM5024002036	12.5	14-18	3000
	25' x 3'	75	SM5024002536	15.6	11-15	3750
	30' x 3'	90	SM5024003036	18.8	9-12	4500
	35' x 3'	105	SM5024003536	21.9	8-11	5250

	Size (L x W)	Ft <sup>2</sup>	Model#	Amps	Ohms	Watts
3' Wide	10' x 3'	30	SM5027701036	5.4	55-68	1500
	15' x 3'	45	SM5027701536	8.1	29-37	2250
	20' x 3'	60	SM5027702036	10.8	19-25	3000
	25' x 3'	75	SM5027702536	13.5	14-18	3750
	30' x 3'	90	SM5027703036	16.2	11-15	4500
	35' x 3'	105	SM5027703536	19.0	11-14	5250

## STEP 1.4 (ProMelt Cable Only)

Select the cables you need.

**WATTAGE:** Decide what heat output is required. Your design must consider weather conditions and how critical it is to clear the heated area. Select a cable spacing.

- 3" spacing / 50 watts per square foot (170 Btu/ft<sup>2</sup>): sufficient to clear most moderate and heavy snowfall rates
- 4" spacing / 38 watts per square foot (130 Btu/ft<sup>2</sup>): sufficient to clear most light to moderate snowfall rates

**SIZE:** Select a cable in Table 2 to fit the Heated Area measured in Step 1.2. ProMelt Cable is manufactured in a variety of sizes as shown. If the exact size of cable is not found in the Table, select the next smaller cable size.

**AMPS and VOLTS:** Pay careful attention to the amps to make sure your controls, circuit breaker panel, and all wiring will have the proper capacity. Design circuit protection and wiring to handle 125 percent of heating cable load:

- 20 amp circuit for load up to 16 amps
- 30 amp circuit for load up to 24 amps
- 40 amp circuit for load up to 32 amps
- 50 amp circuit for load up to 40 amps
- 70 amp circuit for load up to 50 amps

## Table 2 (cable sizes)

Site specific design calculations are recommended to ensure the system performs as expected. 38 Watt/ft<sup>2</sup> spacing is typically used in milder climates. 50 Watt/ft<sup>2</sup> spacing is better for colder climates & critical melting applications.

### 120 VAC Cable

Coverage (ft <sup>2</sup> )		Length	Model#	Amps	Ohms	Watts
3" spacing (50 W/ft <sup>2</sup> )	4" spacing (38 W/ft <sup>2</sup> )					
8	10	29'	SC50120008	3.3	31-39	400
15	20	59'	SC50120015	6.3	15-19	750
20	26	78'	SC50120020	8.3	13-17	1000
30	39	118'	SC50120030	12.5	7-9	1500
40	53	158'	SC50120040	16.7	5-7	2000
53	69	208'	SC50120053	22.1	4-6	2650

### 208 VAC Cable

Coverage (ft <sup>2</sup> )		Length	Model#	Amps	Ohms	Watts
3" spacing (50 W/ft <sup>2</sup> )	4" spacing (38 W/ft <sup>2</sup> )					
14	19	55'	SC50208014	3.4	60-74	700
20	26	78'	SC50208020	4.8	36-46	1000
30	39	118'	SC50208030	7.2	30-38	1500
35	46	138'	SC50208035	8.4	23-29	1750
40	53	158'	SC50208040	9.6	18-23	2000
45	59	178'	SC50208045	10.8	14-19	2250
55	72	218'	SC50208055	13.2	13-17	2750
60	79	238'	SC50208060	14.4	11-15	3000
65	85	257'	SC50208065	15.6	10-13	3250
75	98	297'	SC50208075	18.0	9-12	3750
80	105	317'	SC50208080	19.2	8-11	4000
90	118	357'	SC50208090	21.6	7-9	4500

### 240 VAC Cable

Coverage (ft <sup>2</sup> )		Length	Model#	Amps	Ohms	Watts
3" spacing (50 W/ft <sup>2</sup> )	4" spacing (38 W/ft <sup>2</sup> )					
15	20	59'	SC50240015	3.1	64-79	750
25	33	98'	SC50240025	5.2	46-57	1250
30	39	118'	SC50240030	6.3	30-38	1500
40	53	158'	SC50240040	8.3	26-33	2000
45	59	178'	SC50240045	9.4	20-25	2250
55	72	218'	SC50240055	11.5	18-23	2750
60	79	238'	SC50240060	12.5	14-18	3000
65	85	257'	SC50240065	13.5	12-16	3250
75	98	297'	SC50240075	15.6	11-15	3750
80	105	317'	SC50240080	16.7	10-13	4000
90	118	357'	SC50240090	18.8	9-12	4500
105	137	417'	SC50240105	21.9	8-11	5250

### 277 VAC Cable

Coverage (ft <sup>2</sup> )		Length	Model#	Amps	Ohms	Watts
3" spacing (50 W/ft <sup>2</sup> )	4" spacing (38 W/ft <sup>2</sup> )					
<b>18</b>	24	71	SC50277018	3.2	77-95	900
<b>30</b>	39	118	SC50277030	5.4	55-68	1500
<b>35</b>	46	138	SC50277035	6.3	36-45	1750
<b>45</b>	59	178	SC50277045	8.1	29-37	2250
<b>55</b>	72	218	SC50277055	9.9	24-31	2750
<b>60</b>	79	238	SC50277060	10.8	19-25	3000
<b>70</b>	92	277	SC50277070	12.6	17-21	3500
<b>75</b>	98	297	SC50277075	13.5	14-18	3750
<b>80</b>	105	317	SC50277080	14.4	12-16	4000
<b>90</b>	118	357	SC50277090	16.2	11-15	4500
<b>105</b>	137	417	SC50277105	19.0	11-14	5250
<b>115</b>	150	456	SC50277115	20.8	9-12	5750

## STEP 1.5 (ProMelt Cable only)

If the cable is to be laid on top of an existing slab, select enough Cable Strap to secure the cable to the surface. One box contains 25 ft. of strap, enough to secure about 50 ft<sup>2</sup> of cable at 4-ft parallel spacing. Cable strap is usually spaced no more than 3 to 4 feet apart.

### ⚠ WARNING

Always consult your electrician and designers to ensure proper sizing, location, and site capabilities.

## STEP 1.6

### Select what level of operation is required:

#### 1) Automatic start / timed stop melting

Snow melting system is operated as soon as snow is detected and continues for a pre-set duration. If snow remains on the sensor after the run time has expired, another melting cycle begins.

#### 2) Automatic start & stop melting with slab temperature control

Snow melting system is operated as soon as snow is detected and automatically shuts off when the sensor surface is free of snow or ice. The melting surface is operated using the lowest effective melting temperature to reduce operating costs.

#### 3) Manual start & stop melting with slab temperature control

Snow melting system is manually started at the control or using a remote enable. Snow melting operates for a timed duration or until manually shut off. The melting surface is operated using the lowest effective melting temperature to reduce operating costs.

#### 4) Outdoor heating

The surface temperature where the sensor is installed is controlled by adjusting settings in the PM-519 control. Up and down buttons are used to set the desired temperature or turn outdoor heating off.

## Determine Zoning

**One Zone.** In many instances all the areas can be heated at the same time with one control. The control can be connected to many cables and mats with multiple circuit breakers if needed. One sensor will tell the control when to operate.

**Multiple Zones.** In some instances it may be preferable to have some areas heated separately from other areas. This could be the case if you want to snowmelt the sidewalks in front of a store automatically first, then melt rear entrance areas manually later. In these cases, each “zone” will require its own control and sensor. Do not try to control multiple zones with one sensor.

## Calculate the Amps required for each zone

Total the number of Amps required by cables and mats selected for each zone.

## Select a control package

Zones up to 60 Amps can be controlled by an all-in-one control (PM-2C or PM-5). Zones above 60 Amps or with outdoor heating require a ContactorPro Panel and control kit combination.

System Size	Operation	Sensor	Control	Order #	Required
Up to 30 Amp	Automatic start / timed stop melting	Pole-Mount	PM-2C	81011699	-
Up to 60 Amp	Automatic start / timed stop melting	Pole-Mount	PM-5	81014247	-
Any Size	Automatic start & stop melting with slab temperature control	Surface-Mount	PM-L3	81018910	ContactoPro Panel
Any Size	Automatic start / timed stop melting	Pole-Mount	PM-L2	81018911	ContactoPro Panel
Any Size	Manual start & stop melting with slab temperature control	In-Slab	PM-L1	81018912	ContactoPro Panel
Any Size	Outdoor patio heating (no snow melting)	In-Slab	PM-519	81018840	ContactoPro Panel

ContactoPro Panels are selected to match the Amps required. They include a 24 VAC transformer to supply power to a PM-L1, L2, L3 or PM-519 control. If 277 VAC cables are used, a separate power supply for the transformer is required.

ContactoPro Panel	CP-50	CP-100	CP-200
Built-in Amp capacity	50	100	200
Order#	81012215	81012216	81012217





## NOTICE

DO NOT operate the ProMelt system in ambient temperatures above 68°F (20°C), except for a brief test to ensure system is functioning. Heating performance is never guaranteed. The amount of heat added to the area is dependent on many factors such as air and ground temperature, wind speed, solar heat, moisture, etc. If you have any questions regarding expected performance in your application, please contact the factory.

### STEP 1.7

Consult with your electrician to make sure the mats/cables, control, and design you have selected will work properly.

- The ProMelt Mat/Cable and its control must be placed on a dedicated power supply from the circuit breaker panel.
- The ProMelt Mat/Cable is a resistance heating system and should be considered as a continuous load for branch circuit sizing purposes.
- The circuit breaker must open all ungrounded conductors at the same time. A GFEP type (typically 30 mA trip) is required to directly protect the ProMelt Mat/Cable.
- Circuit breaker size and circuit wiring should be designed to 125 percent of heating mat/cable load:
  - 20 amp circuit for load up to 16 amps
  - 30 amp circuit for load up to 24 amps
  - 40 amp circuit for load up to 32 amps
  - 50 amp circuit for load up to 40 amps
  - 70 amp circuit for load up to 50 amps
- Follow NEC, CEC, and local code guidelines for branch circuit wiring, conduit, and junction box installations. Outdoor and underground junction boxes and conduit must meet rain tight or watertight requirements as required.

## ⚠ WARNING

Do not use insulation underneath snow melt or exterior heated areas if vehicular traffic will be present as compression of the insulation may occur over time. Improper type or use may cause cracking of the slab and possible damage to the ProMelt Mat/Cable.

## Phase 2: Preparations

Before installing ProMelt, make sure to fully check out the products, and carefully plan your site. The following steps may not necessarily occur in the order shown, depending on contractor and electrician scheduling and variations in site preparation requirements. A good discussion with all parties involved will help eliminate costly errors and damages.

### ***INSPECT MAT/CABLE, CONTROL, and SENSOR***

#### STEP 2.1

Remove the ProMelt Mat/Cable, control, and sensor from their packages. Inspect them for any visible damage and verify everything is the correct size and type according to your plan and order.

## ⚠ WARNING

Do not attempt to install a damaged product.

#### STEP 2.2

Record the mat/cable information in Table 3, on the following page. Give this information to the homeowner to keep in a safe place. The mat/cable model number, serial number, voltage, and resistance range are shown on a nameplate label attached to the power leads.

## NOTICE

Do not remove this nameplate label. The electrical inspector will need to see this.

#### STEP 2.3

Use a digital multi-meter to measure the resistance between the conductors of the mat/cable power leads. Record these resistances in **Table 3** under “Out of the box before installation”.

The resistance between the white lead wires should be within the resistance range on the nameplate label. If it is a little low, it may be due to low air temperatures or meter calibration. Consult an electrician or the factory if you are in doubt.

The resistance between the white leads and ground lead should be “open”, usually indicated by an “OL” or whatever your meter shows when the test leads are not touching anything. If there is any change in the reading, record this information and contact the factory before installing. This could indicate damage, test lead problems, or a number of other issues. Try “pinning” the test leads to the mat/cable lead wires against a hard non-metal surface if your readings fluctuate.

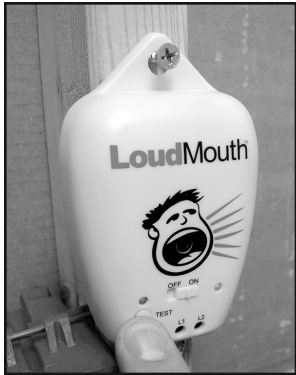
## STEP 2.4

Your electrician should perform an insulation resistance test on the mat. A megohmmeter (e.g. Megger®) adjusted to a minimum 1000 VDC should give a measured value at least 20 megohm (MΩ). Do not apply over 1500 VDC.

### ⚠ WARNING



Megohmmeters apply high voltage and could shock or cause serious injury if improperly used. Follow megohmmeter instructions for safe and proper use.



**The LoudMouth™ monitor shown at left will constantly monitor the heating wire during the entire installation process. If the wire is cut or damaged during installation, this device sounds an alarm. The LoudMouth will prevent burying a damaged wire below hardened concrete.**

## BASE MATERIAL

### STEP 2.5

Prepare the site that you want to heat with ProMelt Mat/Cable. This includes making sure all utilities and obstructions are accounted for.

### STEP 2.6

#### General

Ensure the base is a smooth, well-compacted and solid base. If the mat/cable is to be placed on existing slab, inspect it for any sharp or loose objects, or other potentially damaging issues.

Ensure proper slope and drainage to avoid water buildup in any heated or surrounding areas. This is especially important for brick paver applications, as melted water may re-freeze and heave surrounding sand and paver areas.

Follow local building codes and construction guidelines for grade requirements and slab thickness in your area. Ensure that the base is at the proper height to allow the total slab thickness needed and that the cable will be embedded at the proper distance below the top surface to avoid damaging the cable. It is very important for the cable to be completely embedded.

### STEP 2.7

#### Concrete Application

For a new pour, attach reinforcement, such as wire mesh or rebar, over the base at the required level below the top surface. You must use "chairs" or other appropriate objects to raise the wire mesh to the correct level. The ProMelt Mat/Cable will be attached to this reinforcement later. It is very important for the cable to be completely embedded in concrete.

### ⚠ CAUTION

Protect or remove sharp protrusions by bending them over, capping, or cutting. Sharp edges may damage the heating cable.

### STEP 2.8

#### Asphalt Application

Apply a first course over the gravel base and compact it. The ProMelt Mat/Cable will be secured to the top of this later. Allow it to cool enough to work on before installing ProMelt Mat/Cable.

## Table 3 - Mat/Cable Resistance Log

	Mat/Cable 1	Mat/Cable 2	Mat/Cable 3
Mat/Cable serial number			
Mat/Cable model number			
Mat/Cable voltage			
Factory Mat/Cable resistance range			
<b>OUT OF THE BOX BEFORE INSTALLATION</b>			
Mat/Cable white 1 to white 2			
Mat/Cable white 1 to ground			
Mat/Cable white 2 to ground			
<b>AFTER MAT/CABLE IS SECURED IN PLACE</b>			
Mat/Cable white 1 to white 2			
Mat/Cable white 1 to ground			
Mat/Cable white 2 to ground			
<b>AFTER COVERINGS ARE APPLIED</b>			
Mat/Cable white 1 to white 2			
Mat/Cable white 1 to ground			
Mat/Cable white 2 to ground			
<b>Retain this log to retain the warranty! Do not discard!</b>			

### STEP 2.9

#### Paver or Stone Applications

Follow guidelines recommended by the paver manufacturer. If a coarse of sand is to be used to set the pavers, first lay 3/8 to 1/2 inch sand over the base to help protect the mat/cable against damage.

If this is an outdoor heating application, do not install mat/cable directly in sand or similar. The mat/cable must first be embedded in a concrete slab. Prepare the base according to Step 2.7. The pavers or stone may then be set in sand or mortar on top of this slab.

### STEP 2.10

#### Ceramic or Stone Tile Applications

ProMelt mats or cables can be installed in the structural slab or in a thick mortar bed above a structural slab. In either case, the base material should be prepared according to section 2.7 Concrete Application.

## ***ELECTRICAL***

### STEP 2.11

Install junction boxes in the location(s) planned during the design process Phase 1 (see Step 1.3).

### STEP 2.12

Install conduit and branch circuit wiring from the circuit breaker panel to the control location, and from the control to the junction boxes. Follow local code for wire size, conduit requirements, and proper installation procedure.

### STEP 2.13

Install conduit from the junction box to the edge of the slab to be heated. Extend this conduit into the slab edge about 2 to 6 inches and attach a bushing to the end to prevent damaging the mat/cable power leads.

- Follow electrical code for burial depth of the conduit.
- Plan carefully if you are installing edge pavers, edge drainage systems, landscaping, or other items that affect where the conduit comes in.

### STEP 2.14

If an in-slab or surface mount sensor is to be embedded in the heated area, install conduit from the control location to the desired slab location. When installing the surface mount sensor in asphalt, it is necessary to encapsulate the sensor housing in a 12"x 12" concrete pad. Follow the sensor instructions for proper placement and connections.

### STEP 2.15

Install the circuit breaker size and type as determined earlier in step 1.7 (Designing the System). DO NOT connect the branch wiring to the breaker yet.

### STEP 2.16

Label the circuit breaker in the panel which feeds this snow melt mat/cable system with "Snow Melt" or similar.

## Phase 3: Installation of Mat and/or Cable

The following Steps 3.1 through 3.12 cover installation basics. Steps 3.13 through 3.14 cover some specific applications and their special requirements.

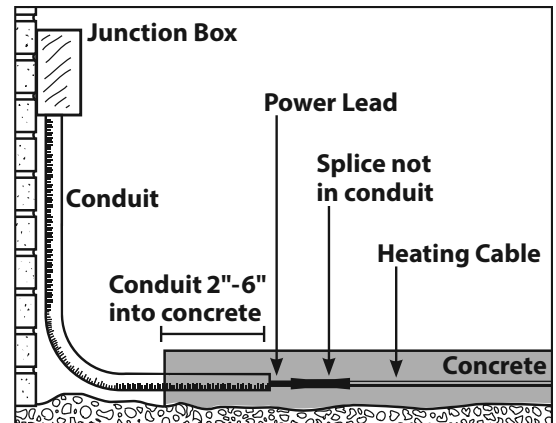
### BASIC INSTALLATION

#### STEP 3.1

Determine a time to install the mat/cable when equipment, heavy tools, and site traffic will be minimal to keep from possibly damaging the product. Be prepared to apply the surfacing courses over the mat/cable the same day so it will be protected from damage.

If installing mat/cable in the upper layer of a two-stage concrete slab or the upper layer of an asphalt application, the mat or cable should be completely ready for the second stage. There is limited time between stages, as the slab should not be allowed to fully cure or the asphalt to completely cool. Therefore, if using ProMelt Cable, you may want to lay it out and tie it to rewire that can be quickly lifted into place after the first stage is laid. This might also be preferable for a mat installation, although if mats are precut and shaped to the area, they generally can be rolled into place fairly quickly.

- If a slab sensor is installed in this second layer, plan ahead so this does not cause the first layer to cure or cool too much.
- Inspect the area and remove any sharp objects.



#### NOTICE

Install in temperatures at least 40°F (4.5°C).

#### STEP 3.2

Begin by test-fitting the mat or cable in the area to be heated. For mat, unroll it completely. Turn and flip it by cutting the tape where needed. Make sure it fits the area properly. For cable, make sure it fits the area with no excess cable.

- Mat/cable cannot be laid closer than 6 inches from the edges of slabs. In asphalt, this is increased to 12 inches from the edge where no curb is provided.
- Avoid crossing expansion joints in a slab, unless proper technique and protection steps are followed (see Step 3.14 on page 15).
- Avoid placing the heating cable any closer than 2 inches from other items such as underground cable or piping to keep from overheating them.

#### ⚠ WARNING

ProMelt heating cable CANNOT be cut shorter to fit!

Do not overlap or cross over heating cable on itself.

Do not space heating cable closer than 2 inches.

The heating cable and factory splices must be completely embedded in the concrete, sand or asphalt. Never try to use up excess heating cable in surrounding soil, walls or other unprotected areas.

The factory splice and heating cable can not be inside conduit.

- Allow at least 2 inches, but not more than 4 inches, between adjacent mats or sections of a mat where the mat tape is cut and turned to fill the area.
- Do not repeatedly bend the heating cable, and never bend factory splices.

### STEP 3.3

Place the power leads of the mat/cable next to the conduit entry. The electrician will pull this through the conduit later. **Make sure it is positioned so that no part of the splice connection or the heating cable will be pulled into the conduit.**

### STEP 3.4

#### Concrete Application

**ProMelt Mat:** Begin laying out and securing the mat about every 2 feet to the reinforcement mesh or rebar using plastic cable ties around the heating cable. Turn the cable tie ends downward, or trim them so they will not poke up through the surface layers. Do not use metal ties as they may damage the cable.

If installing on top of existing slab, secure the mat by nailing through the tape every 2 feet or so. NEVER strike the heating cable with a hammer.

**ProMelt Cable:** Begin securing the heating cable at the desired spacing to the reinforcement mesh or rebar using plastic cable ties. These cable ties should be applied at the ends of each run and at every 3 to 4 feet. Turn the cable tie ends downward, or trim them so they will not poke up through the surface layers. Do not use metal ties as they may damage the cable.

If installing on top of existing slab, secure CableStrap to the surface. Use nails or similar, every 6 to 10 inches. CableStrap should be placed at either end of the heated area, and additional straps should be applied every 3 to 4 feet in between to hold the cable in place during surfacing.

### STEP 3.5

#### Asphalt Application

**ProMelt Mat:** Begin laying and securing the mat to the first course, using nails, staples or similar into the mat tape every 2 feet or so. Make sure it is laid flat. Do not use metallic nails or staples directly over the heating cable. Be careful not to damage the heating cable.

**ProMelt Cable:** Secure CableStrap to the surface. Use nails or similar, every 6 to 10 inches. CableStrap should be placed at either end of the heated area, and additional straps should be applied every 3 to 4 feet in between to hold the cable in place during surfacing.

### STEP 3.6

#### Stone or Paver Application

**ProMelt Mat:** Begin laying out the mat and secure it onto the base with landscape fabric stakes or similar over the mat tape every 2 feet or so. Make sure it is laid flat. Do not use metallic stakes or staples directly over the heating cable. Be careful not to damage the heating cable.

**ProMelt Cable:** Secure plastic mounting cable ties to the gravel base, driving long nails or similar through the head of the cable tie. These cable ties should be applied at the end of each run and at every 3 to 4 feet. Do not use metallic cable ties as they may damage the cable.

Lay out the cable and secure with the cable ties.

### STEP 3.7

#### Ceramic or Stone Tile Applications

- 1) Dry-set or Latex-Portland Cement (thin-set) Mortar Application – For this application, the mat or cable is installed in the concrete slab base, no less than 1.5" and no deeper than 2" below the top surface, so follow recommendations in section 3.4 for mat or cable.
- 2) Cement Mortar or Thick-set Application – For this application, the cable will be installed in a minimum 1.25" thick mortar bed above the structural slab.

**ProMelt Mat:** Begin laying out the mat and securing to the top of the slab with nails, staples, or similar through the tape every 2 feet or so. Minimum 1.25" mortar bed will be installed over the cables.

#### **NOTICE**

Never strike the heating cable with a hammer.

**ProMelt Cable:** Secure CableStrap to the surface of the slab, using nails spaced every 6 to 10 inches. CableStraps should be placed at either end of the heated area for the initial layout. Additional straps should be placed every 3 to 4 feet to hold the cables in place during application of the thick-set mortar. Minimum 1.25" mortar bed will be installed over the cables.

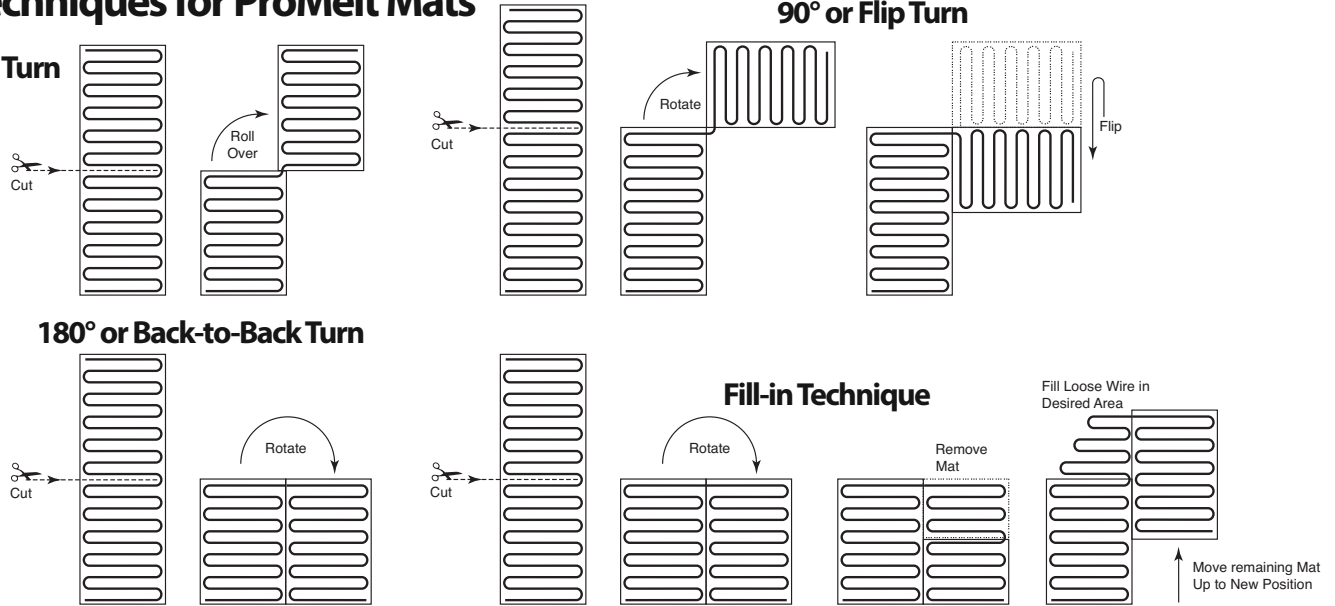
### STEP 3.8 (ProMelt Mat Only)

If you need to cut and turn the mat, or fill odd areas, you may use scissors to carefully cut the tape holding the heating cables. Heating cables should be secured at about 3 inches apart, and no less than 2 inches apart.

#### ⚠ WARNING

Be careful not to kink or sharply bend the heating cable. A minimum bend radius of 1 inch should be maintained.

### Turn techniques for ProMelt Mats



### STEP 3.9

Use a digital multi-meter to measure the resistance between the conductors and ground wire of the mat/cable power leads again. Record these resistances in Table 3 under “After mat/cable is secured in place”.

### STEP 3.10

Feed the power leads through the conduit into the junction box, leaving at least 6 inches of free lead length. Secure the heating cable and splice so that they will not be pulled into the conduit.

Insert a generous amount of electrical conduit sealant into the conduit end around the power leads to prevent water entry

### STEP 3.11

If a surface mount sensor is being installed, place the sensor socket according to the instructions included with the sensor. Secure and seal it to the conduit installed earlier. It should be located halfway between heating cables and in an area that is recommended by the sensor manufacturer. Make sure the top of the sensor will be flush with the surface of the finish layer. Make sure it is protected with a cap or seal.

### STEP 3.12

Take a photo of the mat/cable installation. This can be very helpful later for utility work, changes to the site, etc. to avoid possible damage. Keep the photos with this installation manual.

# SPECIAL APPLICATIONS

## STEP 3.13

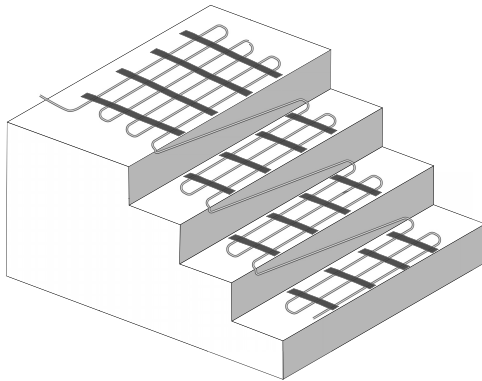
**Stairs:** If you are installing **ProMelt Mat** onto stairs, carefully cut the tape holding the heating cable. If installing **ProMelt Cable**, skip the previous step. Secure a single run of cable to the side of a riser. Lay 3 or 4 runs of cable on the tread area as needed and continue up each stair. Follow these guidelines:

- Lay cable no greater than 3 inches from the front edge of the finished tread. Otherwise this edge may not snow melt properly.
- Lay cable at least 6 inches from the side edges of the finished tread.
- Account for future hand railings that could be mounted onto the tread, especially in the middle of a long tread if required. Use a marker or indicate on drawings where the railing may be installed safely later.
- Avoid pinching or sharply bending the cable. At the corner of the riser and tread, keep a minimum 1-inch radius bend, but secure it flat enough that the surface concrete or pavers will not pinch the cable.

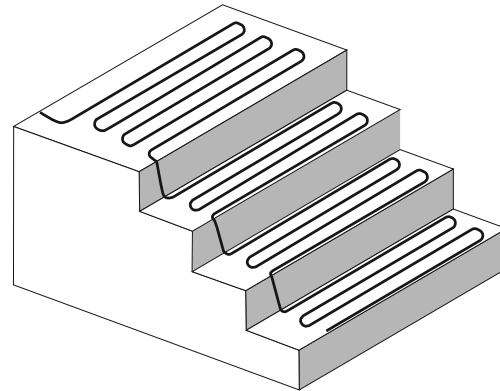
### NOTICE

Do not install the mat/cable on or under non-masonry stairs such as wooden or composite construction.

**ProMelt Mat on stairs**



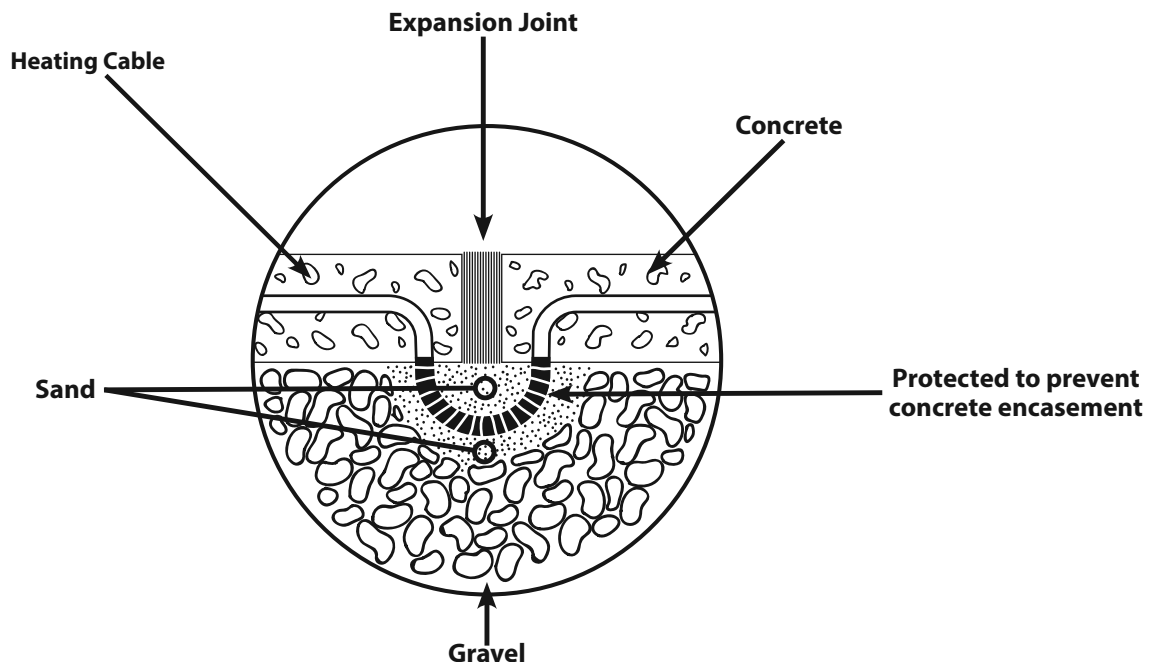
**ProMelt Cable on stairs**



## STEP 3.14

**Expansion Joints:** ProMelt heating cable must never be run through an expansion joint. Doing so may cause damage to the cable with slab movement. It is recommended to lay the mat so these joints are avoided.

However, if it is necessary, a portion of the heating cable may be dropped into the grade below the expansion joint as shown. Fill around the cable with at least 1 inch thick sand. The loop of heating cable should be long enough to allow flexing, and must not be embedded into the concrete (the sand should protect against this) since this would not allow the cable to flex with slab movement.



# Phase 4: Finish Surfaces

## STEP 4.1

Before beginning work, inspect the mat/cable for damage and secure any mat/cable that may have come loose.

**To avoid burying any possible damage that may have occurred since the mat was laid, the following tests should be performed:**

Use a digital multi-meter to measure and record the resistance between the conductors of the mat/cable power leads again (see Step 2.3). If possible, your electrician should perform an insulation resistance test on the mat/cable. A megohmmeter (e.g. Megger®) adjusted to a minimum 1000 VDC should give a measured value at least 20 megohm (MΩ). Do not apply over 1500 VDC.

### NOTICE

Be prepared to install a marker plate or other identification indicating the presence of ProMelt in the slab. This will help avoid damage from future site work. Install a marker plate where clearly visible in each snow-melted area. A marker plate is placed flush in the wet concrete surface or soft asphalt surface. Other types of surfaces should be made to allow the marker plate to be installed flush with the surface. Do not damage the heating cable.

## STEP 4.2

### Concrete Application

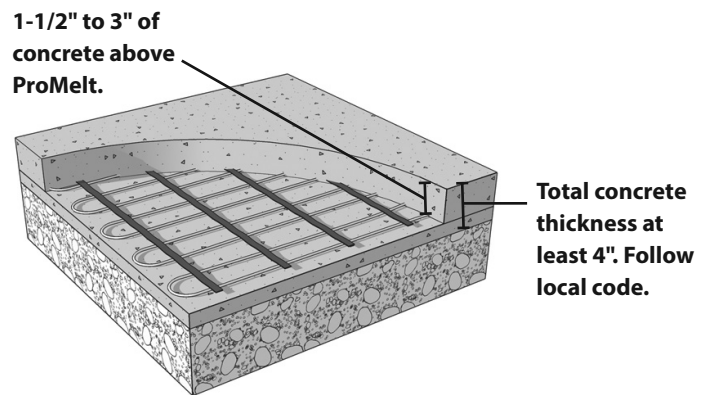
Pour concrete over the base and ProMelt Mat/Cable so that no less than 1-1/2 inches and no more than 3 inches covers the top of the heating cables. The slab should be a minimum of 4 inches thick total. Driveways normally require thicker. Follow building code requirements for required thicknesses.

### NOTICE

Do not use sharp tools which could damage the ProMelt. Blunted shovels should allow you to work the concrete carefully into all areas.

- Make sure the heating cable is fully embedded as well as 2 to 6 inches of the conduits enclosing the power lead and slab sensor wiring (if used).

Allow the concrete to fully cure as required by the concrete supplier. Do not energize the ProMelt Mat/Cable except to briefly test it, as this would improperly accelerate the curing and potentially cause concrete damage.



## STEP 4.3

### Asphalt Application

If required, apply a prime coat to the first course or untreated base over the top of the cable.

Use 1/2" aggregate or smaller. Larger aggregate can cut or pinch the cable.

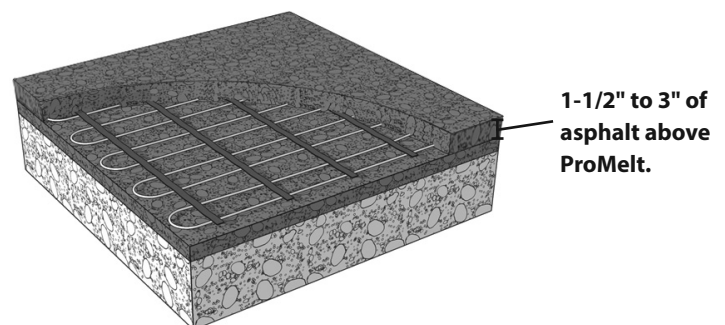
### NOTICE

Before applying, ensure the asphalt temperature is not greater than 285°F (140°C).

Good compaction of the asphalt requires a certain temperature range of installation, depending on the type of asphalt being installed.

Manually lay the asphalt at the cable level.

Spread the asphalt so that no less than 1-1/2 inches and no more than 3 inches covers the top of the heating cables.



### NOTICE

Do not apply with asphalt machines as they may damage the cable.



Compact the asphalt with a small power roller or compactor. Avoid using large power rollers which may compress aggregate into the cable. If possible, move the roller perpendicular with the cable direction to help avoid stress on the cable below. Be careful not to stop or start the roller over the mats as this could cause the asphalt to shift, potentially damaging the cables.

- Make sure the heating cable is fully embedded as well as 2 to 6 inches of the conduits enclosing the power lead and slab sensor wiring (if used).
- **DO NOT** energize the ProMelt system until the asphalt is fully cooled and cured per the manufacturer.

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## STEP 4.4

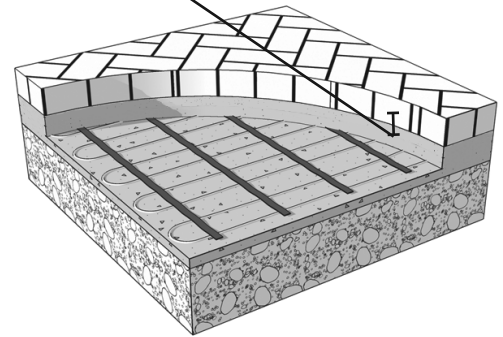
### Stone or Paver Application

Manually spread sand over the top of the cables and base so that no less than 1-1/2 inches covers the top of the heating cables. Do not install mat/cable directly in sand or similar if this is an outdoor heating application. Be careful not to use sharp tools.

Compact the sand as recommended by the paver supplier, being careful not to uncover any of the ProMelt Mat/Cable and not to damage the conduits coming into the area. Use hand compacting tools around the conduit area. Add more sand if necessary to maintain minimum 1-1/2 inches over all of the cables and conduit.

- Make sure the heating cable is fully embedded as well as 2 to 6 inches of the conduits enclosing the power lead and slab sensor wiring (if used).

At least 1-1/2" of sand above ProMelt



Place the pavers over the top and finish as required. The thicker the mass that ProMelt is embedded in, or the deeper the cable is beneath the finish surface, the longer it will take to melt snow from a cold start. Thermal masses thicker than 4" total thickness may have response times that are unacceptably long, and may need to use control strategies that minimize the response time.

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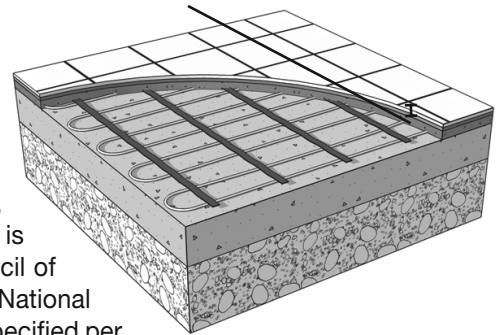
## STEP 4.5

### Ceramic or Stone Tile Applications

For either application below, exterior-grade materials should be selected and installed per manufacturer's recommendations. Only vitreous (non-porous) tile should be used as other tile will absorb moisture which will lead to failure. The maximum thickness above the cable should be no less than 1.5 and no more than 2.5". A movement joint should be installed between any heated and non-heated area.

- 1) Dry-set or Latex-Portland Cement (thin-set) Mortar Application – In this application, the mat or cable is already installed in the concrete slab. The primary concern is to install a cement mortar bond coat (thin-set) and tile according to Tile Council of North America (TCNA) recommendations for exterior applications (F102-07) or National Tile Contractors Association (NTCA). Mortar and grout materials should be as specified per American National Standards Institute (ANSI) for exterior applications.
- 2) Cement Mortar or Thick-set Application – In this application, the mat or cable is installed above the structural slab in a thick mortar bed and bond coat according to TCNA F101.07. A 1.25" minimum mortar bed should be placed over the cable or mat according to ANSI A108.1A guidelines. Above this layer, the mortar bond coat and tile is installed.

1-1/2" to 2.5" of "Specified Material" above ProMelt



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## STEP 4.6

Use a digital multi-meter to measure the resistance between the conductors of the mat/cable power leads again. Record these resistances in Table 3 under "After coverings are applied".

# Phase 5: Controls and Sensors

Refer to Typical Wiring Diagrams on pages 20 to 22.

## STEP 5.1

De-energize all circuits feeding this system before doing any electrical work.

## STEP 5.2

If a surface mount sensor is being installed, uncover the cap or seal on the embedded sensor socket. Feed the sensor leads through the conduit up to the control. Secure the sensor into the socket and finish installation as required by the sensor manufacturer.

## STEP 5.3

Make wire connections at junction boxes for the ProMelt Mat/Cable power leads to the power wiring from the control. If the junction box is located outdoors, it is highly recommended to use wet location rated wire nuts or crimps to avoid corrosion.

## STEP 5.4

Install the control at its location according to the instructions provided with the control. Make wiring connections to the power source and to the sensor wires and mat/cable lead wires.

### **⚠ CAUTION**

The ground wire supplied with the mat/cable must be connected to a suitable grounding/earthing terminal.

## STEP 5.5

After careful inspection of all wiring, connect the power supply wiring to the ground fault type circuit breaker and turn it on.

## STEP 5.6

Follow instructions for the control to set it up. The sensor should not allow the system to energize the ProMelt until proper conditions exist. The control may allow you to temporarily test the system for just a few minutes. If you have a clamp-on type electrical test meter, energize the system briefly and verify it is drawing the proper level of current into the mat/cable as planned.

Do not fully energize the ProMelt, except for this brief test, until the concrete and mortar are cured or asphalt is cool. Heating the ProMelt too soon could cause improper curing of the surface materials.

### **NOTICE**

Do not operate the system with air temperatures above 68°F (20°C) except for this brief test. This will stress the materials and reduce the life of the heating cable and may cause damage to the materials and heating cables.

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. For more information: [www.watts.com/prop65](http://www.watts.com/prop65)

# Troubleshooting

## ⚠ WARNING

Any electrical troubleshooting work should be performed with the power removed from the circuit, unless otherwise noted.

If not qualified to perform electrical installations, it is strongly recommended that a qualified, licensed electrician be hired to install the heating cables and related electrical components. If problems with the system arise, please consult the troubleshooting guide below. Although this troubleshooting guide is provided to assist with problems experienced with a ProMelt system, results are never guaranteed. Watts Radiant does not assume any liability or responsibility for damage or injury that may occur from using this guide. If problems with the system persist, call the manufacturer (see contact information on the back cover).

Problem	Possible Cause	Solution
Mat/cable resistance measurement is outside the range printed on the nameplate label.	An analog ohmmeter (using a moving needle) was used to take the reading.	Obtain a digital ohmmeter (multi-meter) able to read 0 to 20,000 (20k) ohms ( $\Omega$ ) and re-measure the resistance.
	If measurement shows an open or short circuit, the heating cable has been damaged.	Record resistances between all power lead wires and contact the manufacturer.
	If measurement is just a little low or high, air temperature has affected the resistance.	If possible, place the mat/cable in a room 65-75 °F (18-24°C) and re-measure after an hour.
	The resistance measurement could be from more than one mat/cable.	Disconnect all cables/mats from each other and from controls and re-measure.
	The ohmmeter (multimeter) is set to the wrong scale.	If the ohmmeter (multi-meter) has multiple ranges (e.g. 200 $\Omega$ , 2k $\Omega$ , 20k $\Omega$ , 200k $\Omega$ , 20M $\Omega$ ) set the range to 200 $\Omega$ and re-measure.
Snow/ice is not melting.	Mat/cable has been damaged.	Measure mat/cable resistances (see Phase 2) between all power lead wires as shown in Phase 3 of this manual. If there is an open or short-circuit damage, record these resistances and contact the manufacturer.
	Ground fault has tripped.	Try resetting the ground fault on the circuit breaker ONCE. If it trips again, do not continue to try resetting it. Check for loose wire connections in the breaker panel, junction boxes, controls, etc. Measure mat/cable resistances (see Phase 2) between all power lead wires as shown in Phase 3 of this manual. If there is an open or short-circuit damage, record these resistances and contact the manufacturer.
	Incorrect voltage applied.	Briefly energize the system and use a multi-meter to measure the voltage between power lead wires of the mat/cable. Check voltage ratings for each control and cable to make sure they match. If possible, use an "amp clamp" meter to measure the current into each mat/cable.
	Mats/cables are connected in series.	Multiple mats/cables must be connected in "parallel".
System operates continuously.	Incorrect wiring. Control was "bypassed".	Check wire connections. See wiring instructions with control and in this manual.
	Faulty control. Relay is not opening properly.	Check instructions with the control.

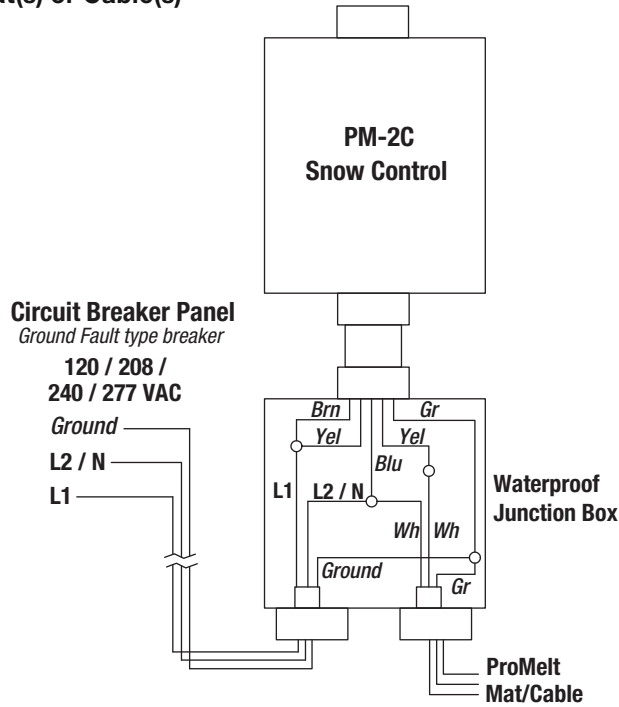
# Appendix: Typical Wiring Diagrams

Following are examples of typical wiring connections for the ProMelt systems. Carefully read and follow the instructions given with each control for complete information.

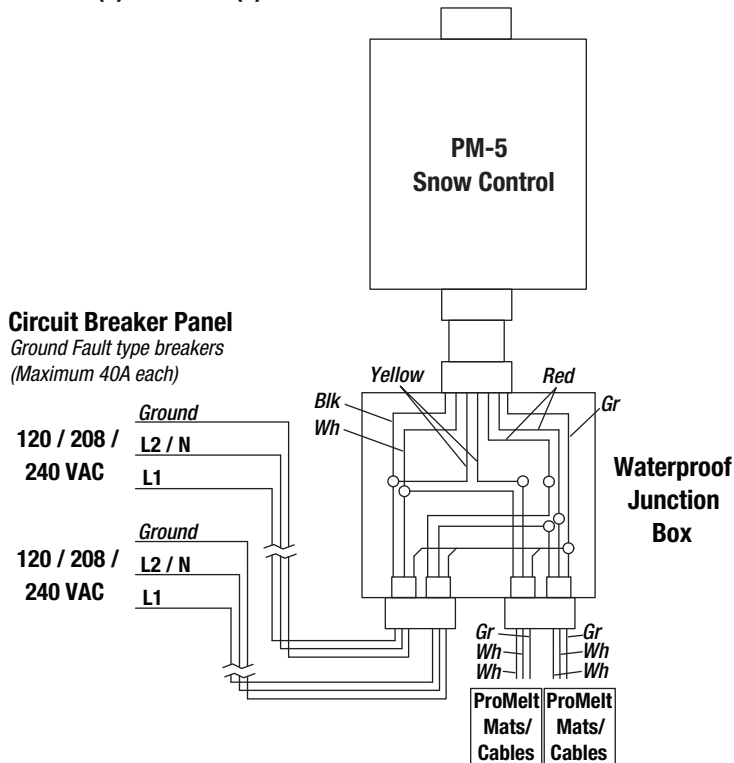
**⚠ WARNING**

All electrical work must be done by a qualified licensed electrician in accordance with local building and electrical codes, and the National Electrical Code (NEC), especially Article 426 of the NEC, ANSI/NFPA70 and Section 62 of CEC Part 1.

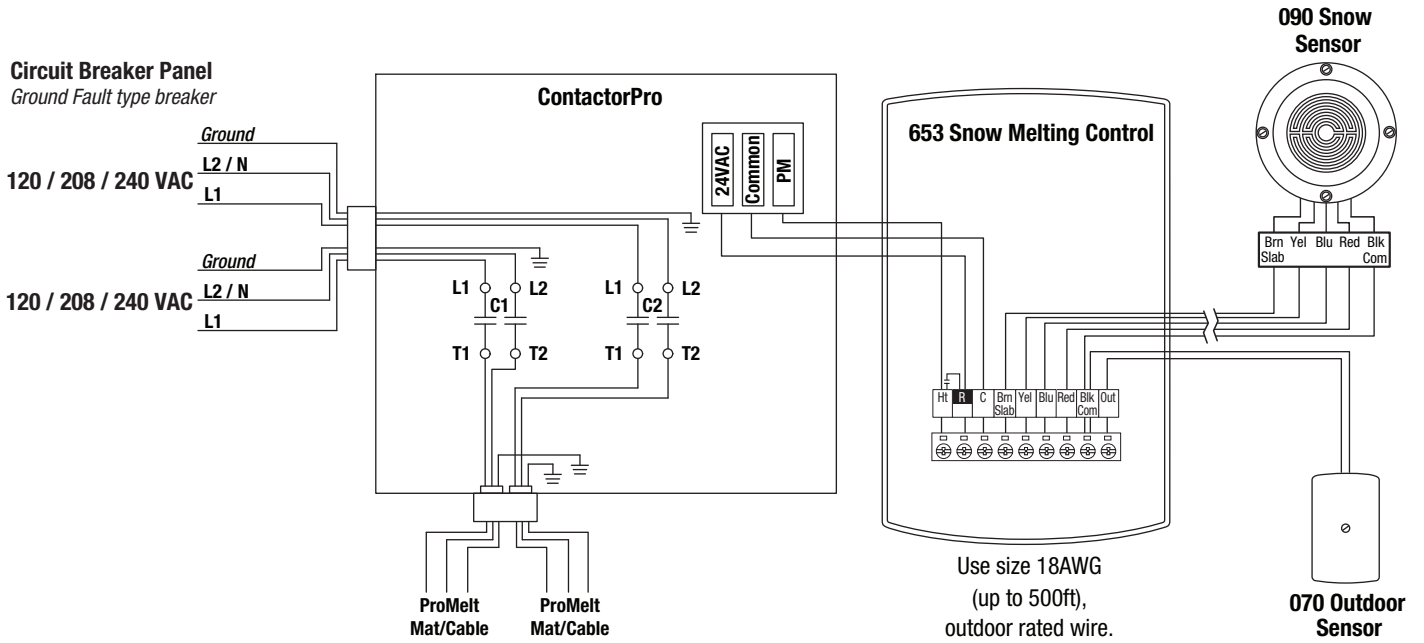
## PM-2C Snow Control with ProMelt Mat(s) or Cable(s)



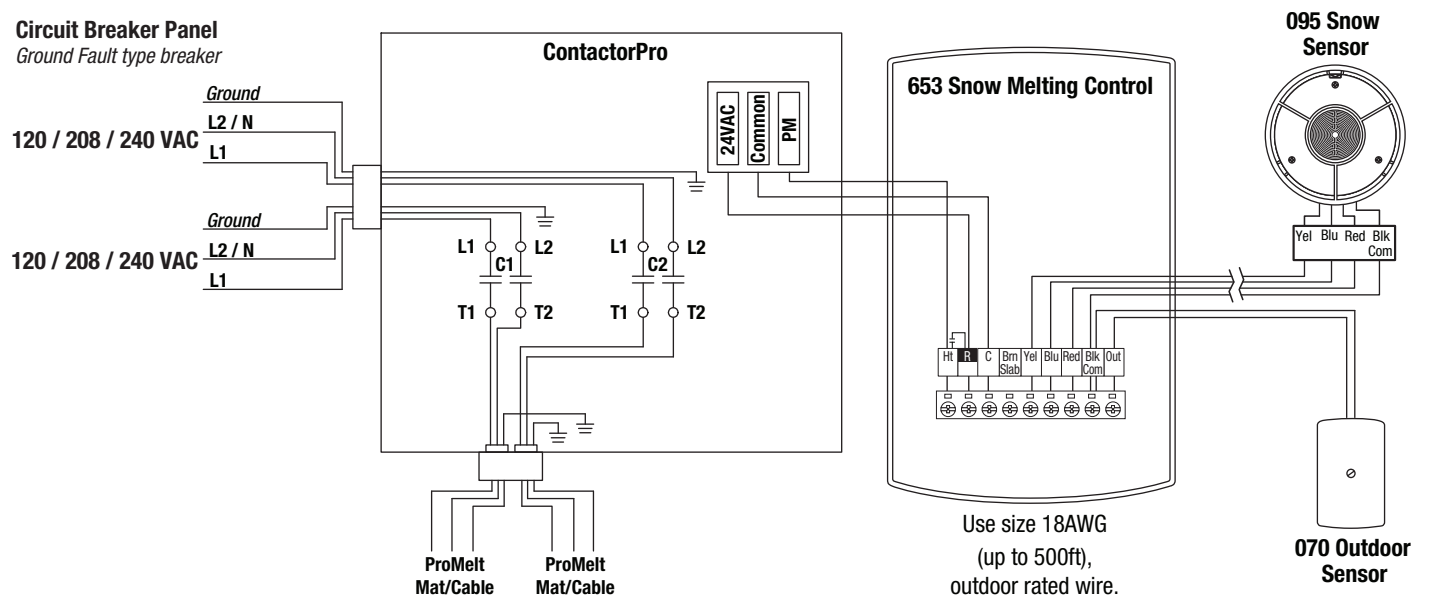
## PM-5 Snow Control with ProMelt Mat(s) or Cable(s)



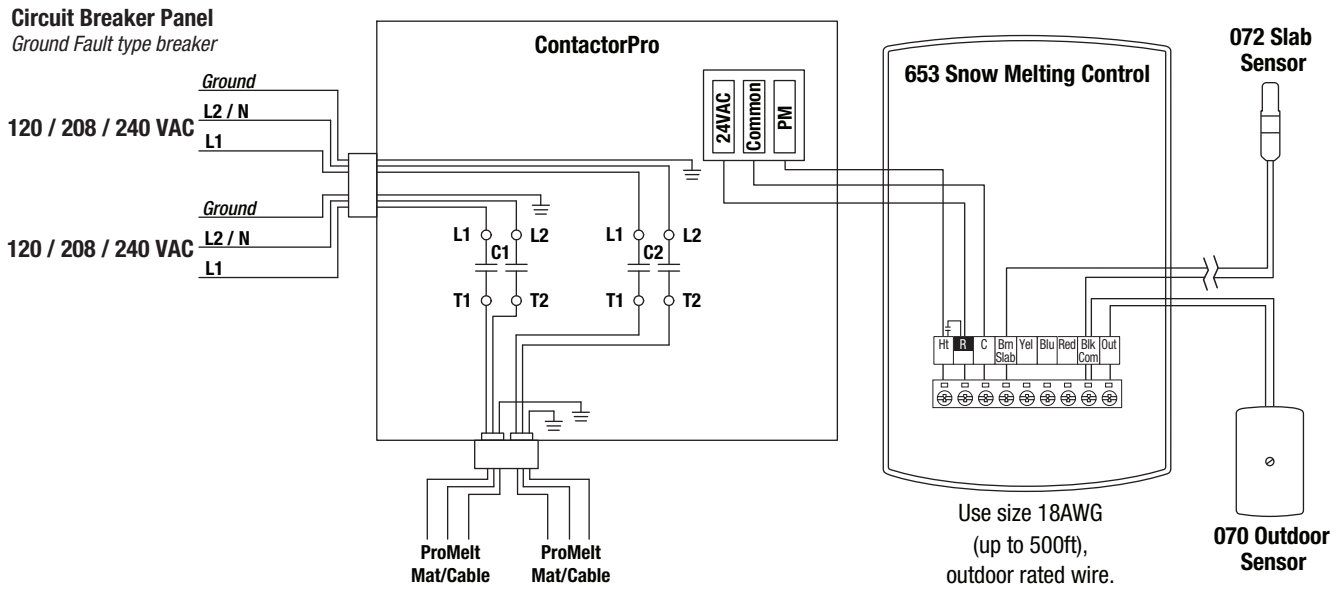
**ProMelt Snow Melting Control Kit PM-L3 with ProMelt Mat(s) or Cable(s)**



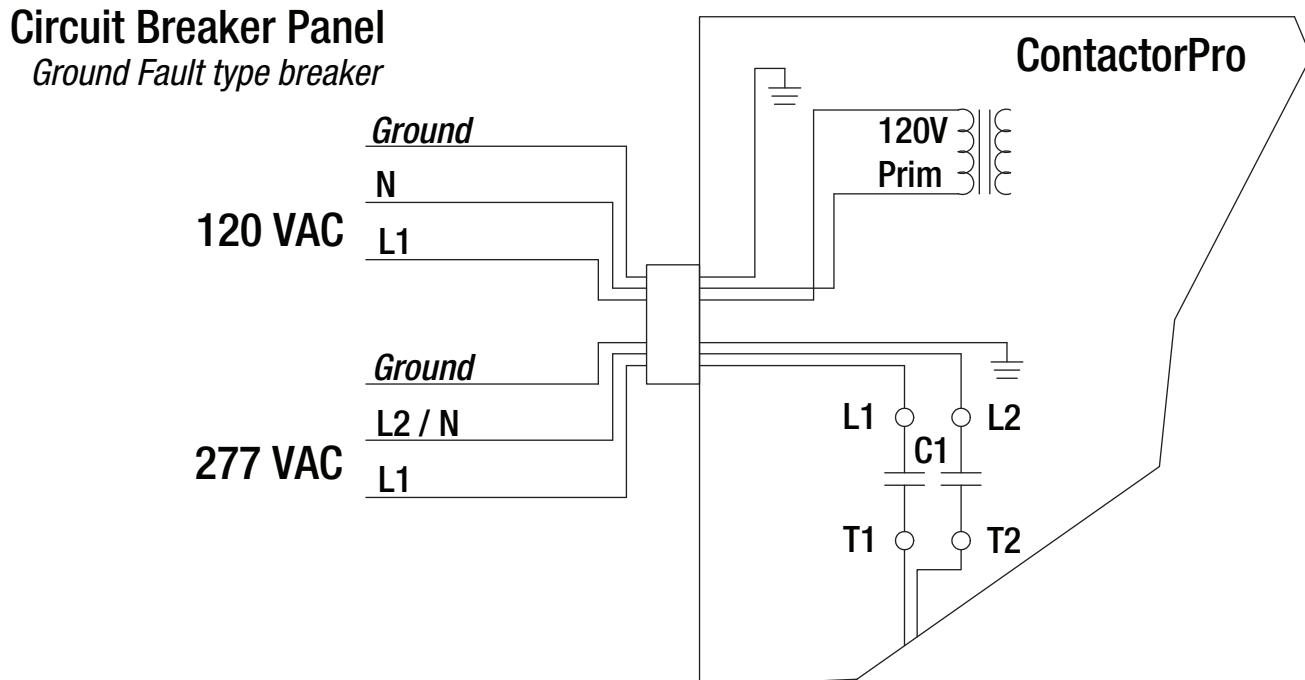
**ProMelt Snow Melting Control Kit PM-L2 with ProMelt Mat(s) or Cable(s)**



**ProMelt Snow Melting Control Kit PM-L1 with ProMelt Mat(s) or Cable(s)**



A separate, 120 VAC power supply is required for the ContactorPro internal transformer when using 277 VAC ProMelt Mats or Cables



# **WattsRadiant**<sup>™</sup>

Floor Heating & Snow Melting

## **Electric Snow Melting Products**

# **10-year Limited Warranty**

1. Watts Radiant warrants its electric snow melting mats and cables (the Products) to be free from defects in materials and workmanship under normal usage for ten (10) years from the date of manufacture. Thermostats and controls sold by Watts Radiant are warranted, parts and materials, to be free from defects in material and workmanship for one (1) year from the date of purchase. The sole remedy for such defects in thermostats and controls within the warranty period is product replacement. This Limited Warranty is transferable to subsequent owners.
2. In the event any Products are determined by Watts Radiant to be defective in materials or workmanship within the warranty period, Watts Radiant will refund all or part of the manufacturer's published list price for the Products at the time of purchase.
3. In order to make a claim, you must do the following:
  - (a) Provide Watts Radiant with sufficient details relating to the nature of the defect, the manner in which the Products were installed, the history of operation, and any repairs that may have been made.
  - (b) At Watts Radiant's discretion and your expense, ship the Products to Watts Radiant or our local representative or distributor.
  - (c) Provide proof that the Products were installed in accordance with the applicable Products Installation Manuals and any special written design or installation guidelines by Watts Radiant for this project.
  - (d) Provide proof that the Products were installed in accordance with the National Electrical Code (NEC) or the Canadian Electrical Code (CEC), and all applicable local building and electrical codes.
  - (e) Provide a retail sales receipt or proof of purchase.
4. Watts Radiant shall not be responsible for the following:
  - (a) The costs of any labor or materials required to repair or replace any defective Products or controls that are not authorized in writing by us.
  - (b) The costs of any labor or materials required to remove, repair or replace flooring materials.
  - (c) Any freight or delivery costs related to the Products, the controls, or any related flooring or electrical products.
5. Watts Radiant assumes no responsibility under this Limited Warranty for any damage to the Products caused by any trades people, visitors on the job site, or damage caused as a result of post-installation work. This Limited Warranty shall be invalidated by any abuse, misuse, misapplication or improper installation of the Products.
6. DUE TO DIFFERENCES IN WALKWAY, DRIVEWAY OR OUTDOOR GROUND SURFACE INSULATION AND VARIATIONS IN CLIMATE AND CONSTRUCTION PRACTICES, WATTS RADIANT MAKES NO REPRESENTATION THAT SURFACES CONTAINING THE PRODUCTS WILL BE FREE FROM SNOW AND/OR ICE.
7. The staff at Watts Radiant is available to answer any questions regarding the proper installation or application of the Products at this toll-free phone number: 800-276-2419. If you are ever in doubt about the correct installation procedure to follow, or if the Products appear to be damaged, you must call us before proceeding with the installation, or proposed repair.

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**Effective: January 1, 2009.** This Limited Warranty applies to all Products purchased after this date.

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