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ӨНЕРКӘСІП ЖӘНЕ ЭЛЕКТР МАТЕРИАЛДАРДЫҢ ЖАБДЫҚТАУШЫСЫ  
ПОСТАВЩИК ИНДУСТРИАЛЬНОГО И ЭЛЕКТРИЧЕСКОГО ОБОРУДОВАНИЯ И МАТЕРИАЛОВ  
SUPPLIER OF INDUSTRIAL & ELECTRICAL EQUIPMENT and MATERIALS

# ***SNOMELT*** ***Self-Regulating Snow and Ice Prevention System***



***SNOMELT***  
*For residential and light commercial applications*

## Maintaining Safe Access for Pedestrians and Vehicles

### The Problem

Snow and ice on driveways, pathways, ramps, steps and access ways can cause considerable problems, restricting their use, or making them hazardous for pedestrians and vehicles.

Manually clearing these areas of snow and ice is time consuming and expensive.

The use of de-icing chemicals, salt and grit is only temporary, as they get washed away by thawing, or rain and may even be environmentally damaging.

### The Solution

SNO-MELT, a self-regulating electrical heating system from Heat Trace, provides a practical solution. The installation of an electric heating cable, embedded in the concrete, ensures that the area remains clear.

SNO-MELT applies heat only when necessary, preventing ice forming on cold surfaces and melting snow as it falls. It is a permanent and cost effective way of dealing with snow and ice build-up automatically, ensuring continuous and safe access, without causing harm to the environment.



### Safe, Efficient, Reliable

SNO-MELT is a self-regulating heating cable especially developed for this application. Two versions, SM-A and SM-B, are available, depending on the heating requirements. The self-regulating effect causes the heater to generate progressively more heat as the surface temperature cools. As the temperature then rises, so the heat output is reduced

Thus, SNO-MELT is energy efficient and can never overheat, or burnout - even when operating in an air void. The control system optimises energy consumption.

The SNO-MELT system is therefore temperature safe, energy efficient and reliable. It operates automatically and requires virtually no maintenance.

### Complete System

The SNO-MELT system comprises the SNO-MELT self-regulating heating cable, the SNO-MELT Control Unit and all of the system's ancillary components, including, if required, a suitably rated contactor and local distribution board to provide a comprehensive system.

### System Design

The design of a SNO-MELT system for domestic or light commercial applications is simple and does not require any specialised knowledge. However, as with any new electrical installation, we do recommend that the system is tested and checked by a competent electrician prior to being energised to ensure it meets National and Local standards.

There are two SNO-MELT cables available, both having different outputs and used where different powers are required:

SNO-MELT SM-A is used where a low to medium power output is required.

SNO-MELT SM-B is used where a higher power output is required - ie: for severe weather conditions, or when protecting suspended structures.

Design and installation of SNO-MELT is easy. The heater is cut to length from the reel during installation and all systems use the same components.

The design guide section of this brochure ensures that designing, ordering and installation of a SNO-MELT system may be achieved simply, safely and reliably.

*FOR THE LARGER COMMERCIAL AND INDUSTRIAL APPLICATIONS SEE THE HEAT TRACE SNOFLOW BROCHURE*

## Applications

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### Residential

- Driveways
- Footpaths
- Steps

For some residential driveways it may be sufficient to provide for protection only in the wheel track areas.

### Commercial

- Vehicle access
- Pedestrian access
- Ramps
- Stairways
- Footbridges



*Snow and ice prevention on steps*



*Snow and ice prevention of pedestrian walkway*



*Snow and ice prevention at building entrance*



*Snow and ice prevention of vehicle tracks*

# Design Guide

## STEP 1

Determine the installed load required

For all applications, the installed load may vary, depending on the potential severity of local weather conditions, and the criticality of the installation.

The following table provides a guide for determining the average power requirements for residential and small commercial applications in different geographical locations.

As a guide, we have suggested the following example loadings :

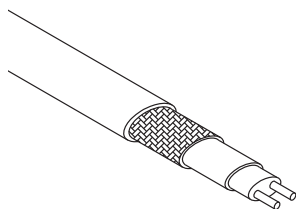
1. Very severe weather - eg: Scandinavia, Russia, etc. - 250 - 350W/m<sup>2</sup>
2. Severe weather - eg: Northern Germany, Poland, etc. - 200 - 300W/m<sup>2</sup>
3. Mild weather - eg: UK, Northern France, etc - 150 - 250W/m<sup>2</sup>

*(Note: For suspended structures a further 20% loading is recommended to compensate for additional downward heat losses - contact your local Heat Trace representative.)*

## STEP 2

Determining the heating cable Type and spacing

SNO-MELT SM-A



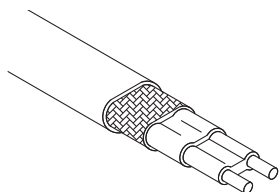
Load W/m<sup>2</sup>

SNO-MELT Cable Type and Pitch (spacing)

Load W/m <sup>2</sup>	SNO-MELT Cable Type and Pitch (spacing)			
	SM2-A		SM2-B	
	Concrete	Sand	Concrete	Sand
350	-	-	230mm	190mm
300	-	-	265mm	220mm
250	120mm	110mm	320mm	265mm
200	150mm	135mm	-	330mm
175	170mm	150mm	-	-
150	200mm	180mm	-	-

Concrete figures also apply to asphalt installations

SNO-MELT SM-B



Stairways

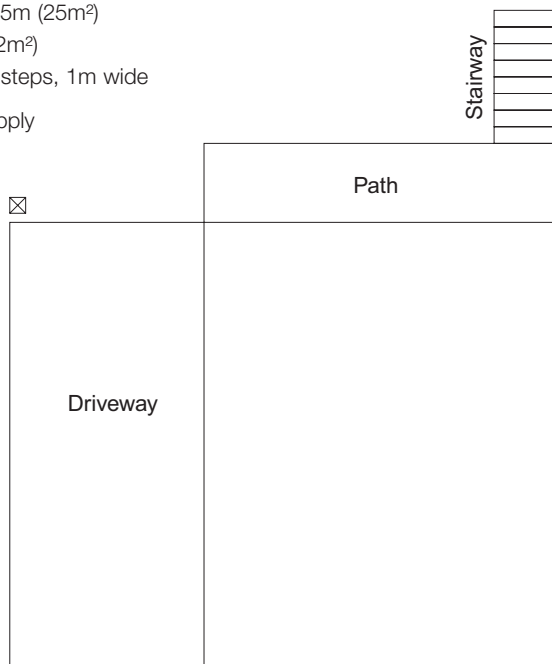
Install 2 runs of **SM2-B** on stairways exposed on both the top and underside, and 2 runs of **SM2-A** on stairways having only the upper surface exposed.

## STEP 3

Define areas to be heated

Example:

- A Driveway 10m x 2.5m (25m<sup>2</sup>)
- B Path 12m x 1m (12m<sup>2</sup>)
- C Open stairway, 10 steps, 1m wide
- Electrical Supply





## Design Guide

### STEP 4

Determine SNO-MELT cable length

- A Drive and pathways:  

$$\text{SNO-MELT cable length (m)} = \frac{\text{Surface area to be heated}}{\text{Heater cable pitch}} \times 1000$$
- B Stairways  

$$\text{SNO-MELT cable length (m)} = \text{No. of stair risers} \times 2 \times (\text{width (m)} + 0.5)$$

Add 1m for each connection. Allow 2.5% for cutting allowance / wastage.

### STEP 5

Determine the number of heating circuits and electrical protection requirements

The number of heating circuits is determined according to the areas to be heated and within the limits of the maximum allowable circuit length.

Circuit Breaker Size	Maximum Circuit Length (for 0°C start-up)	
	SM2-A	SM2-B
6A	36m	14m
10A	58m	22m
16A	80m (94m)	36m
20A	- (116m)	44m

Figures in brackets are maximum circuit lengths when both ends of the heating circuit are connected to the electrical supply (ie: reduced volt drop).

**Important:** A residual current device (rcd), 30mA sensitivity must be provided

More than one heater segment may be connected to the circuit breaker provided that the maximum heater length does not exceed the breaker capacity.

### STEP 6

Determine power feed cable requirements

#### Hook-up Cables

Each heating circuit must be connected back to a suitable electrical supply source, satisfying local / National Standards or Codes. Sizing is determined by the maximum allowable volt drop and current carried by the supply cable. Based on 0°C ambient.

Generally, supply cables may be sized according to the following table.

MCB Type C or D Rating	Supply Cables Size (min)	Max. Supply Cable Length	
		SM2-A	SM2-B
20A	2.5mm <sup>2</sup>	52m	33m
20A	4.0mm <sup>2</sup>	86m	54m

### STEP 7

Connection to a suitable electrical supply

The heating circuits may be connected to an existing electrical supply only if provided with a correctly rated over-current and earth leakage protection (MCB/RCD) device.

Alternatively, use a Heat Trace local distribution panel (LDP). These are available with 3, 6, or 9 way circuit capacities. Select a panel having a circuit capacity equal to or greater than the number of circuits required.

For SM2-A SNO-MELT cables, LDPs are provided fitted with 20A MCBs as standard.

For SM2-B SNO-MELT cables LDPs should be ordered specifying the number of circuits required and the rating for each circuit.

### STEP 8

Determine system components

Determine additional system components shown on pages 7 and 8.

## Design Guide / Worked Example

**Example** The example comprises a driveway and pathway to have SNoMELT cables installed in sand, with pavior blocks forming the heated surface, and a concrete set of stairs open on their underside. Dimensions are as depicted in STEP 3 on page 4.

**STEP 1** A load of 200W/m<sup>2</sup> is specified for this installation.

Electrical load requirements

**STEP 2** From the Table in STEP 2 on page 4, SM2-B is selected for the driveway and path having a cable pitch / spacing of 330mm (note that SM2-A could also be used as an alternative choice having a pitch of 135mm).

SNoMELT cable selection and pitch (spacing)

For the stairway exposed on the underside, 2 runs of SM2-B are also selected per stair riser.

**STEP 3** See STEP 3 on page 4.

Areas to be heated

Driveway	25m <sup>2</sup>
Pathway	12m <sup>2</sup>
Stairway	10 stair rises

**STEP 4** SNoMELT SM2-B cable length:

SNoMELT cable length

**A Drive and pathway**

$$\frac{\text{area}}{\text{pitch}} = \frac{37}{330} \times 1000 = 112\text{m} \quad \left\{ \begin{array}{l} 76\text{m for driveway} \\ 36\text{m for pathway} \end{array} \right.$$

**B Stairway**

(Number of stairs x 2) x (width (m) + 0.5)

$$(10 \times 2) \times 1.5 = 30\text{m}$$

**C Connections (1m for each circuit)** = 3m

**D Spare / cutting allowance (2.5%)** = 4m

**Total SNoMELT SM2-B length** = 149m

**STEP 5** Referring to the Table in STEP 5 on page 5, it can be seen that the following sizing may apply:

Number of circuits and electrical protection

Heating Zone	Heating Circuit Length (m)	MCB/RCB Rating
Driveway	79	2 x 20A
Pathway	38	20A
Stairway	32	20A

Note: Driveway would be split into 2 x 39.5m/20A circuits.

(The above circuit lengths include the cutting allowance and spare).

**STEP 6** From the Table in STEP 6 on page 5, it can be seen that, assuming all circuits are within 33 metres of the supply source, 2.5mm<sup>2</sup> supply cable would suffice for all circuits

Hook-up Cable Sizing

**STEP 7** It can be seen in the above Table (Number of circuits and electrical protection) that 4 x 16A circuits would be sufficient. A standard 6 circuit LDP could be acquired using 4 x 20A circuits (leaving 2 spare ways).

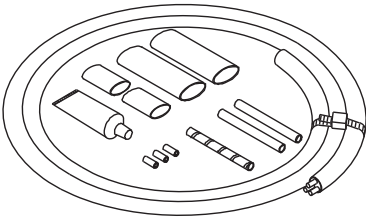
LDP Selection

## Design Guide / System Components

### STEP 8

#### Determining System Components

##### Termination Kit



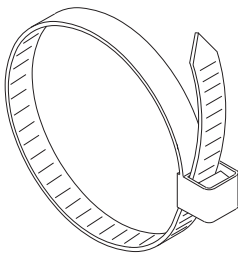
Catalogue Ref : TK/SM-A/2  
TK/SM-A/4  
TK/SM-B/2  
TK/SM-B/4

Cold lead termination kit comprises heat shrink tubing, cable crimps, 2 metre length of cold lead power cable (2.5mm<sup>2</sup> or 4.0mm<sup>2</sup> - determined at STEP 6), glue, and double heat shrink tubing end seal.

**Number required:**

1 per termination to suit chosen cable

##### Cable Ties



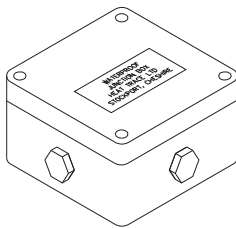
Catalogue Ref : NT/SF

Cable ties are used to secure the heating cable to a wire mesh (not supplied) prior to laying screed, or concrete.

**Number required:**

2 per metre of SNO-MELT heating cable.

##### Junction Box



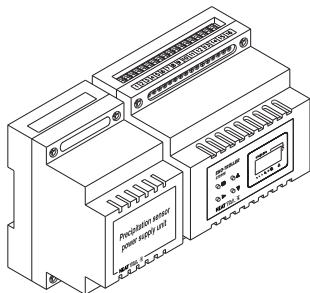
Catalogue Ref : WJB/20

Weather proof junction box suitable for up to three cold lead connections and one power supply connection.

**Number required:**

to suit number of circuits

##### SNO-TROLLER Control Unit



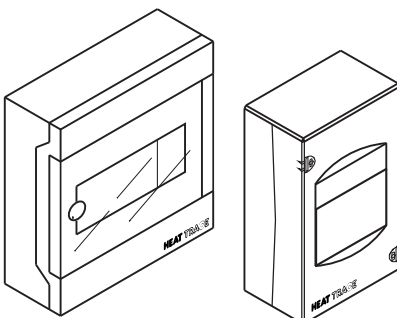
Catalogue Ref : GT200E  
SNO-TROLLER Control Unit and Power Supply Unit

The GT200E control unit and Precision Sensor Power Supply Unit. Switches the heating cable on when the ambient temperature is below 3°C, and icy water / snow is detected.

**Number required:**

1 per SNO-MELT system

##### Enclosures



Catalogue Ref : 0013 xx (IP30)  
0017 xx (IP55)

A selection of enclosures are available as an option to house the electronic components.

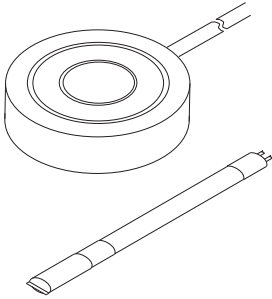
Model No.	Houses
0013 06	1 x SNO-TROLLER Unit
0013 04	1 x Power Supply Unit
0017 04	1 x Power Supply Unit
0017 06	1 x SNO-TROLLER Unit
0017 11	1 x SNO-TROLLER Unit and 1 x Power Supply Unit

Alternative enclosures are also available to suit different system configurations. Contact your local Heat Trace Representative for details.

**Number required:**

to suit system requirements

### Sensors



Catalogue Ref : GT200E/S  
SNO-MELT Sensor Pack

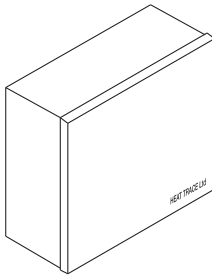
The SNO-MELT snow sensor is supplied complete with a 3.5m flexible conduit for routing to the GT200E Snow Control Unit. Connection may be made directly into the GT200E unit, or remotely via a suitable cable and conduit provided by the installer.

The SNO-MELT temperature sensor is provided in the same kit. Additional conduit length from the GT200E unit to the sensor should be provided by the installer.

**Number required:**  
1 per SNO-MELT system

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### Contactor Box



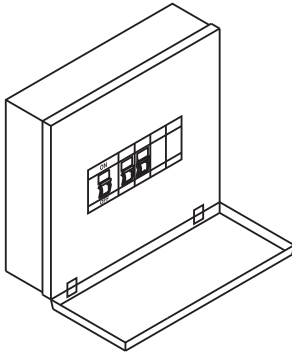
32A Contactor box for up to 6 circuits (or more if the start up load does not exceed 32A on each of 3 phases. The C32/1 (110V), and C32/2 (230V) units comprise a plastic enclosure 190 x 150 x 85mm incorporating the contactor. Used in conjunction with LDP.

63A Contactor box for up to 12 circuits. The start up load should not exceed 63A on each of 3 phases. The C63/1 (110V), and C63/2 (230V) units comprise a plastic enclosure 190 x 150 x 85mm incorporating the contactor. Used in conjunction with LDP.

**Number required:**  
1 per SNO-MELT system

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### Local Distribution Panel (LDP)



The distribution panel is selected according to the number of circuits calculated at STEP 5. Each panel is provided with a 20A circuit breaker for each outgoing circuit. A ground fault protection device is fitted, sensitivity 30mA, 30ms for protection of all circuits. The LDP is also provided with a main incoming isolator. Standard panels are:

LDP-03/20 for up to 3 x 20A, 230V circuits, single phase incoming feed.  
LDP-06/20 for up to 6 x 20A, 230V circuits, 3 phase & neutral incoming feed.  
LDP-09/20 for up to 9 x 20A, 230V circuits, 3 phase & neutral incoming feed.

The LDP is rated IP54 for internal use. It should therefore be suitably weather protected if installed outdoors.

*Above LDPs are suitable for use with 115 VAC or 230 VAC supplies.*

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# Installation

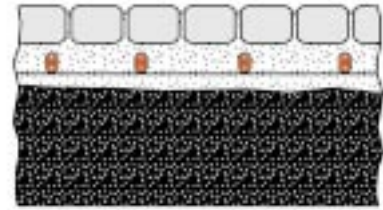
## Surface Finishes

A number of different surface finishes may be encountered and care should be taken to ensure that the correct loadings and heater spacings are adopted.

Where paving blocks or slabs are laid on a sand bed, the heaters may be placed in the sand layer.

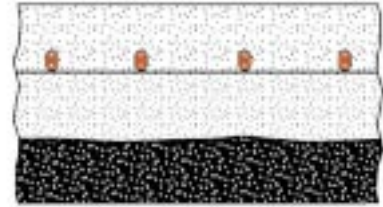
SNOmELT heaters are NOT suitable for laying directly in an asphalt layer. It is, therefore, recommended that in asphalt applications, the heater is placed in the concrete sub-layer, at least 20mm below the asphalt.

- Paving blocks
- Sand bed
- Heater tied to supporting mesh
- Soil, or firm foundation



Paving Blocks

- Concrete slab
- Heater tied to supporting mesh
- Soil, or firm foundation



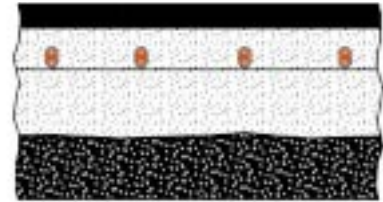
Concrete slab

## Suspended Structures

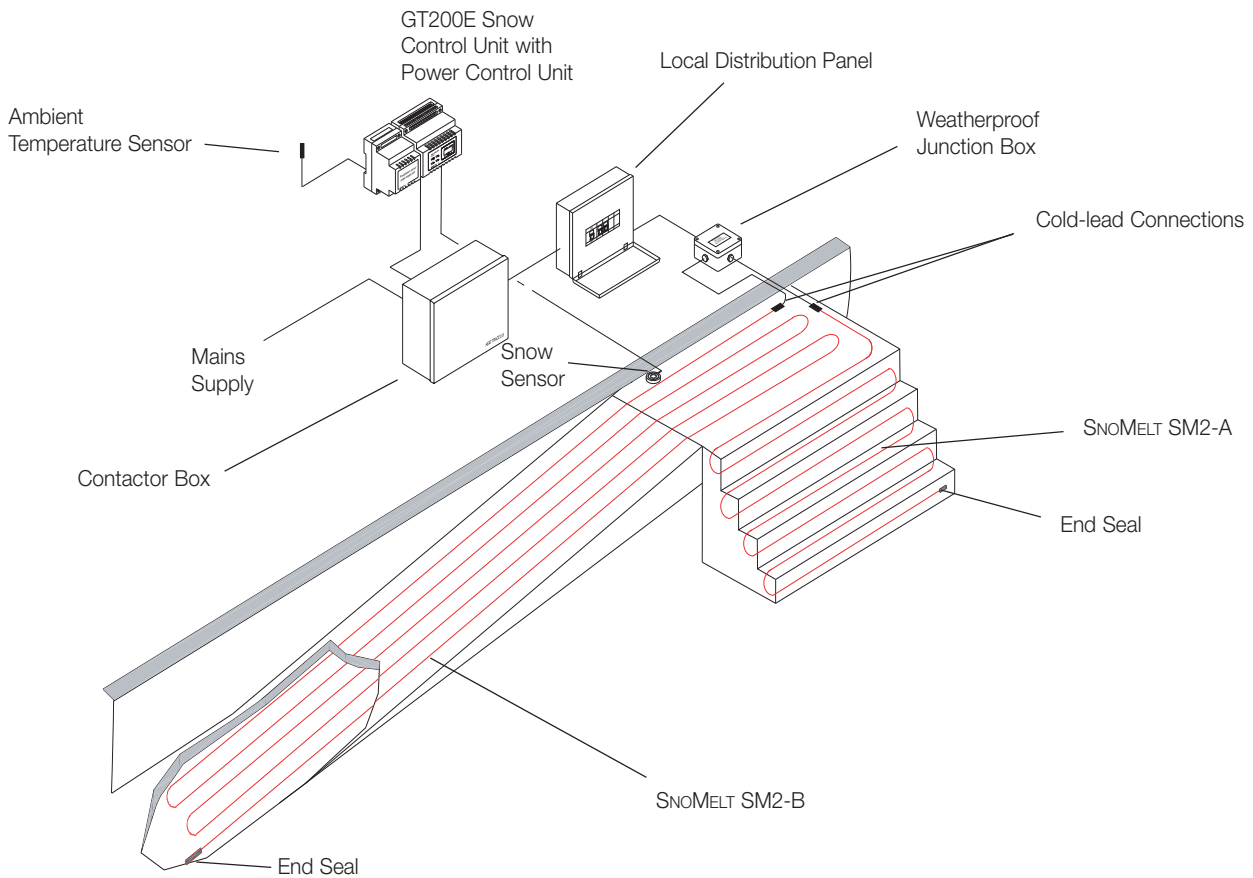
For suspended structures such as ramps, bridges, stairways, etc., an additional 20% loading is recommended to compensate for additional downward heat losses.

Consideration should also be given to providing a thermal insulation layer underneath to help prevent excessive downward heat losses.

- Asphalt surface
- Heater tied to supporting mesh
- Concrete base
- Soil, or firm foundation



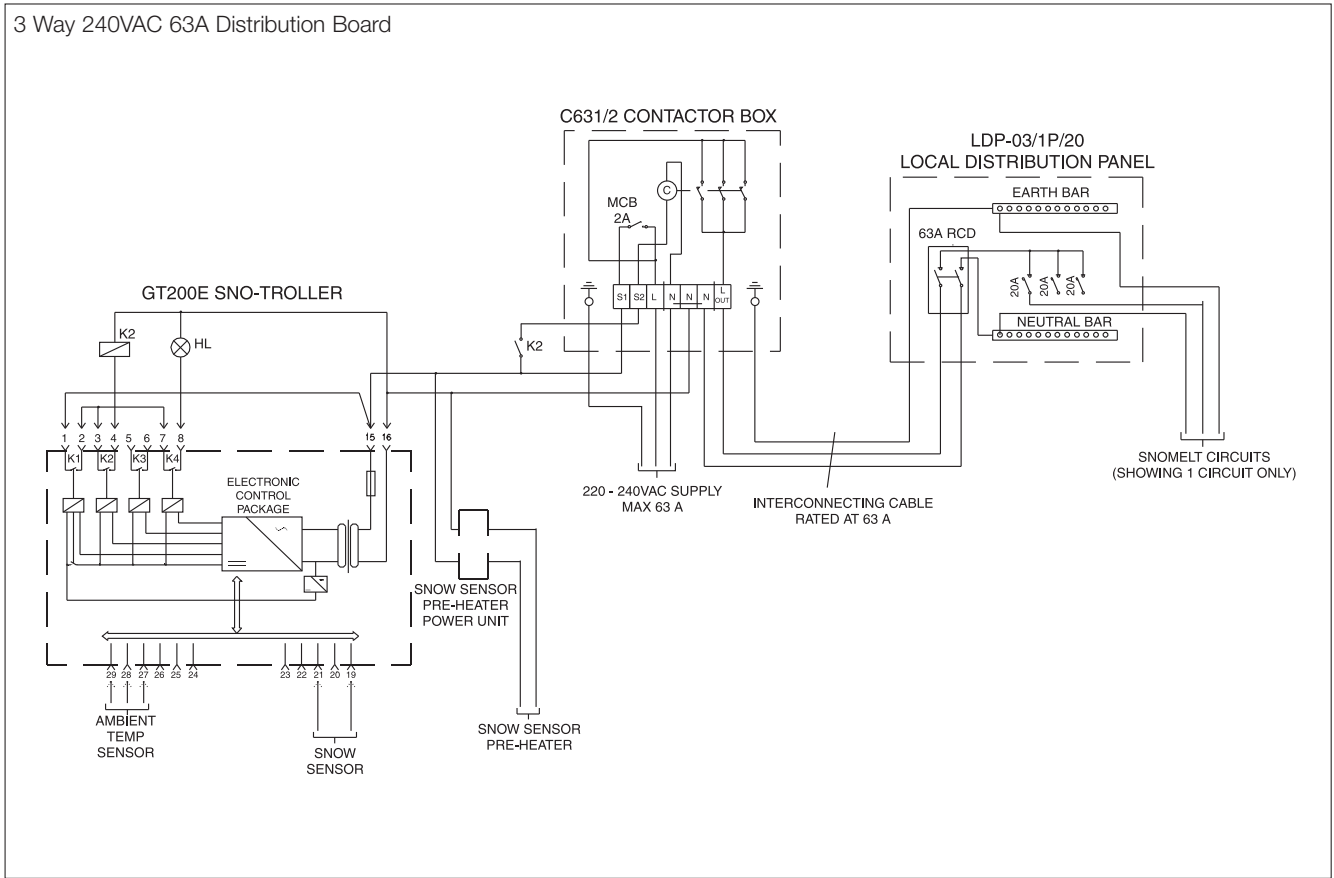
Asphalt



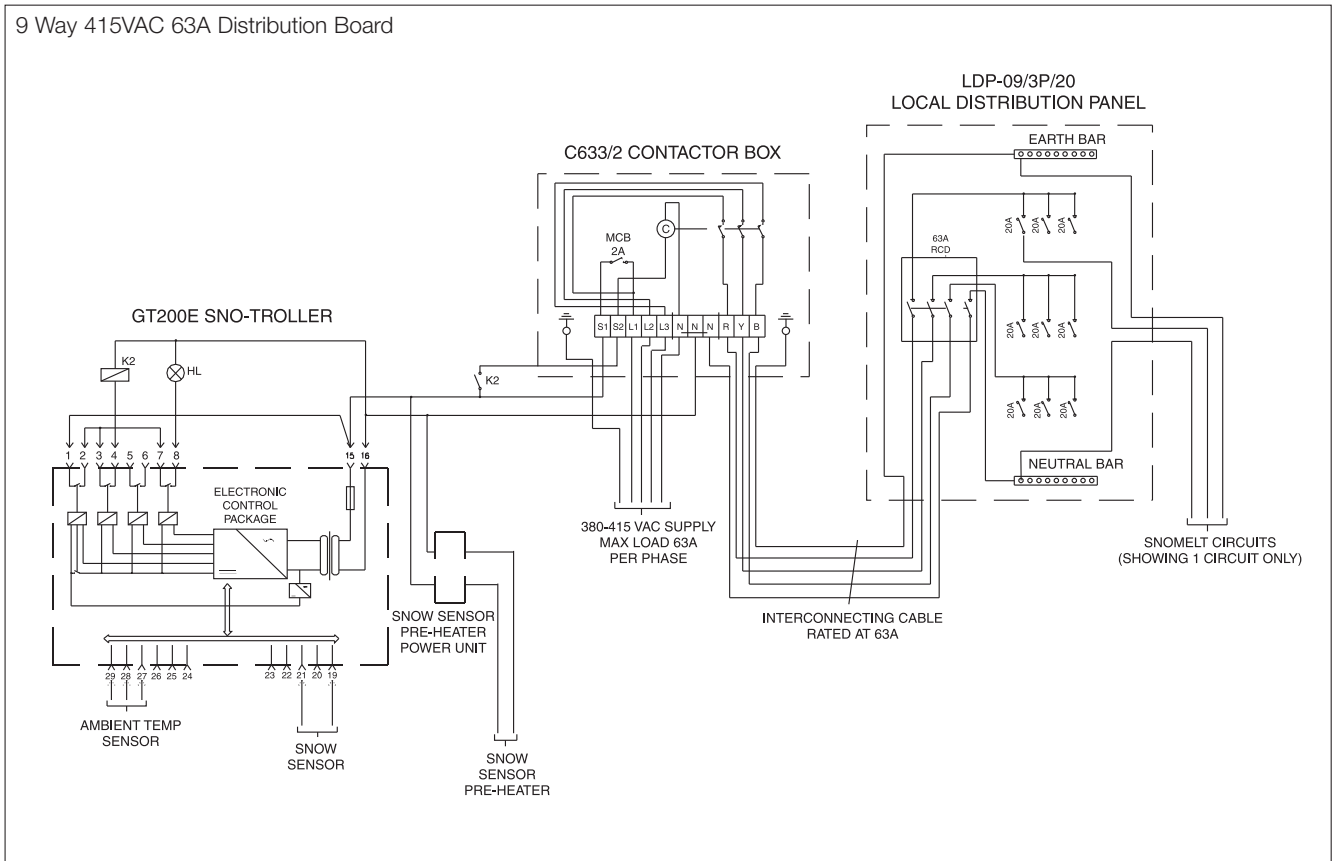
Typical example of SNOmELT using SM2A for access steps, and SM2B for a wheelchair ramp.

# Typical Wiring Arrangement Schematics

3 Way 240VAC 63A Distribution Board



9 Way 415VAC 63A Distribution Board



Bill of Materials - Order Form

CUSTOMER NAME AND ADDRESS:

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Tel: \_\_\_\_\_  
 Fax: \_\_\_\_\_  
 Order Number \_\_\_\_\_  
 Order Date / / Date Required / /

SUPPLIER DETAILS:

Heat Trace Limited  
 Tracer House, Cromwell Road,  
 Bredbury, Stockport  
 Cheshire, SK6 2RF  
 England  
 \_\_\_\_\_  
 Contact: Sales Department  
 Tel: +44 (0)161 430 8333  
 Fax: +44 (0)161 430 8654  
 \_\_\_\_\_

QUANTITY	TYPE REF.	DESCRIPTION	UNIT PRICE	EXTENDED
m	SM2-A	SnoMelt Cable, Low/Medium Power Output, 230V	_____	_____
m	SM1-A	SnoMelt Cable, Low/Medium Power Output, 115V	_____	_____
m	SM2-B	SnoMelt Cable, High Power Output, 230V	_____	_____
m	SM1-B	SnoMelt Cable, High Power Output, 115V	_____	_____
pcs	WJB/20	Junction Box	_____	_____
pcs	TK/SM-A/*	Termination Kit for SM-A, 2 or 4mm <sup>2</sup> power cable	_____	_____
pcs	TK/SM-B/*	Termination Kit for SM-B, 2 or 4mm <sup>2</sup> power cable	_____	_____
pcs	NT/SF	Nylon Cable Tie	_____	_____
pcs	GT200E	Snow Control Unit and Power Supply Unit <sup>††</sup>	_____	_____
pcs	GT200E/S	SnoMelt Sensor Pack	_____	_____
pcs	0013 04	IP30 Enclosure for Power Supply Unit <sup>†</sup>	_____	_____
pcs	0013 06	IP30 Enclosure for Snow Control Unit <sup>†</sup>	_____	_____
pcs	0017 04	IP55 Enclosure for Power Supply Unit <sup>†</sup>	_____	_____
pcs	0017 06	IP55 Enclosure for Snow Control Unit <sup>†</sup>	_____	_____
pcs	0017 11	IP55 Enclosure for Snow Control Unit and Power Supply Unit <sup>†</sup>	_____	_____
pcs	LDP-03/1P/20	3 x 20A S.P. circuits, single phase incoming feed	_____	_____
pcs	LDP-06/3P/20	6 x 20A S.P. circuits, TP&N incoming feed	_____	_____
pcs	LDP-09/3P/20	9 x 20A S.P. circuits, TP&N incoming feed	_____	_____
pcs	C631/1	Contacteur Box, 63A single phase, 110V coil	_____	_____
pcs	C631/2	Contacteur Box, 63A single phase, 230V coil	_____	_____
pcs	C633/1	Contacteur Box, 63A per pole, 110V coil	_____	_____
pcs	C633/2	Contacteur Box, 63A per pole, 230V coil	_____	_____

Note:  
 TP&N: Three phase and neutral  
 \* Denotes '2' for 2mm<sup>2</sup> power cable, or '4' for 4mm<sup>2</sup> power cable supplied with termination kit  
<sup>†</sup> Does NOT include controllers  
<sup>††</sup> Does NOT include enclosures

Additional materials needed to complete the heat tracing installation:  
 ● All mains and interconnecting cables/glands

SUBTOTAL	£ _____
C & P	£ _____
VAT	£ _____
TOTAL PRICE	£ _____

Fax this order form to our head office

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SUPPLIER OF INDUSTRIAL & ELECTRICAL EQUIPMENT and MATERIALS



BS EN ISO 9001

Certificate No. 0160

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