

# **DANFOSS GX CONSTANT WATTAGE HEATING CABLE SPECIFICATION FOR SNOW AND ICE MELTING**

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## **1.0 GENERAL**

Supply and install a complete system of heating cables, accessories and controls for snow melting in ramps, slabs, sidewalks, paths, etc.

## **2.0 MATERIAL**

- 2.1 Shall be Danfoss GX dual conductor heating cable.
- 2.2 Conductor: Copper or copper alloy with nickel coating.
- 2.3 Insulation: FEP DuPont with an average thickness not less than 0.25mm and than layer of XLPE.
- 2.4 Shield: Tin coated drain wire combined with 0.050 mm aluminium foil coated with 0.012 PBT, 100% coverage.
- 2.5 Jacket: PVC with an average thickness not less than 0.75 mm.
- 2.6 Lead free ¼" round heating cable that is both flexible and UV protected.
- 2.7 Shall include 20' cold lead, single point connection.
- 2.8 Rated temperature: 220°F (105°C), maximum voltage 600V, up to 12 W/ft ( 40W/m) .
- 2.9 Shall be approved to applicable UL and CSA standards.
- 2.10 Heating cable circuit shall be protected by a ground fault device in accordance per NEC article 426 and 427.

## **3.0 SYSTEM CONTROLS**

Option 1: Automatic Snow Controller

The system shall be controlled by Danfoss GX850 dual zone control panel with external digital temperature and moisture ground sensors either directly or through an appropriate contactor.

## Option 2: Snow Switch Control

The system shall be controlled by Danfoss DS-2B / DS-5 pole- or wall-mounted temperature and moisture sensor either directly or through an appropriate contactor.

## Option 3: Thermostat

The system shall be controlled by an ambient sensing thermostat Danfoss 088L3422 either directly or through an appropriate contactor.

- 3.1 Automatic Snow Controller shall be microprocessor-based to provide effective, economical, automatic control.
- 3.2 Automatic Snow Controller shall have dual zone capability.
- 3.3 Automatic Snow Controller shall have an adjustable timer providing up to ten hours of system operation after snowfall ceases for complete melting.
- 3.4 Automatic Snow Controller shall have the following modes
  - a. Automatic
  - b. Constant OFF
  - b. Constant ON (manual timer)
- 3.5 Automatic Snow Controller shall have adjustable parameters
  - a. Melting temperature (33.8°F to 49°F)
  - b. Moisture sensibility 5 to 95 (5 being the most sensitive to moisture)
  - b. Standby (slab) temperature (-4 °F to 32 °F)
- 3.6 Automatic Snow Controller shall be able to indicate the actual temperature and moisture levels for sensors.
- 3.7 Automatic Snow Controller shall have an info-button for help/information.
- 3.8 Automatic Snow Controller shall have self-diagnosis program, which will detect faults and give an alarm.
- 3.9 Automatic Snow Controller shall have individual LEDs to provide a visual indication of alarm and heater operation.
- 3.10 Automatic Snow Controller shall be capable of accepting four ground sensors.
- 3.11 Automatic Snow Controller shall have multi-language capabilities (English, Spanish and French).
- 3.12 Sensors shall include 50' lead.

## **4.0 EXECUTION**

### **4.1 Installation**

- a. System must be installed per manufacturer's recommendation using method described in installation guide.
- b. Place the heating mats and sensors in the surface material as per the installation guide.
- c. Secure the heating mat/cable to the rebar or ground.
- d. Maker plaque must indicate presence of embedded heating cables as per NEC 426-13.
- e. Inspect the cable and controls upon receiving the shipment. Note any damage and ensure materials received match the order and shipping documents.

### **4.2 Tests**

- a. Refer to the manufacturer's literature for requirements for testing and documenting cable resistance and insulation-to-ground readings.
- b. Take tests as outlined in the Installation Manual.
- c. If problems are discovered, consult the manufacturer.
- d. If unable to correct problems notify the engineer before proceeding with installation.
- e. Keep record of all readings for inspection by the engineer or for submittal to the manufacturer to ensure a valid warranty.

## **5.0 WARRANTY**

- 5.1 Manufacturer shall offer a 10-year, non-prorated warranty.