Satellite Antenna De-icing Systems for Dish Antennas

- **Automatic De-icing System for Protection against Snow and Ice**
- **Simple to Field Install and Operate**
- **Engineered for Customer Specified Voltages**
- **Low Energy Costs**
- **User selectable Automatic, Off or Manual On Modes**
- **Available for DH Satellite Reflector Sizes: .60, .76, .90, 1.2, 1.5, 1.8, 2.4, 3.3, 3.7, 4.5 and 5.0 Meter**

DESCRIPTION

The SATCOM De-icing system consists of a factory pre-wired control unit, heater pads for reflector coverage, and a feedhorn heater. All systems are engineered to be easily assembled, installed and operated.

The control unit has three modes of operation: Automatic, Manual Off and Manual On. The Automatic mode allows the control to monitor the ambient temperature and sense the presence of moisture. An ambient temperature of less than 40 degrees F and the presence of moisture activate a heater contactor. The heater contactor is rated up to 50 amps. The heaters will remain on for a factory preset time of one hour longer than conditions warrant. The Manual Off mode turns the heaters off, regardless of the weather conditions. The Manual On mode turns the heaters on, regardless of the weather conditions. Control units are factory preset to operate on 120 to 240 volts, single or three phase power. All cabling to attach the heater pads is factory pre-wired. The larger systems have a control unit with remote moisture sensor.

The heater pads consist of heater wire sandwiched between layers of aluminum foil. Heater pads allow for a faster install without the need for templates. The aluminum foil is coated with an aggressive acrylic adhesive and a peel and stick liner. Watt density of the heater pads, depending on the reflector, is between 40 and 55 watts per square foot. The aggressive acrylic adhesive adheres to a variety of substrates and will not release when pad temperature increases. Heater pads have water resistant connectors that plug into the cables from the control unit.

The feedhorn heaters consist of heater wire attached to a strap and covered with heatshrink. They are attached to a rib on the feedhorn.

Installation of the de-ice system consists of applying the heater pads to the backside of the reflector, mounting the control unit / moisture sensor, routing power to the control unit, attaching the feedhorn heater, and connecting the heater pads to the control cables.

The De-icing systems can be custom made for a variety of antennas and applications.

Typical Installation

Instruction Manual for the Viking 1.2 meter
120 Volt Full Coverage Ku band Heater System

Materials Provided List

Quantity	Part Number	Description
1	85427	
1	85428	
1	85429	Heater pad for 1.2 meter
1	85430	full kit part numbers
2	85431	
1	85425	Controller for 1.2 meter full coverage 120 volt with S120 feedhorn heater attached
1		Foil strips for lead wire attachment
2		5/16-18 bolt 2” long with lock washer, flat washers and nut
1		Upper mounting plate for Control enclosure mounting
1		L-shaped feedarm bracket for Control enclosure mounting
1		¼-20 bolt, nut and lockwasher SS
1		Instruction manual for Viking 1.2 meter 120 Volt Full Coverage with Ku feedhorn heater

Tools and Supplies Needed
Adjustable wrenches
Clean rags
Windex glass cleaner
Cable tie straps

Read these instructions carefully and follow all of the procedures for installing this system. All electrical wiring must be performed in accordance with all applicable electrical codes.

APPLY THE HEATER PADS TO THE REFLECTOR

* Apply the center heater pads (85431) to the rear of the reflector before attaching the mounting ring, the others should be applied after the mounting ring is attached to the reflector. If you would like to apply the outer heater pads before the ring is attached, line up the mounting holes and trace the outside of the ring onto the reflector with a marker. Use this line to position the heater pads.
* Be sure that no heater or lead wire is sandwiched between the reflector and the ring.

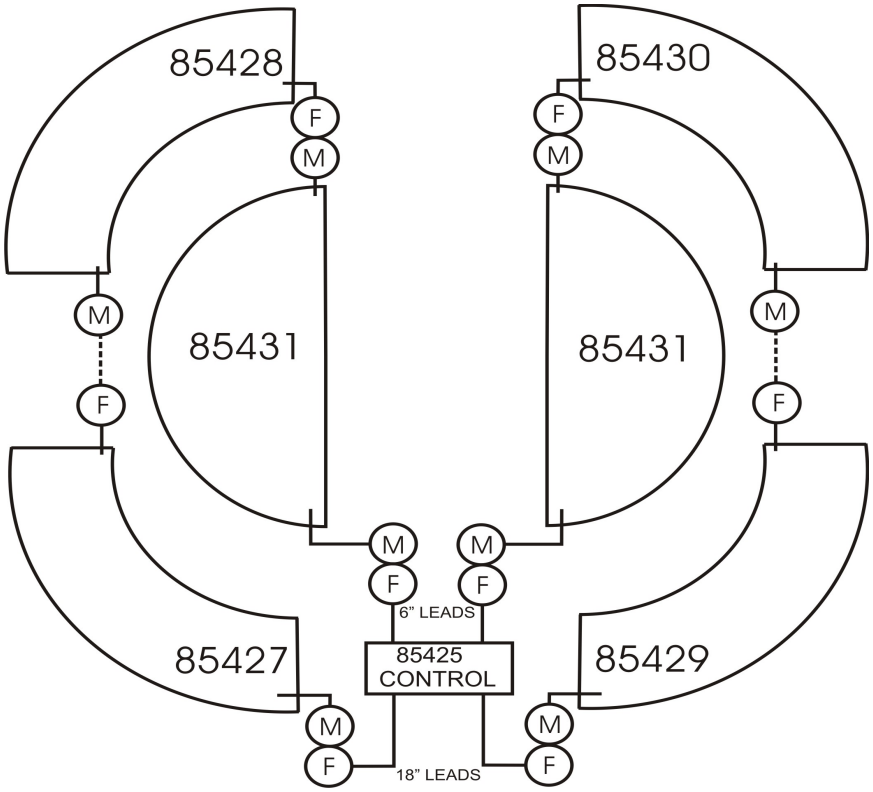
1. Properly support the reflector so that no distortion results from heater pad attachment.
2. The surface temperature of the reflector should be above 50 degrees Fahrenheit, 10

degrees Celsius for proper adhesion of the heater pads.

3. Thoroughly clean the rear of the reflector with Windex and dry thoroughly.
4. Test fit the pads by laying all of them on the back of the reflector and orienting them for the best alignment. The two 85431 half-circle pads should be centered between the six mounting holes in the reflector. See the Heater Pad and Control Connections drawing for the proper locations.
5. Remove the backing paper from the heater pads one at a time and carefully apply to the cleaned reflector. Smooth each pad as it is placed on the reflector. The adhesive is pressure sensitive so be sure to apply pressure and rub the heater pad as it is smoothed to activate the adhesive and adhere properly.

CONNECT THE HEATER PAD LEADS

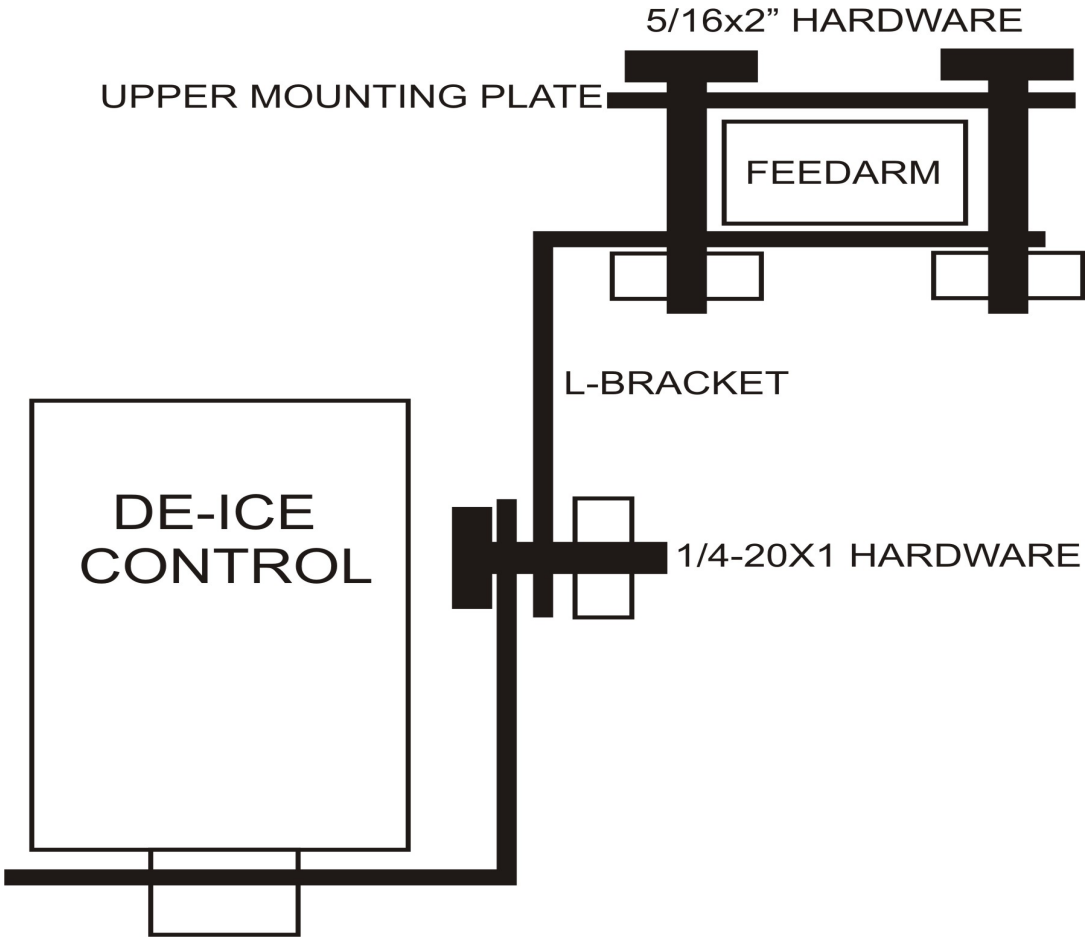
1. Plug the heater pad connectors together as illustrated on the Heater Pad and Control Connections drawing. The six heaters pads connect together to make two parallel heater systems. The connectors are difficult to fully seat, and will not properly seal until a small snap is felt. If heater leads are to pass outside of the mounting ring, install the ring before plugging heater pads together.
2. Use the supplied foil strips to anchor any connected leads with excess slack.
3. The resistance of the connected heater pads can be measured between the male leads exiting heater pad 85427 and the left 85431. The same for heater pad 85429 and the right 85431. The resistance readings should fall between 37.5 and 45.9 ohms.



Heater Pad and Control Connections

MOUNT THE CONTROL ENCLOSURE TO THE FEEDARM

1. Approximately midway on the feedarm, attach the feedarm bracket using the 5/16” hardware supplied. The bracket will be used to attach the Control enclosure in a way that it will not be shielded from falling and blowing snow. The bracket can mount to the left or right depending on which direction the installer would like the Control to mount. See the Control Enclosure Mounting drawing for the orientation.
2. Insert the ¼-20 bolt through the upper slot of the mounting bracket attached to the Control enclosure and through the lower slot of the feedarm bracket. The head of the bolt should be on the enclosure side of the sandwiched brackets. The cable should exit in a downward direction. The cordgrip in the enclosure can be loosened to allow the bracket to turn, aiding in the insertion of the ¼-20 bolt and allowing the enclosure to be turned to face another direction if desired. Retighten when finished.
3. Level the moisture grid on top of the Control enclosure and snug the brackets together securely using the ¼” lock washer and nut supplied. The moisture sensor grid on the top of the control should always remain parallel with the horizon so that it will receive a representative amount of falling and blowing precipitation.



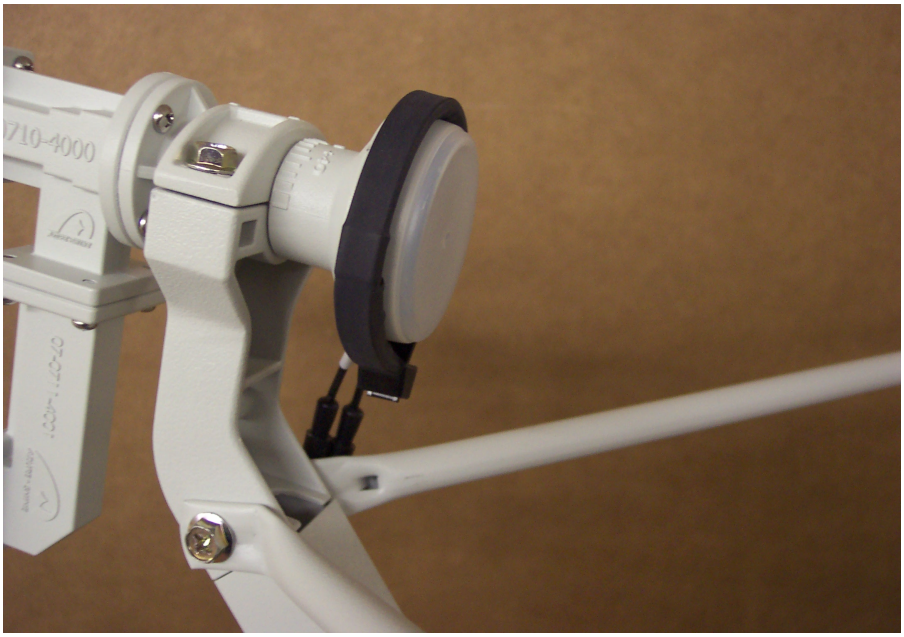
Control Enclosure Mounting drawing

CONNECT THE HEATER PAD LEADS TO THE CONTROL HARNESS

1. Connect the male heater pad leads to the control harness as illustrated in the Heater Pad and Control Connections drawing. The 6” female leads from the Control harness will connect to the 18” male leads from the 85431 pads. The 18” female leads from the Control harness will connect to the 18” male leads from pads 85427 and 85429.
2. Use the supplied foil strips to secure the heater pad leads to the back of the reflector as needed.
3. Attach the ring terminal on the green ground wire to the mounting bracket.

ATTACH THE FEEDHORN HEATER TO THE FEEDHORN

1. Route the Feedhorn Heater Cable along the feedhorn support arm.
2. Place the feedhorn heater around the feedhorn and loosely attach it by passing the tail of the strap through the head. Be sure the heater wire in the feedhorn heater is against the feedhorn.
3. Position the heater with the head of the cable tie and the connectors toward the bottom of the feedhorn and tighten the strap fully. Do not cut the tail off of the feedhorn heater at this time. It will be done when the final test of the system is performed. See the Feedhorn Heater Placement picture for proper placement.
4. Use one tie strap (not supplied) to anchor the Feedhorn Heater Cable near the feedhorn heater.



Feedhorn Heater Placement

ROUTE POWER TO THE CONTROL ENCLOSURE

1. The heater system is supplied with a 30 foot power cord. The system operates on 120 volt AC power. A GFCI breaker should be used. Do not apply power to the system at this point.

* The entire system supplies 700 watts of heat and draws approximately 5.8 amps.

SECURE ALL CABLES WITH TIE STRAPS

1. Secure the entire lengths of the power cable, the feedhorn heater cable, and the De-Ice control cable with tie straps (not supplied).
2. Extra cable length should be coiled and secured to the mounting structure.

TEST THE HEATER SYSTEM

1. Apply 120 VAC power to the system.
2. Allow the sensor to go through its start-up test.
3. When the sensor enters the Automatic Enabled mode (steady green indicator), push the selector switch twice to place the sensor in the Manual On mode (steady amber indicator).
4. Wait a few minutes and feel the surface of the reflector for warmth. The feedhorn heater should also feel warm to the touch. Retighten the feedhorn heater strap while the heater is warmed and cut off all but ½" of the excess strap material.
5. Return the system to the Automatic Enabled mode by pressing the selector switch one more time.

FINALIZE ALL OTHER INSTALLATION ISSUES

READJUST THE MOISTURE SENSOR TO LEVEL WITH THE HORIZON

1. After the reflector has been calibrated, readjust the moisture sensor on top of the Control to level with the horizon.

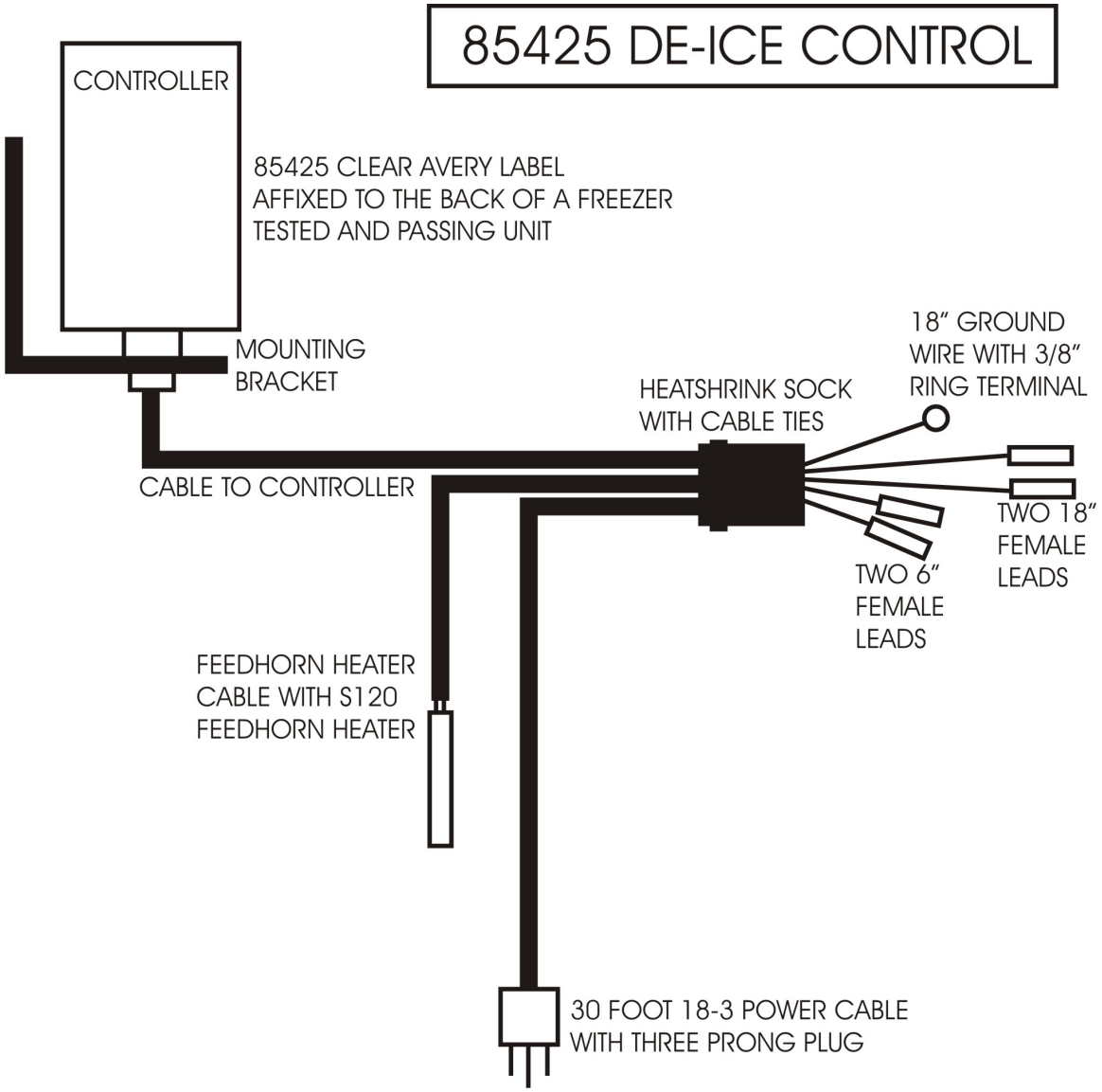
DE-ICE CONTROL SPECIFICATIONS

The control operates electric heaters to prevent the build-up of snow and ice on the reflector when conditions are conducive to their formation. That is, during precipitation when the ambient temperature is below 40 F.

1. The controller will assure a minimum On time of approximately one hour. The system will continue to supply heat as long as conditions warrant it.
2. The controller provides AUTO, OFF, and ON functions. These modes are user selectable through a single push button switch which alternates through each mode.

- The normal power-up mode is AUTO. In this mode, the controller will turn on the heater contactor when conditions are conducive to the formation of snow and ice.
- When in the OFF mode, the heater contactor remains disengaged regardless of the weather conditions.
- When in the ON mode, the heater contactor is engaged until the controller mode is changed or the power is reset.

3. The control provides two indicator lights. The green indicator lights when the control is in the AUTO mode. The yellow indicator lights when the heater contacts are closed and the heaters are on.
4. The moisture sensor is heated to melt snow and ice for detection as moisture.
5. The controller has been factory preset to operate on 120 volt AC power.
6. The heater system draws approximately 5.8 amps.



1.2 meter Full Coverage 120V Heater System with S120 Feedhorn Heater