



Snow Shield®

Walton De-Ice is the **ONLY** manufacturer of Satellite Earth Station Antenna De-Icing Systems that are used by the major antenna manufacturers such as ASC Signal, Alpha-Satcom, GD Satcom and ViaSat.

With over 40 years of experience in battling Mother Nature, Walton De-Ice continues to ex-pand its product line to give the customer even more options to keep their VSATs and Large Satellite Earth Station antennas operational during the harshest of environmental condi-tions.




























Icequake®

Solar Cover

Rain Shield











# Snow Shield

## Contents Hyperlinked

-  Simple facts about De-Icing and Anti-Icing Systems for VSAT's and medium to large earth station antennas.
-  Snow Shield fabric introduction
-  Compare your Snow Shield fabric options
-  Architectural Kynar fabric specifications sheet
-  Architectural Tedlar fabric specifications sheet
-  General comparison of Kynar and Tedlar fabrics
-  Non wicking properties of Kynar and Tedlar fabrics
-  Tear resistant properties of Kynar and Tedlar fabrics
-  Tensile strength properties of Kynar and Tedlar fabrics
-  UV light and weathering properties of Kynar and Tedlar fabrics
-  Coating adhesion properties of Kynar and Tedlar fabrics
-  SEFAR PTFE fabric specifications sheet
-  Ice Quake introduction
-  Electrical consumption comparison between the Ice Quake System and heat pad or heat tape systems
-  Attaching the Ice Quake unit to antenna reflector
-  Ice Quake's eccentric vibrating motor specifications sheet
-  24VAC Ice Quake's PS-2 rain sensor/controller
-  24VAC Ice Quake/Rain Quake system
-  24VDC Ice Quake's PS-4 rain sensor/controller
-  24VDC Ice Quake/Rain Quake system
-  -48VDC Ice Quake/Rain Quake system
-  Ice Quake Systems for larger antennas introduction
-  DS-4C sensor/controller for Ice Quake system
-  DP-7IQ Remote monitor and control system
-  Rain Quake systems introduction
-  Rain Quake system's test data
-  Snow Shield electric and gas heating systems introduction















# Snow Shield

## Contents Hyperlinked

-  Snow Shield electric and gas heating systems introduction
-  DS-4C moisture/temperature sensor/controller
-  Snow Shield electric heating systems for 0.6 to 2.3 meter antennas
-  DS-6 local control unit and DP-7SS remote monitor/control units
-  Snow Shield electric heating systems 2.4 to 6.3 meter antennas
-  Snow Shield gas heating systems 3.2 to 6.3 meter antennas
-  Snow Shield gas heater and electric heater comparison
-  Snow Shield SEFAR PTFE feed horn covers passive and heated cover
-  Heating Systems for Large Transportable Antennas
-  Heating Systems for L-Band Array Feed Horns



## Original Plenum Hot-Air De-Icing Systems Content - Hyperlinked

-  Plenum (Close Out) Hot-Air De-Icing System introduction
-  TBC-1 controller and Ka band antennas
-  TCM-2 monitor and control unit
-  DS-4 Local control unit and DP-7EX remote monitor and control unit
-  ADC-3000's DS-16 local control and monitor unit
-  ADC-3000's DP-9 remote control and status unit
-  ADC-4000's DS-18 local control and monitor unit
-  ADC-4000's DP-10 remote control and status unit
-  Gas heating unit introduction
-  Gas heating unit data sheet
-  Stainless steel electric heating units
-  Comparison of gas and electric heating systems
-  Feed horn rain diversion along with feed horn and subreflector de-icing systems
-  Field Service

## The Simple Fact about De-Icing Systems for VSAT's and medium to large Earth Station Antennas

Walton Hot-Air De-Icing Systems (plenum close-out), along with our Snow Shield, either Passive, Heated or Ice Quake Systems are not only designed, manufactured and supplied for the major antenna manufacturer's products, our products are the only De-Icing systems sold and installed by the major antenna manufacturers such as ASC Signal, GD Satcom, ViaSat, and others. So while our competitors are trying to decide if they are "Anti-Ice or De-Ice", we are leading the way with our partnerships with the major antenna manufacturers in the technology of "De-Icing" both VSAT's and Satellite Earth Station Antennas.

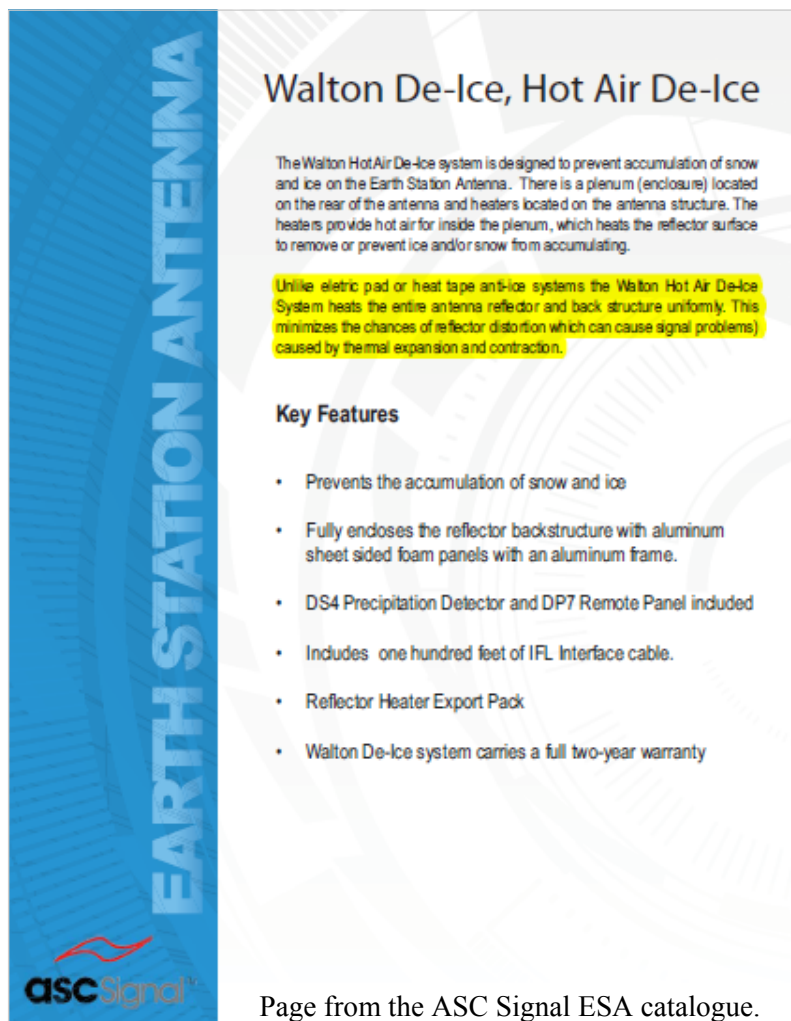
### Here's Why

The "Electric Pad De-Icing System" that was used by the major antenna manufacturer's during the C-band era was all but obsolete when the advent of Ku-band antennas came along in the early 80's. The pad technology would only heat the antenna reflector and not the reflector's back structure, causing movement in the alignment of the reflective surface causing attenuation in the signal and a loss of gain. This loss in performance was not acceptable for the antenna manufacturers or their customers, thus the Hot-Air De-Icing System became the accepted solution for evenly heating both the antenna reflector and reflector's back structure. The end users also enjoyed the aesthetically pleasing looks of the plenum (close-out) rather than thin aluminum foil, foam and wires hanging off of the back of their antenna.

### Why Walton Hot-Air

The Hot-Air De-Icing System is playing even a more important role today with the advancements being made with Ka-band antennas where the alignment of the reflector and back structure is more important than ever. Why install a Anti-Icing System which the major antenna manufacturers would not even sell to you due to degrading effects on signal performance?

Visit our product pages to learn why Walton De-Icing solutions are the only systems on the market that antenna manufacturers rely on to meet their performance requirements.



**Walton De-Ice, Hot Air De-Ice**

The Walton HotAir De-Ice system is designed to prevent accumulation of snow and ice on the Earth Station Antenna. There is a plenum (enclosure) located on the rear of the antenna and heaters located on the antenna structure. The heaters provide hot air for inside the plenum, which heats the reflector surface to remove or prevent ice and/or snow from accumulating.

Unlike electric pad or heat tape anti-ice systems the Walton Hot Air De-Ice System heats the entire antenna reflector and back structure uniformly. This minimizes the chances of reflector distortion which can cause signal problems caused by the thermal expansion and contraction.

**Key Features**

- Prevents the accumulation of snow and ice
- Fully encloses the reflector backstructure with aluminum sheet sided foam panels with an aluminum frame.
- DS4 Precipitation Detector and DP7 Remote Panel included
- Includes one hundred feet of IFL Interface cable.
- Reflector Heater Export Pack
- Walton De-Ice system carries a full two-year warranty

Page from the ASC Signal ESA catalogue.

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# Snow Shield



We are now into our fifth year of offering three types of Snow Shield fabrics and coatings to choose from to help the customer with their budget requirements.

The first is a polyester fabric that is coated in Kynar®. This is a architectural material that has been used to created outdoor structures since the 1940's with great success and now shares the same success in covering antennas.

The second is a polyester fabric that is coated in Tedlar®. This is also a Architectural material and has been used to create outdoor structures since the 1980's with excellent success and with it's self cleaning abilities, has proven to work very well with the Ice Quake System.

The third is the Sefar PTFE white fabric (shown on right) which is also PTFE coated for a life expectancy to exceed 20 years. We have now sold over 5,122 PTFE Snow Shield Covers world wide with no failures since 1996!

Though the two fabrics are less expensive then the PTFE Snow Shield Covers they have proven to be far superior to the competition's covers and can be used as passive or active covers. The Architectural Fabric with either a Kynar® or Tedlar® coating will provide years of service to the customer without having to remove the Snow Shield Covers during the warmer months to increase longevity as some competitor's suggest be done with their antenna covers.

The customer needs to factor in the costs and down time associated with having to replace the antenna cover several times within a 10 year period (antenna cover on the left) as apposed to purchasing a Walton De-Ice Snow Shield Cover (on the right) made with Kynar®, Tedlar® or Sefar PTFE coated PTFE fabrics with a usable life of 10 to 25 years. With the Walton De-Ice Snow Shield Cover, the customer can also add heater inlet pockets or Ice Quake pocket (s) to add an electric, gas heater or Ice Quake System at time of purchase or at a later date without having to replace or remove the Snow Shield Cover.

## Compare Your Snow Shield fabric options

<b>Architectural Kynar® Fabric</b>	<b>Architectural Tedlar® Fabric</b>	<b>Sefar PTFE Fabric / PTFE Coated</b>
Our most economical option	High-Performance and Cost-Effective	Unsurpassed Performance for Snow Shield Cover
RF transparency close to PTFE at C/Ku-Band	RF transparency close to PTFE at C/Ku-Band	RF transparency superior at C/Ku/Ka-Band
Fabric quality superior to competing cover options on the market	Fabric quality superior to competing cover options on the market	Fabric quality superior to other options on the market
Save 65% compared to our PTFE Snow Shield Covers	Save 50% compared to our PTFE Snow Shield Covers	Over two decades of field-proven performance in 1,000's of locations worldwide
Ability to add active Electric/ Gas heated De-Icing Systems	Ability to add active Electric/ Gas heated De-Icing Systems	Ability to add active Electric/ Gas heated De-Icing Systems
Ability to add an Ice Quake De-Icing System	Ability to add an Ice Quake De-Icing System	Ability to add an Ice Quake De-Icing System
Long useful performance life: you'll replace 3 of our competitor's covers before ours wears out	Long useful performance life: you'll replace 4 of our competitor's covers before ours wears out	Long useful performance life: you'll replace 5 of our competitor's covers before ours wears out

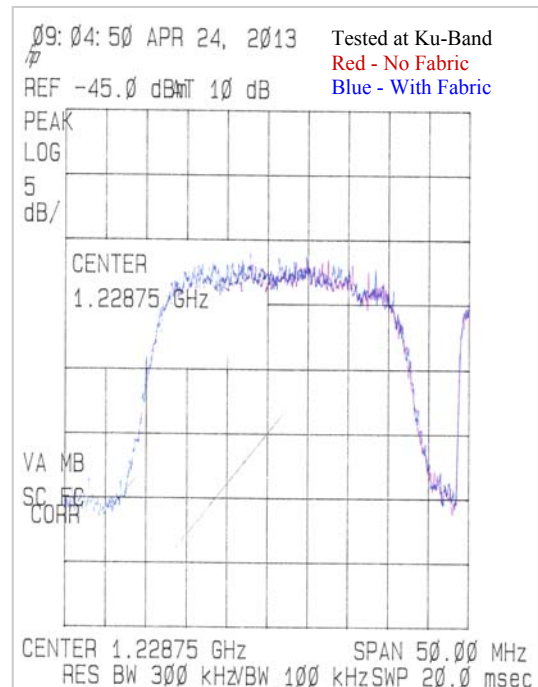
# The Better Fabric for Snow Shield Covers

## Architectural Kynar® Fabric Specifications Sheet

		Standard		Metric	
Base Fabric Type	Polyester	Polyester		Polyester	
Base Fabric Weight (nominal)	4.3 oz/yd <sup>2</sup>			146 g/m <sup>2</sup>	
Finished Coated Weight	21 oz/yd <sup>2</sup>			712g/m <sup>2</sup>	
ASTM D751	+2/-1 oz/yd <sup>2</sup>			+70/-35 g/m <sup>2</sup>	
Trapezoidal Tear					
ASTM D4533	50/60 lb <sub>f</sub>			223/267 N	
Grab Tensile					
ASTM D751	3 75/350lb <sub>f</sub>			1669/1558N	
Strip Tensile					
ASTM D751 Procedure B	350/325 lb/in			307/285 daN/5 cm	
Hydrostatic Resistance					
ASTM D751 Procedure A	500 psi			3.45 MPa	
Dead Load					
ASTM D751	106 lb <sub>f</sub> @ Room Temp. 53 lb <sub>f</sub> @ 160 ° F			472 N @ Room Temp 236 N @ 91 ° C	
Low Temperature					
ASTM D2136	LTA: Pass @ -67 ° F LTC: Pass @ -40 ° F			Pass @ -55 ° C Pass @ -40 ° C	
Flame Resistance					
<ul style="list-style-type: none"> <li>Meets NFPA 701, ULC-S109, ASTM D6413 (2 second flameout)</li> <li>ASTM E84 - Flame spread index &lt;25, smoke development rating &lt;450</li> </ul>					

W. B. Walton Enterprises, Inc. (Walton De-Ice) has now been using the Kynar and Tedlar Snow Shield Covers for 4 years. “We are very excited with the results that we have seen so far in both C and Ku Band along with the longevity of the architectural fabrics.

The quality of the architectural fabric is far superior to any of our competitor’s fabrics. With the Kynar and Tedlar fabrics, we will still be able to offer it as a passive system or utilize both Electric and Gas Heater De-Icing Systems along with the Ice Quake De-Icing Systems.





# The Best Fabric for Snow Shield Covers

## Architectural Tedlar® Fabric Specifications Sheet

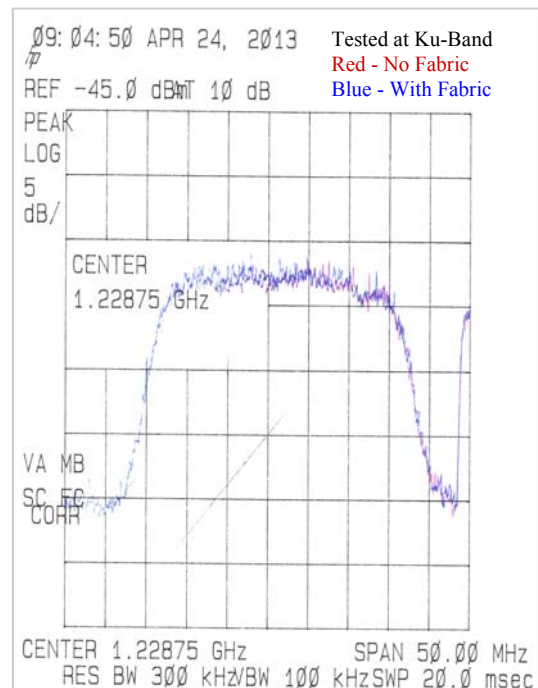
		Standard	Metric
Base Fabric Type	Polyester	Polyester	Polyester
Base Fabric Weight (nominal)	5.0 oz/yd <sup>2</sup>	170 g/m <sup>2</sup>	
Finished Coated Weight	24 oz/yd <sup>2</sup>	814g/m <sup>2</sup>	
ASTM D751	+2/-1 oz/yd <sup>2</sup>	+70/-35 g/m <sup>2</sup>	
Trapezoidal Tear			
ASTM D4533	800/65 lb <sub>f</sub>	356/289 N	
Grab Tensile			
ASTM D751	4 00/350lb <sub>f</sub>	1780/1558N	
Strip Tensile			
ASTM D751 Procedure B	300/240 lb <sub>f</sub> /in	263/210 daN/5 cm	
Hydrostatic Resistance			
ASTM D751 Procedure A	500 psi	3.45 MPa	
Dead Load			
ASTM D751	120 lb <sub>f</sub> @ Room Temp. 60 lb <sub>f</sub> @ 160 ° F	534 N @ Room Temp. 267 N @ 91 ° C	
Low Temperature			
ASTM D2136	LTC: Pass @ -40 ° F LTA: Pass @ -67 ° F	Pass @ -40 ° C Pass @ -55 ° C	

### Flame Resistance

- Meets NFPA 701, ULC-S109, ASTM D6413 (2 second flameout)
- ASTM E84 - Flame spread index <25, smoke development rating <450

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General comparison of Kynar® and Tedlar® coating film when applied to Architectural fabric

	FLUOROPOLYMER BASED	FLUOROPOLYMER BASED
Property:	Brite with Kynar White	Brite with Tedlar White
Retention of color	○ ○ ○ ● ●	○ ○ ○ ● ●
Retention of gloss	○ ○ ○ ● ●	○ ○ ○ ● ●
Stain resistance	○ ○ ○ ● ●	○ ○ ○ ● ●
Dirt pick-up	○ ○ ○ ● ●	○ ○ ○ ● ●
Mildew resistance	○ ○ ○ ● ●	○ ○ ○ ● ●
Chemical resistance	○ ○ ○ ● ●	○ ○ ○ ● ●
Water repellent	○ ○ ○ ● ●	○ ○ ○ ● ●
Chalking	○ ○ ○ ● ●	○ ○ ○ ● ●
Cleanability	○ ○ ○ ● ●	○ ○ ○ ● ●
Coating thickness life	○ ○ ○ ● ●	○ ○ ○ ● ●
Abrasion	○ ○ ○	○ ○ ○ ● ●
<b>Overall life expectancy</b> <small>* Based on field performance</small>	○ ○ ○ ● ●	○ ○ ○ ● ●
GOOD ○ ○ ○ ● ● BEST		

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## Non-Wicking Properties

The ability of a material to resist moisture from wicking into the polyester yarns is important for both structural and signal degradation reasons. Continuous filament polyester yarn can pull water into the space between the filaments by capillary action. If allowed to do so, this moisture can affect the adhesion properties of the material, causing seam problems or delamination of the coating compound. Even small amounts of moisture present in the base fabric can be a source of fungal growth, causing the material to discolor. This creates an signal degradation problem.

Kynar® and Tedlar® has been designed to achieve non-wicking properties by the selection of polyester yarns, the adhesive coat, and the coating procedure. The application of the adhesive coating compound that fully saturates the base fabric is an effective way to eliminate wicking. In recent years, another means is the use of anti-wick polyester yarns to reduce the problems associated with wicking. The yarns are treated with a finish by the yarn producer to reduce wicking.

A wicking test is performed per ASTM D 751 Wicking of Coated Cloth section by immersing a one-inch strip of synthetic resin coated polyester fabric into a dye water solution. The sample is exposed on one end for a period of 24 hours, then removed from the solution, and examined for wicking.

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# Tear Resistance

## Of Architectural Fabrics

The tear strength of an architectural fabric is an important performance property. The ability of a material to resist a tear or tear propagation may be critical to the structural integrity of the Snow Shield Cover.

Tear strength properties are related to a combination of factors involving the base fabric, weave/knit construction and adhesion values. To obtain the highest possible tear properties, the yarns need to be able to slide within the coated fabric. If the yarns are locked into place, a tearing force is applied to individual yarns one at a time, resulting in lower tear values. In general, a warp-knit weft-inserted material will have a higher tear strength than a conventional plain woven fabric since the yarns are not inter-woven. Kynar® and Tedlar® architectural fabrics have superior tear strength and are warp-knit weft-inserted.

The adhesive coat and adhesion values between the base fabric and the coating compound will also greatly influence the tear strength properties. Kynar® and Tedlar® is formulated fabric to have an excellent balance between adhesion and tear strength. Higher coating adhesions will limit the ability of the polyester yarns to slide and rope-up within the coated fabric, thereby reducing the tear strength. While low coating adhesion may yield higher tear strength, it will introduce other significant problems.

Testing for tear strength can be done by either ASTM D 751 Tongue Tear Method or Trapezoid Tear Method. In many cases both methods are used to better characterize the tear properties. In addition, tear testing is performed on material that has been aged to determine if there is a loss in tear strength over time.

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# Tensile Strength

## Of Architectural Fabrics

The first and most important performance property that needs to be considered is the tensile strength of the architectural fabric. Like any building material, knowledge of the tensile strength is required to meet the design and engineering criteria of a Snow Shield Cover.

The material on a fabric structure, whether an air supported, tension membrane or custom structure, must withstand the forces that are applied. These stresses are related to the pre-tension on a structure, or are related to forces such as wind load.

The strength requirements of a coated material for a given structure can be calculated using conventional engineering formulas and applying appropriate safety factors.

The tensile strength is directly related to the base fabric. In fact, the base fabric controls both tensile strength and stretch properties and the thickness of the coating compound have little or no effect on these properties. Begin with high tenacity, continuous filament polyester yarns. The yarns are then formed into the base fabric by either weaving or knitting the threads into the base cloth. Typically, the yarns are placed in two directions, perpendicular to each other: the warp (machine) yarns and the weft (fill) yarns. The tensile strength is determined by the tenacity of the yarn multiplied by the denier of each yarn multiplied by the number of yarns per inch width. To increase the tensile strength of a given material, typically a higher tenacity yarn or increasing the number of yarns per inch can be used. It is important to note that on enclosed specifications, the strip tensile strength is based on 1 inch of yarn and reported as a minimum requirement at the time of manufacture. This is not to be confused with other specifications in which the 'typical' results are reported.

Testing the tensile strength of a material can be done by either the Cut Strip Test Method or the Grab Test Method as outlined in ASTM D 751. Samples of a material are tested in both the warp and fill directions. It is critical when comparing tensile and stretch of multiple fabrics, to use the same test method/criteria.

Because the tensile strength of the architectural fabric depends on the base fabric and the polyester yarns, the useful life of a fabric structure is then dependent on keeping the yarns from deteriorating. If the yarns start to break down, then the structural integrity of the entire building system is in question. Protecting the yarns from damage is one of the main functions of the exterior coating compounds.

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# Ultraviolet Light and Weathering Resistance

## Of Architectural Fabrics

Today's architectural structures require a great deal of design and engineering and unique fabrication processes, representing a significant investment. Snow Shield Cover owners expect to amortize this investment over a long life for the cover. The technology for designing and manufacturing architectural fabrics will provide quality performance properties for a period of 15 to over 20 years, depending on the chosen fabric and top finish.

A critical performance factor in assuring a long lasting Snow Shield Cover is the ultraviolet (UV) light and weathering resistance of the synthetic resin coated polyester fabric. Any fabric exposed to the sunlight, wind, rain, snow and air-borne pollutants will exhibit some form of degradation over time. The most harmful effects are those caused by the UV light present in sunlight.

The principle in extending the life of a cover is to maintain the tensile strength of the base fabric. To do this, proprietary coatings protect the base fabric from UV light and other factors. It is the top exterior coating compound that provides protection from UV light. Kynar® and Tedlar® is formulated to either reflect UV light or absorb the light, so that the UV light cannot affect the base fabric or the compound itself. This is normally accomplished with the proper selection of pigments and the use of UV absorbers, or a combination of both. Further, based on years of experience in exterior coatings different color structures or light transmission into the structures can be made.

Ultraviolet light testing can be performed by either ASTM D 2565 Xenon-Arc testing or ASTM G-154 Fluorescent UV testing. These accelerated weathering machines combine high concentrations of UV light with water spray and high temperatures. These machines can simulate years of outdoor exposure in a matter of months, and have a very good correlation to actual field exposure. Kynar® and Tedlar® fabrics have performed in applications for over 25 years and have an equivalent of 20 years+ weathering in weathering machines.

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## Coating Adhesion

Coating adhesion is the ability of the exterior coating compound to be adhered to the polyester base fabric. Having the strongest base fabric and the best-formulated compound is of no value if the two cannot be properly bonded together. Good coating adhesion is required to allow the material to be handled and sewn. It is also important in preventing the exterior coating compound from delaminating when the material is exposed to the environment.

Kynar® and Tedlar® are designed to provide a chemical and mechanical bond of the coating. The primary function of the adhesive coat is to bind the coating to the base cloth. The adhesive coating compound is formulated as a synthetic resin plastisol with an adhesion promoter added to the compound. When this compound is applied to the base fabric, a chemical bond forms between the polyester yarns and the adhesive coat. The adhesive also provides a bond between the exterior coating compound and the fibers. This process is carefully monitored to develop the right level of adhesion. Too little adhesion will cause problems with seam strength or coating delamination, and too high adhesion will adversely affect tear strength. Mechanical adhesion is attained on open weaves/knits by adhering the exterior coating on both sides through the openings in the cloth. Kynar® and Tedlar® provides an adhesive coat on all architectural fabrics ensuring a good, high-quality bond. Not all coaters provide an adhesive coat, relying totally on mechanical adhesion. In cases of flex fatigue or wind whipping of the fabric, the mechanical adhesion may fail resulting in delamination.

Coating adhesion is tested per ASTM D 751 Peel Adhesion test. Samples are prepared by either welding or gluing two pieces of material together, then peeling the samples apart in a constant rate of separation testing machine. Results are reported as pounds-force per inch or newtons per centimeter.

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# The Unsurpassed Fabric for Snow Shield Covers

## Material Type: SEFAR EL-40-T1

- ❑ Fabric Chemical Makeup: PTFE (Polytetrafluorethylene)
- ❑ Coating Material: 100% Fluoropolymer
- ❑ Construction: PTFE Fabric Emulsion Coated with 100% Pure Fluoropolymer
- ❑ Weave Type: Panama 2 / 2

## ASTM D3786

- ❑ Weight: (typical) 320 grams/square meter = 11.3 oz/square meter
- ❑ Maximum Breaking Strength: 2400/2600 N/5cm = 282/305 lbs/square inch

## ASTM D - 1682

- ❑ Nominal Thickness: .23mm
- ❑ Thread Count, Warp/Weft per cm: 25/28
- ❑ Air Permeability: 0

## STRENGTH CHARACTERISTICS

- ❑ Water Column (mm): 2000 (2.81 PSI)

## WARRANTY

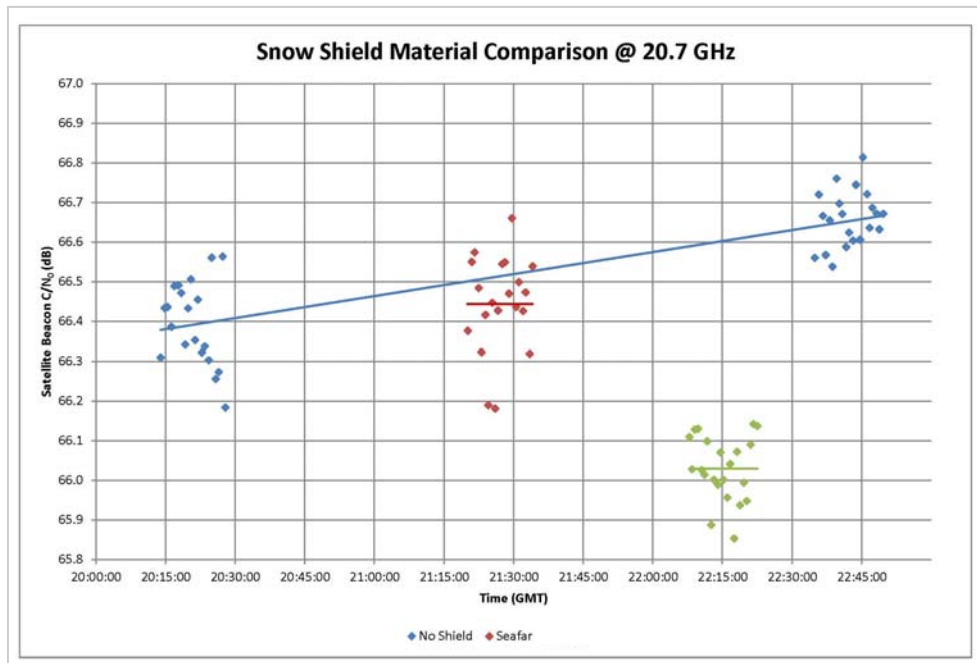
- ❑ 10 Year standard use warranty per SEFAR

## CHECMICAL CHARACTERISTICS

- ❑ Permanently UV-resistant and color fast, weather-proof, dirt- and water repellent, no absorption of moisture and resistant to salt spray.
- ❑ Do not use solvent-based cleaning agents, including but not limited to those containing MEK toluene, THF, MIBK butyl acetate, ethyl acetate, acetone.

## TEMPERTATURE CHARACTERISTICS

- ❑ Range: -60°C to 90°C
- ❑ Non Flammable per ASTM E84, Class A







# Snow Shield



This Walton De-Ice Snow Shield 4.5 meter Cover was delivered to Kansas City, KS. and installed onto a 4.5 meter Antenna and is now on it's 8th. year of service. The customer has decided to give the Snow Shield Cover a tune up and also have Walton add the Ice Quake pockets to the Snow Shield Cover so that the customer can add the Ice Quake De-icing System to that antenna. The tune up consist of a 3 to 5 hour wash and then replacing the feed horn support boot's Velcro loop where the feed horn braces penetrate through the Snow Shield Cover.

What other competitor's cover even lasts 7 years in the field to were it can go through a tune up and even be upgraded to add an active de-icing system to it?

What other competitor's cover can then go into service for another 7 years and do the same if not better job at shedding ice and snow then it did when it was brand new?

With the Walton De-Ice Snow Shield Cover, you do get what you pay for. Do it right the first time.

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**WALTON**  
**REF-ICE**

Snow Shield

**Icequake**





# De-Icing System

The first and only “Green” De-Icing System on the market

After only a few years of operation, the Ice Quake System will pay for itself !



Annual Snow & Freezing Rain Fall in Hours	Cents per Kilowatt Hour Commercial Charges	2.4 to 3.0 meter Antennas Full Reflector De-Icing Systems		3.2 to 4.2 meter Antennas Full Reflector De-Icing Systems		4.3 to 4.8 meter Antennas Full Reflector De-Icing Systems		5.0 to 6.3 meter Antennas Full Reflector De-Icing Systems	
		Annual costs shown below		Annual costs shown below		Annual costs shown below		Annual costs shown below	
		Electric Heat 4000 watts	IQ System 45 watts	Electric Heat 6000 watts	IQ System 90 watts	Electric Heat 12000 watts	IQ System 90 watts	Electric Heat 45000 watts	IQ System 200 watts
450	\$0.1477	\$265.86	\$2.99	\$398.79	\$5.98	\$797.40	\$5.98	\$2,990.93	\$13.29
350	\$0.1477	\$206.78	\$2.31	\$310.17	\$4.65	\$620.20	\$4.65	\$2,326.28	\$10.34
250	\$0.1477	\$147.70	\$1.50	\$221.55	\$3.32	\$443.00	\$3.32	\$1,661.63	\$ 7.39
150	\$0.1477	\$88.62	\$0.90	\$132.93	\$1.99	\$265.80	\$1.99	\$996.98	\$ 4.43
50	\$0.1477	\$29.54	\$0.30	\$44.31	\$0.66	\$88.60	\$0.66	\$332.33	\$ 1.48

The chart above shows the costs savings of using the Walton Ice Quake System over the conventional electric heater pad or heat tape systems. Shipping, installation and maintenance would be another cost saving factor using the Ice Quake System.

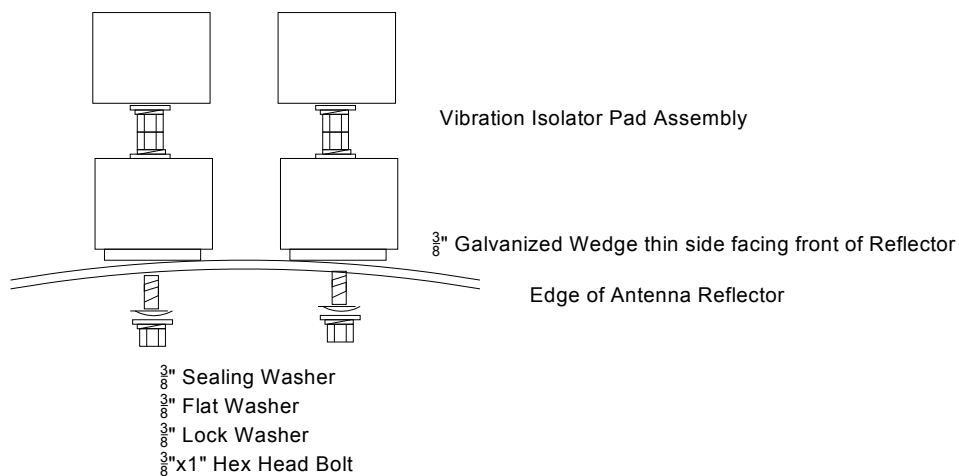


# Icequake

## Snow Shield

## Ice Quake

The Ice Quake Assemblies are installed on the edge of the antenna reflector by drilling 2 each 3/8" holes into the edge of the reflector and mounting the vibration isolator pads. These pads cause the vibration to transfer into the Snow Shield and not into the antenna's reflector







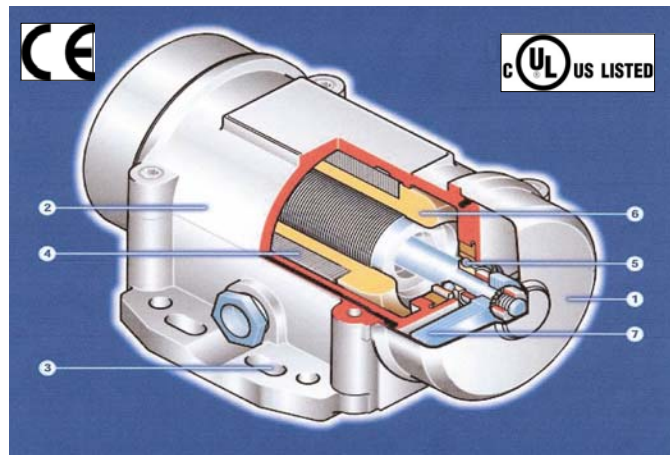
## Snow Shield

## Ice Quake

The Micro Series represents the natural evolution of the previous series produced by Italvibras. Experience acquired throughout years of work and specific workshop tests, have allowed significant improvements to be applied to both the technical aspects and design of the new Micro vibrators, so much so that the product has become even more reliable.

The Micro Series has been designed for continuous use in industrial processes that require smaller size electric vibrators with lower centrifugal force.

Micro electric vibrators feature IP65 mechanical protection, a highly resistant light aluminum alloy casing and stainless steel weight covers. Lubrication is not required as long life maintenance-free type bearings are used.



1. Weight covers in stainless steel that combine high mechanical strength with the protection guaranteed by stainless steel.
2. Aluminum casing with surface polishing treatment.
3. The fixing center-distances, which are identical to those of the previous Micro series, ensures perfect interchangeability.
4. Stator insulated by means of the impregnation process, guaranteeing perfect insulation and the utmost protection against damage from the vibration process
5. Ball bearings set in specifically researched positions to ensure top-most efficiency throughout the stress caused by the centrifugal force.
6. The windings are subjected to the strict tests established by the standards in all pieces produced under CSA, UL and CSA guidelines.
7. The lamellar eccentric weights can be regulated in steps by changing the actual number of weights mounted.



# 24VAC PS-2 Rain Sensor/Controller

Snow Shield

Ice Quake

For 0.6 meter to 2.0 meters in size, Walton Ice Quake systems will be supplied with an automatic rain sensor - controller unit (PS-2) provides the user with a versatile, yet inexpensive method of controlling the Ice Quake systems.

The PS-2 automatic moisture sensor operates by detecting precipitation using a moisture sensing grid. A signal is then supplied to the microcontroller, which will activate the Ice Quake system. The PS-2 can be powered by either a 110-120VAC or 200-240 VAC 50/60 Hz. indoor transformer with outdoor rated cable.



## Key Features

- Automatic activation lowers De-Icing operational costs
- Reliable rain detection
- Operates on 24VAC
- Easy installation and full access to electronics





# 24VAC Ice Quake/Rain Quake System

Snow Shield

Ice Quake



18/2 outdoor rated cable runs from PS-2 to the Ice Quake motor

18/2 outdoor rated cable runs from transformer to Ice Quake's PS-2. 25 feet of cable is include in each system. Additional cable can be purchased.

110/120 VAC or 220/240 VAC to 24 VAC indoor transformer rated at 100 VA is included in with each system and plugs into standard wall outlet.





## 24VDC PS-4 Rain Sensor/Controller

Snow Shield

Ice Quake

For 0.6 meter to 2.0 meters in size, Walton Ice Quake systems will be supplied with an automatic rain sensor - controller unit (PS-4) provides the user with a versatile, yet inexpensive method of controlling the Ice Quake systems.

The PS-4 automatic moisture sensor operates by detecting precipitation using a moisture sensing grid. A signal is then supplied to the microcontroller, which will activate the Ice Quake system. The PS-4 is powered by site provided 45 watts, 24VDC at the base of the antenna.



### Key Features

- Automatic activation lowers De-Icing operational costs
- Reliable rain detection
- Operates on 24VDC
- Easy installation and full access to electronics



## 24VDC Ice Quake/Rain Quake System

Snow Shield

Ice Quake



18/2 outdoor rated cable runs from PS-4 to the Ice Quake motor

15 feet of 18/2 outdoor rated cable runs from the PS-4 to the site provided 45 watts, 24VDC power located at the base of the antenna. Additional cable can be purchased.



## -48VDC Ice Quake/Rain Quake System

Snow Shield

Ice Quake



**NEMA 4X Plastic enclosure housing the PS-4 P.C. Board, Isolated converter -48VAC to 24VDC and Moisture Grid located on top outside of control unit. Control unit installed on the antenna reflector's pipe mount.**



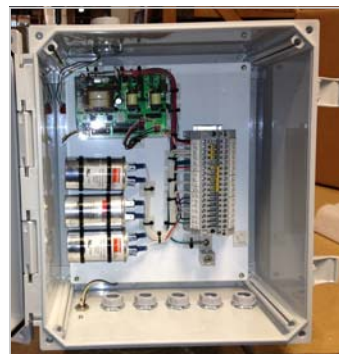
**15 feet of 18/2 outdoor rated cable runs from the Control Unit to the site provided 45 watts, -48VDC power located at the base of the antenna. Additional cable can be purchased.**

## Overview Ice Quake Systems for antennas larger than 2.0 meters



Why gamble with a heat wire or heat pad system that can not even be installed during the weather conditions that it is suppose to be protecting your antenna's signals in; extreme cold, extreme heat, rain, snow or ice due to the adhesive tapes that have to be used to hold the heat wire or pad to the back of the antenna's reflector?

The Walton Snow Shield and Ice Quake System can be installed in any weather conditions. The Snow Shield Cover and Ice Quake System also incorporate a redundancy factor. If the Ice Quake System should loose power, in most conditions the Snow Shield Cover will continue to shed the ice and snow keeping the antenna from loosing signal and you staying on the air.



The Ice Quake System is automatically activated by the DS-4C LCU moisture and temperature sensing control unit. An optional DP-7IQ Remote Monitor/Control Unit can also be added.

The Ice Quake System can also be activated during a rain event to reduce the water sheeting on the reflective surface of the antenna to reduce rain fade.





# DS-4 Sensor/Controller

Snow Shield

Ice Quake

The DS-4C LCU is used to control the Ice Quake System on antennas 2.1 and larger. The Ice Quake System will automatically activate using a moisture/temperature sensing unit. This unit closes a 30amp 1 pole relay in the event that there is moisture present and the temperature is 42 degrees or below.

The DS-4C Rain/Snow Sensor Controller

- Automatic Activation means Lower Deicing Costs**
- Reliable Rain and Snow Detection**
- Full 30A @ 240VAC Control**
- Field Strap for 100-120/200-240 VAC Operation**
- Replaceable Precipitation Sensor**
- Easy Installation, Full Access to Electronics**
- 8 Different Functions, 1 Part Number**
- Adjustable Temperature Trigger Point**
- Adjustable Moisture Sensing Sensitivity**
- Adjustable Delay Off Cycle**
- Selectable Low Temperature Cutoff**
- Smart "Manual On" Operates for One Delay Off Cycle**
- Housed in a NEMA 4X Plastic Enclosure**







# DP-7IQ De-Ice Controller

Snow Shield

Ice Quake

## Walton DP-7IQ Remote Monitor/Control Unit

The DP-7IQ is mounted on a 1.75" X 19" standard, single rack mount panel. The black powder finish assures high indicator visibility, even from a long distance. Termination of the cabling from the local unit is easily made through the rear mounted terminal blocks on the back of the unit. All connections to the unit are clearly marked on the rear of the panel to simplify installation. A de-pluggable terminal block for interface also makes swap-out a snap. Control leads going to the DS-4C Local Control/Sensor are optoisolated in order to improve noise immunity, reduce ground loop problems, and provide circuit protection. This also allows the DP-7IQ to be mounted up to 1200 feet away from the Local (DS-4C) Control/Sensor. Dry contact I/O for customer monitor and control equipment is also provided for monitoring the status of the deicing system along with allowing full remote **Manual On** activation, no matter what position the DP-7IQ control Switch is in. A panel indicator will show a remote M&C **Manual On** command.

### Key Features of the DP-7IQ

- Inexpensive assurance of proper De-icing operation
- Full remote control for testing
- M & C Interface for station control/monitor serial or Ethernet interface
- 100-120VAC standard, 200-240 VAC optional
- Controls can be located up to 1200 feet from the local antenna De-ice controls
- Stand or high density configurations available



The DP-7IQ remote control/status display panels coupled with the DS-4C provides a low cost method to remotely monitor and control your Ice Quake System. The DP-7IQ provides basic **Ice Quake on** Status for the Ice Quake System, along with **Manual on**, **Automatic**, and **Standby** control capabilities. The DP-7IQ also has a Feed Heater On Indicator.

# Minimize The Impact of Ka-Band Rain Fade with



## Walton Rain Quake

Your Signal Without Walton Rain Quake



With Walton Rain Quake



**Rain Fade is a serious challenge with the new Ka-Band systems.**

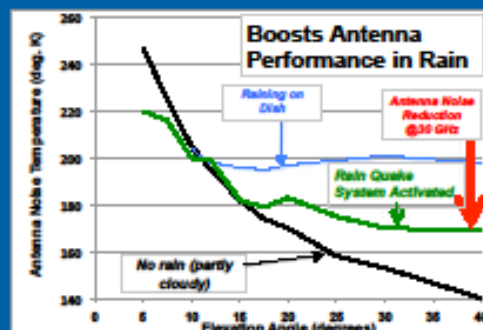
Signal attenuation at Ka-Band during heavy rainfall can be up to four or five times that of G/Ku-Band. Antenna wetting alone can add 2.7 to 3.9 dB of link losses at Ka-Band.

Walton Rain Quake systems reduce rain fade on your Ka-Band antennas, and protect your antenna G/T performance. During heavy rain conditions, Walton Rain Quake systems can reduce data loss — by over 20X compared to Ka-Band antennas without protection.

- Prevents water from sheeting on your antenna surface - and causing Ka or Ku-band rain fade — from VSATs to large antennas.
- Covers your antenna — keeping rain off with GORTEX® material that's virtually invisible to RF.
- Rain Quake is also the Ice Quake De-Icing System for year-round protection in areas with snow and ice.



**Rain Quake**



Tests show that the Rain Quake System helps to minimize bit error rates and antenna noise temperature increases, as well as increase your link margins during a rain storm.



**Rain Quake**

**Solar Cover**

**Ice Quake**



Snow Shield

Ice Quake

## Rain Fade Testing of the Walton Snow Shield Cover and Ice Quake/ Rain Quake System on a 3.9 meter Ka Band Antenna



Rain fade test performed at Ka Band using a FDMA Modem and a satellite simulator. The duration of all testing was 10 minutes. Solar-Winterization Cover with Ice Quake System activated with water at a rate of 2.5 gallons per minute. During this phase of the test a total of 4 hits (data lost) were recorded (photo on the left)



Test performed on a 3.9 meter GD antenna

## Summarization of Testing Performed

Description of Test Performed	Number of Hits (Data Lost)
Reflector Dry with no Solar-Winterization Cover	2
Reflector Wet with no Solar-Winterization Cover	43
Solar-Winterization Cover installed and dry	2
Solar-Winterization Cover installed, dry with Ice Quake activated	1
Solar-Winterization Cover installed, wet with no Ice Quake activated	34
Solar-Winterization Cover installed, wet with Ice Quake activated	4



# Snow Shield

## Electric and Gas Heating Units





# Snow Shield Controls

Snow Shields

Heated

## Automated Snow Shield Heating System

All W. B. Walton Enterprises heated Snow Shield de-icing systems are supplied with an automatic local controller which interfaces with a moisture sensor and Thermister to monitor precipitation and temperature. This system provides the user with a versatile, yet inexpensive method of controlling the de-icing system. These systems were designed specifically to operate in high noise, low temperature environments, for added reliability.

## DS-4C Automatic Local Control Unit

The DS-4C Controller operates by detecting temperature through a base mounted thermistor and precipitation using a precipitation sensor. These signals are then supplied to the micro-controller, which will activate your de-icing system. The DS-4C Controller can be powered by either 110-120 VAC or 200-240 VAC 50/60 Hz power.

### KEY FEATURES

- Automatic Activation Lowers De-icing Operational Costs
- Reliable Snow Detection
- Dual 30A @ 240 VAC Individually Controlled Relays
- Replaceable Precipitation Sensor
- Adjustable Temperature Trigger Point
- Adjustable Moisture Sensing Sensitivity
- Adjustable Delay Off Cycle
- Selectable Low Temperature Cutoff
- Easy Installation and full access to electronics
- Automatic Selection for 100-120/200-220VAC Operation



Now UL and CE Certified







# Walton Electric Heaters

Snow Shield

Heated

## Walton 48 VAC Heater for 0.6 to 1.2-meter Antennas

The 48VAC system was designed for sites with no AC power to the antenna. This system requires no conduit or wire from the power source to the antenna, and can be installed without the need for an electrician. Number 8/2 conductor 150 volt cable is used from the transformer to the antenna. The transformer can be located (plugs into wall outlet) up to 500 feet from the antenna. Electrical cable can be installed with the RF Cable.

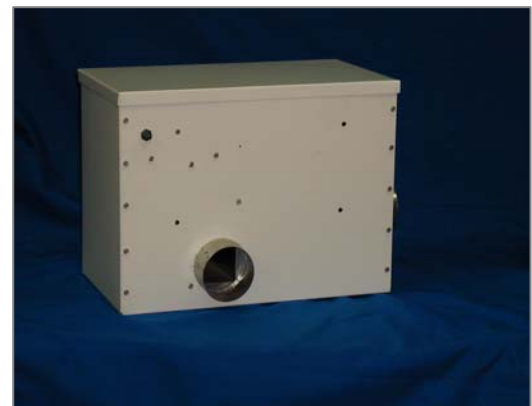
Power to the heater is 48 VAC, which is supplied to the 800 Watt element, and rectified for the 48 VDC blower motor.

The system is controlled with an on/off switch on the transformer assembly. The system should be turned on in the fall, and off in the spring. The blower will operate continually while the switch is on. There is a thermostat in the heater, which turns on the heater element whenever the outside temperature falls below a pre-set temperature range.



## Walton 120 VAC, 220 VAC and 230 VAC Heaters for 0.6 to 2.3-meter Antennas

This small heater is the same design as the 48 VAC heater except it uses 120 VAC, 220 VAC or 230 VAC for the heater element and the blower motor. The heater will provide 1,200 Watts, 1,700 Watts or 2,000 Watt of heat as required. The heater unit utilizes brushless and maintenance free blower motors. The heater is controlled by the DS-4 Moisture/Temperature sensor. The Rack mounted DP-7SS Remote Monitor/Control Panel can be added to the DS-4. Unlike the 48 VAC heater above, this heater requires a professionally installed electrical service.



Heater KW	120VAC 60Hz	220VAC 50/60Hz	230 VAC 50 Hz
1.2	14 amps	* 7.45 amps	7.22 amps
1.7	18.17 amps	* 9.72 amps	9.39 amps
2	* 20.67 amps	* 11.09 amps	10.69 amps

\* Pending  Approval

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# Snow Shield Control Units

Snow Shields

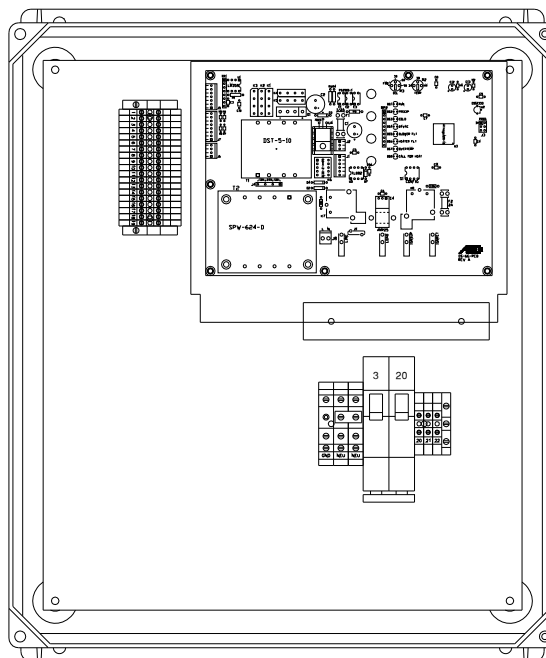
Heated

## DS-6 Local Control Unit located inside the Power Distribution Panel Enclosure

The DS-6 series of controllers were developed to provide a cost effective, automatic control system for Heated Snow Shields with Gas heaters or Electric heaters of 6 KW or 12 KW. Similar to the DS-4 in operation, the DS-6 is in a NEMA 4X non-metallic enclosure which houses the DS-6 Printed Circuit Board, Terminal Blocks, and circuit breakers. These added items are required for the gas heaters and the larger electric heaters.

### Key Features

- Automatic Activation Lowers De-icing Operational Costs
- Reliable Snow Detection
- Replaceable Precipitation Sensor
- Adjustable Temperature Trigger Point



Now UL and CE Certified



## DP-7SS Remote Monitor/Control Unit

The DP-7SS remote Monitor and Control/Status Panel provide a low cost method of remotely monitoring and controlling the DS-4C or the DS-6 De-icing Control Units. The DP-7SS, mounted in a single rack unit (1.75 in. X 19 in.) panel with black finish to assure good indicator visibility.

The DP-7SS, which can be located up to 1200 ft. from the DS-4C or DS-6, has a blower on and heater on indicator LED. Manual, Auto or Standby mode can be selected from the DS-7SS Panel. Dry Contact I/O's or Ethernet is provided for interfacing with customer's M&C





# Walton Electric Heaters

## Snow Shield

## Heated

### Walton 120VAC, 220 VAC and 230 VAC Heaters for 2.4 to 3.1-meter Antennas

This heater uses 2 elements at 2,000 Watts each to provide 4,000 Watts of heat, and utilizes brushless maintenance free blower motors. The heater is controlled by the DS-4C Moisture/Temperature sensor. The Rack mounted DP-7SS Remote Monitor/Control Panel can be added to the DS-4C. This heater does require a professionally installed electrical service.



#### Single Phase Electric Power Consumption

Heater KW	120VAC 60Hz	220VAC 50/60Hz	230 VAC 50 Hz
4	36.83 amps	* 20.48 amps	19.39 amps

\* Pending  Approval

Now UL and CE Certified



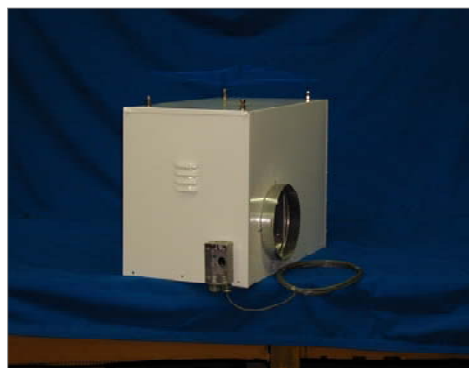
### Walton 120VAC, 220 VAC and 230 VAC Heaters for 3.2 to 6.3-meter Antennas

Using the same concepts as the two smaller heaters, this heater wattage ranges from a three element 6,000 Watt unit to a six element 12,000 Watt unit. The blower motors are brushless and maintenance free.

The heater can be controlled by the Walton Thermostat Controller or the DS-6 Local Control Unit. The Rack mounted DP-7SS Remote Monitor/Control Panel can be added to the DS-6. This heater required a professionally installed electrical service.

#### Single Phase Electric Power Consumption

Heater KW	208/220/230 50/60Hz
6	37.45 amps
12	66.29 amps



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#### Three Phase Electric Power Consumption

Heater KW	208 VAC 60 Hz	220/230/240 VAC 50 Hz	380/400 VAC 50Hz
6	22.26 amps	* 21.35 amps	14.14 amps
12	38.31 amps	* 37.10 amps	23.25 amps

\* Pending  Approval



# Walton Gas Heaters

Snow Shield

Heated

W. B. Walton Enterprises, Inc. (Walton De-Ice)  
Gas Heaters for Snow Shield Cover De-Icing Systems and  
the Gas Heaters for Plenum De-Icing Systems now on their  
5th. year of meeting the European Union Declaration of  
Conformity for directives: EN 60204-1:2006+A1:2009, EN  
60529:1991+A1:2000/IEC 60529:1989+A1:1999 and  
EN12669 (EN298:2003 EN126:2004 EN1854:2006)

EU Gas Appliance Directive Test Standards:  
2009/142/EC (GAD)

EU Low Voltage Directive Test Standards:  
2006/95/EC

Environmental Tests:  
EN 60529:1991+A1:2000



W. B. Walton Enterprises, Inc. is currently pursuing Canadian and U.S. listings for our Gas Heating Units for both the Snow Shield Cover De-Icing System and the Plenum De-Icing Systems.

## New Dual Hot Surface Ignition System

- Dual hot surface igniter's means redundancy in the ignition sequence.
- Large flame sensing rod. Turbulence no longer a factor during ignition sequence.
- Same reliable 3 try ignition sequence with purge time.
- No more pilot assembly or pilot orifice.



## Same Wiring and Mounting Configuration as Original Heaters

- Older Gas Heaters can be changed out with the new designed Gas Heating Units. Mounting and wiring is the same.





## Snow Shield Gas Heater and Electric Heater Comparison

Snow Shield

Heated

Electric Snow Shield Heater



Gas Snow Shield Heater



### Representative Average Unit Cost of Energy

Energy Type	In common Therms:	\$ per million BTU (British Thermal Unit)
Electricity	10.8 cents per KWh	<b>\$31.65</b>
Natural Gas	75.3 cents per therm	<b>\$13.28</b>
Propane	2.42 dollars per gallon	<b>\$26.50</b>

### Heater Specifications

#### Natural Gas

**Inlet Pressure:** 7 inches water column to heater and 4.5 inches of water column to burner.

#### **Electrical Consumption**

**Electric:** 9.6 amps @ 120VAC 1 phase 60 Hz or 4.8 amps @ 220VAC 1 phase 50 Hz.

#### Liquid Propane Gas

**Inlet Pressure:** 10 pounds per square inch to second stage regulator and 11 inches of water column to heater burner.

#### **Electrical Consumption**

**Electric:** 9.6 amps @ 120VAC 1 phase 60 Hz or 4.8 amps @ 220VAC 1 phase 50 Hz.

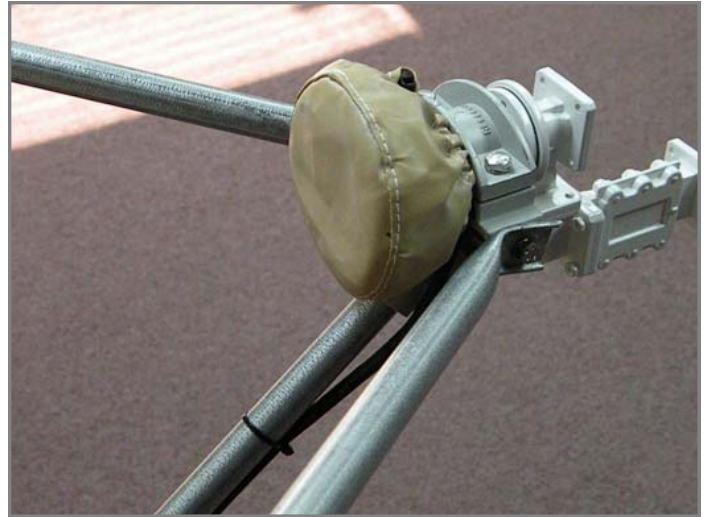


## Sefar PTFE Feed Horn Covers

Walton De-Ice

Heated

W. B. Walton Enterprises, Inc. optional Feed Horn Covers can either be passive or heated. The Passive cover is the same PTFE Coated Sefar® Fabric that is used to manufacture the antenna reflector cover. PTFE has the lowest coefficient of friction of any solid, and therefore does a good job of preventing ice and snow accumulation on the feed. For an even higher level of performance, Walton offers a Heated Feed Cover. The Heated Feed Cover is also the PTFE Coated Sefar® Fabric that has a 24 VAC, 12 watt Silicon Heater Pad that is located inside the Feed Horn Cover and can operate at 220/230 VAC 1 phase 50 Hz. or 120 VAC 1 phase 60 Hz.





## Heating Systems for Large Transportable Antennas



Snow Shield Cover consist of Sefar PTFE fabric that is also coated in PTFE. Stainless steel cable and ratchet assembly is used to secure Snow Shield Cover behind the antenna reflector taking two persons 1 hour or less to install.

Snow Shield Cover is permanently UV-resistant and color fast, weather-proof, dirt and water repellant, no absorption of moisture and resistant to salt spray.

Snow Shield Cover is nearly invisible at Ka band frequencies and prevents water from sheeting on the face of the antenna reflector reducing rain fade.



Product Transportability Package includes shipping container, pre-wired mounted heater and control unit, and storage capability for fully transportable Snow Shield Cover and Electric Heating System.

Shipping container weighs 330 pounds and is 61.31" x 37.25" x 35.55".



Pre-wired mounted heater and control unit are attached to the base of the shipping container and can either be utilized while attached to the base or can quickly be removed and positioned in another location.

Snow Shield Cover and Electric Heating System can be installed with two persons in 2 hours or less and requires a 50 amp 208VAC 3 phase 5 wire or a 30 amp 380/400VAC 3 phase 5 wire power supply.



# Snow Shield

## For L-Band Arrays



Sefar PTFE Snow Shield Cover installed over the L-Band Array and standard feed horn. Air is then blown into the cover to keep the cover inflated 24/7. Air can also be heated for De-Icing.



# Hot-Air De-Ice

Walton De-Ice

Heated

The Walton Hot Air De-ice system is designed to prevent snow and ice from accumulating on the Satellite Earth Station Antenna. This Hot Air De-Ice System is the original Walton concept, with a plenum (enclosure) located on the rear of the antenna. Heaters (Gas or Electric) located on the antenna structure provide Hot Air for inside the plenum, which in turn heats the reflector surface to remove or prevent ice and/or snow from accumulating.

Over the Past 39 years, Walton has updated the plenum and heaters to ease installation, and provide the most reliable and economical satellite antenna de-icing system on the market today. In order to provide maximum flexibility, Walton offers Electric, Natural Gas, and Liquid Propane Gas Heaters so the customer can make their choice, based on the cost and availability of the fuel source at their location.

Unlike Electric Pad or Heat Tape Anti-ice, the Walton Hot Air De-ice System heats the entire Satellite Communications Antenna Reflector and Back Structure uniformly. This minimizes the chances of reflector distortion (which can cause signal problems) caused by thermal expansion and contraction.

Most people agree that enclosing the back of the Satellite Earth Station Antenna makes it more esthetically pleasing. This enclosure will hide the unsightly support structure and will also prevent birds from nesting in the back structure of the antenna.



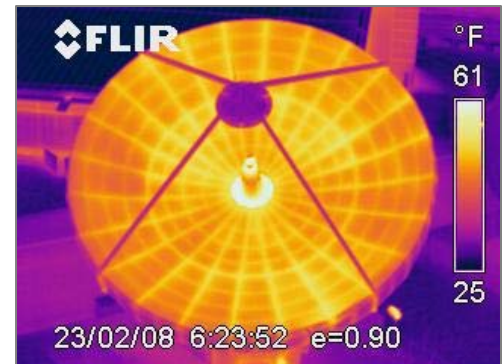
## Key Features

- Prevents the accumulation of snow and ice on the Satellite Earth Station Antenna, which therefore prevents the Signal loss associated with snow and ice.
- Heat Source Flexibility – Electric, Natural Gas and Liquid Propane Gas Heaters are available.
- De-icing System carries a **full two- year warranty**.
- De-icing system makes antenna more Esthetically pleasing.
- **Technical Support available 24 hours a day 7 days a week.**

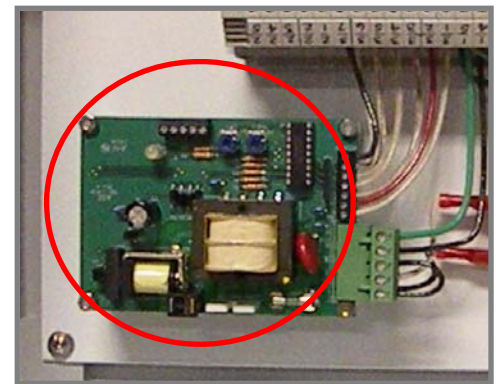


## TCB-1 Controller for Plenum De-Icing System's for Ka-Band Antennas

Walton De-Ice has successfully installed over 200 Ka-Band antenna Gas and Electric Heating Systems utilizing an Infrared Camera technique on the proper location of both Gas Heater Ducts and the Placement of the Stainless Steel Electric Space Heaters.



The TBC-1 is used to monitor the air temperature of up to four quadrants of a satellite antenna and activate circulation fans if a high temperature differential is detected. A control is provided for setting the allowable differential for activation (DIFF) from 2°C to 15°C. A second control provides adjustment of minimum run time in order to reduce short cycling of the fans (Dwell)



Circulation Fans controlled by the TBC-1 are used to move the heated air throughout the plenum to evenly distribute the out bound heat. The Circulation Fans operate all year long to keep the air inside the plenum at a temperature of no more then 10 degrees F. difference at any location within the plenum.



# NEW For 2017 TCM-2 Monitor and Control Unit

The new TCM-2 system is now available! This new control unit can also be integrated into existing De-Icing Systems both Gas and Electric.



The TCM-2 system provides a method of passively monitoring and, if required, actively controlling antenna surface temperatures. Four remote digital temperature sensors are mounted in top, bottom, and side quadrants inside the main reflector plenum. These sensors are accurate to within  $\pm 0.5^{\circ}\text{C}$ . The Digital surface temperature information is returned to a unit mounted on the Power Distribution Panel. Readings are scaled, then forwarded via a serial link to a 1-U rack-mount display panel. This provides the user with a rolling digital display of the operating temperature of each quadrant of the main reflector, confirming proper operation of the deicing system.

Additionally, the TCM-2 can be configured to take the place of the mechanical thermal switches used to activate and deactivate the deicing heaters. An on-board relay opens and closes on cue from the digital temperature sensors inside the plenum, firing the heaters as needed. Heat from all heaters in the deice system will activate and deactivate at the same time. The heater fan/blower motor will operate as long as there is a call for deice. Unlike fixed thermal switches, the user can easily adjust the operating temperature of the deicing system using the TCM-2, assuring reliable melt-off while potentially reducing operating costs. Manual override for testing and special operating conditions are still available.

Higher frequency antennas require tight surface tolerances. Temperature imbalance during non-deice condition can introduce uneven expansion and contraction of the main reflector. This may occur when sun shine is on a portion of the reflector and shadows are on another portion. To help combat asymmetry and optimize the reflector's gain and accuracy the TMC-2 can be configured to assist in maintaining an even surface temperature. The unit monitors the temperatures of the four quadrants. The user is able to set the desired allowable temperature difference ("span") between all quadrants. When this number is exceeded, a relay is closed, activating circulation fans inside the antenna plenum, dispersing "hot spots" and leveling reflector surface temperatures.

The rack-mount unit also offers a monitor & control interface for remote system supervision. Temperatures and relay activation can be monitored remotely through discrete relay closers and also by Ethernet Port and is IP addressable.





# DS-4 De-Ice Controller

Walton De-Ice

Heated

Walton De-icing systems will be supplied with an automatic Rain/Snow sensor – controller unit (DS-4) integrated into the Power Distribution Panel unless the controls are upgraded to the ADC-2000/3000 Antenna De-ice Control System. The DS-4, when coupled with the DP-7EX Remote Control/Status display panel, provides the user with a versatile, yet inexpensive method of controlling the de-icing system. The Local Control/Sensor units along with the Power Distribution Panels are designed specifically to operate in high noise, low temperature environments, for added reliability.

## Walton DS-4 Rain/Snow Sensor/Controller

The DS-4 Automatic local Control Unit operates by detecting temperature through a thermistor and precipitation using a moisture sensor. These signals are then supplied to the microcontroller, which will activate your de-icing system. The DS-4 Controller can be powered by either 110-120 VAC or 200-240 VAC 50/60 Hz power.

### KEY FEATURES

- Automatic Activation Lowers De-icing Operational Costs
- Reliable Rain and Snow Detection
- Field Strap for 100-120/200-240 VAC Operation
- Replaceable Precipitation Sensor
- 16 Different Functions
- Easy Installation and Full Access to Electronics
- Adjustable Temperature Trigger Point
- Adjustable Delay Off Cycle
- Selectable Low Temperature Cutoff



DS-4 Automatic Local Controller which is integrated into the Power Distribution Panel



## ADC-3000's DS-16 Local Monitor/Control Board

Walton De-Ice

Heated

### Introducing the new ADC-3000 Antenna De-Icing Control System

The Walton De-ice ADC 3000 Antenna De-icing Control System is just like ADC 2000 except it can handle up to 6 heaters and has the capability to monitor propane fuel consumption. The ADC 3000 consists of a rack mounted Remote Control/Status Unit (DP-9) that communicates with the Local Control (DS-16)/Power Distribution Panel located on or near the antenna. These Local and Remote Units work in unison to provide the most up to date and cost effective Antenna De-ice Control System in the industry. This system can also serve as the Rain Blower Controller if the antenna is fitted with a Rain Blower. When coupled with the Walton Hot Air De-icing System, the ADC 3000 Automatic De-ice Control System is designed to maintain ice free conditions on the Reflector, Feed and Subreflector without assistance from site personnel. The logical and Straightforward controls and indicators provide simple yet versatile operation.

### DS-16 Local Control Unit located inside the Power Distribution Panel Enclosure

The DS-16 Local Control Unit is located inside the Power Distribution Panel Enclosure, which is mounted on or near the antenna. Together they provide rain and snow detection, basic monitoring functions and switching power for the heaters. At the Local Control Unit Power Distribution Panel, the operator will have access to three LED indicators. The PRECIP LED indicator will show if the sensor is indicating moisture. The COLD LED indicator will show if the Thermister is indicating the air temperature is below the trigger point. The Run LED indicator will show if the DS-16 local controller is operating properly. The Operator will also have access to the System Bypass Switch and the Thermal Disc bypass switch for testing and emergency operation. The Local Control Unit communicates with the Rack Mounted Remote Control/Status Panel via a dedicated 4-wire RS-422 serial link, along with a summary alarm relay contact. The interconnecting cable will be a #2 multi conductor cable with an overall shield. DS-16 Local Control Unit which will be integrated into the Power Distribution Panel

### Key Features

- Automatic Activation Lowers De-icing Operational Costs
- Reliable Rain and Snow Detection
- Replaceable Precipitation Sensor
- Can operate as a Rain Blower and De-ice Control System.
- Adjustable Temp. Trigger Point and Delay Off Cycle
- Selectable Low Temperature Cutoff
- Monitors each Heater for "Blower On", "Call for Heat", "Heater Failure" and "Over Temp"
- Monitors Feed Horn and Subreflector Heater/Blower for "Blower On", Feed Heater On" and Sub Heater On"
- Remote Rack Mounted Unit can communicate with the Customer's M&C system via a RS-232 or addressed 4 wire RS-485 "Party Line". It is also IP
- Addressable through a separate optional port.
- Propane Fuel consumption monitoring capabilities.

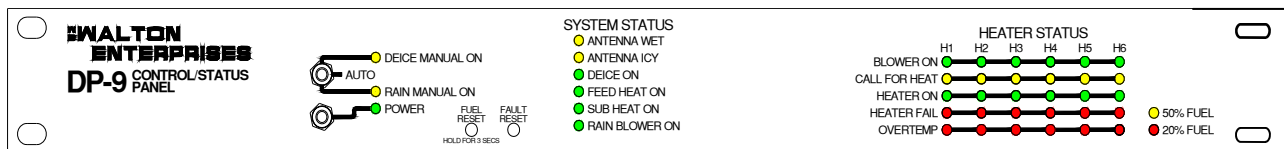


## ADC-3000's DP-9 Remote Control/Status Unit

Walton De-Ice

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### DP-9 Rack Mounted Remote Control/Status Unit



From the Remote Control/Status Panel (DP-9) the operator is able to select between Automatic Operation, De-ice Manual On and Rain Blower Manual On. When in the automatic mode, the Rain Blower (if supplied) will activate when the precipitation sensor detects moisture but the temperature is above the trigger point. The De-icing System will activate when the precipitation sensor detects moisture, and the temperature falls below the adjustable (34o F to 44o F) temperature trigger point. When the De-ice Manual On is selected, the system is activated, just as if the precipitation sensor indicated moisture, and the temperature was below the trigger point. When the Rain Blower Manual On is selected the Rain Blower (if supplied) will be activated. The Remote Panel is equipped with System status LED indicators for "Antenna Wet", "Antenna Icy", "De-ice On", "Feed Heat On", "Sub Heat On" and "Rain Blower On". Additionally, the Remote Panel has LED status indicators for up to 6 heaters. These LED indicators show, "Blower On", "Call For Heat", "Heater On", "Heater Failure" and "Over Temp". LED indicators showing 50% and 20% Propane Fuel consumption are also located on the Remote Control/Status Panel (DP-9). All of this status is available to the customer's M&C system via RS-232 or an addressed 4 wire RS-485 "party line M & C interface. The port for this interface is located on the Rack Mounted (DP-9) Remote Control/Status Unit.



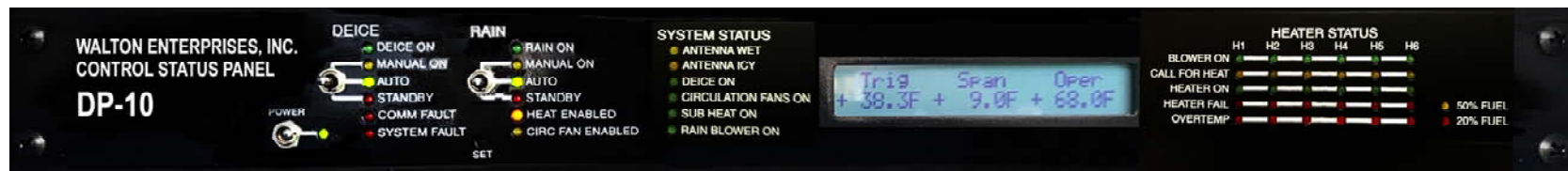
## New Walton ADC-4000 De-Icing Control System

### Most Up to Date and Cost-Effective Antenna De-Ice Control System in the Industry

- Automatic De-Icing - lower your operational costs / overhead
- Rain & Snow Detection
- Manage heaters, blowers, rain diverters to ensure ice-free operation without on-site personal assistance
- Temperature monitoring on/at antenna
- System includes DP-10 (1RU Indoor Unit), DS-18 module enclosed in outdoor Power Distribution Panel (PDP), temperature and moisture probes.

### NEW with ADC-4000

- New way to actively control heat within antenna de-icing enclosure
- Improved control of antenna surface temperature
- Digital Display – Set Triggers, Temperature Span, Monitor Operating Temperature in sections of Antenna
- DP-10 are EMF/RFI rated
- Interface with external M&C systems via RS-323, 4-Wire RS-485, IP Ethernet/Fiber



DP-10 Remote Control Status Panel: Indoor Rack-Mounted M&C



## New Walton ADC-4000 De-Icing Control System

**Most Up to Date and Cost-Effective Antenna De-Ice Control System in the Industry**

- Snow and Rain Detection
- Heater Operating Point Control
- Main Reflector Temperature Balance Control

Left Btm Right  
+ 82.4F + 82.4F + 82.4F

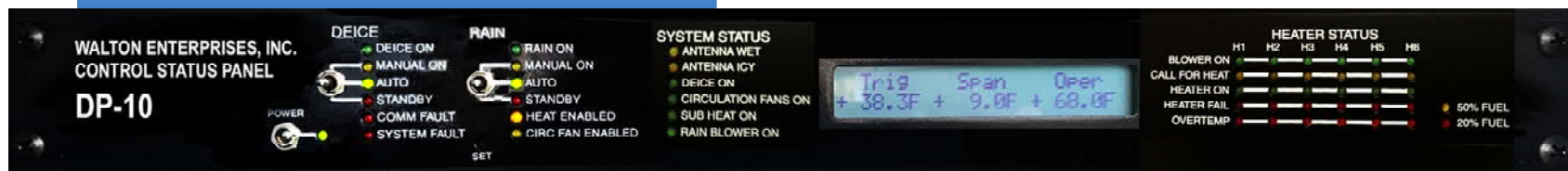
- Temperature Span settings to ensure uniform heat distribution and distortion free reflector

Trig Span Oper  
+ 38.3F + 9.0F + 68.0F

- Set Trigger Temperature threshold to auto- activate; optional time Delay

Del Set Snw Del Rain De  
61 Min 0 Min 0 Min

### DP-10 Remote Control Status Panel







W. B. Walton Enterprises, Inc. (Walton De-Ice)  
Gas Heaters for Snow Shield Cover De-Icing Systems  
and the Gas Heaters for Plenum De-Icing Systems now  
on their 5th. year of meeting the European Union Declaration of Conformity for directives: EN 60204-1:2006+A1:2009, EN 60529:1991+A1:2000/IEC 60529:1989+A1:1999 and EN12669 (EN298:2003 EN126:2004 EN1854:2006)

EU Gas Appliance Directive Test Standards:  
2009/142/EC (GAD)

EU Low Voltage Directive Test Standards:  
2006/95/EC

Environmental Tests:  
EN 60529:1991+A1:2000



## CE Certified Gas Heating Unit's Features

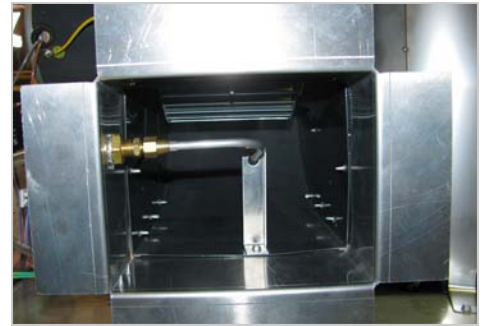
### Dual Hot Surface Ignition System

- Dual hot surface igniter's means redundancy in the ignition sequence.
- Large flame sensing rod. Turbulence no longer a factor during ignition sequence.
- Same reliable 3 try ignition sequence with factory adjustable pre-purge time.



### Positive Blower Recognition for Ignition Sequence

- Normally open contact on air flow switch operates power to the ignition unit. No air flow, no ignition.
- If no airflow is verified, the ignition unit will not be energized and the unit will go into ignition failure mode.



### Same Wiring and Mounting Configuration as Original Heaters

- Older Gas Heaters can be changed out with the new designed Gas Heating Units. Mounting and wiring is the same.



**WALTON**  
**REFICE**



# Stainless Steel Electric Heaters

Walton De-Ice

Heated

The Forced Air Electric heaters used on the Walton Hot Air De-icing Systems are built specifically for Antenna De-icing Systems. The Heating units are built to Walton's demanding specifications in order to provide reliable operation over a long period time and under difficult climatic conditions. The heater (including the heater element's fins) is made of Stainless Steel, and all hardware is either stainless steel or aluminum, for a rust and corrosion free life. These heaters also incorporate the latest innovation with V-seal technology. Because these heaters are inactive for long periods of time, while also being exposed to the elements, preventing moisture absorption is paramount for long trouble free heater service. V-Seal Technology does just that, and extends the life of the heater elements and improves their reliability.

The fan motors are totally enclosed fan cooled (T.E.F.C.) motors, which are better suited for this type of outdoor operation than open winding type motors. These heaters also incorporate built in thermal devices, which provide high heat protection.



## Virtually Maintenance Free Heaters

### Key Features

- Stainless Steel Housing
- Stainless Steel Fins
- Totally Enclosed Fan Cooled (T.E.F.C.) Motor
- V-Seal Technology for battling the elements
- Technical Support available 24 hours a day 7 days a week.





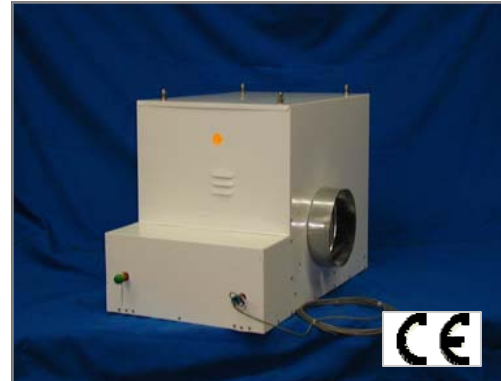
# Gas and Electric Heaters

Walton De-Ice

Heated

W. B. Walton Enterprises, Inc. manufactures a Gas Heater which is designed specifically for De-icing Satellite Earth Station Antennas. These Heaters are suspended from the antenna mounting structure and provide economical and reliable service for years to come.

Walton offers the best electrical heater in the business. These heaters are virtually maintenance free with Stainless Steel Housing, Stainless Steel Fins, V-Seal Technology to seal the Elements and T.E.F.C. (Totally Enclosed Fan Cooled) Motor, for the highest level of reliability in the industry.



## Gas Heaters vs. Electric Heaters Operational Costs

Energy Type	In Common Therms	\$ per million BTU (British Thermal Unit)
Electricity	10.8 cents per KWh	<b>\$31.65</b>
Natural Gas	75.3 cents per therm	<b>\$13.28</b>
Propane	2.42 dollars per gallon	<b>\$26.50</b>

## Available Options

- Feed Horn and Subreflector De-icing systems.
- Control of Antenna manufacturer's Feed Horn and Subreflector De-ice
- Field Services
- Custom Systems for special applications.







## Feed Horn and Subreflector De-Icing System

Walton De-Ice

Heated

The Walton De-ice Feed Horn and Subreflector De-Icing Systems utilize the existing heated air within the plenum. The air is ducted to the Feed Horn and Subreflector using a 60 CFM Regenerative Blower that can operate at 110 VAC or 230 VAC 1 phase 50 or 60 Hz. the system can also be used as a Rain Diverter System to keep the Feed Horn window clear of any moisture.

### Key Features

- The Regenerative Blower Assembly is CE Compliant
- Totally Enclosed Fan Cooled (T.E.F.C.) Capacitor Started Motor is Half Horsepower with Permanently Sealed Bearings and is rated for continues duty
- Cast Aluminum Blower Housing, Impeller and Cover
- Inlet and Outlet Internal Muffling
- Quiet Operation Within OSHA Standards
- Class F Motor Insulation Rated for 140 Degrees C. (284 degrees F.)







## Available Field Services

**Walton De-Ice**

**Snow Shields**

W. B. Walton Enterprises, Inc. installs and maintains what we sell. Who better to install or maintain a Walton System than our highly trained Field Technician. Our Field Technicians are familiar with our equipment as they work with it constantly. We offer a wide variety of field services for De-icing systems, so call today for a price quote on installing, or maintaining your Walton De-ice System (s).

### AVAILABLE FIELD SERVICES

- Turnkey Installation Services for Snow Shields or Hot Air De-icing Systems.
- Updating Existing Walton De-Icing Systems
- Working Installation Supervisors.
- Removal of old systems either hot air or pad type.
- Worldwide installation and maintenance services available.



**Walton Field Technician  
removing a competitors Anti-  
icing system prior to installing a  
Walton System**



**Walton Field Technician  
installing a Walton Hot Air De-  
icing System on a 18-meter  
Antenna**