ESO 180 H 237500004
ESO 180 HL 237500006

KATHREIN
Digital Systems GmbH

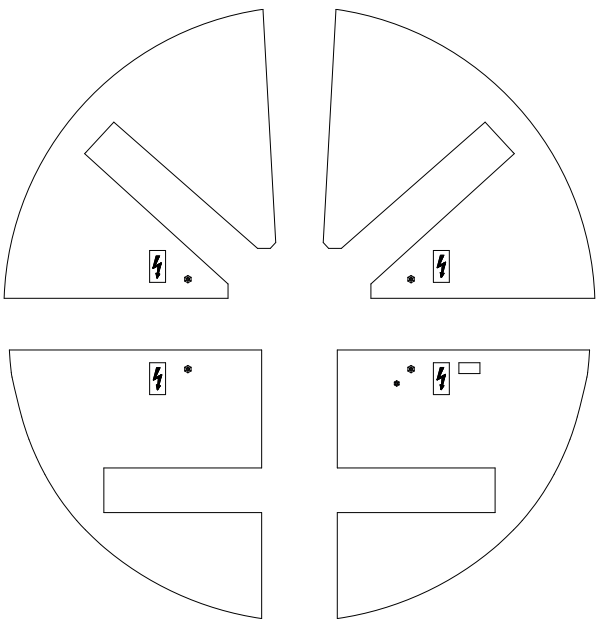
Reflector Heating Systems for CAS 180

About These Instructions

This document is part of the product. These instructions describe how to install and connect the reflector heating systems ESO 180 H, and ESO 180 HL.

- ► Do not install or use the devices until you have read and understood this document.
- ► Keep this document for reference throughout the service life of the devices. Pass this document on to any new owner or user.

The most up-to-date version of this document can be found at **www.kathrein-ds.com**



ESO 180 HL: for exposed locations, with double the heating power compared to ESO 180 H (L = increased performance).

Features

- Flexible special heating mats with integrated heat insulation and PTFE insulated heating elements
- Good heat distribution due to an optimal fit of the heating mats on the reflector
- Element carrier of aluminium foil, self-adhesive foil strips at the front
- Thermal insulation made of bubble wrap with reflective layer, 4 mm
- Built-in sensor to additionally define the heating temperature via a control

Scope of Supply

- 4 heating mats with 3.5 m cable (H05RNF) and heating temperature sensor
- Mesh reinforced aluminium foil, 0.05 x 17 m
- Adhesive film (white) for covering the aluminium foil, 0.075 x 17 m
- 4 elliptical segments made of white adhesive foil for covering the outer contours of the heating mats
- 8 x cable ties, 360 mm

Transport and Storage

- ► If possible, transport and store the heating mats in their original packaging.
- ► Protect the heating mats against moisture and mechanical damage.
- ► Transport and store the heating mats only in the permitted temperature range between -40 and +80°C. Make sure there is no condensation build-up.

Functional Description

The electric heating prevents snow and ice formation on the antenna reflector surface which may lead to interruptions in satellite reception. The heating for the antenna consists of four special heating mats with integrated heat insulation and PTFE insulated heating elements. After installation, the heating mats fit on the reflector in an optimum way and guarantee a good heat distribution. Two of the heating mats have an integrated temperature switch that turns off the heating at 80°C so that the system can be directly operated at 230 V/50 Hz. To ensure efficient operation, we recommend the use of a control unit for the ESO 180 H. The control unit can be operated with the built-in sensor, but also without a sensor. Possible system components:

	Operation without temperature sensor	Operation with temperature sensor	Operation without control possible
ESO 180 H	ESO 97 S	ESO 97 SL	YES
ESO 180 HL	-	ESO 97 SL ESO 99 S	A control unit is mandatory for operating the ESO 180 HL. For this purpose, the required temperature sensor is built into the heating mat.

Intended Use

ESO 180 H and ESO 180 HL (performance-increased version) are reflector heaters for the CAS 180 antenna. They are used to prevent snow and ice formation on the antenna reflector surface which could lead to interruptions in satellite reception. Any other use, or failure to comply with these instructions or documentation and instructions enclosed with the devices, will result in voiding of warranty and guarantee. The following circumstances result in the loss of all warranty and liability claims towards the manufacturer:

- ► Improper installation
- ► Use of non-specified mounting materials which cannot guarantee the mechanical safety
- ► Structural changes or interference with the components and mounting accessories in the kit which could endanger both the mechanical and functional reliability
- ► Failure to observe the installation and safety instructions in this manual

Installation and Safety Instructions

DANGER!
Danger to life from electric shock when touching electrical installations!

- ► Disconnect all devices and units from the power supply during installation.
- ► In order to comply with the regulations for outdoor installation according to DIN VDE 0100 Part 610, it is recommended to have a residual current circuit breaker with a residual current of 0.03 A installed.
- ► Make sure that installation and connection are only carried out by qualified specialist personnel.
- ► Make sure that modifications to the electrical installation are only carried out by a specialist. Do not make any unauthorised modifications yourself.

WARNING!
Risk of severe injuries during installation due to falling from or through the roof or due to falling parts!

- ► Wear stable shoes with non-slip soles.
- ► Use a working platform.
- ► Make sure that the person carrying out the installation or repair has a secure position to stand and hold on whilst working.
- ► Make sure that the person carrying out the installation or repair does not suffer from vertigo and can move around safely on the roof or installation site.
- ► Make sure that the roof is sufficiently strong and stable.
- ► Make sure that there is nobody underneath the antenna during installation/de-installation.

Installing the Reflector Heating

Required tools and equipment

- Knife
- Scissors

Installing the heating mats

Processing temperature

The most favourable processing temperatures (object temperature and ambient temperature) are between +15°C and +30°C. Processing below these temperatures is not recommended. Below the recommended temperatures, the adhesive may become too hard and thus not achieve the desired adhesion.

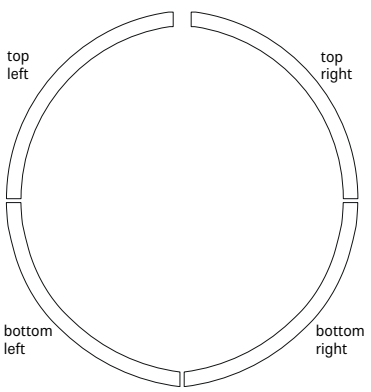
The build-up of condensation must be avoided in any case. Condensation may build up when the adhesive tape and/or the surfaces to be bonded are moved from a cold to a warmer environment. If this is the case, sufficient time must be allowed after transport and before bonding, so that all joining parts have the same temperature in the range indicated above.

1. Clean and degrease the antenna back panel.
   The surface to be bonded must always be dry, free from dust, grease, oil, oxides, separating agents and other contaminants.
   Isopropanol, ethanol, acetone, ethyl acetate, toluene or petrol can be used to remove dust, grease, oil, separating agents and other contaminants. Other standard cleaning agents that do not leave any residues are also suitable. Please observe the respective safety regulations of the manufacturers of the solvents and cleaning agents.

2. Hold the heating mats on the antenna back panel to test their position. Observe the required position of the heating mats (see figure on page 1, cable in the centre). Place the heating mats on the antenna back panel again and check if they fit correctly before gluing them on.
3. For gluing them on, hold the heating mats in place.

NOTICE!
Risk of material damage due to incorrect attachment of the heating mats!
If the heating mats are not attached to the antenna correctly, they can tear when the adhesive film is removed.
- ► Make sure that the heating mats are aligned correctly. To do so, place the heating mats flush with the outer edge of the antenna and pay attention to the equal distance on the antenna bracket. Once the heating mats have been glued on, they cannot be repositioned!
- ► If possible, ask a second person to hold the heating mats.

4. Gradually remove the protective film from the adhesive surface and press the heating mat firmly in place. Repeat this process with all four heating mats.
5. Press the heating mats firmly to the antenna back panel. It can take up to 72 hours before the final adhesive strength is reached.
6. To prevent moisture and insects from entering the heating mat, adhere the mesh-reinforced aluminium foil all along the edges of the mat.
7. Clean the surface to be covered with the mesh-reinforced aluminium adhesive tape (see 1.) to ensure the greatest possible adhesive strength of the white adhesive foil.
8. Cover the aluminium adhesive tape with the white adhesive foil. Stick the outer contours of the heating mats with the elliptical segments according to the labelling on the carrier foil and the other contours with the enclosed 75 mm wide adhesive foil.



Connecting the cables

WARNING!
Risk of severe injuries or material damage to the device!
- ► Make sure that this work is carried out only by qualified specialist personnel.

1. Run the connecting cable of the heating mats and the sensor cable along the antenna carrier to the control unit.
2. Secure all cables with cable ties.
3. Run the cables from the bottom through the screw connection into the control device.
4. Run the mains cable from the bottom through the corresponding screw connection into the control device.
5. Test the heating for contact resistance and insulation resistance (R) before connecting the cables in the control cabinet.

		ESO 180 H	ESO 180 HL
Contact resistance	Target value	36.6 – 40.5 Ω (4x)	18.3 – 20.2 Ω (4x)
	Actual value		
Insulation resistance	Target value	> 999 MΩ	
	Actual value		

De-installing the Reflector Heating

1. Disconnect all cables leading to the control unit and the heating mats. Observe the “Installation and Safety Instructions” on page 2.
2. Use hot air to remove the heating mats (including adhesive residues) from the back of the antenna.
3. Install new heating mats on the back of the antenna as soon as possible (see “Installing the Reflector Heating” on page 2).

When the film is removed, adhesive residues remain, which can only be removed completely with considerable effort. You can glue the new heating mat over the adhesive residues.

Maintenance

Check the correct attachment and seating of the heating mats on the reflector at regular intervals.

Repair and Replacement

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Technical Data

Type | Order No.		ESO 180 H 237500004	ESO 180 HL 237500006
Suitable for satellite antenna		CAS 180	
Permissible ambient temperature	°C	-40 to +80	
Recommended installation temperature	°C	+15 to +30	
Nominal temperature (frost protection)	°C	+3	
Over-temperature protection (opener)	°C	+80	
Operational voltage	V	230; 115 per two heating shells connected in series (+6%/-10%; 50 to 60 Hz)	
Rated current approx.	A	6	12
Rated voltage	V	230	
Rated power approx.	W/m²	500	
Heating power approx.	W	1400	2750
Insulation resistance	MΩ	> 20	
Dielectric strength	kV	2.5	
Protection class		IP 65	
Working life min.		10 years	
Weight approx.	kg	4.3	
Design and construction type acc. to		DIN VDE 0100, DIN EN 60519-1 VDE 0721-1, DIN EN 50173-4 VDE 0800-173-4	
Corresponds to standards		EN 61000-6-1, EN 61000-6-3, EN 1010-1, EN 60519-1, EN 60519-2	
Excess temperature cut-out			
Design		Opener	
Position		Antenna back panel in the middle of the heating area in the top third	
Type of connection		Connected in series to the heating element in the heating mats	
Connection cables			
Length	m	3.5	
Diameter	mm²	3 x 1	
Sensor cable			
Length approx.	m	4	
Diameter	mm²	2 x 0.22	

Disposal

Electronic equipment

Electronic equipment is not domestic waste – in accordance with directive 2012/19/EC OF THE EUROPEAN PARLIAMENT AND THE COUNCIL dated 04th July 2012 concerning used electrical and electronic appliances, it must be disposed of properly. At the end of its service life, take this unit for disposal at a designated public collection point.