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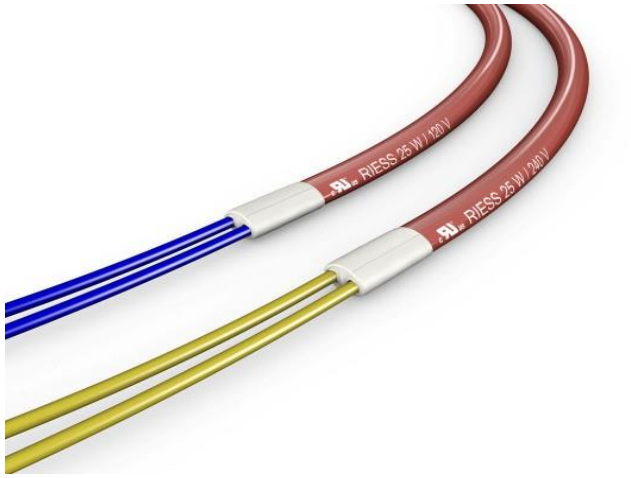
Data sheet

Anti-condensation heating tape

Insulation class H

UL / CSA



Description

The exceedingly robust and flexible heating tapes with high specific heat output are used as anti-condensation idle time motor heaters in electric motors, generators and motor-generators.
The heating cables provide secure protection from corrosion or frost damage and resulting breakdowns, because they effectively prevent condensation build-up and freezing even in extreme climate conditions.

Structure

Our UL/CSA certified anti-condensation heating tapes (UL 499/CSA 22.2 No.72, File E317031) are ready-for-use and ready-for-connection flexible and parallel heating tapes with cold lead connection cables. The heating resistor wire is coiled around to parallelly conducted Cu-cords. The cold lead cables consisting of FEP-insulated Cu-cord serve to connect the heating tape. The outer sheath is a printed silicone and glass silk sleeve.
Both ends of the heating tape are bandaged with a fabric made of glass silk and silicone.

Application

The anti-condensation motor heating tapes are inserted directly around the stator‘s end windings.
The heating tapes are homogeneously bonded to the coil through the impregnating process, which creates an optimal heat transfer to the engine. The cold lead cables of the anti-condensation heater are assigned to separate connectors in the terminal box. The heating should be turned on only after the motor has been turned off.

Technical specifications

Insulation Class:	H = 180°C
Temperature range:	-60°C to +180°C
Test voltage:	2.0 kV to earth
Specific heat output:	50 W/m at rated voltage
Heat output*:	12.5 W / 25 W / 50 W / 75 W / 100 W
Operating voltage *):	120 V / 240 V
Permissible excess voltage:	1.2 x rated voltage
Bend radius:	≥ 25 mm

Materials

Heat conductor:	CuNi-alloy or NiCr-alloy
Connection line *):	FEP-insulated; AWG 20; 600V; 200°C; Style 1330 Connection length CL: 370 mm
Insulation:	glass fabric sleeve; silicone-coated; 600V; 200°C (Grade A)

Dimensions

Cross-section:	max. 5,5 mm x 10,0 mm
Heating length HL *):	12,5 W = 250 mm 25 W = 500 mm 50 W = 1000 mm 75 W = 1500 mm 100 W = 2000 mm

*) standard,
special versions with other ouput, voltage or length available upon request

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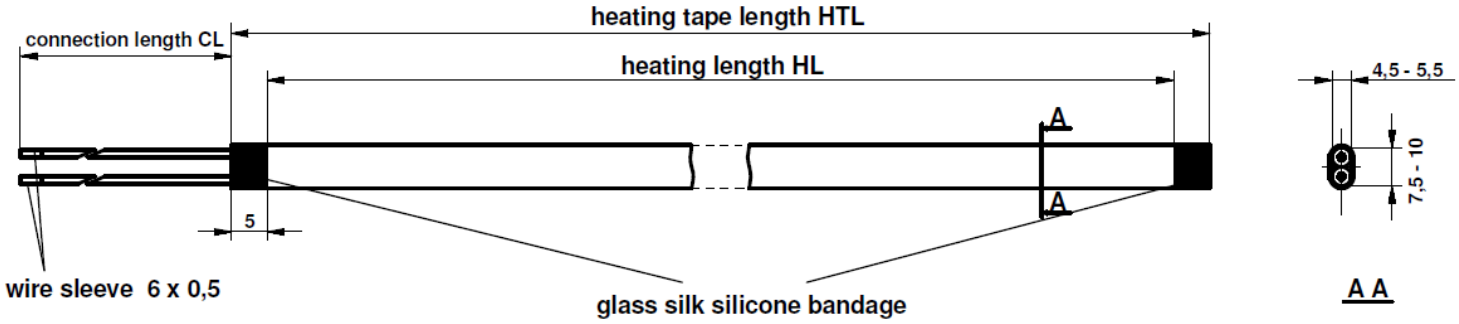

Recommended heat output depending on size

Size	56	71 - 100	112 - 132	160 - 200	225 - 250	280 - 315	355 - 400
Output	2 x 8W	2 x 12,5W	2 x 25W	2 x 50W	2 x 75W	2 x 100W	Combin.

Assembly instructions for heating tapes before the impregnating process

Under normal conditions the heating tapes are bandaged upon the stator‘s end windings near the lamination stack before the impregnating process. In order to achieve optimal efficiency and to avoid overheating („hot spots“) caused by overlapping, the length of the heating band is chosen according to the circumference of the end windings. In case the tapes were overlapping as a result of excess length, it is to be made sure to install the heating band with an intermediate clearance of ≥ 5.0 mm. Machines with size 355 or higher will reach the needed heat output through a combination of heating cables that are distributed equally around the circumference of the coil end.

When bandaging the heating tape upon the windings, it must be avoided to overstrain the component by inappropriate mechanical handling (e.g. excessive drawing, stretching or compressing). Notably strongly stretching or compressing the outer insulation sleeve could critically affect the heating cable‘s operation or lead to a breakdown of the heating cable.
In order to fasten the anti-condensation tapes to the winding head, we recommend a circumferential bandaging with about 3 windings of fleece tape in the appropriate insulating class and width (e.g TESA Polyester Tape 4564/19-25mm). When performing the high voltage test against ground and coil, the test voltage of 2.0 kV and the test duration of 1 minute should not be exceeded.

Assembly instructions for the heating tapes when retrofitting electric machines

When retrofitting electric machines with an anti-condensation heater, close attention should be paid to fastening the heating tapes onto the impregnated winding ends using cord bandages, cable ties or balancing putty between the end coil and the casing. The cold lead cables of the heating tapes should be routed inside the machine, if possible or through gland bolting and thermowells on the outside to the corresponding connectors in the terminal box.