


QAA 025

INSTALLATION MANUAL


Installation of glass- or quarz-insulated Heating Cables / Tapes

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0. Applications

Glas/quartz insulated series trace heaters are suitable for use on tanks, pipes and pipe attachments like valves, pumps etc. in non hazardous areas in laboratory and commercial environments.

1. Receipt of Goods

Upon receipt of the goods, check the heater and the accessories and compare with the data on the delivery-note to ensure that the correct material was supplied.

2. Storage


The goods have to be stored in a dry place at an ambient temperature of -20 ... +60°C. Avoid sharp bends and kinks in order not to break the heating conductor.

3. Length of Heating Circuit

The lengths are calculated by eltherm. For shortening or elongation, please contact eltherm.


4. Protective Measures

- glass- or quartz-insulated trace heaters are not moisture protected and must be operated in dry areas only. Use in hazardous areas is not possible
- Design and installation of heating circuits is to be made compliant to the standards EN 60519-1, -2 and EN 62395-2 as well as to any other locally applicable codes and standards
- Series trace heaters should be operated with a controller. A controlled or stabilised mode of operation as per EN 62395-2 is to be implemented
- Suitable positioning of the temperature sensors will avoid overheating of pipeline / tank, medium and trace heater. Make sure the sensors are properly attached.
- Use of a RCD with a tripping level of max. 30 mA above the inherent leakage current level is recommended for each heating circuit.
- When using the trace heaters on metallic surface, this surface also has to be integrated in the leakage current protection acc. to DIN VDE 100, part 410 before operation of the system.
- When using trace heaters with integral protective braid, this has to be earthed. In case of heaters without protective braid, the installed heaters must be covered by a metallic layer. This metallic layer (e.g. cladding of the thermal insulation) has to be earthed.
- Prior to installation work or maintenance, the relevant heaters need to be disconnected from power supply. If required, heated surfaces need to cool down to become accessible.

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5. Installation Instructions

- Installation is to be done by trained personnel only.
- Heaters and sensors need to be placed on the designated pipes / tanks in the planned positions in order to avoid overheating of equipment as well as insufficient temperature maintenance.
- The max. operating temperature of the heated device as defined by the plant owner as well as the maximum trace heater temperatures (max. 450°C powered, 500°C unpowered in case of ELK-H; max. 800°C powered, 1000°C unpowered in case of ELK-Q) must not be exceeded. This may be achieved by use of an appropriate temperature control.
- Remove any sharp objects from the surface to be heated; clean and degrease the surface.
- Mark the heater spacing on the surface of the device to be heated.
- For heaters with bilateral supply: Arrange both cable ends next to each other.
- For two dimensional applications: apply the trace heater on the surface with adhesive tape (approx. every 300 mm). Max. operating temp. of the adhesive tape must not be lower than the maintenance temperature (or the process temperature, whichever is higher).
- On metallic pipes: place the trace heater on the pipe surface along the pipe axis. Spiral glass tape (non adhesive) around pipe and heater, so that it fixes the heater approx. every 300 mm.
- On glass or ceramic pipes: if required, the trace heater may also be installed in a spiral pattern.
- Take care that the trace heater is not twisted, that the heating elements do not touch nor cross, as it might otherwise lead to local overheating and destruction of the heating elements. Min. bending radius: 5 mm; heating tapes to be bent over the wide side
- Attach heater to pumps, valves and other components in such way that those components are accessible for maintenance or exchange without mechanical stress for the heater.
- Make sure the heater has a good contact to the surface to be heated. In case of gaps, fill those with thermally conductive and temperature resistant materials.
- The heater should be fully covered (the entire length) with aluminum foil in order to prevent insulation material from slipping between the cable and surface to be heated.
- If thermal insulation with metallic cladding is used, provide an insulation entry kit to protect the supply lead or heating tape against cuts.
- Electrically heated parts have to be identified in reasonable distances with warning labels “Electrical Heating” on the thermal insulation (approx. 5 m distance between each label on pipelines or at least 1 warning label per pipe-branch respectively).

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6. Testing

After the completion of a heating circuit and prior to the installation of the thermal insulation, the following steps have to be taken:

- visual check of the heating cable/tape regarding possible mechanical damages and check whether the installation instructions have been followed.
- test of the insulation resistance:
 - the insulation resistance of each heating-circuit is measured between each single bus wire and the metal sheath (protective braid) and is to be recorded.
 - test-voltage: min. 500 Volt, max. 1000 Volt
 - irrespective of the heating-circuit length, the isolation resistance must not be lower than 10MΩ.
- in case of lower isolation resistance, the source of the defect has to be determined and removed.
- functional check of the heating circuit (special attention is to be given to heater temperature to avoid any overheating during the performance of this test)
- repeat the tests after the thermal insulation has been applied.
- Identification: All relevant technical data are given on tag. Make sure tag is in place and information is legible

7. Operation and Maintenance

- During operation of the system, local laws and regulations for the use of electrical trace heaters in hazardous areas as well as all other applicable standards and safety regulations are to be followed
- The permissible operating conditions as stated on the label,(i.e. voltage, amperage, exposure temp., operating temp., IP protection classification) are to be followed accordingly
- When put into operation the first time, lubricant may evaporate from the glass cloth. The vapours are non-toxic but may activate smoke alarms. The colour change of the glass cloth that may be caused by the vapours does not effect the heating and is thus not a warranty issue.
- After long heating intervals, the heating cable/tape becomes more rigid due to the loss of lubricant. Avoid narrow bends and treat the heater carefully in order not to break it.

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- Trace heaters ELK / ELQ are generally maintenance free, although it is recommended that the heating be checked by qualified personnel in regular intervals for damages and insulation resistance.
- Lids and cable entries of junction boxes, thermostats splices etc. to which trace heaters are connected need to be closed and sealed as per manufacturers instructions.
- The opening of controllers, junction boxes and terminations is permitted only when the heating system is not energised
- Installed trace heater has to be protected against damages that may occur during repair work on heated components
- After completion of the repair, the heating circuit will once again need to be tested as shown in paragraph 6 “Testing”
- Damaged heating circuits shall not be operated. This is the case when:
 - heater or attached leads show damage or deformation
 - the circuit is electrically defective (open circuit, high leakage current)
 - after thermal or mechanical overstress
 - after failure of temperature controls
 - after damage to the workpiece to which the heater is installed
- Temperature control units and control devices are to be checked at least annually by trained workers or authorized persons.