

Installation and Operation manual for Ex heated hoses

Heated hoses ELH-...-Ex contain different ATEX approved items. The product group of the heated hose is a summary of the product groups of those items and is stated on the identification label. The identification label is fixed to the end cap, next to the electrical connection. It provides following information:

eltherm GmbH Burbach
 <Type> <Order Number>
 <Part Number> >Lot number>
 Ⓢ <Product Group> <Temperature Classification> Ⓒ 0637
 <Voltage> <Current> <Frequency>
 <Power Output> <max. Operating Temperature>

1. Technical Information

Product group:	<ul style="list-style-type: none"> - Model ELH aD.../...W-Ex with temp. sensor Ex e II 2G Ex e IIC T... Gb II 2D Ex tb IIIC TX Db - Model ELH aD.../...W-Ex with temperature sensor for intrinsically safe connection II 2G Ex eib IIC T... Gb II 2D Ex tb IIIC TX Db - Modell ELH asb /...W-Ex without temperature sensor or with temperature sensor Ex e: II 2G Ex e IIC T... Gb II 2D Ex tb IIIC TX Db
Temp. Classification:	see identification label
Maximal operating temp.:	see identification label
Ambient temperatures:	-20 bis + 50°C (in T6, T85)
Min. bending radius:	400 mm for nominal diameter ≤ ND 16
Power supply/wattage:	see identification label
Length/diameter:	see separate drawing
Fittings/Pipe connectors:	see separate drawing
Conn. cable, sensor:	see separate drawing
Outer jacket:	PA 12 corrugated tubing, anti-static, black
Weight:	max. 1.5 kg/m

Attention: the following steps should only be made by personnel qualified for working with hazardous area (Ex) materials and according to the applicable safety regulations.

2. Receipt of goods:

Inspect the heated hose(s), fittings, connection cables, and the ancillaries for transport damages and compare the items with the delivery note to ensure that the correct material has been delivered.

Immediately (latest before installation) verify the electrical data provided in the attached test protocol according to the procedures stated in this document under paragraph 6 "Testing".

The heated hose contains different ATEX approved items. We declare the correct design and assembly of those items by the attached Declaration of Conformity for heated hoses.

3. Storage:

The heated hoses should be stored in a dry area with an ambient temperature from $-20...+50^{\circ}$ C and ideally at an humidity of 50% to 75%. Avoid exposure to direct sunlight during storage in order to maximise service life.

4. Protective and safety precautions:

The heated hose is built according to EN 60519-1, -2, and IEC 519-1. The thermal safety according to EN60519-2 depends upon the type of temperature control intended.

During operation and maintenance, following documents are to be observed:

- the instruction manual
- the present valid electrical regulations for installation in hazardous areas
- EN 60519-1 Electrical heating Safety Part 1: General Requirements
- EN 60519-2 Electrical heating Safety Part 2: Special Requirements for Resistance Heat Tracing.
- VDE 0100 or comparable local regulations
- when applicable, the corresponding laws and regulations (for example the labour union).

Defective or damaged materials must not to operated. This is at latest the case when the heated hose or its components:

- show visual damages
- do not work or do not work properly
- had been overstressed.

Connection and operation are to be done by qualified personnel only.
Repair work is to be done by eltherm GmbH only

5. Installation precautions:

Installation in hazardous areas needs to be performed in accordance with our Installation Manual BU-029 (attached separately). Additionally the following points are to be followed:

- consideration of product classification and ambient temperatures for proper choice of installation area.
- The heated hose is uv-resistant according to ASTM-Standards. However, protection from direct sunlight is recommended wherever possible in order to enhance service life.
- choice of appropriate underground/supports for durable fixation of the heated hose
- only use approved glands suitable for the various cables attached to the heated hose. In case of Type A ELH asb /...W-Ex, a corresponding gland is included in the delivered termination kit.
- the electrical connections (see separate wiring diagram) are to be made either outside the hazardous area or to a separate, hazardous area approved junction box or controller. Do not exceed the supply voltage stated on the identification label.
- if the the heated hoses contain Pt-100 sensors, these are to be connected to suitable controllers. Pt-100 sensors with type of protection "e" must be connected to controllers not exceeding the following operation values:

max. measurement current:	10 mA
max. measurement voltage:	1,3 V in T6 / T85 and T5 / T100
	1,5 V in T4 / T135
	1,7 V in T3 / T200 and T2 / T235

The yellow/green wire of the sensor shall be connected to an earth terminal.

Non approved Pt-100 sensors need to be connected intrinsically safe via Zener barriers.

- install all connection and sensor cables in a fixed manner and protected from possible damage.

6. Testing and Commissioning:

After the installation of a heated hose, the following steps have to be taken:

- A visual check of the heated hose regarding possible mechanical damages and/or incorrect installation.
- insulation resistance test
- the insulation resistance of the heated hose is to be measured between the power supply cable and the earth cable. These values must be recorded in the protocol.

test voltage for main circuit (heating cable): 500 VDC $\leq U \leq$ 2500VDC

test voltage for Ex e Pt100: 500 VDC

- The insulation resistance must not be less than 20Mohm. In case of a lower insulation resistance, the source of defect has to be determined and eliminated.
- check for proper fit of temperature sensors (if applicable)
- measuring of the heating element resistance for heated hose types ELH-aD.../...W-Ex

7. Operation and maintenance:

- The operating conditions given in Chapter 1 “Technical Information” (Product Group, Voltage, Current, Operating Temperature, max. Ambient Temperature, IP Rating.) are to be observed.
- Heated hoses type ELH-aD.../...W-Ex may reach temperatures above the limit of the relevant T-class and therefore must always be operated with temperature controller and limiter.
- for operation of the heated hose in hazardous areas, use of a ground fault protection device (30mA) is mandatory.
- the corrugated outer jackets serves as a mechanical protection of the heating cables located underneath and must therefore not be damaged or removed.
- operation of the heated hose in chemical aggressive environments, which may lead to damage, must be avoided.
- in case of any installation work next to the heated hose, the heated hose is to be protected from possible damages.
- After completion of this installation work, the heated hose is to be checked again.

Heated hoses generally work maintenance free. However, it is recommended that the heated hoses and associated wiring be checked by qualified personnel in regular intervals for damages and insulation resistance. Associated temperature control units and control devices are to be checked at least annually by qualified personnel.