Manual IAK8EK

Manufacturer:

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Heating Circuits

Type: QE.-…-..-.../….

Index:

This manual is also available in other languages. Please request it per mail.

Diese Anleitung ist auch in anderen Sprachen verfügbar.
Bitte fordern Sie diese per Mail an.

1. Safety Instructions

Use the hating circuit only fort the approved operation purpose.

The explosion protection with heating circuits type QE.- can only be warranted in original condition.

The electrical heating circuits may only be used in undamaged condition.

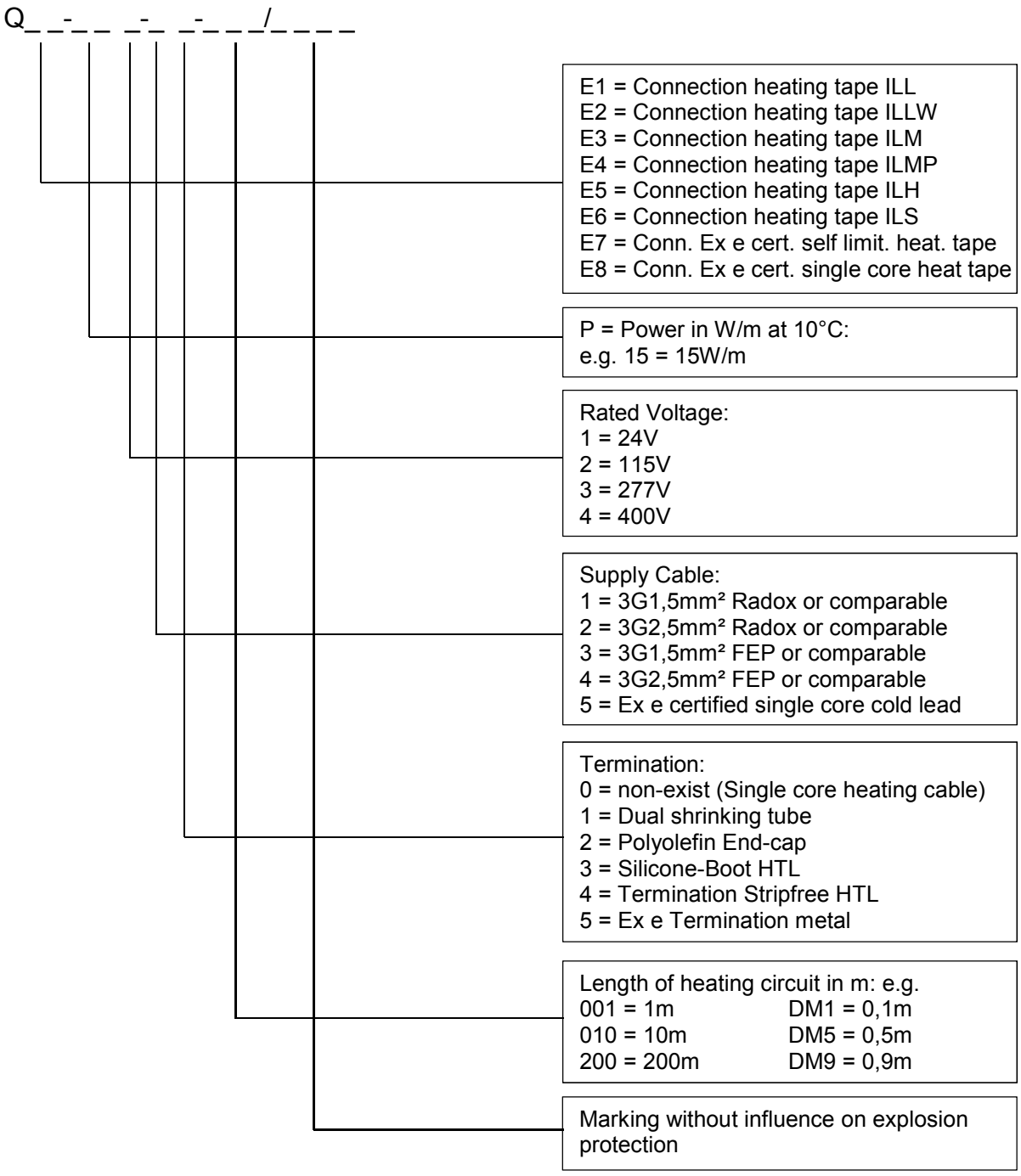
The explosion protection is not or no longer valid when:
- The insulation of the heating tape or the cold lead is damaged, cut or sliced.
- The connection or the termination is mechanical damaged.
- The connection or the termination is not made according manual.
- The artificial hot spot is not made according demand.

2. Technical Data

Approval:	EPS 12 ATEX 1457 X
Marking:	II 2 G Ex e IIC T6/T5/T4/T3 Gb II 2 D Ex tb IIIC T195°C Db
Rated voltage:	up to 400 V (Ex-e single core heating cable)
Rated current:	up to 20 A max.
Max. temperature range of heating tape / environment:	-60°C…+180 °C (Ex-e single core heating cable)
Range of sealing:	3,6…6,5mm
Clamping diameter:	2,5mm²
Protection class:	IP66
Length of heating circuit:	up to 1500m for single core heating cables

Please read approval or datasheets for technical data and further information.

3. Type Code



4. Usage

The hating circuit QE.- is for electrical heating of pipes, vessels, protection-enclosures, e-motors, etc., for protecting temperature sensible products from frost or for temperature maintenance of these products or for protecting from condensate formation.
Compliance with the temperature class will be made by ATEX approved Monitoring device (temperature limiter).
The heating circuit QE.- can be ready-made in factory or assembled on site.

5. Details for Installation and Operation:

Please consider the general installation and operation instructions for Quintherm heating tapes!

Important Instructions for Installation and Operation of trace heating

The construction and assembly of the measurement of the monitoring device must be done according instruction manual.
In order to achieve sufficient security in the data acquisition an artificial hot spot has to be made according drawing (Fig. 1) and the measurement device (temperature sensor) has to be coupled directly to the hot spot.
The fastening of the heating cable and of the limiter sensor has to be made with a highly conductive heat-resistant aluminium tape. (E.g. ALK 150)
To ensure that the temperature at the artificial hot spot is above the temperature of the heating cable in places with poor thermal coupling, this hot spot has to be performed at least three times the length of the probe "T" (see test- and acceptance report).
The construction of the artificial hot spot has to be documented (even if through photo) and added to the heating circuit documents and has to be guided in the explosion protection document.
The identification of the heating circuit has to be done according type code and has to be fixed at a suitable location on the heating circuit, e.g. in the area of Ex e junction box.
The monitoring device (temperature limiter) hast to be set for temperature class T6, T5 to -5K or less in accordance with in EN 60079 fixed limit temperature. From temperature class T3 on, there has to be a minimum temperature distance of -10K to limit temperature.
The manufacturer and type as well as the set point of the used monitoring device must be documented in the acceptance report of the heating circuit.

Single core heating cables may not lay closely to each other or intersect. This leads to a dangerous overheating. The distances must be respected according the design (calculation) and must not be lower than the following value:
Installation distance = 10 x outer diameter of the heating cable.

Improper installation or damage to the heating cable can cause in breakdown or a short circuit.
Minimum installation temperature is -25°C.
For safe operation use only QUINTEX connection technology and accessories when connecting or terminating heating cable.
The national regulations concerned as well as the valid in each case safety regulations are to be kept.

Pay attention to the installation instructions, assembly instructions. A properly and fully completed acceptance report is condition for the warranty.

Use a special drum holder for smooth and free of tension uncoiling the cable.

Before installing the heating tape, painted or coated tubes must be completely dry.

Storage Instructions

Inspect the cable for damage upon delivery, paying specific attention to the sheath.
Store Heating cable in a clean dry area.
Avoid contact with chemicals.
Protect the cable ends from moisture & contamination.

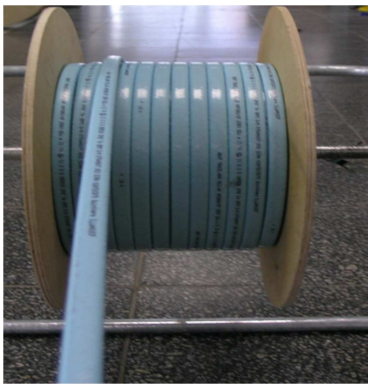
Storage temperature: min. - 40°C / max. + 60°C

Heating Cable Pre-Installation

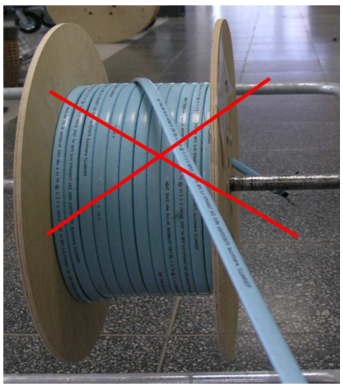
Review the design and compare the list of materials to confirm proper materials are on site.
Confirm that the pipework is complete. Inspect the pipelines for sharp edges, burrs, rough surfaces, etc. This could damage the heating cable.
Smooth over the area or cover it with adhesive tape.
Insure that all the pipes are painted and the paint is dry.

Installation of Heating Cable

Installation on pipelines
Uncoil the heating cable in a straight line to the drum.
Don´t twist, torch or knot the heating cable.

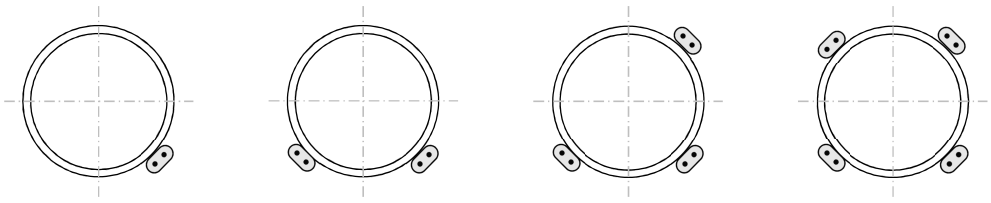


correct

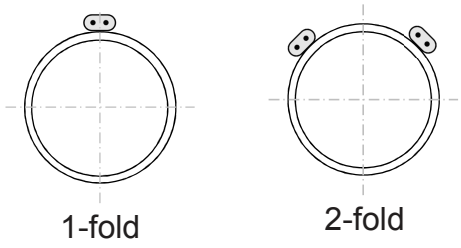


incorrect

Installation with single & multiple layers:



Exception: Temperature maintenance of aliphatic water (pay attention to the temperature)



Aliphatic steam use to condensate at the top of the pipe!

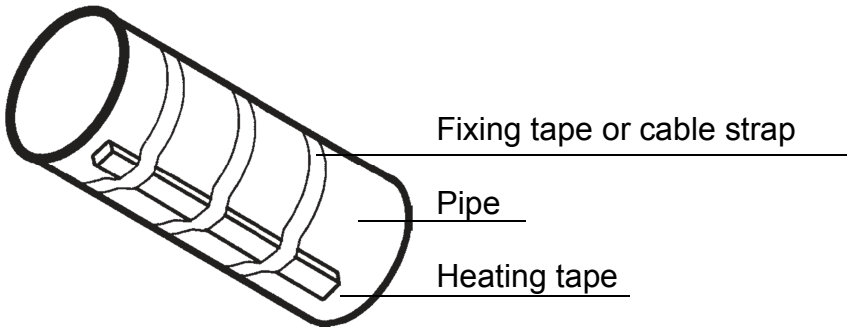
Table 1: Types of Mounting and Associated Material

Adhesive tape	QUINTEX TYPE	Copper/ Steel-pipe	Plastic/PE-Pipe* Composite pipes	Cast iron pipe Stainless steel pipe	Special pipes Heating
Textile adhesive tape	GWK	X			
Polyester adhesive tape	PEK	X			
Glass fibre adhesive tape	GSK				X
Aluminium adhesive tape	ALK		X	X	X

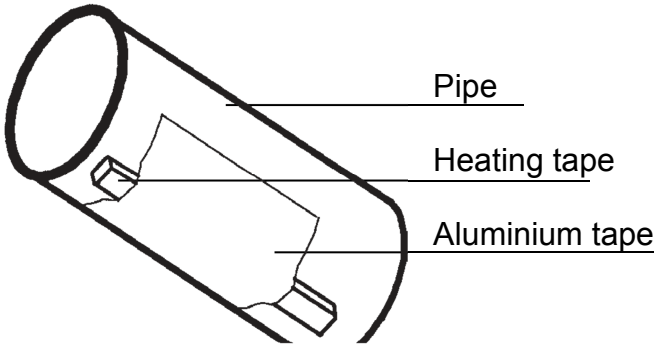
*For plastic / PE- pipe we recommend using aluminium adhesive tape on the pipes to get a better heat transfer.

Use fibre, polyester tape, or cable straps on steel and copper pipes.
Use Glass Fibre tape at temperatures higher than 60°C

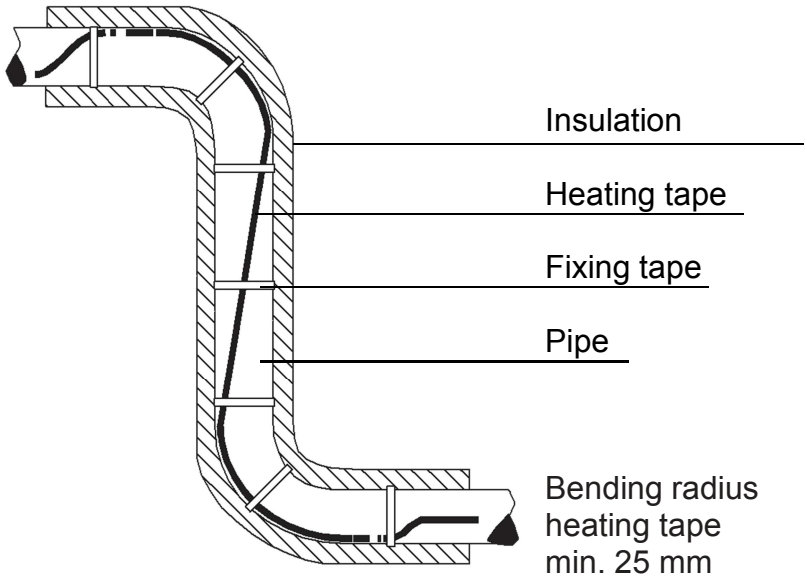
Secure the heating cable onto the pipe using fixing tape or cable straps at 200mm intervals.
Use only QUNINTEX fixing accessories. (See table 1)



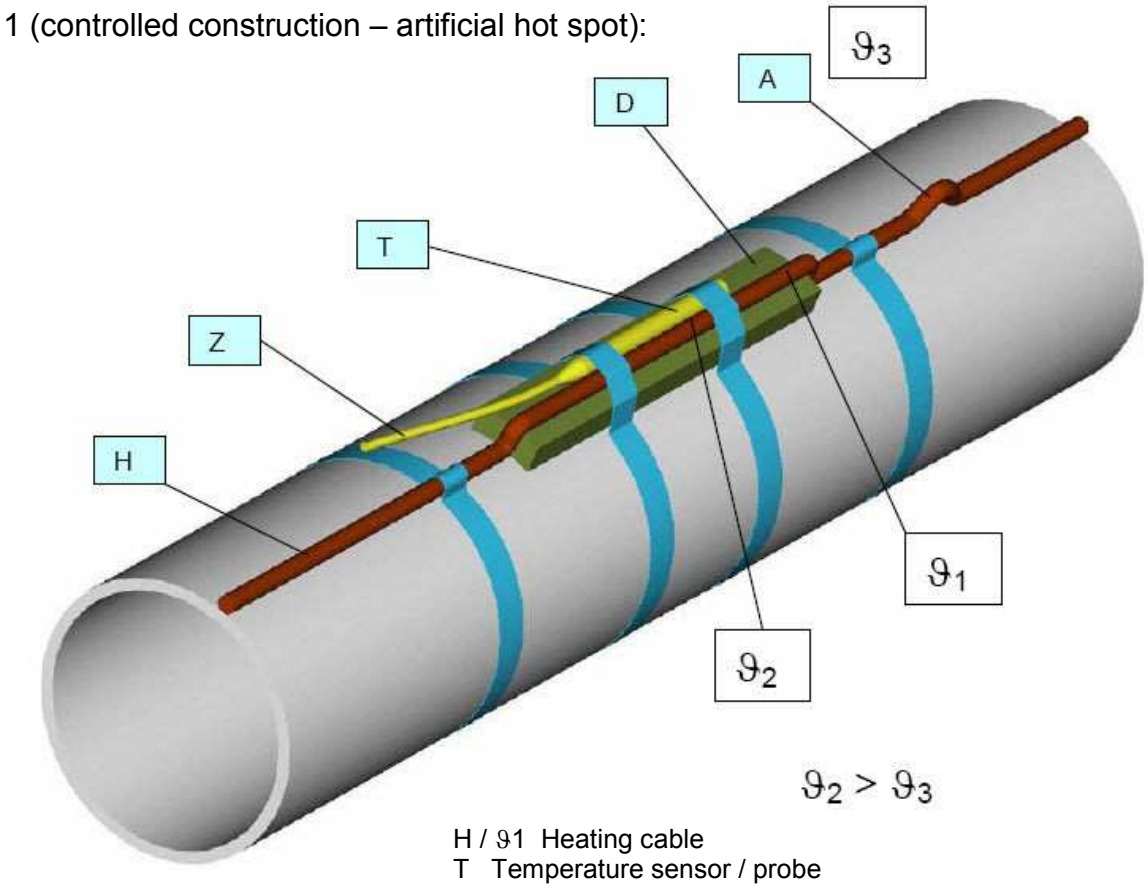
Use aluminium tape (ALK) for PE, cast iron, stainless steel, metal pipes.
Aluminium tape will improve heat transfer on plastic pipes, also try and use aluminium tape under the heating cable.



Laying at pipe bends



Picture 1 (controlled construction – artificial hot spot):



H / ϑ1 Heating cable
T Temperature sensor / probe
Z Cable of temp sensor
A Point of poor thermal coupling
D Insulation between heating cable and surface to be heated

Insulation

Visually inspection and control of function of the heating cable and components hast to be done before fixing.

Correct insulation is a critical component of a proper functioning of the heating system.

Thermal insulation is to comply with national regulations.

Insure that insulation entries are used in steel cladding applications.

Install warning label „electrically heated“ every 3m.

6. Operation, Maintenance and Trouble Shooting

The operator of electrical installations in hazardous areas must ensure that the equipment is in proper condition to operate properly, to monitor and carry out maintenance and repair work. (See also EN 60079-17)

Maintenance work and repair of faults on this equipment should only be carried out by trained personnel. Prior to the maintenance and/or repair of faults the specified safety regulations have to be observed. The warnings on the equipment should be observed.
For maintenance and repair of faults, only original parts are allowed to use after consultation the manufacturer.

7. Maintenance:

As part of the inspection and maintenance of trace heating systems, the heating and the connection system must be checked.

8. Maintenance Recommendations

There is to carry out a periodical test of the proper condition. (See also EN 60079-17).
Damaged heating cables must be replaced in any case.

9. Test / Acceptance

The acceptance report (page 10) is part of the documentation and must be filled out for each circuit (or for each connection / repair sleeve) when reinstalling and for changings.

10. Testing and Acceptance Report

Building:	Project:	Drawing:
Cabling from:	to:	Ex-Zone: Zone _____ T ___
Electrical Supply:		

General		Controller and Limiter unit	
Type of heating cable:			
Length of heating cable	m	Fuse control circuit	A
P/l (Power per meter)	W/m	Type of controller	
P (Entire heating power)	W	Temperature setting of controller	°C
Supply voltage	V	Function of controller ok	Yes/No
Connection voltage	V	Sensor broken signal ok	Yes/No
Normal current	A	Amount of limiters	pcs
Supply cable		Type of limiter	
Fuse	A	Temperature setting of limiter	°C
Amount of connection units	pcs	Function of limiter ok	Yes/No
Amount of supply units	pcs	Sensor broken signal ok	Yes/No
Amount of cold leads	pcs	Function - Disconnection when broken wire	Yes/No
Amount of temperature sensors	pcs	Setting of limiter secured	Yes/No
Construction of temperature sensor		Amount of ELCB (Earth leakage circuit breaker)	pcs
Type of temperature sensor		Current of ELCB	A
Test made according DIN VDE 0100 part 610	Yes/No	Function of ELCB ok	Yes/No
Measurement of temperature profile	Yes/No		
Insulation Measurement		**Operation and Fault signals ok**	
Measurement device:		Function ok	Yes/No
Insulation test voltage	V	Signal low temperature	°C
Insulation resistance heating line section 1	MΩ		
Insulation resistance heating line section 2	MΩ		
Insulation resistance heating line section 3	MΩ		
Junction boxes		**Visual Inspection**	
Manufacturer:		Insulation complete and weather proof	
Type:		Identification / Marking labels	
Protection class: IP		Junction boxes closed	
EC-Certificate:		Documentation	
Manufacturer:		**Raiser**	
Type:		Name:	
Protection class: IP		Date:	
EC-Certificate:		Sign:	

11. Acceptance Report „artificial hot spot“ for controlled construction

Appropriate component (e.g.: Number of heating circuit)

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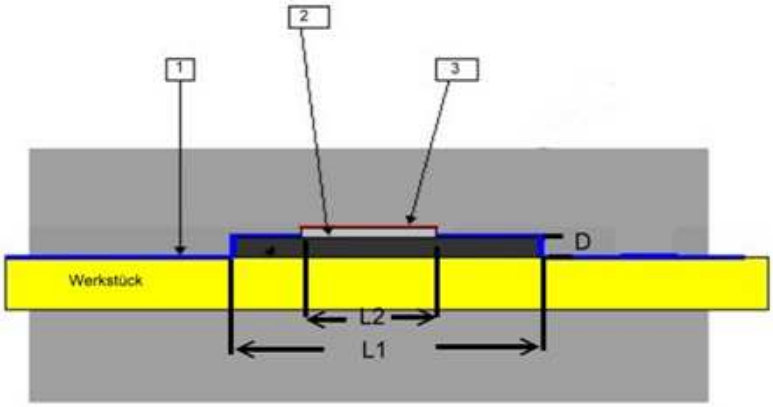

1 Heating circuit
2 Sensor / capillary tube
3 Thermic coupling heating circuit to sensor (Aluminium tape)
L1 Length of hot spot
L2 Length of sensor / capillary tube
D Thickness of insulation of the hot spot

Particularly consider the thermic coupling between heating cable and sensor!

Material of insulation of the hot spot _____

Length of the temperature sensor _____ mm

Length of the insulation of the hot spot _____ mm
(min. 3x length of sensor)

Diameter of the temperature sensor _____ mm

Thickness of the insulation of hot spot _____ mm
(min. 3x diameter of sensor)

Kind of the thermal coupling _____
(Material)

_____

Inspector:

_____	_____	_____
Name	Date	Sign