General
The electric heater FSHK 200/300/500 T4/T3 is equipment and protective system intended for use in potentially explosive atmospheres. The heater can be used in areas in which an explosive atmosphere occurs in operation occasionally (Zone 1). The mixture can either be consisting of air together with flammable substances in the form of gas/vapor or with a cloud of combustible dust (G/D).

EC-Type Examination Certificate: PTB 02 ATEX 2041X
EAC-Ex-Certificate: RU C-DE.EB05.B.00445

Marking:
Ex II 2 G Ex mb IIC T4 / T3
Ex II 2 D Ex tb IIIC IP68 T130°C / T195°C

Function
The electrical heaters FSHK 200/300/500 T4/T3 are intended for heating protection boxes or switchgear cabinets. The heaters are designed for operation with an external temperature controller or switch. Attach the temperature controller or switch in an area with a regulated temperature. Advisable are areas where free air flow is possible. With respect to cabinet dimensions we recommend a position close to the cabinet centre as temperature might slightly vary throughout the cabinet height. In the case of overheating an internal, resettable temperature limiter will actuate and ensure the compliance with the maximum permitted surface temperature. Reset the temperature limiter by pressing the middle of the red button with an edgeless item, after eliminating the reason and cooling the heater. An internal thermal cut-off fuse prevents the switch from exceeding the maximum allowable surface temperature defined by the specified temperature class. The heaters have an internal failure switch T < 5°C (250V, 6A).

Technical Data

Rated voltage: 115 / 250VAC
Max. Rated Current: FSHK 200: 1.9 / 1.0A
FSHK 300: 2.8 / 1.5A
FSHK 500: 4.6 / 2.4A
Rated Power: FSHK 200 T4: 200W
FSHK 300 T4/T3: 300W
FSHK 500 T3: 500W
Connection cable: SIHF 5 x 1 mm² x 3 m long
Dimension: L x W x H 200 x 178 x 90 mm
Weight: 3.1 kg
Ambient temp.: -50°C to +80°C
Operating temp.: T4: -50°C to +120°C, T3: -50°C to +180°C
Protection degree: IP 68

For installation and operation it is essential to follow this Manual and the relevant national regulations in addition to generally accepted good engineering practice and the IEC 60079-14 “Electrical installation design, selection and erection”. The specified rated data on the type plate of the heater must always be taken in account.

Mounting
The FSHK heater can be mounted directly at the mounting plate or cabinet bottom with the enclosed mounting straps. For a perfect antifreeze effect a horizontal mounting position in the bottom area must be provided because of correct convection. During disassembly, turn off the power supply, remove the electrical connections and remove the mounting screws.

Commissioning
The electric heater FSHK 200/300/500 is delivered operable from the manufacture. The connecting cable of the FSHK is foreseen to be joined in a junction box according to wiring diagram. The junction box must comply with the requirements of an approved type of protection according to IEC 60079-0, if the connection is in a hazardous area. The FSHK is intended for stationary installation, so the connection cable must be protected against mechanical damage. The equipotential bonding and earthing shall be ensured by connecting the FSHK to the entire system.

Electrical Protection
Line and short circuit protection
The switch-off and electrical isolation of all circuit power supply conductors including the neutral should be done by Miniature Circuit Breaker (MCB) in a switchgear. The rated current should be limited to 6A. Residual current circuit breakers and insulation monitoring
To limit the heating effect due to earth-fault and earth-leakage currents the additional protection is required:
In a TT or TN system a residual current device (RCD) with a rated residual operation current not exceeding 100mA shall be used. Preference should be given to RCDs with a rated residual operating current of 30mA. Residual current circuit breakers with overcurrent protection
In a TT or TN system also a compact protection device (RCBO) which combine the overcurrent function of a MCB with the earth fault functions of a RCD can be used.
Overcurrent protection
The rated current and the tripping characteristic of an overcurrent protection must be matched to the rated current of the switching or control device possibly used.
Potential equalization
At the metallic housing of the FSHK is a protective conductor connection for connecting to the external potential equalization. The potential bonding conductor shall be connected as shown. When connecting two conductors, they must have the same size.

Operation, Maintenance
Devices in hazardous area must be installed, supervised, maintained and kept in good conditions by the owner of the plant. For information, refer to IEC 60079-17. Only skilled workers are allowed to do maintenance and the elimination of disturbance work. Do not perform any independent repair of defective heater, but send it back to SCHRAMM. Unauthorized repairs and disassembly will automatically eliminate warranties and liabilities.
EC-TYPE-EXAMINATION CERTIFICATE
(Translation)


EC-type-examination Certificate Number:
PTB 02 ATEX 2041 X

Equipment: Electric Heating Elements Type HK-250, HK-500 and HK-700
Manufacturer: Schramm GmbH
Address: Flinschstr. 18A, D-60388 Frankfurt am Main

This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the confidential report PTB Ex 00-20159

Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN 50014:1997 + A1 + A2
EN 50028:1987

If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

This EC-type-examination Certificate relates only to the design and construction of the specified equipment in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.

The marking of the equipment shall include the following:

II 2 G EEx m II T3/T4

Zertifizierungsstelle Explosionsschutz
Braunschweig, April 15, 2002
By order:

(signature)

Dr.-Ing. U. Klausmeyer
Regierungsdirektor
SCHEDULE

EC-TYPE-EXAMINATION CERTIFICATE  PTB 02 ATEX 2041 X

(15) Description of Operational Device

The universal Ex – heating elements HK-250, HK-500 and HK-700 are intended for heating switch cabinets and transmitter protection boxes. They are exclusively meant for fixed positions where connections cables must be protected against mechanical damage. All heating element parts are bedded in a casting compound so that no detonation can occur in a potentially explosive atmosphere. The heating element cartridge is regulated through a temperature switch. In case of a defect, the temperature switch is turned off through a restorable temperature range limiter. The temperature limiter can only then be restarted after the device has cooled down. As a technical safety procedure, a non-restorable temperature fuse is included. This guarantees that a permitted temperature class and a ‘continuous use’ temperature of the casting compound are not exceeded.

Technical Data

<table>
<thead>
<tr>
<th>Type</th>
<th>HK-250</th>
<th>HK-500</th>
<th>HK-700</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Voltage</td>
<td>120 V</td>
<td>120 V</td>
<td>250 V</td>
</tr>
<tr>
<td>Rated Power</td>
<td>242 W</td>
<td>403 W</td>
<td>622 W</td>
</tr>
<tr>
<td>I max.</td>
<td>2.4 A</td>
<td>4.0 A</td>
<td>2.9 A</td>
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<tr>
<td>P max.</td>
<td>288 W</td>
<td>480 W</td>
<td>735 W</td>
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<tr>
<td>Resistance</td>
<td>50 Ω</td>
<td>132 Ω</td>
<td>85 Ω</td>
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<tr>
<td>Ext. Fuse</td>
<td>10 A</td>
<td>10 A</td>
<td>10 A</td>
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<tr>
<td>Temperature class</td>
<td>T4</td>
<td>T4</td>
<td>T3</td>
</tr>
<tr>
<td>Temperature (given)</td>
<td>128 °C</td>
<td>128 °C</td>
<td>184 °C</td>
</tr>
</tbody>
</table>

(16) Test Report PTB Ex 02-20159

(17) Special Requirements

Each electric heating element must include a short circuit contact safety fuse (IEC 60127-2-1) respectively a protective motor switch with a short circuit and a thermal rapid release (set at the specified value) and connected in series. The fuse can be installed in the device or must be connected separately. The safety power rate must be the same as or greater than the given rated voltage of the heating element. The ability to disconnect rate must be the same as or greater than the maximum short circuit current on location (normally 1500 A).
When using a silicon (or containing silicon) non-scratch connection cable, protect against mechanical damage (e.g. a break in piping system with edge protection).

The heating elements are exclusively for use in switch cabinets, transmitter boxes or for other such housings.

(18) Essential Safety and Health Requirements

covered through norms and standard

Zertifizierungsstelle Explosionsschutz

By order:

Braunschweig, April 15, 2002

(signature)

Dr. Ing. U. Klausmeyer
Regierungsdirektor

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt.

In case of dispute, the German text shall prevail.

Physikalisch-Technische Bundesanstalt • Bundesallee 100 • D-38116 Braunschweig
3. SUPPLEMENT
according to Directive 94/9/EG Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 02 ATEX 2041 X
(Translation)

Equipment: Electric Heating Elements Type HK-250, HK-500 and HK-700

Marking: ☑ II 2 G EEx m II T3/T4

Manufacturer: Schramm GmbH

Address: Flinschstr. 18A, D-60388 Frankfurt am Main

Description of the supplements and modifications

The Electric Heating Elements Type HK-250, HK-500 and HK-700 will be extended by the Types FSHK-Ex 200, FSHK-Ex 300 and FSHK-Ex 500. The Electric Heating Elements FSHK-Ex 200, FSHK-Ex 300 and FSHK-Ex 500 are allowed to be used in areas, where a potentially explosive atmosphere can occur occasionally. The new marking is:

☑ II 2G EEx m II T3/T4 and ☑ II 2D IP65 T 130°C / T 195°C

Applied Standards

EN 50281-1-1:1999

Test Report: PTB Ex 05-24346

Zertifizierungsstelle Explosionsschutz

By order:

(signature)

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

Braunschweig, May 10, 2005
4. SUPPLEMENT
according to Directive 94/9/EG Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 02 ATEX 2041 X
(Translation)

Equipment: Electric Heating Elements Type HK-250, HK-500 and HK-700, FSHK-Ex 200, FSHK-Ex 300, FSHK-Ex 500

Marking: ɇ II 2 G EEx m II T3/T4 and ɇ II 2 D IP65 T195°C/T130°C

Manufacturer: Schramm GmbH

Address: Flinschstr. 18A, D-60388 Frankfurt am Main

Description of the supplements and modifications

The ambient temperature range is extended from -50°C to 80°C.

The new marking is:

ɇ II 2 G Ex mb IIC T4/T3
ɇ II 2 D Ex tD A21 IP 68 T 130°C / T 195°C

All other specifications of the type-examination and the “special conditions for safe use” apply without changes.

Applied Standards


Test Report: PTB Ex 09-29049

Zertifizierungsstelle Explosionsschutz

Braunschweig, August 17, 2009

By order:

(signature)

Dr.-Ing. U. Johannsmeyer
Regerungsdirktor
Wir / We erklären in alleiniger Verantwortung, dass das Produkt
bearing sole responsibility, hereby declare that the product
Elektroheizkörper
Type FSHK 200/300/500
auf das sich diese Erklärung bezieht, mit der/den folgenden Norm(en) oder normativen Dokument(en)
which is the subject of this declaration, is in conformity with the following standards or normative documents.

<table>
<thead>
<tr>
<th>Bestimmung der Richtlinie</th>
<th>Titel und/oder Nummer sowie Ausgabe der Norm(en)</th>
</tr>
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<tbody>
<tr>
<td>EN 60079-31:2014</td>
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<tr>
<td>EG Baumusterprüfbescheinigung:</td>
<td>PTB 02 ATEX 2041 X</td>
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<tr>
<td>EC-Type-Examination Certificate:</td>
<td>Physikalisch-Technische Bundesanstalt, 0102</td>
</tr>
<tr>
<td>Kennzeichnung:</td>
<td>☑ II 2 G Ex mb IIC T4/T3</td>
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<tr>
<td>Marking:</td>
<td>☑ II 2 D Ex tb IIIC IP68 T130°C/T195°C</td>
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<tr>
<td>Qualitätssicherung Produktion:</td>
<td>EPS 17 ATEX Q 147</td>
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<tr>
<td>Production Quality Assessment:</td>
<td>Bureau Veritas, 2004</td>
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<tr>
<td>2014/30/EU: Electromagnetic compatibility</td>
<td></td>
</tr>
</tbody>
</table>

Frankfurt, 14. August 2018
Ort und Datum
Place and Date
Dipl. Ing. Robin Schramm
Qualitätsleitung
Quality Management