KEMA

(1) # EC-TYPE EXAMINATION CERTIFICATE

(2) **Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC**

(3) EC-Type Examination Certificate Number: **KEMA 08ATEX0110** Issue Number: 2

(4) Equipment: **HSB Heating System type 27-1780-***0/*****

(5) Manufacturer: **BARTEC GmbH**

(6) Address: **Max-Eyth-Straße 16, 97980 Bad Mergentheim, Germany**

(7) This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) KEMA Quality B.V., notified body number 0344 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 confidential test report number 211394200/2.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0 : 2006	**EN 60079-7 : 2007**	**EN 60079-30-1 : 2007**
EN 61241-0 : 2006	**EN 61241-1 : 2004**	

(10) 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.

(11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment according to the Directive 94/9/EC. Further requirements of the directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment shall include the following:

Ex

II 2 G Ex e II 200 °C (T2), T3, T4
II 2 D Ex tD A21 IP65 T 200 °C, T 195 °C, T 130 °C

This certificate is issued on December 21, 2009 and, as far as applicable, shall be revised before the date of cessation of presumption of conformity of (one of) the standards mentioned above as communicated in the Official Journal of the European Union.

KEMA Quality B.V.

T. Pijpker
Certification Manager

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(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 08ATEX0110** Issue No. **2**

(15) **Description**

The HSB Heating System type 27-1780-***0/**** is a trace heating system used to raise or maintain the temperature of a workpiece where it is externally applied. It consists of Self Limiting Heating Cable series HSB (trace heater), non-metallic or metallic junction boxes, terminals, glands, blind plugs and termination kits 05-0091-0096 (heat shrink), 05-0091-0129 and 05-0091-0135 (both cold applied) as specified in the test documentation listed at (19).

Type	27-1780-**00/**** (heat shrink)	27-1780-**10/**** (cold applied)
Ambient temperature range, per EN 60079-30-1:	-40 °C ... +55 °C	-50 °C ... +55 °C
Degree of protection:	IP 65	IP 65
Maximum cross section power supply conductors:	16 mm²	16 mm²
For trace heater:		
Maximum operating temperature, power "on":	+120 °C	+120 °C
Maximum withstand temperature, power "off":	+185 °C	+190 °C
Minimum bending radius:	25 mm	25 mm

In addition the HSB Heating System type 27-1780-***0/**** may also consist of the PLEXO HTS Termination System with heating cable connection plugs PLEXO B-H, H-CN, H-CW and H-CA, heating cable interconnection plug PLEXO H-S and heating cable termination plugs PLEXO H-1S and H-2S.

Type	27-1780-**20/**** (PLEXO HTS)	27-1780-**30/**** (PLEXO HTS combined with cold applied)	27-1780-**40/**** (PLEXO HTS combined with heat shrink)
Ambient temperature range, per EN 60079-30-1:	-60 °C ... +55 °C	-50 °C ... +55 °C	-40 °C ... +55 °C
Degree of protection:	IP 65	IP 65	IP 65
Maximum cross section power supply conductors:	4 mm²	4 mm²	4 mm²
For trace heater:			
Maximum operating temperature, power "on":	+120 °C	+120 °C	+120 °C
Maximum withstand temperature, power "off":	+160 °C	+160 °C	+160 °C
Minimum bending radius:	25 mm	25 mm	25 mm

(13) # SCHEDULE

(14) **to EC-Type Examination Certificate KEMA 08ATEX0110** Issue No. **2**

Electrical data

Type	27-1780-0**0/****	27-1780-1**0/****
Rated voltage:	110 to 120 Vac	208 to 254 Vac
Rated power output:	10, 15, 25, 30, 45, 60 W/m at 10 °C	
Maximum rating over current protection:	32 A	

The rated current is limited by the maximum circuit length, specified for each individual heating cable in the design documentation and installation instructions. The applicable maximum circuit length shall not be exceeded for installation.

Temperature class and maximum surface temperature "T"

The maximum surface temperature "T" is based upon exposure to the temperatures listed under "Description" and the "Electrical Data" above.

For use with		Product classification approach		Systems approach, design verification method		
Rated voltage	Rated power output	T-class	Max. surface temperature "T"	Max. operating temperature	T-class	Max. surface temperature "T"
208 Vac to 254 Vac	10 W/m	T3	195 °C	105 °C	T4	130 °C
	15 W/m	T3	195 °C	70 °C	T4	130 °C
	25 W/m	T3	195 °C	55 °C	T4	130 °C
	30 W/m	T3	195 °C	25 °C	T4	130 °C
	45 W/m	T3	195 °C	-	-	-
	60 W/m	-	-	120 °C	T3	195 °C
110 Vac to 120 Vac	10 W/m	T3	195 °C	-	-	-
	15 W/m	T3	195 °C	-	-	-
	25 W/m	T3	195 °C	-	-	-
	30 W/m	T3	195 °C	-	-	-
	45 W/m	T2	200 °C	-	-	-
	60 W/m	T2	200 °C	-	-	-

Conditions for systems approach, design verification method

For insulated externally heated surfaces lower T-class systems may be obtained by ensuring that the heating cable shall not be exposed to temperatures exceeding those listed under maximum operating temperature.

The T-class obtained through systems approach is based on the energy balance of heat loss and heat production of the system at a certain temperature. The maximum operating temperature of the system including the resulting T-class and heating cable type shall be provided as a record of system documentation for each stabilized designed system. The parameters in the system documentation shall be checked during commissioning of the system.

The system documentation shall be kept by the owner of the system and be available at all times for as long as the system is in use.

(13) # SCHEDULE

(14) **to EC-Type Examination Certificate KEMA 08ATEX0110** Issue No. **2**

Installation instructions

The manual provided with the equipment shall be followed in detail to assure safe operation.

The maximum circuit lengths specified in the design documentation and installation instructions shall be observed.

The cable connection plugs PLEXO B-H shall be mounted to an Ex e or Ex tD certified enclosure in such a way that the ingress protection rating of IP65 is ensured.

For the connection of the cable connection plugs PLEXO H-CN, H-CW and H-CA to power, suitable power cables, certified glands and junction boxes shall be used that are suitable for the application and are correctly installed. The cable glands shall be mounted in an enclosure in such a way that the ingress protection rating of IP65 is ensured. Ingress protection rating according to EN-IEC 60529.

After installation, the HSB Heating System shall be subjected to an insulation resistance test according to EN 60079-30-2, clause 8.3.4, using a minimum test voltage of 500 Vdc, applied between the live conductors and the metallic braid of the power or heating cables. The measured insulation resistance shall not be less than 20 MΩ.

When used in TT and TN systems a residual current device according to EN 60079-30-1, clause 4.3 point d) shall be installed. When used in IT systems, an insulation monitoring device according to EN 60079-30-1, clause 4.3 point e) shall be used.

(16) **Test Report**

KEMA No. 211394200/2.

(17) **Special conditions for safe use**

None.

(18) **Essential Health and Safety Requirements**

Covered by the standards listed at (9).
Essential Health and Safety Requirements for the PLEXO HTS Termination System are covered by:
- EN 60079-0 : 2006;
- EN 60079-7 : 2007;
- EN 61241-0 : 2006;
- EN 61241-1 : 2004;
- EN 60079-30-1 : 2007, clauses 5.1.2, 5.1.4 and 5.1.9.

(19) **Test documentation**

As listed in Test Report No. 211394200/2.

CERTIFICATE

(1) EC-Type Examination

(2) **Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC**

(3) EC-Type Examination Certificate Number: **KEMA 08ATEX0110** Issue Number: **3**

(4) Equipment: **HSB Heating System type 27-1780-***0/*****

(5) Manufacturer: **BARTEC GmbH**

(6) Address: **Max-Eyth-Straße 16, 97980 Bad Mergentheim, Germany**

(7) This equipment and any acceptable variation thereto is specified in the **schedule** to this certificate and the documents therein referred to.

(8) DEKRA Certification B.V., notified body number 0344 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 confidential test report number 211394200/2.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0 : 2006	**EN 60079-7 : 2007**	**EN 60079-30-1 : 2007**
EN 61241-0 : 2006	**EN 61241-1 : 2004**	

(10) 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.

(11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment according to the Directive 94/9/EC. Further requirements of the directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment shall include the following:

II 2 G Ex e II 200 °C (T2), T3, T4
II 2 D Ex tD A21 IP65 T 200 °C, T 195 °C, T 130 °C

This certificate is issued on 29 March 2011 and, as far as applicable, shall be revised before the date of cessation of presumption of conformity of (one of) the standards mentioned above as communicated in the Official Journal of the European Union.

DEKRA Certification B.V.

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(13) # SCHEDULE

(14) **to EC-Type Examination Certificate KEMA 08ATEX0110** Issue No. **3**

(15) **Description**

The HSB Heating System type 27-1780-***0/**** is a trace heating system used to raise or maintain the temperature of a workpiece where it is externally applied. It consists of Self Limiting Heating Cable series HSB (trace heater), non-metallic or metallic junction boxes, terminals, glands, blind plugs and termination kits 05-0091-0096 (heat shrink), 05-0091-0129 and 05-0091-0135 (both cold applied) as specified in the test documentation listed at (19).

Type	27-1780-**00/**** (heat shrink)	27-1780-**10/**** (cold applied)
Ambient temperature range, per EN 60079-30-1:	-40 °C ... +55 °C	-55 °C ... +55 °C
Degree of protection:	IP 65	IP 65
Maximum cross section power supply conductors:	16 mm²	16 mm²
For trace heater: Maximum operating temperature, power "on":	+120 °C	+120 °C
Maximum withstand temperature, power "off":	+185 °C	+190 °C
Minimum bending radius:	25 mm	25 mm

In addition the HSB Heating System type 27-1780-***0/**** may also consist of the PLEXO HTS Termination System with heating cable connection plugs PLEXO B-H, H-CN, H-CW and H-CA, heating cable interconnection plug PLEXO H-S and heating cable termination plugs PLEXO H-1S and H-2S.

Type	27-1780-**20/**** (PLEXO HTS)	27-1780-**30/**** (PLEXO HTS combined with cold applied)	27-1780-**40/**** (PLEXO HTS combined with heat shrink)
Ambient temperature range, per EN 60079-30-1:	-60 °C ... +55 °C	-55 °C ... +55 °C	-40 °C ... +55 °C
Degree of protection:	IP 65	IP 65	IP 65
Maximum cross section power supply conductors:	4 mm²	4 mm²	4 mm²
For trace heater: Maximum operating temperature, power "on":	+120 °C	+120 °C	+120 °C
Maximum withstand temperature, power "off":	+160 °C	+160 °C	+160 °C
Minimum bending radius:	25 mm	25 mm	25 mm

(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 08ATEX0110** Issue No. **3**

Electrical data

Type	27-1780-**0**0/****	27-1780-**1**0/****
Rated voltage:	110 to 120 Vac	208 to 254 Vac
Rated power output:	10, 15, 25, 30, 45, 60 W/m at 10 °C	
Maximum rating over current protection:	32 A	

The rated current is limited by the maximum circuit length, specified for each individual heating cable in the design documentation and installation instructions. The applicable maximum circuit length shall not be exceeded for installation.

Temperature class and maximum surface temperature "T"

The maximum surface temperature "T" is based upon exposure to the temperatures listed under "Description" and the "Electrical Data" above.

For use with		Product classification approach		Systems approach, design verification method		
Rated voltage	Rated power output	T-class	Max. surface temperature "T"	Max. operating temperature	T-class	Max. surface temperature "T"
208 Vac to 254 Vac	10 W/m	T3	195 °C	105 °C	T4	130 °C
	15 W/m	T3	195 °C	70 °C	T4	130 °C
	25 W/m	T3	195 °C	55 °C	T4	130 °C
	30 W/m	T3	195 °C	25 °C	T4	130 °C
	45 W/m	T3	195 °C	-	-	-
	60 W/m	-	-	120 °C	T3	195 °C
110 Vac to 120 Vac	10 W/m	T3	195 °C	-	-	-
	15 W/m	T3	195 °C	-	-	-
	25 W/m	T3	195 °C	-	-	-
	30 W/m	T3	195 °C	-	-	-
	45 W/m	T2	200 °C	-	-	-
	60 W/m	T2	200 °C	-	-	-

Conditions for systems approach, design verification method

For insulated externally heated surfaces lower T-class systems may be obtained by ensuring that the heating cable shall not be exposed to temperatures exceeding those listed under maximum operating temperature.
The T-class obtained through systems approach is based on the energy balance of heat loss and heat production of the system at a certain temperature. The maximum operating temperature of the system including the resulting T-class and heating cable type shall be provided as a record of system documentation for each stabilized designed system. The parameters in the system documentation shall be checked during commissioning of the system.
The system documentation shall be kept by the owner of the system and be available at all times for as long as the system is in use.

(13) # SCHEDULE

(14) **to EC-Type Examination Certificate KEMA 08ATEX0110** Issue No. **3**

Installation instructions

The manual provided with the equipment shall be followed in detail to assure safe operation.

The maximum circuit lengths specified in the design documentation and installation instructions shall be observed.

The cable connection plugs PLEXO B-H shall be mounted to an Ex e or Ex tD certified enclosure in such a way that the ingress protection rating of IP65 is ensured.

For the connection of the cable connection plugs PLEXO H-CN, H-CW and H-CA to power, suitable power cables, certified glands and junction boxes shall be used that are suitable for the application and are correctly installed. The cable glands shall be mounted in an enclosure in such a way that the ingress protection rating of IP65 is ensured. Ingress protection rating according to EN-IEC 60529.

After installation, the HSB Heating System shall be subjected to an insulation resistance test according to EN 60079-30-2, clause 8.3.4, using a minimum test voltage of 500 Vdc, applied between the live conductors and the metallic braid of the power or heating cables. The measured insulation resistance shall not be less than 20 MΩ.

When used in TT and TN systems a residual current device according to EN 60079-30-1, clause 4.3 point d) shall be installed. When used in IT systems, an insulation monitoring device according to EN 60079-30-1, clause 4.3 point e) shall be used.

(16) **Test Report**

No. 211394200/2.

(17) **Special conditions for safe use**

None.

(18) **Essential Health and Safety Requirements**

Covered by the standards listed at (9).
Essential Health and Safety Requirements for the PLEXO HTS Termination System are covered by:
- EN 60079-0 : 2006;
- EN 60079-7 : 2007;
- EN 61241-0 : 2006;
- EN 61241-1 : 2004;
- EN 60079-30-1 : 2007, clauses 5.1.2, 5.1.4 and 5.1.9.

(19) **Test documentation**

As listed in Test Report No. 211394200/2.

CERTIFICATE

(1) EC-Type Examination

(2) **Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC**

(3) EC-Type Examination Certificate Number: **KEMA 08ATEX0110** Issue Number: 4

(4) Equipment: **HSB Heating System type 27-1780-***0/**** and MSB Heating System type 27-1980-1**0/******

(5) Manufacturer: **BARTEC GmbH**

(6) Address: **Max-Eyth-Straße 16, 97980 Bad Mergentheim, Germany**

(7) This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) DEKRA Certification B.V., notified body number 0344 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 confidential test report number 211394200/2.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0 : 2006 **EN 60079-7 : 2007** **EN 60079-30-1 : 2007**
EN 61241-0 : 2006 **EN 61241-1 : 2004**

(10) 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.

(11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment according to the Directive 94/9/EC. Further requirements of the directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment shall include the following:

II 2 G	**Ex e II 200 °C (T2), T3, T4**	**(HSB Heating System)**
II 2 D	**Ex tD A21 IP65 T 200 °C, T 195 °C, T 130 °C**	**(HSB Heating System)**
II 2 G	**Ex e II 150 °C (T3), T4**	**(MSB Heating System)**
II 2 D	**Ex tD A21 IP65 T 150 °C, T 130 °C**	**(MSB Heating System)**

This certificate is issued on 28 February 2012 and, as far as applicable, shall be revised before the date of cessation of presumption of conformity of (one of) the standards mentioned above as communicated in the Official Journal of the European Union.

DEKRA Certification B.V.

T. Pijpker
Certification Manager

PRODUCTS RvA C 001

All testing, inspection, auditing and certification activities of the former KEMA Quality are an integral part of the DEKRA Certification Group

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(13) # SCHEDULE DRAFT

(14) **to EC-Type Examination Certificate KEMA 08ATEX0110** Issue No. **4**

(15) **Description**

The HSB Heating System type 27-1780-***0/**** and the MSB Heating System type 27-1980-***0/**** are trace heating systems used to raise or maintain the temperature of a workpiece where it is externally applied.

The trace heating systems consist of Self Limiting Heating Cable either series HSB or series MSB (trace heater), non-metallic or metallic junction boxes, terminals, glands, blind plugs and heating cable connection and termination kits in heat shrink, cold applied and PLEXO HTS technology.

Type of Heating System	HSB 27-1780-**00/****	HSB 27-1780-**10/****
Heating cable connection and termination technology:	heat shrink	cold applied
Ambient temperature range, per EN 60079-30-1:	-40 °C ... +55 °C	-55 °C ... +55 °C
Degree of protection:	IP 65	IP 65
Maximum cross section power supply conductors:	16 mm²	16 mm²
For trace heater:		
Heating Cable Series	HSB	HSB
Maximum operating temperature, power "on":	+120 °C	+120 °C
Maximum withstand temperature, power "off":	+185 °C	+190 °C
Minimum bending radius:	25 mm	25 mm

Type of Heating System	HSB 27-1780-**20/****	HSB 27-1780-**30/****	HSB 27-1780-**40/****
Heating cable connection and termination technology:	PLEXO HTS	PLEXO HTS with cold applied	PLEXO HTS with heat shrink
Ambient temperature range, per EN 60079-30-1:	-60 °C ... +55 °C	-55 °C ... +55 °C	-40 °C ... +55 °C
Degree of protection:	IP 65	IP 65	IP 65
Maximum cross section power supply conductors:	4 mm²	4 mm²	4 mm²
For trace heater:			
Heating Cable Series	HSB	HSB	HSB
Maximum operating temperature, power "on":	+120 °C	+120 °C	+120 °C
Maximum withstand temperature, power "off":	+160 °C	+160 °C	+160 °C
Minimum bending radius:	25 mm	25 mm	25 mm

(13) **SCHEDULE DRAFT**

(14) **to EC-Type Examination Certificate KEMA 08ATEX0110** Issue No. **4**

Description (continued)

Type of Heating System	MSB 27-1980-**10/****	MSB 27-1980-**20/****	MSB 27-1980-**30/****
Heating cable connection and termination technology:	cold applied	PLEXO HTS	PLEXO HTS with cold applied
Ambient temperature range, per EN 60079-30-1:	-40 °C ... +55 °C	-40 °C ... +55 °C	-40 °C ... +55 °C
Degree of protection:	IP 65	IP 65	IP 65
Maximum cross section power supply conductors:	16 mm²	4 mm²	4 mm²
For trace heater: Heating Cable Series	MSB	MSB	MSB
Maximum operating temperature, power "on":	+110 °C	+110 °C	+110 °C
Maximum withstand temperature, power "off":	+130 °C	+130 °C	+130 °C
Minimum bending radius:	25 mm	25 mm	25 mm

The heating systems may consist the following heating cable connection and termination kits:

05-0091-0096:	heat shrink heating cable connection and termination kit, 1 set
05-0091-0129:	cold applied heating cable connection and termination kit, 1 set
05-0091-012901:	cold applied heating cable connection kit, 1 set
05-0091-012902:	cold applied heating cable termination kit, 1 set
05-0091-0135:	cold applied heating cable connection and termination kit, 10 sets
05-0091-013501:	cold applied heating cable connection kit, 10 sets
05-0091-013502:	cold applied heating cable termination kit, 10 sets
05-0091-013503:	cold applied heating cable connection kit, 50 sets
05-0091-013504:	cold applied heating cable termination kit, 50 sets
27-59SG-VH70/00H0:	PLEXO B-H heating cable terminal box connection socket and plug
27-59SG-VH7P/00CN:	PLEXO H-CN heating cable power cable connection socket and plug
27-59SG-VH7S/00CW:	PLEXO H-CW heating cable power cable connection socket and plug
27-59SV-VH7V/00CA:	PLEXO H-CA heating cable power cable (armoured) connection socket and plug
27-59SJ-VH77/00S0:	PLEXO H-S heating cable interconnection socket and plug
27-59SK-VH70/001S:	PLEXO H-1S heating cable termination cap
27-59SL-VH70/002S:	PLEXO H-2S heating cable socket with termination cap

(13) # SCHEDULE DRAFT

(14) **to EC-Type Examination Certificate KEMA 08ATEX0110** Issue No. **4**

Electrical data

Type of Heating System	HSB 27-1780-**0****0/****	HSB 27-1780-**1****0/****	MSB 27-1980-**1****0/****
Rated voltage:	110 to 120 Vac	208 to 254 Vac	208 to 254 Vac
Rated power output at 10 °C:	10 W/m 15 W/m 25 W/m 30 W/m 45 W/m 60 W/m	10 W/m 15 W/m 25 W/m 30 W/m 45 W/m 60 W/m	10 W/m 15 W/m 25 W/m 30 W/m 40 W/m
Maximum rating of over current protection:	32 A	32 A	32 A

The rated current is limited by the maximum circuit length, specified for each individual heating cable in the design documentation and installation instructions. The applicable maximum circuit length shall not be exceeded for installation.

Temperature class and maximum surface temperature "T"

The maximum surface temperature "T" is based upon exposure to the temperatures listed under "Description" and the "Electrical Data" above.

HSB Heating System type 27-1780-*0/****:**

For use with		Product classification approach		Systems approach, design verification method		
Rated voltage	Rated power output	T-class	Max. surface temperature "T"	Max. operating temperature	T-class	Max. surface temperature "T"
208 Vac to 254 Vac	10 W/m	T3	195 °C	105 °C	T4	130 °C
	15 W/m	T3	195 °C	70 °C	T4	130 °C
	25 W/m	T3	195 °C	55 °C	T4	130 °C
	30 W/m	T3	195 °C	25 °C	T4	130 °C
	45 W/m	T3	195 °C	-	-	-
	60 W/m	-	-	120 °C	T3	195 °C
110 Vac to 120 Vac	10 W/m	T3	195 °C	-	-	-
	15 W/m	T3	195 °C	-	-	-
	25 W/m	T3	195 °C	-	-	-
	30 W/m	T3	195 °C	-	-	-
	45 W/m	T2	200 °C	-	-	-
	60 W/m	T2	200 °C	-	-	-

(13) # SCHEDULE DRAFT

(14) **to EC-Type Examination Certificate KEMA 08ATEX0110** Issue No. **4**

Temperature class and maximum surface temperature "T" (continued)

MSB Heating System type 27-1980-10/****:**

For use with		Systems approach, design verification method		
Rated voltage	Power output rating	Maximum operating temperature	T-class	Maximum surface temperature "T"
254 Vac	All	110 °C	150 °C (T3)	150 °C
	10 W/m	100 °C	T4	130 °C
	15 W/m	90 °C	T4	130 °C
	25 W/m	80 °C	T4	130 °C
	30 W/m	70 °C	T4	130 °C
	40 W/m	60 °C	T4	130 °C

Conditions for systems approach, design verification method

For insulated externally heated surfaces lower T-class systems may be obtained by ensuring that the heating cable shall not be exposed to temperatures exceeding those listed under maximum operating temperature.
The T-class obtained through systems approach is based on the energy balance of heat loss and heat production of the system at a certain temperature. The maximum operating temperature of the system including the resulting T-class and heating cable type shall be provided as a record of system documentation for each stabilized designed system. The parameters in the system documentation shall be checked during commissioning of the system.
The system documentation shall be kept by the owner of the system and be available at all times for as long as the system is in use.

Installation instructions

The instructions provided with the equipment shall be followed in detail to assure safe operation.

(16) **Test Report**

No. 211394200/2.

(17) **Special conditions for safe use**

None.

(13) # SCHEDULE DRAFT

(14) **to EC-Type Examination Certificate KEMA 08ATEX0110** Issue No. **4**

(18) **Essential Health and Safety Requirements**

Covered by the standards listed at (9).
Essential Health and Safety Requirements for the PLEXO HTS Termination System are covered by:
- EN 60079-0 : 2006;
- EN 60079-7 : 2007;
- EN 61241-0 : 2006;
- EN 61241-1 : 2004;
- EN 60079-30-1 : 2007, clauses 5.1.2, 5.1.4 and 5.1.9.

(19) **Test documentation**

As listed in Test Report No. 211394200/2.

CERTIFICATE

(1) EC-Type Examination

(2) **Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC**

(3) EC-Type Examination Certificate Number: **KEMA 08ATEX0110 X** Issue Number: **5**

(4) Equipment: **HSB Heating System type 27-1780-***0/**** and MSB Heating System type 27-1980-1**0/******

(5) Manufacturer: **BARTEC GmbH**

(6) Address: **Max-Eyth-Straße 16, 97980 Bad Mergentheim, Germany**

(7) This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) DEKRA Certification B.V., notified body number 0344 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 confidential test report numbers NL/DEK/ExTR12.0005/**, NL/KEM/ExTR07.0054/** and NL/KEM/ExTR09.0085/**.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0 : 2009
EN 60079-30-1 : 2007
EN 60079-7 : 2007
EN 60079-31 : 2009

(10) 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.

(11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment according to the Directive 94/9/EC. Further requirements of the directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment shall include the following:

II 2 G	**Ex e IIC 200 °C (T2), T3, T4 Gb**	**(HSB Heating System)**
II 2 D	**Ex tb IIIC T 200 °C, T 195 °C, T 130 °C Db**	**(HSB Heating System)**
II 2 G	**Ex e IIC 150 °C (T3), T4 Gb**	**(MSB Heating System)**
II 2 D	**Ex tb IIIC T 150 °C, T 130 °C Db**	**(MSB Heating System)**

This certificate is issued on 21 February 2014 and, as far as applicable, shall be revised before the date of cessation of presumption of conformity of (one of) the standards mentioned above as communicated in the Official Journal of the European Union.

DEKRA Certification B.V.

T. Pijpker
Certification Manager

PRODUCTS
RvA C 001

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(13) # SCHEDULE

(14) **to EC-Type Examination Certificate KEMA 08ATEX0110 X** Issue No. **5**

(15) **Description**

The HSB Heating System type 27-1780-***0/**** and the MSB Heating System type 27-1980-1**0/**** are trace heating systems used to raise or maintain the temperature of a workpiece where they are externally applied.

The trace heating systems consist of Self Limiting Heating Cable either series HSB or series MSB (trace heater), non-metallic or metallic junction boxes, terminals, glands, blind plugs and heating cable connection and termination kits in heat shrink, cold applied and PLEXO TCS technology.

For thermal data, product ratings, electrical data, temperature class and description of system elements see Annex 1 to EC Type Examination Certificate KEMA 08ATEX0110 X, issue no. 5.

Installation instructions

The instructions provided with the equipment shall be followed in detail to assure safe operation.

(16) **Test Reports**

No's. NL/DEK/ExTR12.0005/**, NL/KEM/ExTR07.0054/** and NL/KEM/ExTR09.0085/**.

(17) **Special conditions for safe use**

Supply cables shall be selected per manufacturer's installation instructions for appropriate conductor size and temperature range.

(18) **Essential Health and Safety Requirements**

Covered by the standards listed at (9).

(19) **Test documentation**

As listed in Test Report No's. NL/DEK/ExTR12.0005/**, NL/KEM/ExTR07.0054/** and NL/KEM/ExTR09.0085/**.

Annex 1 to Certificate of Conformity IECEx KEM 09.0083 X, issue no. 2
Annex 1 to EC Type Examination KEMA 08ATEX0110 X, issue no. 5
Anhang 1 zu EG Baumunsterprüfbescheinigung KEMA 08ATEX0110 X, Ausgabe Nr. 5

Description

The HSB Heating System type 27-1780-***0/**** and the MSB Heating System type 27-1980-1**0/**** are trace heating systems used to raise or maintain the temperature of a workpiece where they are externally applied.

The trace heating systems consist of Self Limiting Heating Cable either series HSB or series MSB (trace heater), non-metallic or metallic junction boxes, terminals, glands, blind plugs and heating cable connection and termination kits in heat shrink, cold applied and PLEXO TCS technology.

Type of Heating System	HSB 27-1780-**00/****	HSB 27-1780-**10/****
Heating cable connection and termination technology:	heat shrink	cold applied
Ambient temperature range, per EN 60079-30-1:	-40 °C ... +55 °C	-55 °C ... +55 °C
Degree of protection:	IP 65	IP 65
Maximum cross section power supply conductors:	16 mm²	16 mm²
For trace heater: Heating Cable Series:	HSB	HSB
Maximum operating temperature, power "on":	+120 °C	+120 °C
Maximum withstand temperature, power "off":	+185 °C	+200 °C
Minimum bending radius:	25 mm	25 mm

Type of Heating System	HSB 27-1780-**50/****	HSB 27-1780-**60/****	HSB 27-1780-**70/****
Heating cable connection and termination technology:	PLEXO TCS	PLEXO TCS with cold applied	PLEXO TCS with heat shrink
Ambient temperature range, per EN 60079-30-1:	-60 °C ... +55 °C	-55 °C ... +55 °C	-40 °C ... +55 °C
Degree of protection:	IP 65	IP 65	IP 65
Maximum cross section power supply conductors:	4 mm²	4 mm²	4 mm²
For trace heater: Heating Cable Series:	HSB	HSB	HSB
Maximum operating temperature, power "on":	+120 °C	+120 °C	+120 °C
Maximum withstand temperature, power "off":	+180 °C	+180 °C	+180 °C
Minimum bending radius:	25 mm	25 mm	25 mm

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Description (continued)

Type of Heating System	MSB 27-1980-1*10/****	MSB 27-1980-1*50/****	MSB 27-1980-1*60/****
Heating cable connection and termination technology:	cold applied	PLEXO TCS	PLEXO TCS with cold applied
Ambient temperature range, per EN 60079-30-1:	-40 °C ... +55 °C	-40 °C ... +55 °C	-40 °C ... +55 °C
Degree of protection:	IP 65	IP 65	IP 65
Maximum cross section power supply conductors:	16 mm²	4 mm²	4 mm²
For trace heater: Heating Cable Series:	MSB	MSB	MSB
Maximum operating temperature, power "on":	+110 °C	+110 °C	+110 °C
Maximum withstand temperature, power "off":	+130 °C	+130 °C	+130 °C
Minimum bending radius:	25 mm	25 mm	25 mm

The heating systems may consist the following heating cable connection and termination kits:

05-0091-0096:	heat shrink heating cable connection and termination kit, 1 set
05-0091-0129:	cold applied heating cable connection and termination kit, 1 set
05-0091-012901:	cold applied heating cable connection kit, 1 set
05-0091-012902:	cold applied heating cable termination kit, 1 set
05-0091-0135:	cold applied heating cable connection and termination kit, 10 sets
05-0091-013501:	cold applied heating cable connection kit, 10 sets
05-0091-013502:	cold applied heating cable termination kit, 10 sets
05-0091-013503:	cold applied heating cable connection kit, 50 sets
05-0091-013504:	cold applied heating cable termination kit, 50 sets
27-1100-1250/****:	PLEXO TCS system for MSB heating cable
27-1100-*350/****:	PLEXO TCS system for HSB heating cable

Electrical data

Type of Heating System	HSB 27-1780-0**0/****	HSB 27-1780-1**0/****	MSB 27-1980-1**0/****
Rated voltage:	110 to 120 Vac	208 to 254 Vac	208 to 254 Vac
Rated power output at 10 °C:	10 W/m 15 W/m 25 W/m 30 W/m 45 W/m 60 W/m	10 W/m 15 W/m 25 W/m 30 W/m 45 W/m 60 W/m	10 W/m 15 W/m 25 W/m 30 W/m 40 W/m
Maximum rating of over current protection:	32 A	32 A	32 A

The rated current is limited by the maximum circuit length and the applied supply cables, specified for each individual heating cable in the design documentation and installation instructions. The applicable maximum circuit length shall not be exceeded for installation.

Annex 1 to Certificate of Conformity IECEx KEM 09.0083 X, issue no. 2
Annex 1 to EC Type Examination KEMA 08ATEX0110 X, issue no. 5
Anhang 1 zu EG Baumunsterprüfbescheinigung KEMA 08ATEX0110 X, Ausgabe Nr. 5

Temperature class and maximum surface temperature "T"

The maximum surface temperature "T" is based upon exposure to the temperatures listed under "Description" and the "Electrical Data" above.

HSB Heating System type 27-1780-*0/****:**

For use with		Product classification approach		Systems approach, design verification method		
Rated voltage	Rated power output	T-class	Max. surface temperature "T"	Max. operating temperature	T-class	Max. surface temperature "T"
208 Vac to 254 Vac	10 W/m	T3	195 °C	105 °C	T4	130 °C
	15 W/m	T3	195 °C	70 °C	T4	130 °C
	25 W/m	T3	195 °C	55 °C	T4	130 °C
	30 W/m	T3	195 °C	25 °C	T4	130 °C
	45 W/m	T3	195 °C	120 °C	T3	195 °C
	60 W/m	-	-	120 °C	T3	195 °C
110 Vac to 120 Vac	10 W/m	T3	195 °C	-	-	-
	15 W/m	T3	195 °C	-	-	-
	25 W/m	T3	195 °C	-	-	-
	30 W/m	T3	195 °C	-	-	-
	45 W/m	T2	200 °C	-	-	-
	60 W/m	T2	200 °C	-	-	-

MSB Heating System type 27-1980-10/****:**

For use with		Systems approach, design verification method		
Rated voltage	Power output rating	Maximum operating temperature	T-class	Maximum surface temperature "T"
254 Vac	All	110 °C	150 °C (T3)	150 °C
	10 W/m	100 °C	T4	130 °C
	15 W/m	90 °C	T4	130 °C
	25 W/m	80 °C	T4	130 °C
	30 W/m	70 °C	T4	130 °C
	40 W/m	60 °C	T4	130 °C

Conditions for systems approach, design verification method

For insulated externally heated surfaces lower T-class systems may be obtained by ensuring that the heating cable shall not be exposed to temperatures exceeding those listed under maximum operating temperature.
The T-class obtained through systems approach is based on the energy balance of heat loss and heat production of the system at a certain temperature. The maximum operating temperature of the system including the resulting T-class and heating cable type shall be provided as a record of system documentation for each stabilized designed system. The parameters in the system documentation shall be checked during commissioning of the system.
The system documentation shall be kept by the owner of the system and be available at all times for as long as the system is in use.

Annex 1 to Certificate of Conformity IECEx KEM 09.0083 X, issue no. 2
Annex 1 to EC Type Examination KEMA 08ATEX0110 X, issue no. 5
Anhang 1 zu EG Baumunsterprüfbescheinigung KEMA 08ATEX0110 X, Ausgabe Nr. 5

Beschreibung

Das HSB Heizsystem Typ 27-1780-***0/**** und das MSB Heizsystem Typ 27-1980-1**0/**** sind Begleitheizungssysteme, die an einem Werkstück außen angebracht, zur Temperaturerhöhung oder Temperaturerhaltung von diesem Werkstück dienen.

Die Heizsysteme bestehen entweder aus Selbstbegrenzender Heizleitung HSB oder MSB, Anschlussgehäusen aus Kunststoff oder Metall, Reihenklemmen, Kabeleinführungen, Blindstopfen und An- und Abschlusssets in Warmschrumpftechnik, Kaltklebetechnik und dem PLEXO TCS Anschlusssystem.

Typ Heizsystem	HSB 27-1780-**00/****	HSB 27-1780-**10/****
Heizleitung An- und Abschlusstechnik:	Warmschrumpf-technik	Kaltklebetechnik
Umgebungstemperaturbereich, nach EN 60079-30-1:	-40 °C ... +55 °C	-55 °C ... +55 °C
Schutzart:	IP 65	IP 65
Maximaler Leiterquerschnitt der Anschlussleitungen:	16 mm²	16 mm²
Für Heizleitung: Heizleitungsserie:	HSB	HSB
Maximale Arbeitstemperatur, Versorgung eingeschaltet:	+120 °C	+120 °C
Maximale Einsatztemperatur, Versorgung ausgeschaltet:	+185 °C	+200 °C
Minimaler Biegeradius:	25 mm	25 mm

Typ Heizsystem	HSB 27-1780-**50/****	HSB 27-1780-**60/****	HSB 27-1780-**70/****
Heizleitung An- und Abschlusstechnik:	PLEXO TCS	PLEXO TCS mit Kaltklebetechnik	PLEXO TCS mit Warmschrumpf-technik
Umgebungstemperaturbereich, nach EN 60079-30-1:	-60 °C ... +55 °C	-55 °C ... +55 °C	-40 °C ... +55 °C
Schutzart:	IP 65	IP 65	IP 65
Maximaler Leiterquerschnitt der Anschlussleitungen:	4 mm²	4 mm²	4 mm²
Für Heizleitung: Heizleitungsserie:	HSB	HSB	HSB
Maximale Arbeitstemperatur, Versorgung eingeschaltet:	+120 °C	+120 °C	+120 °C
Maximale Einsatztemperatur, Versorgung ausgeschaltet:	+180 °C	+180 °C	+180 °C
Minimaler Biegeradius:	25 mm	25 mm	25 mm

Annex 1 to Certificate of Conformity IECEx KEM 09.0083 X, issue no. 2
Annex 1 to EC Type Examination KEMA 08ATEX0110 X, issue no. 5
Anhang 1 zu EG Baumunsterprüfbescheinigung KEMA 08ATEX0110 X, Ausgabe Nr. 5

Beschreibung (fortgesetzt)

Typ Heizsystem	MSB 27-1980-1*10/****	MSB 27-1980-1*50/****	MSB 27-1980-1*60/****
Heizleitung An- und Abschlusstechnik:	Kaltklebetechnik	PLEXO TCS	PLEXO TCS mit Kaltklebetechnik
Umgebungstemperaturbereich, nach EN 60079-30-1:	-40 °C ... +55 °C	-40 °C ... +55 °C	-40 °C ... +55 °C
Schutzart:	IP 65	IP 65	IP 65
Maximaler Leiterquerschnitt der Anschlussleitungen:	16 mm²	4 mm²	4 mm²
Für Heizleitung: Heizleitungsserie:	MSB	MSB	MSB
Maximale Arbeitstemperatur, Versorgung eingeschaltet:	+110 °C	+110 °C	+110 °C
Maximale Einsatztemperatur, Versorgung ausgeschaltet:	+130 °C	+130 °C	+130 °C
Minimaler Biegeradius:	25 mm	25 mm	25 mm

Die Heizsysteme können mit folgenden An- und Abschlusssets ausgestattet sein:

05-0091-0096:	Warmschrumpf An- und Abschlussset für Heizleitungen, 1 Set
05-0091-0129:	Kaltklebe An- und Abschlussset für Heizleitungen, 1 Set
05-0091-012901:	Kaltklebe Anschlussset für Heizleitungen, 1 Set
05-0091-012902:	Kaltklebe Abschlussset für Heizleitungen, 1 Set
05-0091-0135:	Kaltklebe An- und Abschlusssets für Heizleitungen, 10 Sets
05-0091-013501:	Kaltklebe Anschlusssets für Heizleitungen, 10 Sets
05-0091-013502:	Kaltklebe Abschlusssets für Heizleitungen, 10 Sets
05-0091-013503:	Kaltklebe Anschlusssets für Heizleitungen, 50 Sets
05-0091-013504:	Kaltklebe Abschlusssets für Heizleitungen, 50 Sets
27-1100-1250/****:	PLEXO TCS System für MSB Heizleitung
27-1100-*350/****:	PLEXO TCS System für HSB Heizleitung

Elektrische Daten

Typ Heizsystem	HSB 27-1780-0**0/****	HSB 27-1780-1**0/****	MSB 27-1980-1**0/****
Bemessungsspannung:	110 bis 120 Vac	208 bis 254 Vac	208 bis 254 Vac
Bemessungsleistung bei 10 °C:	10 W/m 15 W/m 25 W/m 30 W/m 45 W/m 60 W/m	10 W/m 15 W/m 25 W/m 30 W/m 45 W/m 60 W/m	10 W/m 15 W/m 25 W/m 30 W/m 40 W/m
Maximaler Bemessungswert der Stromabsicherung:	32 A	32 A	32 A

Der Bemessungsstrom ist durch die maximale Heizkreislänge und den verwendeten Anschlussleitungen beschränkt, die für jede Heizleitung in der Systemdokumentation und den Errichtungshinweisen spezifiziert ist. Der jeweilige Wert der maximalen Heizkreislänge darf nicht überschritten werden.

Annex 1 to Certificate of Conformity IECEx KEM 09.0083 X, issue no. 2
Annex 1 to EC Type Examination KEMA 08ATEX0110 X, issue no. 5
Anhang 1 zu EG Baumunsterprüfbescheinigung KEMA 08ATEX0110 X, Ausgabe Nr. 5

Temperaturklasse und maximale Oberflächentemperatur „T“

Die maximale Oberflächentemperatur „T“ basiert auf der Anwendung bei Temperaturen, die unter „Beschreibung“ genannt sind, mit den oben genannten „Elektrischen Daten“.

HSB Heizsystem Typ 27-1780-*0/****:**

Anwendung mit		Produktklassifizierungs-annäherung		Systemannäherung, Entwurfsprüfungsverfahren		
Bemessungs-spannung	Bemessungs-leistung	T-Klasse	Maximale Oberflächen-temperatur „T“	Maximale Arbeits-temperatur	T-Klasse	Maximale Oberflächen-temperatur „T“
208 Vac bis 254 Vac	10 W/m	T3	195 °C	105 °C	T4	130 °C
	15 W/m	T3	195 °C	70 °C	T4	130 °C
	25 W/m	T3	195 °C	55 °C	T4	130 °C
	30 W/m	T3	195 °C	25 °C	T4	130 °C
	45 W/m	T3	195 °C	120 °C	T3	195 °C
	60 W/m	-	-	120 °C	T3	195 °C
110 Vac bis 120 Vac	10 W/m	T3	195 °C	-	-	-
	15 W/m	T3	195 °C	-	-	-
	25 W/m	T3	195 °C	-	-	-
	30 W/m	T3	195 °C	-	-	-
	45 W/m	T2	200 °C	-	-	-
	60 W/m	T2	200 °C	-	-	-

MSB Heizsystem Typ 27-1980-10/****:**

Anwendung mit		Systemannäherung, Entwurfsprüfungsverfahren		
Bemessungs-spannung	Bemessungs-leistung	Maximale Arbeits-temperatur	T-Klasse	Maximale Oberflächen-temperatur „T“
254 Vac	Alle	110 °C	150 °C (T3)	150 °C
	10 W/m	100 °C	T4	130 °C
	15 W/m	90 °C	T4	130 °C
	25 W/m	80 °C	T4	130 °C
	30 W/m	70 °C	T4	130 °C
	40 W/m	60 °C	T4	130 °C

Annex 1 to Certificate of Conformity IECEx KEM 09.0083 X, issue no. 2
Annex 1 to EC Type Examination KEMA 08ATEX0110 X, issue no. 5
Anhang 1 zu EG Baumunsterprüfbescheinigung KEMA 08ATEX0110 X, Ausgabe Nr. 5

Temperaturklasse und maximale Oberflächentemperatur „T" (fortgesetzt)

Bedingungen für Systemannäherung, Entwurfsprüfungsverfahren

Systeme mit isolierten von außen beheizten Oberflächen können die auf der vorigen Seite genannten niedrigeren Temperaturklassen bekommen. Dabei ist sicher zu stellen, dass die auf der vorigen Seite jeweilig genannte maximale Arbeitstemperatur nicht überschritten wird.
Die Temperaturklasse die durch Systemannäherung, Entwurfsprüfungsverfahren ermittelt ist, basiert auf dem Ausgleich des Wärmeverlustes und der erzeugten Energie des Systems bei einer bestimmten Temperatur. Die maximale Arbeitstemperatur des Systems, einschließlich der resultierenden Temperaturklasse, und der Typ der Heizleitung müssen als Datensatz in der Systemdokumentation für jedes System, in stabilisierter Bauart mitgeliefert werden. Die Parameter in der Systemdokumentation müssen während der Systemabnahme kontrolliert werden.
Der Systembetreiber muss die Systemdokumentation aufbewahren und jederzeit zur Verfügung stellen können, solange das System in Betrieb ist.