Base Load Power Hub (BLPH)

ATEX REGISTER INCLUDING CERTIFICATIONS - EHT

ELECTRICAL HEAT TRACING

1724001647-EL-LIS-00011

Document Class: 2

Rev.	Date	Description	Prepared	Reviewed	Approved
03	17-02-25	Accepted for Construction (AFC)	L. Gentile	A. Martelli	P. Padovani
02	20-01-25	Issue for Review (IFR)	L. Gentile	A. Martelli	P. Padovani
01	17-12-24	Issue for Review (IFR)	L. Gentile	A. Martelli	P. Padovani
00	26-09-24	Issue for Review (IFR)	L. Gentile	A. Martelli	P. Padovani

nVent

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Revision / Change Log

Rev.	Description
00	ISSUE FOR REVIEW (IFR)
01	ISSUE FOR REVIEW (IFR)
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03	ACCEPTED FOR CONSTRUCTION (AFC)

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No.	Revision	Tag Number	Description	Location	Manufacturer	Model Type Catalogue Number	Serial Number	ATEX Certification Marking	Reference Document	ATEX Certificate Number	Installation Zone	Notes / Comments	P.O.	Vendor	Skid / Package	Barrier Calculation Ref.	Non-Electrical Equipment	Special Conditions of safe use Applicable
1	02	EHT-1001-A	Raychem Self-Regulating Heating Cable and accessories	n/a	nVent	3BTV2-CT	469145-000	II 2 GD Ex 60079-30-1 eb IIC T6 Gb or Ex 60079-30-1 eb mb IIC T6 Gb Tmin -60°C Ex 60079-30-1 tb IIIC T80°C Db or Ex 60079-30-1 mb tb IIIC T80°C Db	1724001647-EL-DD-00004	SGS20ATEX0048X	Zone 1	n/a	1724001647	nVent	n/a	n/a	n/a	YES
2	02	EHT-1002-A	Raychem Self-Regulating Heating Cable and accessories	n/a	nVent	3BTV2-CT	469145-000		1724001647-EL-DD-00004			n/a	1724001647	nVent	n/a	n/a	n/a	YES
3	02	EHT-1003-A	Raychem Self-Regulating Heating Cable and accessories	n/a	nVent	3BTV2-CT	469145-000		1724001647-EL-DD-00004			n/a	1724001647	nVent	n/a	n/a	n/a	YES
4	02	EHT-1004-A	Raychem Self-Regulating Heating Cable and accessories	n/a	nVent	3BTV2-CT	469145-000		1724001647-EL-DD-00004			n/a	1724001647	nVent	n/a	n/a	n/a	YES
5	02	EHT-1005-A	Raychem Self-Regulating Heating Cable and accessories	n/a	nVent	3BTV2-CT	469145-000		1724001647-EL-DD-00004			n/a	1724001647	nVent	n/a	n/a	n/a	YES
6	02	EHT-1006-A	Raychem Self-Regulating Heating Cable and accessories	n/a	nVent	3BTV2-CT	469145-000		1724001647-EL-DD-00004			n/a	1724001647	nVent	n/a	n/a	n/a	YES
7	02	EHT-1007-A	Raychem Self-Regulating Heating Cable and accessories	n/a	nVent	3BTV2-CT	469145-000		1724001647-EL-DD-00004			n/a	1724001647	nVent	n/a	n/a	n/a	YES
8	02	EHT-1004-B	Raychem Self-Regulating Heating Cable and accessories	n/a	nVent	3BTV2-CT	469145-000		1724001647-EL-DD-00004			n/a	1724001647	nVent	n/a	n/a	n/a	YES
9	02	EHT-2002-A	Raychem Self-Regulating Heating Cable and accessories	n/a	nVent	3BTV2-CT	469145-000		1724001647-EL-DD-00004			n/a	1724001647	nVent	n/a	n/a	n/a	YES
10	02	n/a	Heat shrink end seal, ATEX (BTV, QTVR)	n/a	nVent	E-20	1244-022489	II 2 GD Ex 60079-30-1 eb IIC T6 Gb or Ex 60079-30-1 eb mb IIC T6 Gb Tmin -60°C Ex 60079-30-1 tb IIIC T80°C Db or Ex 60079-30-1 mb tb IIIC T80°C Db	1724001647-EL-DD-00004	SGS20ATEX0048X	Zone 1	n/a	1724001647	nVent	n/a	n/a	YES	YES
11	02	EAT-200N1-01	Electronic Ambient Sensing Thermostat with Alarm Relay, ATEX	n/a	nVent	ETS-05-A2-E-A	1244-022663	II 2(1)G Ex eb ia mb [ia Ga] IIC T5 Gb -40ºC ≤ Ta ≤ +60ºC II 2D Ex tb IIIC T100ºC Db	1724001647-EL-DD-00004	Baseefa13ATEX0137	Zone 1	n/a	1724001647	nVent	n/a	n/a	n/a	n/a
12	02	ETB-200N1-16-L3-01	Single entry power connection, EP, ATEX	n/a	nVent	JBS-100-E	829939-000	II2GExebmbIICGb II2DExtbmbMICDb	1724001647-EL-DD-00004	PTB 20 ATEX 1008 U	Zone 1	n/a	1724001647	nVent	n/a	n/a	n/a	n/a
13	02	ETB-200N1-17-L1-02	Single entry power connection, EP, ATEX	n/a	nVent	JBS-100-E	829939-000	II2GExebmbIICGb II2DExtbmbMICDb	1724001647-EL-DD-00004			n/a	1724001647	nVent	n/a	n/a	n/a	n/a
14	02	ETB-200N1-17-L1-03	Single entry power connection, EP, ATEX	n/a	nVent	JBS-100-E	829939-000	II2GExebmbIICGb II2DExtbmbMICDb	1724001647-EL-DD-00004			n/a	1724001647	nVent	n/a	n/a	n/a	n/a
15	02	ETB-200N1-15-L2-02	Single entry power connection, EP, ATEX	n/a	nVent	JBS-100-E	829939-000	II2GExebmbIICGb II2DExtbmbMICDb	1724001647-EL-DD-00004			n/a	1724001647	nVent	n/a	n/a	n/a	n/a
16	02	ETB-200N1-17-L1-05	Single entry power connection, EP, ATEX	n/a	nVent	JBS-100-E	829939-000	II2GExebmbIICGb II2DExtbmbMICDb	1724001647-EL-DD-00004			n/a	1724001647	nVent	n/a	n/a	n/a	n/a
17	02	ETB-200N1-17-L1-01	Single entry power connection, EP, ATEX	n/a	nVent	JBS-100-E	829939-000	II2GExebmbIICGb II2DExtbmbMICDb	1724001647-IN-HD-00010			n/a	1724001647	nVent	n/a	n/a	n/a	n/a
18	02	ETB-200N1-15-L2-01	Integrated Junction Box, Multiple-Entry, Cold-Applied, Cold-Applied, ATEX	n/a	nVent	JBM-100-E	831519-000	II2GExebmbIICGb II2DExtbmbMICDb	1724001647-EL-DD-00004			n/a	1724001647	nVent	n/a	n/a	n/a	n/a
19	02	ETB-200N1-14-L1-01	Integrated Junction Box, Multiple-Entry, Cold-Applied, Cold-Applied, ATEX	n/a	nVent	JBM-100-E	831519-000	II2GExebmbIICGb II2DExtbmbMICDb	1724001647-EL-DD-00004			n/a	1724001647	nVent	n/a	n/a	n/a	n/a
20	02	ETB-200N1-17-L1-04	Integrated Junction Box, Multiple-Entry, Cold-Applied, Cold-Applied, ATEX	n/a	nVent	JBM-100-E	831519-000	II2GExebmbIICGb II2DExtbmbMICDb	1724001647-EL-DD-00004			n/a	1724001647	nVent	n/a	n/a	n/a	n/a

EU - TYPE EXAMINATION CERTIFICATE

Equipment or Protective System Intended for use in Potentially Explosive Atmospheres
Directive 2014/34/EU

3	EU - Type Examination Certificate Number:	**SGS20ATEX0048X – Issue 3**
4	Product:	**BTV Range of Self-Regulating Trace Heating Systems**
5	Manufacturer:	**nVent Thermal LLC**
6	Address:	**899 Broadway Street, CA, 94063-3104, United States of America**

7 This re-issued certificate extends EU Type Examination Certificate No. **SGS20ATEX0048X** to apply to product designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

8 SGS Fimko Oy, Notified Body number 0598, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report No. See Certificate History

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

EN IEC 60079-0:2018 **EN IEC 60079-7:2015+A1:2018** **EN 60079-18:2015+A1:2017**
EN 60079-30-1:2017 **EN 60079-31:2014**

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

11 This EU - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of the product shall include the following :

☐ **II 2 GD Ex 60079-30-1 eb IIC T6 Gb or Ex 60079-30-1 eb mb IIC T6 Gb T_{min} -60°C**
Ex 60079-30-1 tb IIIC T80°C Db or Ex 60079-30-1 mb tb IIIC T80°C Db

SGS Fimko Oy Customer Reference No. **865** Project File No. **21/0455**

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13 # Schedule

14 ## Certificate Number SGS20ATEX0048X – Issue 3

15 Description of Product

The BTV Range of Self-Regulating Trace Heating Systems is of the parallel circuit self-regulating type, rated at up to 277V, with power output up to 33W/m (10W/ft). The units have a maximum self-limiting temperature of 80°C.

Each trace heating system comprises:

- the active heating cable.
- an end seal for terminating the remote end of the unit.
- a cable gland for connecting the powered end of the unit to a suitable terminal enclosure, or alternative integrated power connection systems.

The active heating cable comprises two stranded copper conductors around which is extruded a semi-conductive core material. This core material increases in resistance with increasing temperature and gives the cable its self-limiting property. This semi conductive core with embedded conductors forms the active part of the heating cable. An extruded layer of fluoropolymer serves to insulate the semi conductive core from the conductive covering, covering the active heater. A protective anti-corrosion fluoropolymer sheath may be extruded over the conductive covering.

The declared maximum withstand temperature for the range is 85°C and the minimum installation temperature is -60°C.

CABLE ACCESSORIES

END SEALS

The end seals for terminating the remote end of the unit may be the following types:

Types E-100-L or E-100, which are mechanical end seals incorporating an end cap which is filled with silicone grease sealant covered by certificates Sira14ATEX3015X and PTB09ATEX1060U.

Types E-100-L-A or E-100-A, which are mechanical end seals incorporating an end cap which is filled with silicone grease sealant.

A Raychem Type E-20 heat shrink end seal kit.

Type E-150 mechanical end seals, covered by certificate DEKRA20ATEX0011U.

SPLICES AND JOINTS

The following splicing and jointing arrangements are provided:

A Raychem Type S-20 heat shrink splice kit for connecting lengths of active heating cable.

A Raychem T-100 tee connection system, certificate PTB20ATEX1008U, for connecting up to three heater cables.

Type S-150 mechanical splice kit, covered by certificate DEKRA20ATEX0011U.

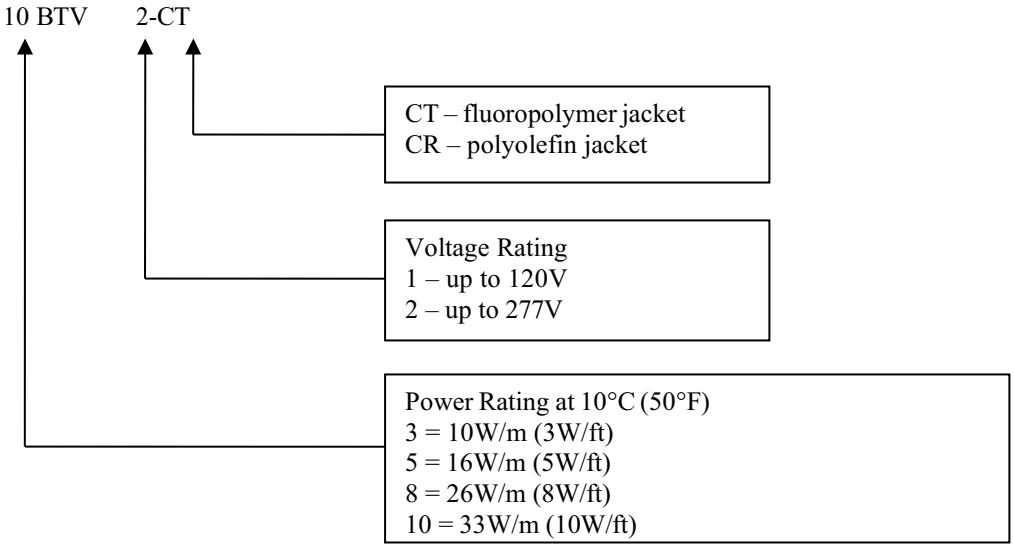
POWER CONNECTIONS

Power connection may be achieved by the following means:

Connection Type	ATEX Certificate
JBM-100	PTB20ATEX1008U
JBS-100	PTB20ATEX1008U
JBU-100	PTB20ATEX1008U
C-150-E	DEKRA20ATEX0011U
C25-21 Connection Kit	Baseefa16ATEX0037U
C25-100 Connection Kit	Baseefa16ATEX0038U
C25-100-Metal / C3/4-100-Metal / C25-100-Metal-NP / C3/4-100-Metal-NP / C25-100-Metal-SS Kits	Baseefa16ATEX0039U

The C25-100-Metal / C3/4-100-Metal / C25-100-Metal-NP / C3/4-100-Metal-NP / C25-100-Metal-SS Kits include M25 or ¾ NPT gland to Sira01ATEX1270X and core sealer to Baseefa15ATEX0194U.

A number of power levels and voltages, up to the maximum specified, are included in the range. They are identified in the following manner:



Any of the products in the range may be considered as part of a stabilised design system. In such a system the design is based upon the use of nVent proprietary software Trace calc Pro. The algorithm defined in this software may be used in additional design software.

The minimum bending radii for BTV trace heating cable at specific temperatures are shown in the table below:

Temperature, T (°C)	**Minimum Bending Radius (mm)**
$-60 \leq T < -20$	35
$-20 \leq T < -10$	30
$-10 \leq T < 0$	25
$0 \leq T < +10$	20
$T \geq +10$	12

16 Report Number

See Certificate History.

17 Specific Conditions of Use

1. The following limiting temperatures for the heat shrink end seals and splices shall not be exceeded:

   +110°C for the S-20 and E-20
   +150°C for the C-150-E, S-150 and E-150

2. The end seals, splices and power connections have the following associated ambient temperatures:

   -60°C to +56°C for the E-20 and S-20
   -55°C to +56°C for the T-100, JBM-100, JBS-100, JBU-100, and E-100
   -40°C to +56°C for the JBS-100-L, JBM-100-L, and JBU-100-L
   -55°C to +55°C for the C-150-E, S-150 and E-150
   -40°C to +40°C for the E-100-L
   -55°C to +110°C for the C25-21 and C25-100
   -60°C to +180°C for the C25-100-Metal / C3/4-100-Metal / C25-100-Metal-NP / C3/4-100-Metal-NP / C25-100-Metal-SS

3. The assembly of glands, splices and end terminations shall be carried out in accordance with the manufacturing instructions

4. The heating element supply circuit must include an electrical protection device in conformity with Clause 4.4 of EN 60079-30-1.

5. The minimum installation temperature is -60°C. The minimum bending radii at specific temperatures for the Type BTV units are shown in the table in the equipment description.

6. The supply to the heating unit must be terminated in a suitably certified terminal enclosure.

7. The minimum installation temperature for E-20 and S-20, end seal and splice is -20°C.

8. The installer is to carry out a dielectric strength test on Ex equipment in which the C25-21, C25-100 and C25-100-Metal / C3/4-100-Metal / C25-100-Metal-NP / C3/4-100-Metal-NP / C25-100-Metal-SS connection kit is fitted. No dielectric breakdown shall occur. (Alternatively, an insulation resistance test may be undertaken in accordance with EN 60079-30-2).

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

Clause	Subject
1.2.7	LVD type requirements
1.2.8	Overloading of equipment (protection relays, etc.)
1.4.1	External effects
1.4.2	Aggressive substances, etc.

19 Drawings and Documents

New drawings submitted for this issue of certificate:

Number	Sheet	Issue	Date	Description
205308-A[i]	1 of 1	Q	05/27/2021	BTV-8BTV-CR & BTV-10BTV-CR
205310-A[i]	1 of 1	R	05/27/2021	BTV-8BTV-CT & BTV-10BTV-CT

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
906567[ii]	1 of 1	P	05/21/21	C25-21, C25-100 and C25-100-METAL-XX, C3/4-100-METAL-XX Connection Kits
906579-A[i]	1 of 1	N	01/15/2021	BTV Heater Units (European System)
205350-A[i]	1 of 1	P	03/31/20	BTV-3BTV-CT & BTV-5BTV-CT
205349-A[i]	1 of 1	J	03/26/20	BTV-3BTV-CR & BTV-5BTV-CR
906794-A[iii]	1 of 1	AA	03/30/20	Generic ATEX and IECEx Print Dwg for BTV-CT, QTVR-CT, XTV-CT, KTV-CT Heating Cables
9242869[iv]	1 & 2	O	12/09/19	LABL JBM-100-L-E
9532687[iv]	1 & 2	Q	12/09/19	LABL JBM-100-L-EP
9621473[iv]	1 & 2	O	12/09/19	LABL JBS-100-L-E
9777523[iv]	1 & 2	P	12/09/19	LABL JBS-100-L-EP
9319676[iv]	1 & 2	O	12/09/19	LABL JBU-100-L-E
9735898[iv]	1 & 2	O	12/09/19	LABL JBU-100-L-EP
908742-A[v]	1 of 1	A	2/19/20	E-20 Heat Shrinkable End Seal Kit Cut Back Dimensions
908743-A[vi]	1 of 1	A	2/19/20	S-20 Heat Shrinkable Splice Joint Kit Cut Back Dimensions

i) These drawings are common to IECEx BAS 20.0011X, SGS20ATEX0048X and are held with IECEx BAS 20.0011X.

ii) This drawing is common to IECEx BAS 16.0040U, IECEx BAS 16.0041U, IECEx 16.0042U, IECEx BAS 20.0008X, IECEx BAS 20.0009X, IECEx BAS 20.0011X, IECEx BAS 20.0012X, IECEx BAS 20.0013X, IECEx BAS 20.0014X, Baseefa16ATEX0037U, Baseefa16ATEX0038U, Baseefa16ATEX0039U, SGS20ATEX0045X, SGS20ATEX0046X, SGS20ATEX0048X, SGS20ATEX0049X, SGS20ATEX0050X, SGS20ATEX0051X and is held with IECEx BAS 16.0040U.

iii) These drawings are common to IECEx BAS 20.0011X, IECEx BAS 20.0012X, IECEx BAS 20.0013X, IECEx BAS 20.0014X, SGS20ATEX0048X, SGS20ATEX0049X, SGS20ATEX0050X, SGS20ATEX0051X and are held with IECEx BAS 20.0011X.

iv) These drawings are common to IECEx BAS 20.0008X, IECEx BAS 20.0011X, IECEx BAS 20.0012X, IECEx BAS 20.0013X, IECEx BAS 20.0014X, SGS20ATEX0045X, SGS20ATEX0048X, SGS20ATEX0049X, SGS20ATEX0050X, SGS20ATEX0051X and are held with IECEx BAS 20.0008X.

v) These drawings are common to IECEx BAS 20.0010X, IECEx BAS 20.0011X, IECEx BAS 20.0013X, SGS20ATEX0047X, SGS20ATEX0048X, SGS20ATEX0050X and are held with IECEx BAS 20.0010X.

vi) These drawings are common to IECEx BAS 20.0011X, IECEx BAS 20.0013X, SGS20ATEX0048X, SGS20ATEX0050X and are held with IECEx BAS 20.0011X.

20 Certificate History

Certificate No.	Date	Comments
SGS20ATEX0048X	23 October 2020	The release of the prime certificate. The associated test and assessment against the requirements of EN 60079-0:2012+A11:2013, EN IEC 60079-7:2015+A1:2018, EN 60079-18:2015+A1:2017, EN 60079-30-1:2017 and EN 60079-31:2014 is documented in Test Report No. GB/BAS/ExTR20.0030/00.

Certificate No.	Date	Comments
SGS20ATEX0048X Issue 1	11 February 2021	To assess the BTV range of self-regulating trace heating systems against EN IEC 60079-0:2018, introduce the low profile power connection, splice and end seal kits, types C-150-E, S-150 and E-150 afforded DEKRA20ATEX0011U, minor amendments to the product description, to change the product name to "BTV Range of Self-Regulating Trace Heating Systems" and to amend the Specific Conditions of Use. The associated test and assessment is documented in Test Report No. GB/BAS/ExTR21.0005/00.
SGS20ATEX0048X Issue 2	7 July 2021	Minor drawing updates not affecting certification. Baseefa Certification Report GB/BAS/ExTR21.0060/00 refers.
SGS20ATEX0048X Issue 3	3 September 2021	Minor change to the BTV-8BTV-CR, BTV-8BTV-CT, BTV-10BTV-CR and BTV-10BTV-CT heating cable dimensions. Baseefa Certification Report GB/BAS/ExTR21.0104/00 refers.
For drawings applicable to each issue, see original of that issue.		

1 # EU - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres**
Directive 2014/34/EU

3 EU - Type Examination Certificate Number: **Baseefa13ATEX0137 Issue 6**

3.1 In accordance with Article 41 of Directive 2014/34/EU, EC-Type Examination Certificates referring to 94/9/EC that were in existence prior to the date of application of 2014/34/EU (20 April 2016) may be referenced as if they were issued in accordance with Directive 2014/34/EU. Supplementary Certificates to such EC-Type Examination Certificates, and new issues of such certificates, may continue to bear the original certificate number issued prior to 20 April 2016.

4 Product: **ETS-05 Electronic Thermostat**

5 Held by: **nVent Thermal Belgium NV**

6 Address: **Research Park Haasrode - Zone 2, Romeinse straat 14, B-3001 Leuven, Belgium**

7 This re-issued certificate extends EC Type Examination Certificate No. Baseefa13ATEX0137 to apply to product designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

8 SGS Fimko Oy, Notified Body number 0598, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

8.1 The original certificate was issued by SGS Baseefa Ltd (UK Notified Body 1180). It, and any supplements previously issued by SGS Baseefa Ltd have been transferred to the supervision of SGS Fimko Oy (EU Notified Body 0598). The original certificate number is retained.

The examination and test results are recorded in confidential Report No. **See Certificate History**

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

EN IEC 60079-0:2018 EN IEC 60079-7:2015+A1:2018 EN 60079-11:2012 EN 60079-18: 2015 EN 60079-31:2013

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign “X” is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

11 This EU - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of the product shall include the following:

Ex **See schedule**

SGS Fimko Oy Customer Reference No. **5034** Project File No. **20/0458**

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Tuomas Hänninen
SGS Fimko Oy

13 **Schedule**

14 **Certificate Number Baseefa13ATEX0137 – Issue 6**

15 Description of Product

The nVent ETS-05 Electronic Thermostat provides accurate temperature control for heating cables.

It comprises a plastic box with terminals inside for connection to the sensor and to the incoming user connections. Relay contacts are present to allow resistive loads of up to 230V a.c. at 32A to be controlled.

ETS-05-a1-bb-c
The supply range for the equipment is 99 to 121V a.c.
Supply & relay terminal block TB1 U_m = 253V. Rated current = 32A.
Relay terminal block TB3 (if present) U_m = 253V.

ETS-05-a1R-bb-c
The supply range for the equipment is 99 to 132V a.c. U_m = 253V.
Supply & relay terminal block TB1 Um = 253V. Rated current = 32A.
Relay terminal block TB3 (if present) Um = 253V.

ETS-05-a2-bb-c
The supply range for the equipment is 195 to 230V a.c. U_m = 253V.
Supply & relay terminal block TB1 Um = 253V. Rated current = 32A.
Relay terminal block TB3 (if present) Um = 253V.

ETS-05-a2R-bb-c
The supply range for the equipment is 195 to 277V a.c. U_m = 277V.
Supply & relay terminal block TB1 Um = 277V. Rated current = 32A.
Relay terminal block TB3 (if present) Um = 277V.

The options a bb & c affect the operational non-safety aspects:-
a = A (0°C to 49°C model)
H (0°C to 499°C model)
L (0°C to 199°C model)
bb = A (American market version)
= E (European market version)
= J (Japanese market version)
c = A (Alarm output model) Rated alarm output = 275V, 3A resistive.
= not present (Alarm output not present)

Sensor Connections - Terminal Block TB2

U_o = 5.88V
I_o = 29mA
P_o = 43mW
C_i =26nF
L_i = 0
U_i = 0

The capacitance and either the inductance or inductance to resistance ratio (L/R) of the load connected to hazardous area terminals must not exceed the following values:

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR L/R RATIO (µH/ohm)
IIC	43	43	843
IIB	1000	172	3373
IIA	1000	345	6746

The above load parameters apply where:

1. The external circuit contains no combined lumped inductance L_i and capacitance C_i greater than 1% of the above values, or
2. The inductance and capacitance are distributed as in a cable, or
3. The external circuit contains either only lumped inductance or lumped capacitance in combination with a cable.

In all other situations e.g. the external circuit contains combined lumped inductance and lumped capacitance, up to 50% of each of the L and C values is allowed.

The equipment is marked:

Ⓔx II 2(1)G Ex eb ia mb [ia Ga] IIC T5 Gb -40ºC ≤ Ta ≤ +60ºC
Ⓔx II 2D Ex tb IIIC T100ºC Db

16 Report Number

See Certificate History.

17 Specific Conditions of Use

None

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product.

Clause	Subject	Compliance
1.2.7	LVD type requirements	Standards require manufacturer's declaration, supplied.
1.2.8	Overloading of equipment (protection relays, etc.)	Covered by installation rules and manufacturer's instructions
1.4.1	External effects	The Purchaser should make the manufacturer aware of such issues. Covered in Instructions
1.4.2	Aggressive substances, etc.	The Purchaser should make the manufacturer aware of such issues. Covered in Instructions

19 Drawings and Documents

New drawings submitted for this issue of certificate:

Number	Sheet	Issue	Date	Description
RGD 1102-107	1	6	01/05/2021	ETS-05 nVent Certification Label

This drawing is held with IECEx BAS 13.0071 Issue 6.
Other applicable drawings are listed on Baseefa13ATEX0126 Issue 5.

20 Certificate History

Certificate No.	Date	Comments
Baseefa13ATEX0137	26 August 2014	The release of the prime certificate. The associated test and assessment against the requirements of EN60079-0: 2012, EN60079-7: 2007, EN60079-11: 2012, EN60079-18: 2009 & EN60079-31: 2013 is recorded in Report GB/BAS/ExTR14.0185/00 for Project 12/0565
Baseefa13ATEX0137 Issue 1	21 December 2016	This issue reflects the issue of Baseefa13ATEX0126 Issue 1. Report GB/BAS/ExTR16.0395/00, Project 16/0987

Certificate No.	Date	Comments
Baseefa13ATEX0137/2	28 February 2018	To permit the use of an alternative opto-coupler and the correction of the marking code. See report GB/BAS/ExTR18.0099/00 for project 17/0869.
Baseefa13ATEX0137/3	22 January 2019	To confirm the certificate is now held in the name of nVent Thermal Belgium BV, and to permit the label to show name of nVent Thermal Belgium BV. See GB/BAS/ExTR18.0125/00 for project 17/0864.
Baseefa13ATEX0137/4	8 April 2020	To permit the addition of a new variant model ETS-05-x3-x that has an increased voltage range of 195V to 277V, and an increased U_m of 277V. See report GB/BAS/ExTR20.0070/00 for project 20/0005.
Baseefa13ATEX0137 Issue 5	10 August 2020	This issue of the certificate incorporates previously issued primary & supplementary certificates into one certificate, permits the use of an alternative enclosure, and confirms the equipment meets the requirements of EN IEC 60079-0:2018, EN IEC 60079-7: 2015+A1:2018 and EN 60079-18: 2015. See report GB/BAS/ExTR20.0119/00 for project 20/0123.
Baseefa13ATEX0137 Issue 6	30 September 2021	This issue of the certificate permits the addition of models with alarm outputs and permits the introduction of a new model naming convention. See report GB/BAS/ExTR21.0172/00 for project 20/0458.
For drawings applicable to each issue, see original of that issue.		

Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin
Nationales Metrologieinstitut

(1) EU-Baumusterprüfbescheinigung

(2) Geräte oder Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen - **Richtlinie 2014/34/EU**

(3) EU-Baumusterprüfbescheinigungsnummer

PTB 20 ATEX 1008 U **Ausgabe: 1**

(4) Produkt: Integriertes Begleitheizungs-Anschlusssystem Typ JBx-100-xx-xx und T-100

(5) Hersteller: nVent Thermal Belgium LLC

(6) Anschrift: Romeinse straat 14, 3001 Leuven, Belgien

(7) Die Bauart dieses Produkts sowie die verschiedenen zulässigen Ausführungen sind in der Anlage und den darin aufgeführten Unterlagen zu dieser Baumusterprüfbescheinigung festgelegt.

(8) Die Physikalisch-Technische Bundesanstalt, notifizierte Stelle Nr. 0102 gemäß Artikel 17 der Richtlinie 2014/34/EU des Europäischen Parlaments und des Rates vom 26. Februar 2014, bescheinigt, dass dieses Produkt die grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Produkten zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie erfüllt.

Die Ergebnisse der Prüfung sind in dem vertraulichen Prüfbericht PTB Ex 21-10134 festgehalten.

(9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit

EN IEC 60079-0:2018; EN IEC 60079-7:2015/A1:2018-01; EN 60079-18:2015; EN 60079-31:2014

(10) Falls das Zeichen „X“ hinter der Bescheinigungsnummer steht, wird auf besondere Bedingungen für die sichere Anwendung des Produkts in der Anlage zu dieser Bescheinigung hingewiesen.

(11) Diese EU-Baumusterprüfbescheinigung bezieht sich nur auf Konzeption und Prüfung des festgelegten Produkts gemäß Richtlinie 2014/34/EU. Weitere Anforderungen dieser Richtlinie gelten für die Herstellung und das Bereitstellen auf dem Markt. Diese Anforderungen werden nicht durch diese Bescheinigung abgedeckt.

(12) Die Kennzeichnung des Produkts muss die folgenden Angaben enthalten:

II 2 G Ex eb mb IIC Gb

II 2 D Ex tb mb IIIC Db

Konformitätsbewertungsstelle, Sektor Explosionsschutz Braunschweig, 22. März 2021
Im Auftrag

Dr.-Ing. D. Markus
Direktor und Professor

PHYSIKALISCH-TECHNISCHE BUNDESANSTALT

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(13) # Anlage

(14) **EU-Baumusterprüfbescheinigung PTB 20 ATEX 1008 U, Ausgabe: 1**

(15) Beschreibung des Produkts

Die JBx-100-xx-xx und T-100 Anschlusskasten-Serie ist ein Anschlusssystem für elektrische Begleitheizungssysteme. Die Anschlusskastenserie JBx-100-xx-xx ist in vier verschiedene Versionen unterteilt (JBS-100-xx-xx, JBM-100-xx-xx und T-100). Diese Anschlusskastenserie ist auf einem integrierten Rohrträger montiert, um elektrische Heizkabel an das Stromnetz anzuschließen oder um eine Verbindung zwischen 2 oder 3 Heizkabeln herzustellen. Die verschiedenen Modelle der Serie umfassen Optionen wie: Kästen mit einer Offshore-Platte (Erdungsplatte) und Kästen mit einem optionalen Lichtmodul. Die vierte Version der Anschlusskasten-Serie ist JBU-100-xx-xx. Diese Version hat die gleichen Eigenschaften, wird jedoch anstelle des Rohrträgers mit einer Halterung direkt an der Rohrleitung montiert.

Typ JBS-100-xx-xx
Der Anschlusskasten ist auf einem integrierten Rohrträger installiert. Im Inneren des Anschlusskastens JBS-100-xx-xx befindet sich eine DIN-Schiene auf der zertifizierte Klemmen installiert sind. Zusätzliche Klemmen können hinzugefügt werden, um den Anschluss eines externen Thermostaten zu ermöglichen. Der Anschlusskasten ist für den Anschluss eines Heizkabels an ein Stromkabel (mit oder ohne Thermostat) ausgelegt. Die Stromkabel werden im Anschlusskasten durch ein Loch in der Seitenwand des Kastens und eine zertifizierte Kabelverschraubung eingeführt.

Typ JBM-100-xx-xx
Der Anschlusskasten ist auf einem integrierten Rohrträger installiert. Der Anschlusskasten JBM-100-xx-xx ist für die Aufnahme von bis zu maximal drei Heizkabeln ausgelegt. Daher sind drei Paare von zertifizierten Klemmen vorgesehen. Gelegentlich können weitere Klemmen installiert werden, um die Verkettung der Stromversorgung zu unterstützen. Das Stromkabel wird über ein Loch in der Seitenwand des Kastens und eine zertifizierte Kabelverschraubung in den Kasten eingeführt. Für die Heizkabel ist eine zusätzliche Zugentlastung vorgesehen. Die Zugentlastung verhindert, dass die Heizkabel beim Ziehen verrutschen.

Typ JBU-100-xx-xx
Die JBU-100-xx-xx ist nicht auf einem integrierten Rohrträger installiert. Der Anschlusskasten kann auf einer stabilen Struktur wie z.B. einem Rohrgestell, einer Wand über die M6-Schrauben oder über eine optionale Halterung direkt auf dem Rohr installiert werden. Der Anschlusskasten ist so ausgelegt, dass bis zu maximal vier Heizkabel an das Stromnetz installiert werden können. Die elektrischen Verbindungen werden mit Hilfe von Klemmen hergestellt, die auf einer DIN-Schiene im Inneren des Anschlusskastens installiert sind.
Alternativ kann JBU-100-xx-xx als Verteilerkasten für Leistungs- und Steuerkabel verwendet werden. Es dürfen nur Leitungseinführungen verwendet werden, die für den Bereich entsprechend zertifiziert sind und die den Abmessungen des Kabels entsprechen.

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Anlage zur EU-Baumusterprüfbescheinigung PTB 20 ATEX 1008 U, Ausgabe: 1

Typ T-100
Der T-100 ist ein Kasten, der als Anschlusskasten (Verbindungskasten) für den Anschluss von bis zu maximal 3 Heizkabeln verwendet wird. Die Box wird auf einem Rohrständer installiert, der die Eingänge und den Schutz für die installierten Heizkabel bietet. Für die Heizkabel ist eine zusätzliche Zugentlastung vorgesehen. Die Zugentlastung verhindert, dass die Heizkabel beim Ziehen verrutschen. Die Verbindung zwischen den Leitern der Heizkabel wird über Aderendhülsen hergestellt. Nach der Installation werden die Leiter mit Schutzkappen aus temperaturbeständigem Silikon elektrisch isoliert.

Änderungen in Bezug auf vorherige Ausgaben

Aufnahme der Verwendung des selbstregulierenden Parallelheizkabels Typ HTV

Typschlüssel

JB	x	-	100	-	xx	-	xx
	1		2		3		4

1	S	JBS – zur Verbindung von einem Heizkabel
	M	JBM – zur Verbindung von bis zu max. drei Heizkabeln
	U	JBU – Universelle Verbindung
2	100	Aufrechte Installation
3	A	Version mit gewindelosen Bohrungen
	L	Version mit optionalem Lichtmodul
	E	Version mit metrischen Gewindebohrungen
	P	Version mit optionaler Offshore-Platte (Erdungsplatte)
	D	Version mit optionalem Belüftungsstopfen
4	E	Version mit metrischen Gewindebohrungen
	A	Version mit gewindelosen Bohrungen
	P	Version mit optionaler Offshore-Platte (Erdungsplatte)

Technische Daten

Umgebungstemperaturbereich	Standard Version	-55°C to +56°C
	Mit Lichtmodul	-40°C to +40°C
Max. Anzahl der Heizbänder	JBS-100-xx-xx	1
	JBM-100-xx-xx	3
	JBU-100-xx-xx	3 (4 ohne Stromkabel)
	T-100	3

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Anlage zur EU-Baumusterprüfbescheinigung PTB 20 ATEX 1008 U, Ausgabe: 1

Anzahl der Anschlussklemmen*	JBS-100-xx-xx	L+N+PE
	JBM-100-xx-xx	2xL + 2xN + 2xPE
	JBU-100-xx-xx	2xL + 2xN + 2xPE
	T-100	-
Max. Kabelquerschnitt	JBS-100-xx-xx	0.5 mm² bis 10 mm²
	JBM-100-xx-xx	0.5 mm² bis 10 mm²
	JBU-100-xx-xx	0.5 mm² bis 10 mm²
	T-100	max. 3,3 mm²
Bemessungsspannung**	Abhängig vom verwendeten Heizkabeltyp	
	BTV1, QTVR1, XTV1, KTV1, HTV1	max. 120 V
	BTV2, QTVR2, XTV2, KTV2, HTV2	max. 277 V
	VPL1	max. 120 V
	VPL2	max. 230 / 254 V
	VPL4 + FHPC	max. 480 V
Bemessungsstrom	JBS-100-xx-xx	Max. 53 A
	JBM-100-xx-xx	Max. 53 A
	JBU-100-xx-xx	Max. 53 A
	T-100	Max. 40 A

* Weitere Klemmen sind zulässig, solange der Gesamtstrom durch das Gehäuse 40 A nicht übersteigt.

** abhängig von Absicherung bzw. max. zulässigem Bemessungsstrom, max. zulässiger Temperatur der zu beheizenden Oberfläche; siehe hierzu Datenblätter bzw. Betriebsanleitung des Herstellers.

Hinweise zur Herstellung

1. Die maximal zulässige Temperatur für die zu beheizende Fläche (Rohrtemperatur) ist auf der Grundlage der spezifischen Leistungsklasse, der max. zulässigen Betriebstemperatur der Heizbänder, der Nennspannung und der max. zulässigen Strombelastbarkeit zu bestimmen.
2. Anwendungen, für die wärmebeständige Zuleitungen inkl. Kabelverschraubungen aus Metall verwendet werden müssen, sind vom Hersteller anzugeben und vom Errichter/Anwender zusammenzustellen.
3. Einschränkungen bezüglich der Verwendung der Typen JBS-100-L-x, JBM-100-L-x und JBU-100-L-x (mit Kontrollleuchte) sind vom Hersteller anzugeben und vom Installateur/Benutzer zu beachten.

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4. Die Parallelheizbänder vom Typ VPL und FHPC müssen so installiert werden, dass ihre kalten Enden außerhalb des Klemmenkastens beginnen.
5. Wenn JBU-100-xx-x mit Spannungseinspeisung installiert wird, müssen bei 40 °C < Ta < 56 °C eine ausreichende hitzebeständige Einspeisung und Metall-Verschraubungen, inkl. Dichtung, verwendet werden. Für die Metallverschraubungen inkl. Dichtung muss ein separates IECEx-Zertifikat ausgestellt und von nVent Thermal verifiziert worden sein.
6. Für Heizkabel müssen zertifizierte nVent Thermal Verschraubungen vom Typ C25-100-METAL bei 40 °C < Ta < 56 °C verwendet werden.
7. Die Ausführung des Anschlusskastens mit Belüftungsstopfen muss am Rohr aufgehängt werden, um eine einwandfreie Funktion zu gewährleisten.

(16) Prüfbericht PTB Ex 21-10134

(17) Besondere Bedingungen

Die Verwendung von alternativen Heizbändern ohne Freigabe durch den Hersteller ist nicht zulässig.

(18) Grundlegende Sicherheits- und Gesundheitsanforderungen

Erfüllt durch Übereinstimmung mit den vorgenannten Normen.

Konformitätsbewertungsstelle, Sektor Explosionsschutz
Im Auftrag

Braunschweig, 22. März 2021

D. Markus

Dr.-Ing. D. Markus
Direktor und Professor

PHYSIKALISCH-TECHNISCHE BUNDESANSTALT

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Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin
Nationales Metrologieinstitut

(1) EU-TYPE EXAMINATION CERTIFICATE

(Translation)

(2) Equipment or Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 2014/34/EU**

(3) EU-Type Examination Certificate Number:

PTB 20 ATEX 1008 U **Issue: 1**

(4) Product: Integrated Heat Tracing Connection System
Type JBx-100-xx-xx and T-100

(5) Manufacturer: nVent Thermal Belgium NV

(6) Address: Romeinse straat 14, 3001 Leuven, Belgium

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

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 17 of the Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the confidential Test Report PTB Ex 21-10134.

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

EN IEC 60079-0:2018; EN IEC 60079-7:2015/A1:2018-01; EN 60079-18:2015; EN 60079-31:2014

(10) If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

(11) This EU-Type Examination Certificate relates only to the design and construction of the specified product in accordance to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

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

II 2 G Ex eb mb IIC Gb

II 2 D Ex tb mb IIIC Db

Konformitätsbewertungsstelle Sektor Explosionsschutz Braunschweig, March 22, 2021
On behalf of PTB:

Dr.-Ing. D. Markus
Direktor und Professor

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EU-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.

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(13) # SCHEDULE

(14) **EU-Type Examination Certificate Number PTB 20 ATEX 1008 U, Issue: 1**

(15) Description of Product

The JBx-100-xx-xx and T-100 Connection box series is a connection system for electrical trace heating systems. The JBx-100-xx-xx Connection box series is subdivided in four different versions (JBS-100-xx-xx, JBM-100-xx-xx and T-100). This junction box series is mounted on an integrated pipe stand for the connection of electrical heating cables to the mains supply or to provide a splice between 2 or 3 heating cables. The different models of the series include options such as: boxes equipped with an offshore plate (earth plate) and boxes with an optional light module and lens. Another part of the Connection box series is JBU-100-xx-xx. This version has the same features, but is mounted directly on the pipeline with a support bracket instead of the pipe stand.

Product type JBS-100-xx-xx

The junction box is installed on an integral pipe support. Inside the JBS-100-xx-xx junction box there is installed one DIN rail on which are installed a number of certified terminals. Additional terminals can be added to allow an external thermostat to be connected. The junction box is designed to connect one heating cable to one power cable (with or without thermostat). Power cables are fed in the junction box by means of a hole in the sidewall of the box and a certified cable gland.

Product type JBM-100-xx-xx

The junction box is installed on an integral pipe support. The JBM-100-xx-xx junction box is designed to accommodate up to a maximum of three heating cables. Therefore, there are three pairs of certified terminals provided. Occasionally more terminals can be installed to support daisy chaining of the power supply. The power cable will be fed in the box via a hole in the sidewall of the box and a certified cable gland. Additional strain relief is provided for the heating cables. The strain relief is avoiding that the heating cables will slip when pulled.

Product type JBU-100-xx-xx

The JBU-100-xx-xx is not installed on an integral pipe support. The junction box can be installed on a stable structure such as a pipe rack; a wall via the M6 screws or can be installed via an optional support bracket directly on the pipe. The junction box is designed to accommodate up to a maximum of four heating cables to the mains supply. The electrical connections are established by means of terminals that are installed on a DIN rail inside the junction box.
Alternatively, the JBU type boxes can be used as a marshalling box for power and control cables. Use glands that are suitably certified for the area and that meet the dimensions of the cable.

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SCHEDULE TO EU-TYPE EXAMINATION CERTIFICATE PTB 20 ATEX 1008 U, Issue: 1

Product type T-100
The T-100 is a box used as a connection (Splice) box for connecting up to maximum 3 heating cables. The Box is installed on a pipe stand providing the entries and protection for the installed heating cables. Additional strain relief is provided for the heating cables. The strain relief is avoiding that the heating cables will slip when pulled. The connection between the conductors of the heating cables is established via ferrules. Once installed the conductors are electrically isolated using protective caps made out of temperature resistive silicone.

Nomenclature

JB	x	-	100		-	xx	-	xx
	1		2			3		4

1	S	JBS – for connection of one heating cable
	M	JBM – for connection of up to three heating cables.
	U	JBU – universal
2	100	Above installation
3	A	version with unthreaded holes
	L	model with optional Light module
	E	version with threaded metric holes
	P	model with optional off shore plate
	D	model with optional drain plug
4	E	version with threaded metric holes
	A	version with unthreaded holes
	P	model with optional off shore plate

Technical data

Ambient temperature range	Standard version	-55°C to +56°C
	With pilot lamp	-40°C to +40°C
Max. number of heating cables	JBS-100-xx-xx	1
	JBM-100-xx-xx	3
	JBU-100-xx-xx	3 (4 without power cable)
	T-100	3
Standard number of terminals*	JBS-100-xx-xx	L+N+PE
	JBM-100-xx-xx	2xL + 2xN + 2xPE
	JBU-100-xx-xx	2xL + 2xN + 2xPE

EU-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.

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SCHEDULE TO EU-TYPE EXAMINATION CERTIFICATE PTB 20 ATEX 1008 U, Issue: 1

	T-100	-
Max. wire cross section	JBS-100-xx-xx	0.5 mm² to 10 mm²
	JBM-100-xx-xx	0.5 mm² to 10 mm²
	JBU-100-xx-xx	0.5 mm² to 10 mm²
	T-100	max. 3.3 mm²
Rated voltage**	Depends on the heating cable type used	
	BTV1, QTVR1, XTV1, KTV1, HTV1	max. 120 V
	BTV2, QTVR2, XTV2, KTV2, HTV2	max. 277 V
	VPL1	max. 120 V
	VPL2	max. 230 / 254 V
	VPL4 + FHPC	max. 480 V
Rated current	JBS-100-xx-xx	max. 53 A
	JBM-100-xx-xx	max. 53 A
	JBU-100-xx-xx	max. 53 A
	T-100	max. 40 A

* More terminals are permitted as long as the total current trough the enclosure is not exceeding 40A

**subject to protection and max. permissible rated current, max. permissible temperature of the surface to be heated; see data sheets and operating instructions of the manufacturer.

Notes for manufacturing

1. The temperature accepted as a maximum for the surface to be heated (tube temperature) shall be determined on the basis of the specific performance category, the max. admissible operating temperature of the parallel strip heaters, the voltage rating and the max. admissible current carrying capacity.
2. Applications for which heat-resistant incoming cables incl. cable glands from metal have to be used, have to be specified by the manufacturer and must be compiled with the installer/user.
3. Restrictions regarding the use of type JBS-100-L-x, JBM-100-L-x and JBU-100-L-x (with pilot lamp) have to be specified by the manufacturer and must be complied with the installer/user.
4. The parallel strip heaters, type VPL and FHPC, have to be installed so that their cold ends start outside the terminal box.
5. If JBU-100-xx-xx with voltage infeed is installed, an adequate heat-resistant feeder and screwed metal glands, incl. gasket, must be used at 40 °C < Ta < 56 °C. For the screwed

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metal glands, incl. gasket a separate IECEx Certificate must have been issued and they must have been verified by nVent Thermal.

6. For heating cables, certified nVent Thermal glands of type C25-100-METAL must be used at 40 °C < Ta < 56 °C.
7. The version of the connection box with a drain plug must be suspended on the pipe to ensure proper function.

(16) Test Report PTB Ex 21-10134

(17) Specific conditions of use

Alternative strip heaters must not be used, unless the manufacturer's approval has been obtained.

(18) Essential health and safety requirements

Met by compliance with the aforementioned standards.

Konformitätsbewertungsstelle, Sektor Explosionsschutz
On behalf of PTB:

Braunschweig, March 22, 2021

D. Markus

Dr.-Ing. D. Markus
Direktor und Professor

PHYSIKALISCH-TECHNISCHE BUNDESANSTALT

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Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

(1) # EC-TYPE-EXAMINATION CERTIFICATE

(Translation)

(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**

(3) EC-type-examination Certificate Number:

PTB 14 ATEX 1015 X

(4) Equipment: Cable gland, type GHG 960 **** * ****

(5) Manufacturer: COOPER Crouse-Hinds GmbH

(6) Address: Neuer Weg Nord 49, 69412 Eberbach, Germany

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

(8) 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 test report PTB Ex 14-14056.

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

EN 60079-0:2012, 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 in accordance 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 Gb

II 2 D Ex tb IIIC Db

Zertifizierungssektor Explosionsschutz
On behalf of PTB:

Dipl.-Phys. U. Völkel

Braunschweig, June 27, 2014

ZSEx10100e.dotm

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(13) # SCHEDULE

(14) ## EC-TYPE-EXAMINATION CERTIFICATE PTB 14 ATEX 1015 X

(15) Description of equipment

The GHG 960 **** * **** cable gland is made from polyamide and is used for entering permanently laid cables into stationary electrical equipment of Increased Safety "e" and Protection by Enclosure "tb" type of protection. The cable gland consists of adapter glands with two different thread lengths, different types of sealing rings and a cap nut. Accessories are a blanking plug, reducing gland, screwed multiple and expansion gland, and screwed flat-cable gland. To distinguish between Ex-e and Ex-i circuits, the cap nut is optionally provided in black and blue, respectively.

The cable glands are installed in enclosures with through-holes or threaded holes, with our without lock nut.

Technical data
Table 1

Designation	Clamp range dia. in mm Sealing ring 1 / Sealing ring 2		Service temperature	One pc.	Packing set
Cable gland, M12	Ø 5 – 7	---------	-20°C - +70°C	GHG 960 9235 P****	GHG 960 1955 R****
Cable gland, M16	Ø 7 – 10	---------	-20°C - +70°C	GHG 960 9235 P****	GHG 960 1955 R****
Cable gland, M20	Ø 7 – 9	Ø 9.5 – 13	-20°C - +70°C	GHG 960 9235 P****	GHG 960 1955 R****
Cable gland, M20	Ø 7 – 9	Ø 9.5 – 11	-40°C - +70°C	GHG 960 9248 P****	GHG 960 1955 R****
Cable gland, M25	Ø 10 – 13	Ø 13.5 – 17.5	-20°C - +70°C	GHG 960 9235 P****	GHG 960 1955 R****
Cable gland, M25	Ø 10 – 13	Ø 13.5 – 15	-55°C - +70°C	GHG 960 9235 P****	GHG 960 1955 R****
Cable gland, M32	Ø 14 – 17	Ø 17.5 – 21	-55°C - +70°C	GHG 960 9248 P****	GHG 960 1955 R****
Cable gland, M32	Ø 14 – 17	Ø 17.5 – 21	-20°C - +70°C	GHG 960 9235 P****	GHG 960 1955 R****
Cable gland, M40	Ø 19 – 22	Ø 22 – 28	-55°C - +70°C	GHG 960 9235 P****	GHG 960 1955 R****
Cable gland, M50	Ø 24 – 28	Ø 28 – 35	-55°C - +70°C	GHG 960 9235 P****	GHG 960 1955 R****
Cable gland, M63	Ø 29 – 35	Ø 36 – 41 *	-55°C - +70°C	GHG 960 9235 P****	GHG 960 1955 R****
Expansion gland, M16/M20X1.5	Ø 7 – 9	Ø 9.5 – 13	-20°C - +70°C	GHG 960 9244 P****	GHG 960 1956 R****
Expansion gland, M20/M25X1.5	Ø 10 – 13	Ø 13.5 – 17.5	-20°C - +70°C	GHG 960 9244 P****	GHG 960 1956 R****
Expansion gland, M25/M32X1.5	Ø 14 – 17	Ø 17.5 – 21	-55°C - +70°C	GHG 960 9244 P****	GHG 960 1956 R****
Expansion gland, M32/M40X1.5	Ø 19 – 22	Ø 22 – 28	-55°C - +70°C	GHG 960 9244 P****	GHG 960 1956 R****
Expansion gland, M40/M50X1.5	Ø 24 – 28	Ø 28 – 35	-55°C - +70°C	GHG 960 9244 P****	GHG 960 1956 R****
Expansion gland, M50/M63X1.5	Ø 29 – 35	Ø 36 – 41 *	-55°C - +70°C	GHG 960 9244 P****	GHG 960 1956 R****
Reducing gland, M16-M12			-55°C - +70°C	GHG 960 9237 P****	GHG 960 1946 R****
Reducing gland, M20-M12			-55°C - +70°C	GHG 960 9237 P****	GHG 960 1946 R****
Reducing gland, M20-M16			-55°C - +70°C	GHG 960 9237 P****	GHG 960 1946 R****
Reducing gland, M25-M12			-55°C - +70°C	GHG 960 9237 P****	GHG 960 1946 R****
Reducing gland, M25-M16			-55°C - +70°C	GHG 960 9237 P****	GHG 960 1946 R****
Reducing gland, M25-M20			-55°C - +70°C	GHG 960 9237 P****	GHG 960 1946 R****
Reducing gland, M32-M12			-55°C - +70°C	GHG 960 9237 P****	GHG 960 1946 R****
Reducing gland, M32-M16			-55°C - +70°C	GHG 960 9237 P****	GHG 960 1946 R****
Reducing gland, M32-M20			-55°C - +70°C	GHG 960 9237 P****	GHG 960 1946 R****
Reducing gland, M32-M25			-55°C - +70°C	GHG 960 9237 P****	GHG 960 1946 R****
Reducing gland, M40-M16			-55°C - +70°C	GHG 960 9237 P****	GHG 960 1946 R****
Reducing gland, M40-M20			-55°C - +70°C	GHG 960 9237 P****	GHG 960 1946 R****

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Reducing gland, M40-M25		-55°C - +70°C	GHG 960 9237 P****	GHG 960 1946 R****
Reducing gland, M40-M32		-55°C - +70°C	GHG 960 9237 P****	GHG 960 1946 R****
Reducing gland, M50-M20		-55°C - +70°C	GHG 960 9237 P****	GHG 960 1946 R****
Reducing gland, M50-M25		-55°C - +70°C	GHG 960 9237 P****	GHG 960 1946 R****
Reducing gland, M50-M32		-55°C - +70°C	GHG 960 9237 P****	GHG 960 1946 R****
Reducing gland, M50-M40		-55°C - +70°C	GHG 960 9237 P****	GHG 960 1946 R****
Reducing gland, M63-M25		-55°C - +70°C	GHG 960 9237 P****	GHG 960 1946 R****
Reducing gland, M63-M32		-55°C - +70°C	GHG 960 9237 P****	GHG 960 1946 R****
Reducing gland, M63-M40		-55°C - +70°C	GHG 960 9237 P****	GHG 960 1946 R****
Reducing gland, M63-M50		-55°C - +70°C	GHG 960 9237 P****	GHG 960 1946 R****
Multiple gland, M25X1.5 2-fold	Ø 4.5 – 7 ---------	-20°C - +70°C	GHG 960 9235 P****	GHG 960 1955 R****
Multiple gland, M32X1.5 4-fold	Ø 4.5 – 7 ---------	-20°C - +70°C	GHG 960 9235 P****	GHG 960 1955 R****
Flat-cable gland, M25X1.	G18 = 12.2 - 9 x 8 -5 G26 = 14- 11 x 8 - 6	-55°C - +70°C (+110°C)	GHG 960 9242 P****	
Cable gland, PG 16	**	-20°C - +70°C	GHG 960 9243 P****	
Cable gland, PG 16	**	-55°C - +70°C	GHG 960 9243 P****	
Blanking plug for M12	Ø 5	-55°C - +70°C	GHG 960 6107 P****	GHG 960 1944 R****
Blanking plug for M16	Ø 6	-55°C - +70°C	GHG 960 6107 P****	GHG 960 1944 R****
Blanking plug for M20	Ø 7	-55°C - +70°C	GHG 960 6107 P****	GHG 960 1944 R****
Blanking plug for M25	Ø 10	-55°C - +70°C	GHG 960 6107 P****	GHG 960 1944 R****
Blanking plug for M32	Ø 13	-55°C - +70°C	GHG 960 6107 P****	GHG 960 1944 R****
Blanking plug for M40	Ø 19	-55°C - +70°C	GHG 960 6107 P****	GHG 960 1944 R****
Blanking plug for M50	Ø 25	-55°C - +70°C	GHG 960 6107 P****	GHG 960 1944 R****
Blanking plug for M63	Ø 32	-55°C - +70°C	GHG 960 6107 P****	GHG 960 1944 R****
Blanking plug for multiple gland	Ø 5	-55°C - +70°C	GHG 960 6107 P****	GHG 960 1944 R****

* An additional seal for clamping range dia. 41mm to dia. 48mm is included

** Identical with M25 cable gland

Cable gland M20x1.5 options with slotted seal for the following cables:

Glass fibre cable	Record	PTB test report	Application
Cable dia. 6.4mm / Breakout inner cable / type: orange *	MI_0657a	PTB Ex 07-17154	-5°C - +45°C
Cable dia. 7.0mm / Ultra-Fox Plus / type: 903 AG 621 02 709*	MI_0657a	PTB Ex 07-17154	-20°C - +70°C
Cable dia. 6.8mm / Ehret / ICS 24 / type : 84 305 .. . . *	MI_0657a1	PTB Ex 07-17154	-20°C - +60°C
Cable dia. 2mm / fibre optic cable *	PTB letter	PTB Ex 07-17154	-20°C - +60°C

For use in Zone 1 and Zone 21

Cable gland with two different thread lengths
short = P/R****
long = P/R****

Cable gland with differently coloured cap nuts
black Ex-e version = P/R****
blue Ex- i version = P/R****

Ambient temperatures:
max. -55 °C to +70°C (110°C)*
see table 1
* 110°C for the sealing ring of the heating cable of the flat-cable gland

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For use in equipment of group II with the following mechanical hazard levels:	Cable glands: M12 / -20°C = low M16 / -20°C = low M20 / -20°C = high M20 / -40°C = low M25 -M 63 = high PG16 = high Multiple gland: M25 / -20°C = high M32 / -20°C = high Expansion gland: M16/M20 / -20°C = high M16/M20 / -40°C = low M20/M25 - M50/M63 = high
To be installed in equipment with a wall thickness of	at least 1.5 mm
Protection against solid foreign objects, water and contact	IP 66

Nomenclature

GHG 960	****	*	****
1	2	3	4

1) Type
2) Design and versions, see table 1
3) P = single part
   R = packing set
4) Options, e.g. colour, thread length, gland with flameproof fastener, size, etc.

(16) Test Report PTB Ex 14-14056

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(17) Special conditions for safe use

Only permanently installed cables may be entered through the glands. The operating company must ensure that adequate strain relief is provided.

The degree of protection (IP66) will only be met if seals and cable glands are properly fitted. The manufacturer's instructions must be followed.

The types with low impact energy have to be mounted in the enclosure, so they are mechanically protected against impact energy.

The GHG 960 6107 P*** and GHG 960 1944 R **** blanking plugs may only be used together with GHG 960 92** P**** and GHG 960 19** R**** cable glands.

The EC-Type-Examination Certificate and future supplements thereto shall at the same time be considered as supplements for EC Type Examination Certificates PTB 99 ATEX 3128 X and PTB 99 ATEX 3101 X.

(18) Essential health and safety requirements

Met by compliance with the afore-mentioned Standards.

Zertifizierungssektor Explosionsschutz
On behalf of PTB:

Braunschweig, June 27, 201

Dipl.-Phys. U. Völkel

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PTB

(1) # EC-TYPE-EXAMINATION CERTIFICATE

(Translation)

(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**

(3) EC-type-examination Certificate Number:

PTB 98 ATEX 3130

(4) Equipment: Dummy plugs type GHG 960 663.P....

(5) Manufacturer: CEAG Sicherheitstechnik GmbH

(6) Address: Neuer Weg Nord 49, D-69412 Eberbach

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

(8) 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 98-30021.

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

EN 50014:1992 EN 50019:1994

(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 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.

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

II 2 G EEx e II

Zertifizierungsstelle Explosionsschutz
By order:

Braunschweig, November 12, 1998

Dr.-Ing. U. [illegible]
Regierungsdirektor

PHYSIKALISCH-TECHNISCHE BUNDESANSTALT

sheet 1/2

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In case of dispute, the German text shall prevail.

(13) # SCHEDULE

(14) ## EC-TYPE-EXAMINATION CERTIFICATE PTB 98 ATEX 3130

(15) Description of equipment

The type GHG 960 663.P... dummy plugs made of polyamide serve to close threaded holes for cable entries in enclosures of the type of protection increased safety "e". Installation in clearance holes is with lock nuts made of brass or polyamide.

Technical data

Nominal size	Installation in encloses of wall thickness
M 16 x 1,5	≥ 3,5 mm
M 20 x 1,5	≥ 3,5 mm
M 25 x 1,5	≥ 3,5 mm
M 32 x 1,5	≥ 3,5 mm
M 40 x 1,5	≥ 3,5 mm
M 50 x 1,5	≥ 3,5 mm
range of temperature of use:	-55 °C to +95 °C
range of temperature of ambient:	-55 °C to +55 °C
Suitability for equipment of group II with a degree of mechanical hazard:	high
Protection against contact, foreign matter and water:	at least IP 54 acc. to EN 60 529:1991

(16) Test report PTB Ex 98-30021 (comprising 3 pages, description and drawing)

(17) Special conditions for safe use

not applicable

(18) Essential health and safety requirements

The degree of protection - at least IP 54 according to EN 60529:1991 - is guaranteed only by appropriate selection of the dummy plugs and proper installation in the equipment.

Zertifizierungsstelle Explosionsschutz
By order:

Dr.-Ing. U. Engel
Regierungsdirektor

Braunschweig, Novermber 12,1998

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Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

1. SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 98 ATEX 3130

(Translation)

Equipment: Dummy plugs, type GHG 960 663. P.

Marking: ⟨Ex⟩ **II 2 G EEx e II**

Manufacturer: CEAG Sicherheitstechnik GmbH

Address: Neuer Weg Nord 49
69412 Eberbach, Germany

Description of supplements and modifications

According to EN 50281-1-1:1998 the type GHG 960 663.P... dummy plugs may also be used in areas in which explosive atmospheres with dust/air mixtures have to be expected to occur occasionally.

The marking is therefore changed to read:

⟨Ex⟩ **II 2 G/D EEx e II IP66**

Test report: PTB Ex 03-13301

Zertifizierungsstelle Explosionsschutz
By order:

Dipl.-Phys. U. Völker

Braunschweig, September 18, 2003

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