

CERTIFICATE OF CONFORMITY



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1. HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS

2. **Certificate No:** FM18US0143X
3. **Equipment:** Raychem VPL Self-Regulating Heat Trace Cable Systems, including E-100-A, E-100-L, E-100-LR, JBM-100-A, JBM-100-L-A, JBS-100-A, JBS-100-L-A, T-100 Connection Kits and JS-100-A and C75-100-A Heating Cable Gland Kit.
(Type Reference and Name)
4. **Name of Listing Company:** nVent Thermal LLC
5. **Address of Listing Company:** 899 Broadway St,
Redwood City, California 94063-3104, USA

6. The examination and test results are recorded in confidential report number:

3008235 dated 25th July 2000

7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

FM 3600:2022, FM 3611:2016, FM 3810:2021, IEEE 515:2004, NEMA 250:2003

8. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.

9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.

10. Equipment Ratings:

Electrical Trace Heater for Class I, Division 2, Groups B, C, and D T*;

Electrical Trace Heater for Class II/III, Division 2, Groups F, and G T*;

Maximum continuous operating temperature: 235°C

Maximum withstand temperature: 260°C

Minimum installation temperature: -60°C

(*) refer to the Specific Conditions of Use

Certificate issued by:

18 April 2023

J.E. Marquedant
VP, Manager - Electrical Systems

Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

FM Approvals LLC, 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA

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F 347 (Apr 21)



SCHEDULE

US Certificate Of Conformity No: FM18US0143X



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Termination Kits Suitable for Class I, Division 2, Groups A, B, C, and D T3A... T2C;
Termination Kits Suitable for Class II/III, Division 2, Groups F and G T3A... T2C; hazardous (classified) locations; with possible ambient temperature ranges from -40°C, -55°C, or -60°C to +40°C or +56°C and IP66 and Type 4X environmental ratings.

Note—protection concept, temperature class, and ambient temperature range depend on the type of termination kits used. Refer to the tables in the description section.

11. The marking of the equipment shall include:

Electrical Trace Heater

Class I, Division 2, Groups B, C, D, T*... T2C $-60^{\circ}\text{C} \leq T_a \leq +56^{\circ}\text{C}$

Class II/III, Division 2, Groups F and G, T*... T2C $-60^{\circ}\text{C} \leq T_a \leq +56^{\circ}\text{C}$

(* refer to conditions of use

Termination Kits

Class I, Division 2, Groups A, B, C, D, T3A... T2C -40°C , -55°C , or $-60^{\circ}\text{C} \leq T_a \leq +40^{\circ}\text{C}$ or $+56^{\circ}\text{C}$

Class II/III, Division 2, Groups F and G, T3A... T2C -40°C , -55°C , or $-60^{\circ}\text{C} \leq T_a \leq +40^{\circ}\text{C}$ or $+56^{\circ}\text{C}$

IP66 and Type 4X

12. Description of Equipment:

General – nVent RAYCHEM VPL is a family of power-limiting heating cables designed for pipe heat tracing in industrial applications. VPL can be used for freeze protection and process-temperature maintenance requiring high power output and/or high temperature exposure up to 455°F (235°C) and can withstand routine steam purges and temperature excursions to 500°F (260°C) with power off. Power-limiting cables are parallel heaters formed by a coiled resistor alloy heating element wrapped around two parallel bus wires. The distance between conductor contact points forms the heating zone length.

Construction – This parallel construction allows the cable to be cut to length and terminated on site. The power output of VPL heating cables decreases with increasing temperature. VPL heating cables can be overlapped. The relatively flat power temperature curve of VPL ensures a low start-up current and high output at elevated temperatures. VPL cables are approved for use in non-hazardous and hazardous locations.

The minimum bend radius is $\frac{3}{4}$ " at -60°C .

Heating cables of 5, 10, 15 and 20 watts (at 10°C) are available at voltage ranges of 100-120 VAC, 200-277 VAC and 400-480 VAC.

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F 347 (Apr 21)



Page 2 of 4

SCHEDULE

US Certificate Of Conformity No: FM18US0143X



aVPLb-CT. Electrical Heat Tracing Cable Systems.

a = Output W/ft at 50°F (10°C): 5, 10, 15 or 20.

b = Voltage: 1 (120 V ac) or 2 (277 V ac: 20 W/ft cable is for 240 V ac only) or 4 (480 V ac)

The following connection kits can be used with the VPL High-Temperature Power-Limiting Heating Cables:

Class I, Division 2, Groups A, B, C, D

Class II/III, Division 2, Groups F and G

Model	Description	Ambient Temperature Range
JBS-100-A	Single entry power connection junction box (maximum conductor size 8 AWG)	-55°C to +56°C
JBS-100-A6	Single entry power connection junction box (maximum conductor size 6 AWG)	-55°C to +56°C
JBS-100-L-A	Lighted single entry power connection junction box (maximum conductor size 8 AWG)	-40°C to +40°C
JBS-100 STB	Single entry power connection junction box (Screw Terminal Block)	-55°C to +56°C
T-100	Splice or Tee connection kit	-55°C to +56°C
JBM-100-A	Multiple entry power/splice connection junction box (maximum conductor size 8 AWG)	-55°C to +56°C
JBM-100-A6	Multiple entry power/splice connection junction box (maximum conductor size 6 AWG)	-55°C to +56°C
JBM-100-L-A	Lighted multiple entry power/splice connection junction box	-40°C to +40°C
JBM-100-A6	Multiple entry power/splice connection junction box (Screw Terminal Block)	-55°C to +56°C
E-100-L-A	Lighted end seal kit	-40°C to +40°C
E-100-A	End seal kit Class I Division 2 Group A,B,C and D	-55°C to +56°C
C75-100-A	Heating cable gland kit	-55°C to +56°C

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13. Specific Conditions of Use:

1. The manufacturer is to provide design parameters for an engineered VPL-CT cable system for the specific installation application which will include the Maximum Sheath Temperature (T code rating).
2. The VPL-CT Electrical Heat Trace Cables have a Maximum Maintenance Temperature rating up to 455°F (235°C) and a Maximum Exposure Temperature (Power Off) rating of 500°F (260°C).
3. The VPL-CT Heating Cables are designed for use with the manufacturer's E-100-A, E-100-L, E-100-LR, JBM-100-A, JBM-100-L-A, JBS-100-A, JBS-100-L-A, T-100 Connection Kits and JS-100-A and C75-100-A Accessories.
4. Ambient temperature range for the JBM-100-A, JBS-100-A, JBS-100-A6, and E-100-A is -75°F (-60°C) to 132°F (56°C).
5. Ambient temperature range for the E-100-L-A, JBM-100-L-A, JBS-100-L-A is -40°F (-40°C) to 104°F (40°C).

14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

15. Schedule Drawings

A copy of the technical documentation has been kept by FM Approvals.

16. Certificate History

Details of the supplements to this certificate are described below:

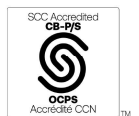
Date	Description
25 July 2000	Original Issue.
20 May 2018	<u>Supplement 5:</u> Report Reference: RR213989 dated 20 th May 2018 Description of the Change: 1) Name change to nVent Thermal LLC. 2) Updated the year on FM Class 3600 and FM Class 3810 standards to 2018 due to nontechnical changes in the latest editions of these standards.
18 April 2023	<u>Supplement 6:</u> Report Reference: PR464567 dated 18 April 2023. Description of the Change: - Update the FM3600 from 2018 to the 2022 and FM3611 from 2004 to the 2016 as no technical changes were made. - Add 4 new outer jacket material option. - Update the minimum installation temperature to -60°C - Update form from the Mar 16 to Apr 21 in the EUI system - Reformat to the same style as the HTV certificate.

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Page 4 of 4