CERTIFICATE OF CONFORMITY

1. **HAZARDOUS LOCATION ELECTRICAL EQUIPMENT PER CANADIAN REQUIREMENTS**

2. **Certificate No:** **FM16CA0183X**

3. **Equipment:**
   (Type Reference and Name)
   ELSR-WA-Ex Series Self-Regulating Heating Cables
   EL-ECN-Ex End Termination Kits
   ELVB-SREx-20 BR HT Power Termination Kit
   ELVB-SREx- ½" BR HT Power Termination Kit
   ELVB-SREx- ¾" BR HT Power Termination Kit

4. **Name of Listing Company:** **eltherm production GmbH**

5. **Address of Listing Company:**
   Ernst-Heinkel Str 6-10
   Burbach
   57299
   Germany

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

   3050047 dated 23rd February 2015

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

   CSA C22.2 No. 130-16:2016, CAN/CSA 60079-0:2011, CAN/CSA 60079-7:2012

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.

Certificate issued by:

J.E. Marquedant
Manager, Electrical Systems

14 December 2016
Date

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

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

Canadian Certificate Of Conformity No: FM16CA0183X

10. Equipment Ratings:

Suitable for use in Class I, Divisions 2, Groups A, B, C and D; Dustignitionproof for use in Class II, Division 1, Groups E, F, and G; Dustignitionproof for use in Class III, Division 1; and Increased Safety for Class I, Zone 1, Group II, hazardous locations, wet locations (-WS). Maximum current rating 40A and Voltage ratings 120Vac or 240Vac. See Specific Conditions of Use.

11. The marking of the equipment (as appropriate) shall include:

Class I Division 2, Groups A, B, C, D; T5 (Refer to Specific Conditions of Use)
Class II, Division 1, Groups E, F, G, Class III, Division 1; T5 (Refer to Specific Conditions of Use)
Class I, Zone 1, Ex e II T5 Gb (Refer to Specific Conditions of Use)

12. **Description of Equipment:**

The self-regulating heating cables ELSR WA series (warm water) are designed with maximum temperatures of 55°C (for 3W/ft) or 65°C (for 4W/ft).

There are two forms of ground connections for each sub-category namely “A” for aluminium foil and “B” for metallic braid. The outer jacket is “O” for polypropylene.

The self-regulating heating cable ELSR-WA series is used for vessels, pipes, valves and several other applications with processing temperatures between 30 °C and 80 °C approximately (power on) and 90°C (power off).

The ratings of these Self-regulating Heat Trace Cable Systems are shown below.

Type	Design	Voltage AC	Nominal Power	Max. Temperatures
ELSR-WA-..-1-AO-Ex	2 nickel plated bus wires (1.23mm²), PVDF Matrix, PP insulation, aluminum screen (100%) with embedded earth conductor, PP sheath	120V	3W/ft at 55°C (WA-55-1), 4W/ft at 65°C (WA-65-1)	80°C/176°F energized 90°C/194°F de-energized
ELSR-WA-..-1-BO-Ex	as above except for tin plated braid (80%) instead of aluminum screen	as above	as above	as above
ELSR-WA-..-2-AO-Ex	as NA-..-1-AO	240V	3W/ft at 55°C (WA-55-2), 4W/ft at 65°C (WA-65-2)	as above
ELSR-WA-..-2-BO-Ex	as NA-..-1-BO	as above	as above	as above

Integral Components

The integral components used on the ELSR Series Self-regulating Heat Trace Cable Systems are: End termination kits which include the end caps that is made from a silicone material sealed with a silicone glue and Power termination kits which includes cable glands for flat cables and silicone glue for sealing the cables. The details of the respective kits used on the relevant cables are shown below.

SCHEDULE

Canadian Certificate Of Conformity No: FM16CA0183X

The correlations between the respective kits used on the relevant cables are shown below.

End Termination Kits

Accessories	ELSR-WA-Ex (-WS) Class I Zone 1 Class I Div 2	ELSR-WA-Ex (-WS) Class II, III Div 1
End Termination Kit EL-ECN-Ex	+	+

Power Termination Kits

Accessories	ELSR-WA-Ex (-WS) Class I Zone 1; Class I Div 2	ELSR-WA-Ex (-WS) Class II, III Div 1
Power Termination Kit ELVB-SREx-20 BR HT	+	+
Power Termination Kit ELVB-SREx-½ BR HT	+	+
Power Termination Kit ELVB-SREx-¾ BR HT	+	+

13. **Specific Conditions of Use:**

For ELSR-WA Series

1. Power Connections shall only be made using a suitable certified Junction Box with minimum Approval rating compatible for the connection of the heating cable.
2. Minimum installation temperature is -45°C.
3. Minimum start up temperature is -30°C.
4. Maximum operating temperature is 80°C when power is on.
5. Maximum exposure temperature is 90°C when power is off.
6. The end termination kit to be used for connection is the EL-ECN-Ex model.
7. The suitable power termination kits are the ELVB-SREx-20 BR HT, ELVB-SREx- ½" BR HT and ELVB-SREx- ¾" BR HT.
8. A ground fault protection device must be used with this heating device.

For EL-ECN-Ex End Termination Kit

1. Minimum installation temperature is -45°C.
2. Maximum exposure temperature is 90°C.

For ELVB-SREx-20 BR HT Power Termination Kit, ELVB-SREx- ½" BR HT Power Termination Kit & ELVB-SREx- ¾" BR HT Power Termination Kit

1. Minimum installation temperature is -45°C.
2. Maximum exposure temperature is 90°C.

14. **Test and Assessment Procedure and Conditions:**

This Certificate has been issued in accordance with FM Approvals Canadian Certification Scheme.

15. **Schedule Drawings**

SCHEDULE

Canadian Certificate Of Conformity No: FM16CA0183X

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
23rd February 2015	Original Issue.
14th December 2016	Supplement 1: Report Reference: – RR206603 dated 14th December 2016. Description of the Change: 1. CDL & Listing update. 2. New Certificate Format.

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CERTIFICATE OF CONFORMITY

1. **HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS**
2. **Certificate No:** **FM16US0394X**
3. **Equipment:** **ELSR-WA-Ex Series Self-Regulating Heating Cables**
   (Type Reference and Name) **EL-ECN-Ex End Termination Kits**
   ELVB-SREx-20 BR HT Power Termination Kit
   ELVB-SREx- ½" BR HT Power Termination Kit
   ELVB-SREx- ¾" BR HT Power Termination Kit
4. **Name of Listing Company:** **eltherm production GmbH**
5. **Address of Listing Company:** **Ernst-Heinkel Str 6-10**
   Burbach
   57299
   Germany
6. The examination and test results are recorded in confidential report number:

   3050047 dated 23rd February 2015
7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

   FM Class 3600:2011, IEEE 515:2011, ANSI/ISA 60079-0:2013, ANSI/ISA 60079-7:2013
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.

Certificate issued by:

J. E. Marquedant
Manager, Electrical Systems

14 December 2016
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

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SCHEDULE

US Certificate Of Conformity No: FM16US0394X

10. Equipment Ratings:

Suitable for use in Class I, Divisions 2, Groups A, B, C and D; Suitable for use in Class II, Division 1, Groups E, F, and G; Suitable for use in Class III, Division 1; and Increased Safety for Class I, Zone 1, Group II, hazardous (classified) locations. Maximum current rating 40A and Voltage ratings 120Vac or 240Vac. See Specific Conditions of Use.

11. The marking of the equipment (as appropriate) shall include:

Class I Division 2, Groups A, B, C, D; T5 (Refer to Specific Conditions of Use)
Class II, Division 1, Groups E, F, G, Class III, Division 1; T5 (Refer to Specific Conditions of Use)
Class I, Zone 1, AEx e II T5 (Refer to Specific Conditions of Use)

12. **Description of Equipment:**

The self-regulating heating cables ELSR WA series (warm water) are designed with maximum temperatures of 55°C (for 3W/ft) or 65°C (for 4W/ft).
There are two forms of ground connections for each sub-category namely “A” for aluminium foil and “B” for metallic braid. The outer jacket is “O” for polypropylene.

The self-regulating heating cable ELSR-WA series is used for vessels, pipes, valves and several other applications with processing temperatures between 30 °C and 80 °C approximately (power on) and 90°C (power off).

The system pictorial overview is shown below:

The ratings of these Self-regulating Heat Trace Cable Systems are shown below.

Type	Design	Voltage AC	Nominal Power	Max. Temperatures
ELSR-WA-..-1-AO-Ex	2 nickel plated bus wires (1.23mm²), PVDF Matrix, PP insulation, aluminum screen (100%) with embedded earth conductor, PP sheath	120V	3W/ft at 55°C (WA-55-1), 4W/ft at 65°C (WA-65-1)	80°C/176°F energized 90°C/194°F de-energized
ELSR-WA-..-1-BO-Ex	as above except for tin plated braid (80%) instead of aluminum screen	as above	as above	as above
ELSR-WA-..-2-AO-Ex	as NA-..-1-AO	240V	3W/ft at 55°C (WA-55-2), 4W/ft at 65°C (WA-65-2)	as above
ELSR-WA-..-2-BO-Ex	as NA-..-1-BO	as above	as above	as above

Integral Components

The integral components used on the ELSR Series Self-regulating Heat Trace Cable Systems are: End termination kits which include the end caps that is made from a silicone material sealed with a silicone glue and Power termination kits which includes cable glands for flat cables and silicone glue for sealing the cables. The details of the respective kits used on the relevant cables are shown below.

The correlations between the respective kits used on the relevant cables are shown below.

SCHEDULE

US Certificate Of Conformity No: FM16US0394X

End Termination Kits

Accessories	ELSR-WA-Ex Class I Zone 1 Class I Div 2	ELSR-WA-Ex Class II, III Div 1
End Termination Kit EL-ECN-Ex	+	+

Power Termination Kits

Accessories	ELSR-WA-Ex Class I Zone 1; Class I Div 2	ELSR-WA-Ex Class II, III Div 1
Power Termination Kit ELVB-SREx-20 BR HT	+	+
Power Termination Kit ELVB-SREx-½ BR HT	+	+
Power Termination Kit ELVB-SREx-¾ BR HT	+	+

13. **Specific Conditions of Use:**

For ELSR-WA Series

1. Power Connections shall only be made using an NRTL Listed Junction Box with minimum Approval rating compatible for the connection of the heating cable.
2. Minimum installation temperature is -45°C.
3. Minimum start up temperature is -30°C.
4. Maximum operating temperature is 80°C when power is on.
5. Maximum exposure temperature is 90°C when power is off.
6. The end termination kit to be used for connection is the EL-ECN-Ex model.
7. The suitable power termination kits are the ELVB-SREx-20 BR HT, ELVB-SREx- ½" BR HT and ELVB-SREx- ¾" BR HT.
8. A ground fault protection device must be used with this heating device.

For EL-ECN-Ex End Termination Kit

1. Minimum installation temperature is -45°C.
2. Maximum exposure temperature is 90°C.

For ELVB-SREx-20 BR HT Power Termination Kit, ELVB-SREx- ½" BR HT Power Termination Kit & ELVB-SREx- ¾" BR HT Power Termination Kit

1. Minimum installation temperature is -45°C.
2. Maximum exposure temperature is 90°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.

SCHEDULE

US Certificate Of Conformity No: FM16US0394X

16. **Certificate History**

Details of the supplements to this certificate are described below:

Date	Description
23rd February 2015	Original Issue.
14th December 2016	Supplement 1: Report Reference: – RR206603, dated 14th December 2016. Description of the Change: 1. CDL & Listing update. 2. New Certificate Format.

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