CERTIFICATE OF CONFORMITY

FM Approvals

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

2. **Certificate No:** **FM16US0124X**

3. **Equipment:**
   (Type Reference and Name) **ELKM-AG-NA Trace Heater Cable & ELK-AG-NB Series PFA Insulated Trace Heating Cable Systems, ELVB-AG-NA Integral Splice Kit and ELVB-NB 1/2 (09CAAG1) & ELVB-NB M16 (09CAAG2) Connection Kits (See Equipment Ratings for further details) Electrical Resistance PFA Insulated Heating Cable Systems and Integral Components**

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:

   3052962 dated 19th August 2016

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, ANSI/UL 60079-0:2020, ANSI/UL 60079-1:2020, ANSI/UL 60079-7:2021, ANSI/UL 60079-30-1:2017 (R2021), ANSI/UL 60079-31:2013

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.

10. Equipment Ratings:

    Refer to the Annex

11. The marking of the equipment shall include:

    Refer to the Annex

Certificate issued by:

J.E. Marquedant

08/05/2026

J.E. Marquedant
VP, Manager - Electrical Systems

Date

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

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SCC Accredited CB-P/S OCPS Accredité CCN

12. **Description of Equipment:**

ELK-AG Series heaters consist of a single core series heater with PFA insulation, nickel plated copper braid and PFA outer jacket. The heater is connected to 1.5 mm^2 cold leads of the same design by integral, crimped splice. The free end of the cold lead is to be connected to the power supply by means of separately approved junction boxes equipped with approved terminals and approved glands with suitable clamping range.
The System Components for various areas are as follows:

Class I Div 2; Class II Div 2 & Class III; Zone 1/21: ELKM-AG-NA heater, ELVB-AG-NA splice kit, ELVB-NB (1/2 or M16) Connection Kit & ELKM-AG-NA 0.0117 Cold Lead

Technical Data

Material of conductor:	heater alloy, copper
Range of resistance:	8 Ohm/m to 0.0117 Ohm/m
Tolerance:	+- 5%
Diameter of conductor:	from 0.4 mm to 1.6 mm depending on resistance
Outer diameter	from 4.7 mm to 5.9 mm (ELKM-AG-NA) depending on resistance
Insulation	PFA, thickness 1.0 mm (ELKM-AG-NA)
Sheath	PFA, thickness 0.8 mm (ELKM-AG-NA)
Bend radius	10 mm (ELKM-AG-NA)
Nominal voltage	750 VAC
Nominal current	40 A
Protective covering	nickel plated copper braid
Resistance of protective coating	< 0.018 Ohm/m
Max. exposure temp.	250°C (100°C for the ELVB-NB (1/2 or M16) Connection Units)
Min. installation temp.	-60°C

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

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

14. **Schedule Drawings**

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

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16. **Certificate History**

Details of the supplements to this certificate are described below:

Date	Description
19 August 2016	Original Issue.
5 August 2026	Supplement 1: Report Reference: PR475234 dated 5 August 2026. Description of the Change(s): 1. Delisting of the ELK-AG-NC Series Class I, II, III, Division 1 rated cables systems & EL-HAZELECT-AG Connection Kit (09CA050). 2. Additional optional materials for insulation and outer jacket. 3. Change the protection concept of the Zone ratings for ELKM-AG-NA Trace Heater Cable, ELK-AG-NB Series Heating Cable System and ELVB-AG-NA Splice Kit to AEx 60079-30-1 and include Zone 21 AEx 60079-30-1 IIIC Db ratings. 4. Update of the Zone ratings of the ELVB-NB ½ inch Connection kit and ELVB-NB M16 Connection kit to include Zone 21 AEx tb IIIC Db ratings. 5. Approvals Standards Update. 6. Documentation Updates due to the changes listed above.

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ANNEX

ELKM-AG-NA Trace Heater Cable & ELK-AG-NB Heating Cable System

Equipment Ratings:

For ELKM-AG-NA Trace Heater Cable
Suitable for use in Class I, Division 2, Groups A, B, C and D, T6...T2C; Class II, Divisions 2, Groups E and F, T6...T3; Class II, Divisions 2, Group G, T6...T3B; Class III, Divisions 1, T6 to T3; Zone 1, AEx 60079-30-1 IIC T6...T2 and Zone 21, AEx 60079-30-1 IIIC, T85°C...T300°C; hazardous (classified) locations as appropriate. See Specific Conditions of Use.

For ELK-AG-NB Heating Cable System
Suitable for use in Class I, Division 2, Groups A, B, C and D, T6...T2C; Class II, Divisions 2, Groups E and F, T6...T3; Class II, Divisions 2, Group G, T6...T3B; Class III, Divisions 1, T6 to T3; Zone 1, AEx 60079-30-1 db or eb IIC T6...T2 and Zone 21, AEx 60079-30-1 tb IIIC, T85°C...T300°C; hazardous (classified) locations as appropriate. See Specific Conditions of Use.

Markings:

For ELKM-AG-NA Trace Heater Cable
Class I Division 2, Groups A, B, C, D, T6...T2C (See Specific Conditions of Use)
Class II, Division 2, Groups E, F, T6...T3 (See Specific Conditions of Use)
Class II, Division 2, Group G, T6...T3B (See Specific Conditions of Use)
Class III, Division 2, T6...T3 (See Specific Conditions of Use)
Zone 1, AEx 60079-30-1 IIC T6...T2 Gb (See Specific Conditions of Use)
Zone 21, AEx 60079-30-1 IIIC T85°C...T300°C Gb (See Specific Conditions of Use)

For ELK-AG-NB Heating Cable System
Class I Division 2, Groups A, B, C, D, T6...T2C (See Specific Conditions of Use)
Class II, Division 2, Groups E, F, T6...T3 (See Specific Conditions of Use)
Class II, Division 2, Group G, T6...T3B (See Specific Conditions of Use)
Class III, Division 2, T6...T3 (See Specific Conditions of Use)
Zone 1, AEx 60079-30-1 db IIC T6...T2 Gb or AEx 60079-30-1 eb IIC T6...T2 Gb (See Specific Conditions of Use)
Zone 21, AEx 60079-30-1 tb IIIC T85°C...T300°C Gb (See Specific Conditions of Use)

Description of Equipment:

ELKM-AG-NA-a PFA Trace Heater Cable
ELK-AG-NB-a PFA insulated heating cable. ELK-AG-NB Heating Cable System
Maximum Voltage 750V ac; Maximum Current 40A; Maximum Resistance 8Ω/m
a = resistance (up to 8 ohm/m)

Specific Conditions of Use:

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 -60°C.

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3. Maximum exposure temperature is 250°C.
4. A ground fault protection device must be used with this heating device.
5. The ELK-AG-NB series trace heating cables and integral splices shall have a minimum and maximum operating temperature range of -60°C to +250°C.
6. The maximum surface temperature in or on the ELK-AG-NB series Trace Heating System is limited to the maximum allowed values by means of controlled design or stabilized design in accordance with IEEE 515 or IEC/IEEE 60079-30-1.
For Stabilized Design -
The design information from eltherm GmbH and the calculation tool "eltherm designer version 2.0" shall be such that they ensure temperature stabilization at lower values than the specified maximum surface temperature class selected, T2C to T6 or the corresponding maximum surface temperature of the specific gas for Class I, or T3 to T6 for the corresponding maximum surface temperature of the specific dust or fiber for Class II, Group E & F and Class III, or T3B to T6 or the corresponding maximum surface temperature of the specific dust for Class II, Group G.

For Control design -
The device applied as a temperature limiter for the controlled temperature design shall comply with the types of protections that are suitably rated for compatibility with the heating cable system.7. Notification shall be given that the design information shall be retained as a record of system documentation for each controlled design system for as long as the system is in use. The set point in the system documentation shall be checked during commissioning of the system.

ELVB-AG-NA Splice kit (09CAAG0)

Equipment Ratings:

Suitable for use in Class I, Divisions 2, Groups A, B, C and D; Class II, Division 2, Groups E, F, and G; Class III, Division 2; Zone 1, AEx 60079-30-1, Group IIC and Zone 21, AEx 60079-30-1, Group IIIC; hazardous (classified) locations. See Specific Conditions of Use.

Markings:

Class I Division 2, Groups A, B, C, D; (Refer to Special Conditions of Use)
Class II, Division 2, Groups E, F, G; (Refer to Special Conditions of Use)
Class III, Division 2; (Refer to Special Conditions of Use)
Zone 1, AEx 60079-30-1, IIC Gb (See Specific Conditions of Use)
Zone 21, AEx 60079-30-1, IIIC Gb (See Specific Conditions of Use)

Description of Equipment:

ELVB-AG-NA Integral Splice kit (09CAAG0)
Maximum Voltage 750V ac; Maximum Current 40A

Specific Conditions of Use:

1. This Splice Kit shall only be used with the eltherm GmbH ELKM-AG & ELKM-AG-NA trace heaters and their corresponding Cold Leads.
2. Minimum installation temperature is -60°C.

3. Maximum exposure temperature is 250°C.
4. The Temperature class shall be T2C to T6 or the corresponding maximum surface temperature of the specific gas for Class I, or T3 to T6 for the corresponding maximum surface temperature of the specific dust or fiber for Class II, Group E & F and Class III, or T3B to T6 or the corresponding maximum surface temperature of the specific dust for Class II, Group G.
5. A ground fault protection device must be used with this heating device.

ELVB-NB 1/2 Connection kit (09CAAG1) and ELVB-NB M16 Connection kit (09CAAG2)

Equipment Ratings:

Suitable for use in Class I, Divisions 2, Groups A, B, C and D; Class II, Division 2, Groups E, F, and G; Class III, Division 2; Zone 1, AEx db or eb Group IIC and Zone 21, AEx tb Group IIIC; hazardous (classified) locations. See Specific Conditions of Use.

Markings:

Class I Division 2, Groups A, B, C, D (See Specific Conditions of Use)
Class II, Division 2, Groups E, F, G (See Specific Conditions of Use)
Class III, Division 2 (See Specific Conditions of Use)
Zone 1, AEx db IIC Gb (with Ex d gland) or Zone 1, AEx eb IIC Gb (with Ex e gland) (See Specific Conditions of Use)
Zone 21, AEx tb IIIC Db (with Ex d or Ex e gland) (See Specific Conditions of Use)

Description of Equipment:

ELVB-NB 1/2 Connection kit (09CAAG1)
ELVB-NB M16 Connection kit (09CAAG2)
Maximum Voltage 750V ac; Maximum Current 40A

Specific Conditions of Use:

1. These Connection Kits shall only be used with the eltherm GmbH ELK-AG-NB series trace heating system. Optionally it is suitable for use on the ELK-AG-NA series trace heating system.
2. Minimum installation temperature is -60°C.
3. Maximum exposure temperature is 100°C.
4. The Temperature class shall be T2C to T6 or the corresponding maximum surface temperature of the specific gas for Class I, or T3 to T6 for the corresponding maximum surface temperature of the specific dust or fiber for Class II, Group E & F and Class III, or T3B to T6 or the corresponding maximum surface temperature of the specific dust for Class II, Group G.
5. A ground fault protection device must be used with this heating device.

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CERTIFICATE OF CONFORMITY

FM Approvals

1. **ELECTRICAL EQUIPMENT PER US REQUIREMENTS**

2. **Certificate No:** **FM16NUS0004X**

3. **Equipment:**
   (Type Reference and Name) **ELK-AG-NA Series PFA Insulated Trace Heating Cable Systems, ELVB-NA 3/8 Connection kit (09CAAG3) and ELVB-NA M12 Connection kit (09CAAG4)**
   Electrical Resistance PFA Insulated Heating Cable Systems & Integral Components

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:

   3052962 dated 19th August 2016

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

   ANSI/IEEE 515:2011, ANSI/UL 60079-30-1:2017 (R2021)

8. 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.

9. Equipment Ratings:

   Suitable for use only in an ordinary (unclassified) locations. The maximum voltage rating is 750V ac, maximum current is 40A and maximum resistance per meter is 8Ω. See Specific Conditions of Use.

10. **Description of Equipment:**

    ELK-AG Series heaters consist of a single core series heater with PFA insulation, nickel plated copper braid and PFA outer jacket. The heater is connected to 1.5 mm^2 cold leads of the same design by integral, crimped splice. The free end of the cold lead is to be connected to the power supply by means of separately approved junction boxes equipped with approved terminals and approved glands with suitable clamping range.
    The System Components are as follows: ELKM-AG-NA heater, ELVB-AG-NA splice kit, ELVB-NA (3/8 or M12) Connection Kit & ELKM-AG-NA 0.0117 Cold Lead

Certificate issued by:

J.E. Marquedant
VP, Manager - Electrical Systems

08/05/2026
Date

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

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Technical Data

Material of conductor:	heater alloy, copper
Range of resistance:	8 Ohm/m to 0.0117 Ohm/m
Tolerance:	±5%
Diameter of conductor:	from 0.4 mm to 1.6 mm depending on resistance
Outer diameter	from 4.7 mm to 6.0 mm (ELKM-AG-NA) depending on resistance
Insulation	PFA, thickness 1.0 mm (ELKM-AG-NA)
Sheath	PFA, thickness 0.8 mm (ELKM-AG-NA)
Bend radius	10 mm (ELKM-AG-NA)
Nominal voltage	750 VAC
Nominal current	40 A
Protective covering	nickel plated copper braid
Resistance of protective coating	< 0.018 Ohm/m
Max. exposure temp.	250°C (95°C for Connection Kit)
Min. installation temp.	-60°C

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

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

12. **Schedule Drawings**

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

13. **Certificate History**

    Details of the supplements to this certificate are described below:

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SCHEDULE

to US Certificate of Conformity No: FM16NUS0004X

Date	Description
19 August 2016	Original Issue.
5 August 2026	Supplement 1: Report Reference: PR475234 dated 5 August 2026. Description of the Change(s): 1. Additional optional materials for insulation and outer jacket. 2. Documentation Updates.

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

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ANNEX

ELK-AG-NA Series PFA Insulated Trace Heating Cable Systems

Description of Equipment:

ELK-AG-NA-a PFA Insulated Heating Cable. ELK-AG-NA Heating Cable System
Maximum Voltage 750V ac; Maximum Current 40A; Maximum Resistance 8Ω/m
Suitable for use in unclassified location
a = resistance (up to 8 ohm/m)

Specific Conditions of Use:

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 -60°C.*
3. *Maximum exposure temperature is 250°C.*
4. *A ground fault protection device must be used with this heating device.*
5. *The ELK-AG-NA series trace heating cables and integral splices shall have a minimum and maximum operating temperature range of -60°C to +250°C.*

ELVB-NA 3/8 Connection kit (09CAAG3) and ELVB-NA M12 Connection kit (09CAAG4)

Description of Equipment:

ELVB-NA 3/8 Connection kit (09CAAG3)
ELVB-NA M12 Connection kit (09CAAG4)
Maximum Voltage 750V ac; Maximum Current 40A

Specific Conditions of Use:

1. *These Connection Kits shall only be used with the eltherm GmbH ELK-AG-NA series trace heating system.*
2. *Minimum installation temperature is -60°C.*
3. *Maximum exposure temperature is 95°C.*
4. *A ground fault protection device must be used with this heating device.*

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