

# CERTIFICATE OF CONFORMITY



- HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS**
- Certificate No:** FM18US0191X
- Equipment:** ELK-MI Series Mineral Insulated Heating Cable Systems  
**(Type Reference and Name)** ELK-MI-AY825-D1 Series Mineral Insulated Heating Cable Systems
- Name of Listing Company:** eltherm production GmbH
- Address of Listing Company:** Ernst-Heinkel Str 6-10  
Burbach  
57299 Germany
- The examination and test results are recorded in confidential report number:  
3052972 dated 15<sup>th</sup> January 2016
- FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:  
FM Class 3600:2018, FM Class 3615:2018, FM Class 3616:2011, ANSI/UL 60079-30-1:2017, ANSI/ISA 60079-0:2013, ANSI/ISA 60079-1:2013; ANSI/ISA 60079-7:2013; ANSI/NEMA 250:2008
- 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.
- 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.
- Equipment Ratings:  
Suitable for use in Class I, Divisions 2, Groups A, B, C and D; Dust-ignitionproof for use in Class II, Division 1, Groups E, F, and G; Dust-ignitionproof for use in Class III, Division 1; and Flameproof with Increased Safety for Class I, Zone 1, Group IIC, hazardous (classified) locations and ordinary (unclassified) locations. See Specific Conditions of Use for details of temperature class.  
The maximum voltage rating is 600V ac and maximum resistance per meter is 36.1Ω.

**Certificate issued by:**

October 15, 2019

J. E. Marquedant  
VP, Manager, Electrical Systems

Date

To verify the availability of the Approved product, please refer to [www.approvalguide.com](http://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  
T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: [information@fmapprovals.com](mailto:information@fmapprovals.com) [www.fmapprovals.com](http://www.fmapprovals.com)

# SCHEDULE



US Certificate Of Conformity No: FM18US0191X

**(For ELK-MI-AY825-D1 Series only):** Suitable for use in Class I, Division 1, Groups A, B, C and D; Dust-ignitionproof for use in Class II, Division 1, Groups E, F, and G; Dust-ignitionproof for use in Class III, Division 1.

See Specific Conditions of Use for details of temperature class.

The maximum voltage rating is 600V ac and maximum resistance per meter is 36.1Ω.

11. The marking of the equipment shall include:

Class I, Divisions 2, Groups A, B, C and D; T\* Ta = -60°C to +60°C; Type 3

Class II, Divisions 1, Groups E, F and G; T\* Ta = -60°C to +60°C; Type 3

Class III, Divisions 1; T\* Ta = -60°C to +60°C; Type 3

Class I, Zone 1, AEx d e IIC T\* Ta = -60°C to +60°C; Type 3

Class I, Zone 1, AEx d IIC T\* Ta = -60°C to +60°C; Type 3

(\*Refer to Specific Conditions of Use)

**(For ELK-MI-AY825-D1 Series only):**

Class I, Divisions 1, Groups A, B, C and D; T\* Ta = -60°C to +60°C; Type 3

Class II, Divisions 1, Groups E, F and G; T\* Ta = -60°C to +60°C; Type 3

Class III, Divisions 1; T\* Ta = -60°C to +60°C; Type 3

(\*Refer to Specific Conditions of Use)

12. **Description of Equipment:**

The updated ELK-MI series trace heaters consist of a single or twin core series heater, connected to mineral insulated cold leads (1.5 mm<sup>2</sup> - up to 6 mm<sup>2</sup> copper conductor) by means of a laser welded splice. Outer materials are stainless steel 1.4541 (AISI 321), alloy 600 and alloy 825. The free end of the cold lead is potted and fitted with a flexible lead for power connection and a lead for earthing; cross section is same as cold lead. A compression ring stainless steel gland 1.4404 (AISI 316L) threaded either as M20x1.5, M25x1.5, ½"NPT or ¾"NPT is fitted at the end of each cold lead and prevented from possible loss by the potted end seal.

The explosionproof rated ELAK-Ex-3d junction box and the M20, M25, ½ inch NPT or ¾ inch NPT threaded glands are used for the power connection in complete system.

ELK-MI trace heaters are supplied prefabricated and ready for installation. Each unit comes with an attached type plate bearing all required information / marking. Maximum permitted maintain temperatures are derived from a maximum sheath temperature determination by eltherm based on the calculation tool "eltherm designer" and are indicated on the type plate.

The model structure of the heating cable is shown below:

**ELK-MI-a-b-c mineral insulated heating cable ELK-MI series**

a = sheath material VA or AY825

b = no of cables (blank or T for twin)

c = resistance (up to 36.1 ohm/m)

The ELK-MI-AY825-D1 series trace heaters consist of a single or twin core series heater, connected to mineral insulated cold leads by means of a laser welded splice. The outer material is alloy 825. The free end of the cold lead is potted and fitted with a flexible lead for power connection and a lead for earthing; cross section is same as cold lead.

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

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

T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: [information@fmapprovals.com](mailto:information@fmapprovals.com) [www.fmapprovals.com](http://www.fmapprovals.com)

# SCHEDULE



US Certificate Of Conformity No: FM18US0191X

The end pot is welded to the cold lead (instead of pressing) and there are threaded joints between the end pot and the nipple and between the nipple and the enclosure.

ELK-MI-AY825-D1 trace heaters are supplied prefabricated and ready for installation. Each unit comes with an attached type plate bearing all required information / marking. Maximum permitted maintain temperatures are derived from a maximum sheath temperature determination by eltherm and are indicated on the type plate.

The model structure of the ELK-MI-AY825-D1 trace heating cable is shown below:

**ELK-MI-AY825-D1-a-b mineral insulated heating cable ELK-MI-AY825-D1 series**

a = no of cables (blank or T for twin)

b = resistance (up to 36.1 ohm/m)

**13. Specific Conditions of Use:**

1. Power Connections shall only be made using the ELAK-Ex-3d Junction Box. Alternatively, an NRTL Listed Junction Box with minimum Approval rating compatible for the connection of the heating cable may be used.
2. Minimum installation temperature is -60°C.
3. Maximum exposure temperature is 700°C for the MI cable and integral splice and 80°C for the potted end seals.
4. A ground fault protection device must be used with this heating device.
5. The ELK-MI series trace heating cables and integral splices shall have a minimum and maximum operating temperature range of -60°C to +700°C. The potted end seals shall have a minimum and maximum operating temperature range of -60°C to +80°C.
6. The maximum surface temperature in or on the ELK-MI series Trace Heating System is limited to the maximum allowed values by means of controlled design or stabilized design in accordance with ANSI/UL 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, T1 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.

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

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

T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: [information@fmaprovals.com](mailto:information@fmaprovals.com) [www.fmaprovals.com](http://www.fmaprovals.com)



# SCHEDULE



US Certificate Of Conformity No: FM18US0191X

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.

**(For ELK-MI-AY825-D1 Series only)**

1. Power Connections shall only be made using the ELAK-Ex-3d Junction Box.
2. Minimum installation temperature is -60°C.
3. Maximum exposure temperature is 700°C for the MI cable and integral splice and 80°C for the potted end seals.
4. A ground fault protection device must be used with this heating device.
5. The ELK-MI-AY825-D1 series trace heating cables and integral splices shall have a minimum and maximum operating temperature range of -60°C to +700°C. The potted end seals shall have a minimum and maximum operating temperature range of -60°C to +80°C.
6. The maximum surface temperature in or on the ELK-MI-AY825-D1 series Trace Heating System is limited to the maximum allowed values by means of controlled design or stabilized design in accordance with UL 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, T1 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.

**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.

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

FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA  
T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: [information@fmapprovals.com](mailto:information@fmapprovals.com) [www.fmapprovals.com](http://www.fmapprovals.com)

# SCHEDULE



Member of the FM Global Group

US Certificate Of Conformity No: FM18US0191X

## 16. Certificate History

Details of the supplements to this certificate are described below:

Date	Description
25 <sup>th</sup> January 2016	Original Issue.
24 <sup>th</sup> August 2018	<u>Supplement 1:</u> Report Reference: - 3062064 dated 24 <sup>th</sup> August 2018. Description of the Change: Addition of Stainless Steel Alloys 600 & 825 as Sheath Material & Optional Single / Twin Cables; Certification standards updates & relevant documentation updates.
Xx October 2019	<u>Supplement 2:</u> Report Reference: - PR452456 dated xx <sup>th</sup> October 2019. Description of the Change: Addition of ELK-MI-AY825-D1 model rated as suitable for Class I, Division 1, & relevant documentation updates.

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

FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA  
T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: [information@fmaprovals.com](mailto:information@fmaprovals.com) [www.fmaprovals.com](http://www.fmaprovals.com)