



1. EU-TYPE EXAMINATION CERTIFICATE

2. Equipment or Protective systems intended for use in Potentially Explosive Atmospheres - Directive 2014/34/EU

3. EU-Type Examination Certificate No: FM24ATEX0011X

4. Equipment or protective system: (Type Reference and Name) ELSR-SH+ Self Regulating Trace Heating Cable Systems

5. Name of Applicant: eltherm production GmbH

6. Address of Applicant Ernst-Heinkel Str 6-10 , Burbach 57299, Germany

7. This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and documents therein referred to.

8. FM Approvals Europe Ltd, notified body number 2809 in accordance with Article 17 of Directive 2014/34/EU of 26 February 2014, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

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

PR456322 dated 2nd January 2025

9. Compliance with the Essential Health and Safety Requirements, with the exception of those identified in item 15 of the schedule to this certificate, has been assessed by compliance with the following documents:

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

10. 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.

11. This EU-Type Examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

12. The marking of the equipment or protective system shall include:



II 2 G Ex 60079-30-1 db IIC T6...T2 Gb
II 2 G Ex 60079-30-1 eb IIC T6...T2 Gb
II 2 D Ex 60079-30-1 tb IIIC T85°C...T300°C Db
(See Specific Conditions of Use)

Certificate issued by:

13 October 2025

Certification Manager, FM Approvals Europe Ltd.

Date

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

FM Approvals Europe Ltd. One Georges Quay Plaza, Dublin. Ireland. D02 E440
T: +353 (0) 1761 4200 E-mail: atex@fmaprovals.com www.fmaprovals.com

F ATEX 020 (Jul/2024)



Page 1 of 5

SCHEDULE

EU-Type Examination Certificate No. FM24ATEX0011X

13. Description of Equipment or Protective System:

ELSR-SH+... trace heaters are suitable for use on pipes, vessels and associated equipment in areas with combustible gas or dust. They consist of two parallel bus wires (nickel plated copper) which are embedded in a string of conductive polymeric matrix. Different power outputs are achieved by perforating the matrix in defined patterns. The matrix is electrically insulated by a layer of polymeric material, which is covered by a nickel-plated copper braid and finally by a polymeric outer jacket. The free end of each cold lead is either to be connected to the power supply (by means of separately approved junction boxes equipped with approved terminals and approved glands suitable for flat cable) or to be terminated by means of an approved end cap. ELSR-SH+... trace heaters are supplied prefabricated or are spliced on site by the manufacturer or by end users. Each prefabricated unit comes with an attached type plate bearing all required information / marking.

Technical Data

Material of bus wires: stranded copper 1,23mm², nickel plated

Matrix material: PFA, carbon black doted

Insulation material: PFA, thickness ≥ 0.6 mm

Sheath material: PFA, thickness ≥ 0.4 mm

Protective covering nickel plated copper braid, coverage $>70\%$, cross section $> 2\text{mm}^2$

Outer dimensions 14 $\pm$ 0.2 mm x 5.5 $\pm$ 0.2 mm

Bend radius 25 mm

Nominal voltage see table below

Nominal power see table below

Max. voltage 277 VAC (...-2-BOT only)

Max. current 40 A

Max. exposure temp. 250°C (including integral component EL-ECSH)

Max. maintain temperature 185°C

Min. installation temp. -60°C (including integral component EL-ECSH)

Min. start up temp. -30°C

The model structure is shown below.

ELSR-SH+-a-b-c self-regulating heating cable ELSR-SH+ series

a = power output (15 = 15W/m, 30 = 30W/m, 45 = 45W/m, 60 = 60W/m, 75 = 75W/m, 90 = 90W/m)

b = nominal voltage (1 = 120Vac or 2 = 230Vac [277Vac])

c = type of conductive covering (BOT = Braid and fluoropolymer jacket)

Electrical Ratings		
Nominal Voltage VAC	Nominal Power W/m at 10°C	Model Code
120	15	ELSR-SH+-15-1-BOT
120	30	ELSR-SH+-30-1-BOT
120	60	ELSR-SH+-60-1-BOT
230	15	ELSR-SH+-15-2-BOT
230	30	ELSR-SH+-30-2-BOT
230	45	ELSR-SH+-45-2-BOT

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

SCHEDULE

EU-Type Examination Certificate No. FM24ATEX0011X

Electrical Ratings		
Nominal Voltage VAC	Nominal Power W/m at 10°C	Model Code
230	60	ELSR-SH+-60-2-BOT
230	75	ELSR-SH+-75-2-BOT
230	90	ELSR-SH+-90-2-BOT

The components used on the ELSR-SH+ Series Self-regulating Heat Trace Cable Systems are listed below.

- EL-ECSH-Ex end cap
- Ex e gland eltherm 0X80100 (For Ex eb & Ex tb ratings)
- Ex e gland eltherm EL-GSR 40X8045000 (For Ex eb & Ex tb ratings)
- Ex d gland Peppers A8BFNP20M25 (For Ex db & Ex tb ratings)
- Ex d gland Peppers A8BFNP25M25 (For Ex db & Ex tb ratings)
- Ex-Con SR splice kit (For Ex eb & Ex tb ratings)

14. Specific Conditions of Use:

1. The ELSR-SH+-a-b-c series trace heating cables and integral splices shall have a minimum and maximum operating temperature range of -60°C to +250°C.

2. The maximum surface temperature in or on the ELSR-SH+-a-b-c series Trace Heating System is limited to the maximum allowed values by means of controlled design or stabilized design in accordance with EN 60079-30-1. Refer to the table below for the respective temperature classes for the cable systems.

For Stabilized Design -

The design information from eltherm GmbH and the calculation tool "eltherm designer version 2.0x" shall be such that they ensure temperature stabilization at lower values than the specified maximum surface temperature class selected, T6...T2 or the corresponding maximum surface temperature of the specific gas for EPL Gb, or T85°C...T300°C for the specific dust or fiber for EPL Db.

For Control design -

The device applied as a temperature limiter for the controlled temperature design shall comply with the requirements of Clause 4.4.3.a) of EN 60079-30-1. The temperature sensors for temperature control or limitation shall be ATEX Certified and comply with the types of protections listed in Clause 1 of EN IEC 60079-0 as EPL Gb or Db equipment. In case of Pt100 sensors connected to intrinsically safe circuits, they shall comply with the applicable requirements of EN 60079-11.

Heater	T-Class as per "product classification"	T-Class as per "systems approach" (controlled or stabilized design of heating circuit required by eltherm or by tool eltherm designer V2.0x)
ELSR-SH+- 15-1-BOT	T3 or T200°C	T4, T5, T6 or Tx with x < 200°C
ELSR-SH+- 30-1-BOT	T2 or T230°C	T3, T4, T5, T6 or Tx with x < 230°C
ELSR-SH+-60-1-BOT	T2 or T260°C	T3, T4, T5, T6 or Tx with x < 260°C

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

SCHEDULE

EU-Type Examination Certificate No. FM24ATEX0011X

Heater	T-Class as per “product classification”	T-Class as per “systems approach” (controlled or stabilized design of heating circuit required by eltherm or by tool eltherm designer V2.0x)
ELSR-SH+- 15-2-BOT	T3 or T200°C	T4, T5, T6 or Tx with x < 200°C
ELSR-SH+- 15-2-BOT	T2 or T230°C at 277V	T3, T4, T5, T6 or Tx with x < 230°C
ELSR-SH+- 30-2-BOT	T3 or T200°C	T4, T5, T6 or Tx with x < 200°C
ELSR-SH+- 30-2-BOT	T2 or T230°C at 277V	T3, T4, T5, T6 or Tx with x < 230°C
ELSR-SH+- 45-2-BOT	T3 or T200°C	T4, T5, T6 or Tx with x < 200°C
ELSR-SH+- 45-2-BOT	T2 or T230°C at 277V	T3, T4, T5, T6 or Tx with x < 230°C
ELSR-SH+- 60-2-BOT	T2 or T230°C	T3, T4, T5, T6 or Tx with x < 230°C
ELSR-SH+- 75-2-BOT	T2 or T260°C	T3, T4, T5, T6 or Tx with x < 260°C
ELSR-SH+- 90-2-BOT	T2 or T260°C	T3, T4, T5, T6 or Tx with x < 260°C

3. The ELSR-SH+-a-b-c Trace heaters shall be installed in accordance with the manufacturer's instructions and connected in accordance with EN 60079-14. The connections shall be made using the following:

- The end cap to be used for connection is the EL-ECSH model.
- For Ex e rated system, the splice kit to be used shall be the Ex-Con-SR splice kit
- (For Ex d rating) an Ex d rated ATEX Certified flameproof enclosure and Ex d Peppers Glands A8BF20M20, A8BF20M25 or A8BF25M25; Gland Peppers A8BF25.
- (For Ex e rating) an Ex e rated ATEX Certified increased safety enclosure, Ex-It mounting post or Ex e Eltherm Gland M25x1,5 0X80100 or Ex e Eltherm Gland EL-GSR.
- (For Ex tb rating) an Ex tb rated ATEX Certified enclosure and Ex d Peppers Glands A8BF20M20, A8BF20M25 or A8BF25M25; Gland Peppers A8BF25gland or Ex e Eltherm Gland M25x1,5 0X80100 or Ex-It mounting post or Ex e Eltherm Gland EL-GSR.

4. The ELSR-SH+-a-b-c Trace heaters shall be installed in accordance with the manufacturer's instructions and connected in accordance with EN 60079-14. The connections shall be made using a suitably rated ATEX Certified flameproof enclosure and gland “d” or a suitably rated ATEX Certified increased safety enclosure and gland “e” or in the case of dust installations using an ATEX Certified and suitably rated “tb” enclosure and gland.

5. 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.

6. A ground fault protection device must be used with this heating device.

15. Essential Health and Safety Requirements:

The relevant EHSRs that have not been addressed by the standards listed in this certificate have been identified and assessed in the confidential report identified in item 8.

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

SCHEDULE

EU-Type Examination Certificate No. FM24ATEX0011X

16. Test and Assessment Procedure and Conditions:

This EU-Type Examination Certificate is the result of testing of a sample of the product submitted, in accordance with the provisions of the relevant specific standard(s), and assessment of supporting documentation. It does not imply an assessment of the whole production.

Whilst this certificate may be used in support of a manufacturer's claim for CE Marking, FM Approvals Europe Ltd accepts no responsibility for the compliance of the equipment against all applicable Directives in all applications.

This Certificate has been issued in accordance with FM Approvals Europe Ltd's ATEX Certification Scheme.

17. Schedule Drawings

A list of the significant parts of the technical documentation is annexed to this certificate and a copy has been kept by the Notified Body.

18. Certificate History

Details of the supplements to this certificate are described below:

Date	Description
3 January 2025	Original Issue.
13 October 2025	<u>Supplement 1:</u> Report Reference: PR472607 dated 13 October 2025. Description of the Change(s): Addition of two new power output variants (45 W/m and 75 W/m) and updated 60W/m & 90W/m for improvement to their self-limiting behaviour. Introduction of a new Ex eb/tb rated cable gland (eltherm model code EL-GSR) into the system. Relevant Documentation update, including update to Specific Conditions of Use to improve clarity.

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