

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Electric Heating Cable**

with type designation(s)

FAILSAFE ULTIMO FSU, FAILSAFE ULTIMO WIDE FSUw

Issued to

Heat Trace Ltd.**Frodsham CHESHIRE, United Kingdom**

is found to comply with

DNV GL rules for classification – Ships, offshore units, and high speed and light craft**Application :****Heat trace. Self regulating power output depending on temperature.****Suitable for gas dangerous areas ref. IEC Ex marking on cable.****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**

Type	Rated voltage (V)	Temp. class (°C)	Power [W/m] @ref. temp.	Suitable for Hazardous areas
FAILSAFE ULTIMO FSU	0-277	300°C (T2)	15/30/45/60/75/90 @ 10C	Yes
FAILSAFE ULTIMO WIDE FSUw	0-277	300°C (T2)	100/125 @ 10 C	Yes

Issued at **Høvik** on **2018-02-07**This Certificate is valid until **2023-02-06**.for **DNV GL**DNV GL local station: **Manchester**Approval Engineer: **Ivar Bull**

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Andreas Kristoffersen
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.



Job Id: **262.1-015472-2**
Certificate No: **TAE00002KC**

Product description

FAILSAFE ULTIMO FSU, FAILSAFE ULTIMO WIDE FSUw

Conductors: 2 parallel bus wires: Stranded metallic conductor
Heating Conductor Element: Semi-conductive self-limiting matrix
Insulation: Fluoropolymer insulation
Braid: Aluminum sheath or metallic braid
Sheath: Optional additional outer jacket of MFA/PFA/Silicone

Type designation	Supply voltage (V)	Nominal Output at 10°C (w/m)	Type Self regulating / Constant power / series
15 FSU	110-277	15	Self regulating
30 FSU	110-277	30	Self regulating
45 FSU	110-277	45	Self regulating
60 FSU	110-277	60	Self regulating
75 FSU	110-277	75	Self regulating
90 FSU	110-277	90	Self regulating
100 FSUw	110-277	100	Self regulating
125 FSUw	110-277	125	Self regulating

Maximum continuous exposure temperature (Power ON or OFF) is 250°C

Application/Limitation

References to Ex-certifications in this type approval is for information only.
Installation has to be done in accordance with installation instruction.
The minimum installation temperature of the heating cables is -40°C

Type Approval documentation

Tests carried out

Tested in accordance with IEC 60079-30-1 Electrical resistance trace heating - General and testing requirements.

Marking of product

HEAT TRACE -Type designation – Gas Marking - Power output at nominal voltage – serial number

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Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval are complied with and that no alterations are made to the product design or choice of materials.

The main elements of the assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routine tests (RT) and selected type tests (ref. to applicable class programs) checked (if not available these tests shall be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE