DNV·GL

Certificate No:
TAE00002KB

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Electric Heating Cable

with type designation(s)
FAILSAFE+ FS+

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.

Rated voltage (V)	**0-277**
Temp. class (°C)	**200 (T3)**
Power [W/m] @ref. temp.	**15/30/45/60/75 @ 10 C**
Suitable for Hazardous areas	**Yes**

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

Approval Engineer: **Ivar Bull**

for **DNV GL**

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.

© DNV GL 2014. DNV GL and the Horizon Graphic are trademarks of DNV GL AS.

Job Id: **262.1-015472-2**
Certificate No: **TAE00002KB**

Product description

FAILSAFE+ FS+

Conductors:	2 parallel bus wires: Stranded metallic conductor
Heating Conductor Element:	Semi-conductive self-limiting matrix
Insulation:	Silicone
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 FS+	110-277	15	Self regulating
30 FS+	110-277	30	Self regulating
45 FS+	110-277	45	Self regulating
60 FS+	110-277	60	Self regulating
75 FS+	110-277	75	Self regulating

Maximum continuous exposure temperature (Power ON or OFF) is 225°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

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