DNV·GL

Certificate No:
TAE00002TS

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Electric Heating Cable

with type designation(s)
ZP, ZS, ZE, ZL, ZT and ZP Ambient

Issued to
Thermon, Inc.
San Marcos, TX, USA

is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

Power, Splice, and End - Termination Kits

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Rated voltage (V)	**Various (750 V max)**
Temp. class (°C)	**T4 -T6 (135 - 85)**
Power [W/m] @ref. temp.	**NA**
Suitable for Hazardous areas	**Yes**

Issued at **Høvik** on **2018-04-27**
This Certificate is valid until **2022-12-31**.
DNV GL local station: **Houston**

Approval Engineer: **Nicolay Horn**

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.

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Product description

Part 1: Description of Equipment or protective system: Terminator Series: Power, Splice and End-Termination Kits

Terminator	**Z**	**P**	**- L**
I	II	III	IV

I - Terminator Series Designation
II - Z – Zone areas Designation
III - Kit Type Designation
P – Power Connection
S – Splice Connection
E – End Termination
L – End of Circuit (Voltage Indication Light)
IV - Cable Profile Designation
Blank – Intended for use with BSX, HTSX, KSX, RSX, VSX, VSX-HT, HPT and FP.
B – Intended for use with End of Circuit Light Beacon (for ZE only).
L – Intended for use with BSX, HTSX, KSX, RSX, VSX and VSX-HT.
M – Intended for use with TEK and HTEK (for ZP only).
MS – Intended for use with TEK and HTEK, for Power Splice connection (for ZP only).
MI – Intended for use with Mineral Insulated heat tracer (for ZP only).
PTD100 – Intended for use with PTD100 Temperature Sensor (for ZP only).
S – Intended for use with BSX, HPT, FP, HTSX and KSX.

Temperature data:
Maximum pipe temperature exposure +250°C
Minimum temperature exposure -60°C

Electrical data:
Maximum rated operating voltage is 750Vac (except for ZE-B, ZL series, and ZP-PTD100).
Maximum rated operating voltage for ZE-B is 277 Vac.
Maximum rated operating voltage for ZL series is 270 Vac.
Maximum rated operating voltage for ZP-PTD100 is 100 mVdc.

Ingress protection:
The Terminator Series kits are rated IP66.

Part 2: Description of Equipment or protective system: Terminator ZT Thermostat / Power Connection

Terminator	**Z**	**T**	**-C**	**-100**	**-P**	**-400**
I	II	III	IV	V	VI	VII

I - Terminator Series Designation
II - Z – Zone areas Designation
III - Kit Type Designation
T – Thermostat
IV - Switch Type Designation
C – Controller
L – Limiter
V - Controller Range Designation
100 – 0°C to 100°C
200 – 0°C to 200°C
300 – 0°C to 300°C
500 – 20°C to 500°C

VI - Cable Profile Designation
P – RSX, VSX, VSX-HT, BSX, HTSX, KSX, FP, HPT
M – Multiple Conductor Series Cables
MI – Mineral Insulated
VII - Thermostat Voltage Designation
Blank – 230 Vac nominal
400 – 400 Vac nominal

Temperature data:
Maximum pipe temperature exposure is 250°C.
Minimum temperature exposure is -60°C.

Electrical data:
Maximum rated operating voltage is 400Vac +10%.

Ingress protection:
The ZT kit provides a degree of protection IP66.

Part 3: Description of Equipment or protective system: Terminator ZP-Ambient Sensing Thermostat

Terminator	**Z**	**P**	**-Ambient**	**-P**
I	II	III	IV	V

I - Terminator Series Designation
II - Z – Zone areas Designation
III - Kit Type Designation
P – Power Connection
IV - Switch Type Designation
Ambient – Ambient Sensing Thermostat
V - Cable Profile Designation
P – RSX, VSX, VSX-HT, BSX, HTSX, KSX, FP, HPT

Temperature data:
Maximum pipe temperature exposure is 250°C.
Minimum temperature exposure is -50°C

Electrical data:
Maximum rated operating voltage is 250 Vac.

Ingress protection:
The ZP-Ambient kit provides a degree of protection IP66.

Application/Limitation

The installation has to be done in accordance with the installation instructions also taking into account limitations as found in the valid Ex certificates.

Reference is also made to

IECEx Certificates: IECEx FMG 10.0022X Iss3 dated 2014-04-09
IECEx UL 05.0003 dated 2006-12-05
ATEX Certificates: FM10ATEX0058X Iss4 dated 2014-04-22

Type Approval documentation

Tests carried out

IEC Standard	Release	General description
IEC 60079-0	2011	Explosive atmospheres - Part 0: General requirement
IEC 60079-1	2007-04	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-7	2006-07	Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
IEC 60079-18	2009	Explosive atmospheres Part 18: Equipment protection by encapsulation "m"
IEC 60079-31	2008	Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure 't'
IEC 60529+A1	1999	Degree of protection provided by enclosures (IP Code)

EN Standard	Release	General description
EN 60079-0	2012	Explosive atmospheres - Part 0: General requirement
EN 60079-1	2007	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
EN 60079-7	2007	Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
EN 60079-18	2009	Explosive atmospheres Part 18: Equipment protection by encapsulation "m"
EN 60079-31	2009	Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure 't'
EN 60529+A1	2000	Degree of protection provided by enclosures (IP Code)

Marking of product

Thermon – Type designation – Voltage.

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) checked (if not available tests according to RT to 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