



## EC-TYPE EXAMINATION CERTIFICATE

Equipment or Protective System Intended for use  
in Potentially Explosive Atmospheres  
Directive 94/9/EC

EC-Type Examination Certificate Number : BAS00ATEX2163X

Equipment or Protective System: VPL RANGE OF HEATING UNITS

Manufacturer: RAYCHEM CORPORATION

Address: 300 Constitution Drive, Menlo Park, California 94025, USA

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

The Electrical Equipment Certification Service, notified body number 600 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report N°

00(C)0443 dated 8 December 2000

Compliance with the Essential Health and Safety Requirements has been assured by compliance with:  
EN 50014: 1997 + Amds 1 & 2      EN 50019: 2000      SFA 3009: 1985  
except in respect of those requirements listed at item 18 of the Schedule.

If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

This EC-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment or protective system.

The marking of the equipment or protective system shall include the following:-

 II 2 G Ex es II T\* (see schedule)

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0865/03/034

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.



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DIRECTOR  
2 January 2001



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## Schedule

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### EC-TYPE EXAMINATION CERTIFICATE N° BAS00ATEX2163X

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#### Description of Equipment or Protective System

The VPL Range of Trace Heating Units are parallel circuit power limiting type rated at up to 230V with a nominal power output from 16 W/m to 66 W/m at 10°C and a maximum maintain temperature of 150°C.

Each trace heating unit comprises:

- the active heating cable
- an end seal for terminating the remote end of the unit
- a cable gland for connecting the powered end of the unit to a suitable terminal enclosure, or alternative integrated power connection systems.

The heating cables consist of two stranded nickel plated copper 3.31mm<sup>2</sup> conductors insulated with 0.38 mm minimum thickness fluoropolymer. Both bus wires are further contained within a 0.125 mm fluoropolymer pairing jacket. A helical heating element is wound evenly around the pairing jacket. A short length of insulation sufficient for 5 to 10 turns of the heating element to contact the bus wire is removed from the pairing jacket and the bus wire. The insulation is removed from only one bus wire at each location and different bus wires at each adjacent location to form a heating zone.

A primary 0.5mm thick fluoropolymer jacket covers the heating element which itself is covered by a steel or copper braid equivalent to a 3.31mm<sup>2</sup> conductor. The final outer jacket is another 0.5mm thick layer of fluoropolymer.

There may optionally be a layer of fibreglass braid between the heating element and the primary fluoropolymer jacket.

The resistance of the heating element changes as its surrounding temperature changes resulting in the power output of the heating cable reducing with increasing temperature.

The declared maximum withstand temperature for the range is 250°C and the minimum installation temperature is -60°C.

There are 4 different power ratings available and the cables are identified as shown below:



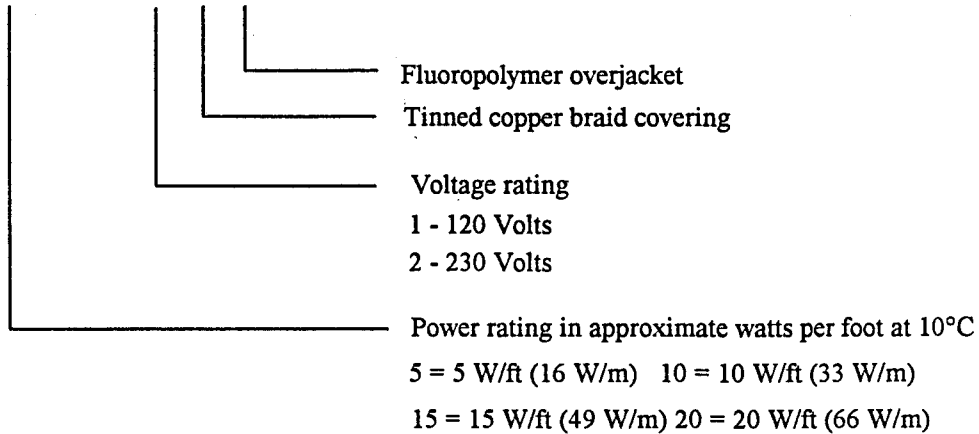
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### Schedule

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20 VPL 2-C T



#### Temperature Class

Any of the products in the range may be considered as part of a stabilised design system. In such a system the design is based upon the use of Raychem Engineering Design Software such as Trace Calc Plus. The algorithm defined in this software may be used in additional software. These designs may carry temperature classes of T6 to T3 and are marked with the actual maximum temperature and the appropriate T Class in parenthesis.

The following accessories can be used as part of the complete heating system:

#### END SEALS

Type E-100 mechanical end seal covered by PTB Certificate PTB98ATEX1101U.

Type E-150 mechanical end seal covered by PTB Certificate PTB98ATEX1121U.

#### SPLICES AND JOINTS

Type T-100 tee connection system for up to three heater cables covered by PTB Certificate PTB98ATEX1020U.

Type S-150 Splice Kit covered by PTB Certificate PTB98ATEX1121.

#### POWER CONNECTIONS

Types C25-21 and C16-29 incorporating ABB Type GHG 960 923 P... plastic cable glands covered by component certificate PTB Ex-92.C.3142 coded EEx e II. The power connection kits may use a moulded silicone rubber core seal to insulate the bus wires with silicone grease in a moulded cavity to seal the end of the heating cable. These are Types C25-100 and C16-100 covered by PTB Certificate PTB98ATEX1015U.



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Type C-150 covered by PTB Certificate PTB98ATEX1121U

Types C3/4-100-METAL and C25-100-METAL for connection into Ex d enclosures covered by BASEEFA Certificate No. Ex 97D1313U coded EEx d IIC which include a Type A7F/e metallic cable gland.

Type JBS-100 power connection system for a single heater cable covered by PTB Certificate PTB97ATEX1058U.

Type JBM-100 power connection system for multiple heater cables covered by PTB Certificate PTB98ATEX1021U.

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17 **Special Conditions For Safe Use**

1. The following temperatures shall not be exceeded:

Type	Description	Limiting temperature (°C)
E100 & E100L	End seals	165
JBS-100	Single power connection kit	165
JBM-100	Multiple power connection kit	155
T-100	Tee connection	155
GHG 960 923 P...	Cable gland	110
Type A7F/e	Cable gland	180

The E-100 end seal, E-100-L end seal, JBM-100 junction box, JBS-100 junction box and the T-100 tee have limiting temperatures based on an internal component in these accessories. When locating on the pipe or work piece surface a maximum pipe temperature of 250°C will not cause the limiting temperatures of 165°C or 155°C to be exceeded.

2. The heating element supply circuit must include an electrical protection device in conformity with Annex D of EN 50019: 2000.
3. The assembly of the cables, glands, splices and end terminations shall be carried out in accordance with the manufacturers instructions.
4. The minimum bend radius is 19mm.



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**Schedule**

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**Essential Health and Safety Requirements**

Essential Health & Safety Requirements not covered by Standards listed at (9)		
Clause	Subject	Compliance
1.02	Analysis of possible operating faults	4.3

**19. DRAWINGS**

Number	Issue	Date	Description
907285-A	B	12/1/00	VPL-CT cable
907429-A	A	12/1/00	Stabilized design VPL-CT label
* 906816-A	B	12/1/00	Metal connection kit label
* 906567-A	D	12/1/00	Connection kits
907269-A	B	12/1/00	Generic print drawing
907381-A	A	12/1/00	VPL heater units

\* These drawings are common to certificates BAS98ATEX2335X

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**BASEEFA List Keywords**  
2HEATER



1 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use  
in Potentially explosive atmospheres  
Directive 94/9/EC**

3 Supplementary EC-Type Examination Certificate Number: **BAS00ATEX2163X/2**

4 Equipment or Protective System: **VPL RANGE OF HEATING UNITS**

5 Manufacturer: **TYCO THERMAL CONTROLS LLC**

6 Address: **300 Constitution Drive, Menlo Park, California 94025, USA**

7 This supplementary certificate extends EC-Type Examination Certificate No. BAS00ATEX2163X to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said Certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This Supplementary Certificate shall be held with the original Certificate.

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0865/03/034A

BASEEFA ATEX Certification Report No 01(C)0918 dated 19 October 2001

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.



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DIRECTOR  
25 October 2001



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**Schedule**

**14 SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE N° BAS00ATEX2163X/2**

**Description of the Variation to the Equipment or Protective System**

**VARIATION 2.1**

To extend the voltage range for VPL-2 products up to 254V.

**VARIATION 2.2**

To include VPL-1 products with a voltage range up to 120V.

**VARIATION 2.3**

The maximum pipe maintain temperatures for the range of cables are as follows:-

Heating cable	Maximum maintain temperature (°C)		Heating cable	Maximum maintain temperature (°C)	
	@ 110V	@ 120V		@ 230V	@ 254V
5VPL1-CT	235	235	5VPL2-CT	230	225
10VPL1-CT	215	210	10VPL2-CT	210	200
15VPL1-CT	190	165	15VPL2-CT	180	145
20VPL1-CT	150	150	20VPL2-CT	150	not allowed

**VARIATION 2.4**

To include the year of manufacture in the main body of the marking.

**Report No.**

01(C)0918 dated 19 October 2001

**Special Conditions For Safe Use**

See original certificate.

**Essential Health and Safety Requirements**

See original certificate.

**DRAWING**

Number	Issue	Date	Description
907269-A	C	30/5/01	Generic print drawing

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