Translation

(1) # EC-Type Examination Certificate

(2) **- Directive 94/9/EC -**
Equipment and protective systems intended for use in potentially explosive atmospheres

(3) **BVS 07 ATEX F 001**

(4) Equipment: **Temperature limiting circuit of the temperature control-limit-alert unit type TRB-P.S**

(5) **Manufacturer:** **Erich Ott Elektronische Geräte**

(6) **Address:** **Rüdigerstraße 15, 65189 Wiesbaden, Germany**

(7) The design and construction of this equipment and any acceptable variation thereto are specified in the appendix to this type examination certificate.

(8) The certification body of DEKRA EXAM GmbH, notified body no. 0158 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament and the Council of 23 March 1994, certifies that this equipment 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 the test and assessment report BVS PP 07.2099 EG.

(9) The Essential Health and Safety Requirements are assured by compliance with:

DIN EN 61508-1:2002-11	Functional safety of electrical/ electronic/ programmable electronic safety-related systems, Part 1
EN 60079-7:2004	Electrical apparatus for explosive gas atmospheres – Part 7 increased safety "e"
EN 62086-1:2005	Electrical apparatus for explosive gas atmospheres – Electrical trace heating – Part 1 General and testing requirements

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the appendix to this certificate.

(11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to Directive 94/9/EC.
Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate

(12) The marking of the equipment shall include the following:

II (2) GD

DEKRA EXAM GmbH
Bochum, dated 30.11.2007

Signed: Dr. Jockers
Certification body

Signed: Dr. Eickhoff
Special services unit

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(13) Appendix to

(14) # EC-Type Examination Certificate

BVS 07 ATEX F 001

(15) 15.1 Subject and type

Temperature limiting circuit of the temperature control-limit-alert unit type TRB-P.S

15.2 Description

The temperature limit circuit of the TRB-P.S of the company Erich Ott Elektronische Geräte is a safety device according to directive 94/9/EC, which can be used as a measure for direct temperature control of electrical heating devices or of other electrical equipment.

The measuring of the temperature is supplied by a Pt100 measuring resistor. In case of an excess temperature, the power supply of the equipment under control is switched off by a relay contact of the device in a direct or indirect way. The temperature limit circuit can only be manually reset after a switch-off has been carried out.

The measuring circuit is monitored on short circuit and open circuit. In case of a fault, the contact of the relay output of the limit circuit is switched off, too.

If the voltage supply fails, a switch-off of the relay contact remains, even if the supply voltage is reactivated.

The device is manufactured in three versions, which differ in the max. switch-off temperature (200 °C, 300 °C, 400 °C). The key code makes no differences between these versions; the differentiation does not affect the assessment of the functional safety.

The control function and the fault display function are not subject of this EC-Type Examination Certificate.

15.3 Parameters

15.3.1 General:	
- Rated voltage:	230 V + 10 % - 15 %, 50Hz
- Rated current:	45 mA
- Ambient temperature range:	0 °C up to +40 °C
15.3.2 Sensor:	
Sensor, type:	Pt 100 in 3-wire circuit
Connection:	b26, b28, z26
15.3.3 Limiter:	
- Max. adjustable threshold, temperature (scale):	0 °C … 200 °C, 0 °C … 300 °C, 0 °C … 400 °C
- Reset hysteresis:	< 6 K
- Accuracy of the switch-off:	ca. 1 % of the full-scale point
15.3.4 Limiter relay K1:	
- Contact:	1 change-over contact
- Switching voltage:	max. 230 V AC
- Switching current:	max. 4 A AC
- Connection:	b6, b8, z8

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15.3.5 Safety Integrity Level:

The Temperature limiting circuit of the temperature control-limit-alert unit type TRB-P.S fulfils the requirements for the usage in safety functions up to a safety integrity level of SIL 1.
This applies to the low demand mode of operation; for the calculation of the safety integrity level a proof-test interval of the safety function of five years was assumed.

Parameters:
SFF: 50.36 %
PFH: $7.88 \cdot 10^{-7}$ 1/h
PFD: $1.73 \cdot 10^{-2}$ 1/h

The assessment of the Safety Integrity Level was made on the assumption that the fault display relay D3 is connected and interpreted.

(16) Test and assessment report
BVS PP 07.2099 EG as of 30.11.2007

(17) Special conditions for safe use
None

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

44809 Bochum, 09.06.2008
BVS-Wil/Ar E 0817/08

DEKRA EXAM GmbH

Certification body

Special services unit

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