



Translation

(1) **EC-Type Examination Certificate**

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

(3) **BVS 05 ATEX E 011 X**

(4) **Equipment: Temperature-Transmitter type TT421 * * ***

(5) **Manufacturer: smar Equipamentos Industriais Ltda**

(6) **Address: BR - 14160 -000 Sertaozinho-SP (Brazil)**

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

(8) The certification body of EXAM BBG Prüf- und Zertifizier 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 05.2031 EG.


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

EN 50014:1997+A1-A2 General requirements
EN 50020:2002 Intrinsic safety 'i'

(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 schedule 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 2G EEx ia IIC T5 / T6**

EXAM BBG Prüf- und Zertifizier GmbH

Bochum, dated 02. March 2005

Signed: Dr. Jockers

Signed: Dr. Eickhoff

Certification body

Special services unit

(13)

Appendix to

(14)

EC-Type Examination Certificate

BVS 05 ATEX E 011 X

(15) 15.1 Subject and type

Temperature-Transmitter type TT421 * * *

In the full designation the "*" are replaced by letters/numbers indicating configuration of sensor terminals, (2-wire / 3-wire / 4-wire / dual 2-wire), type of sensor and measuring mode (simple / difference / maximum / minimum / average).

15.2 Description

The Temperature-Transmitter type TT 421 transfers measuring data from resistive sensors (RTD's), thermocouples, sensors with resistance or mV-outputs into an intrinsically safe 4 - 20 mA current loop.

The Temperature-Transmitter consists of an electronic device intended to be mounted in industry standard DIN Form B connection heads.

The electronic device comprises a plastics enclosure containing printed circuit boards embedded in casting compound.

Terminals for the intrinsically safe 4 - 20 mA current loop and the intrinsically safe single or dual sensor circuit in 2-/3-/4-wire configuration are arranged on the top side of the enclosure.

15.3 Parameters

15.3.1 Supply and signal circuit for the connection to an intrinsically safe 4 to 20 mA current loop
Terminals 3, 4; non-polarized

| | | | | |
|--------------------------------|-------|--------|------------|----|
| Voltage | U_i | DC | 28 | V |
| Current | I_i | | 93 | mA |
| Power | P_i | | 700 | mW |
| Effective internal capacitance | C_i | \leq | 2,2 | nF |
| Effective internal inductance | L_i | | negligible | |

15.3.2 2-wire/3-wire/4-wire-measurement circuit in type of protection EEx ia IIC
for the connection to intrinsically safe thermocouples or resistance temperature indicators
Terminals 5, 6, 7, 8

| | | | | |
|--------------------------------|-------|--------|------------|----|
| Voltage | U_o | DC | 6,5 | V |
| Current | I_o | | 20 | mA |
| Power | P_o | | 30 | mW |
| Effective internal capacitance | C_i | \leq | 450 | nF |
| Effective internal inductance | L_i | | negligible | |
| maximum external capacitance | C_o | \leq | 550 | nF |
| maximum external inductance | L_o | \leq | 20 | mH |

The 2-wire/3-wire/4-wire-measurement circuit is safely galvanically separated from the supply and signal circuit up to 60 V.

(16) Test and assessment report
BVS PP 05.2031 EG as of 02.03.2005

(17) Special conditions for safe use

- 17.1 The Temperature-Transmitter type TT 421 * * * shall be installed in an enclosure providing degree of protection IP20 as a minimum.
- 17.2 In case of installation of the Temperature-Transmitter in an enclosure made of plastics material or light alloy, the material of the enclosure shall comply with clause 7.3.2 or clause 8.1 EN 50014:1997 respectively.
- 17.3 Internal wiring within this enclosure shall comply with clauses 6.4.11 and 7.6 e) EN 50020:2002.
- 17.4 For the Temperature-Transmitter the following ambient temperature range applies $-40\text{ °C} \leq T_a \leq +75\text{ °C}$ (Temperature class T5) or $-40\text{ °C} \leq T_a \leq +60\text{ °C}$ (Temperature class T6) .

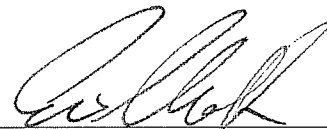
We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

44809 Bochum, 02. March 2005
BVS-Scha/Kw A 20030836

EXAM BBG Prüf- und Zertifizier GmbH



Certification body



Special services unit