



Translation

(1) **EC-TYPE EXAMINATION CERTIFICATE**

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



(3) EC-Type Examination Certificate Number

TÜV 02 ATEX 1989 X

(4) Equipment: Temperature Measuring Device type Thermocont Ex ST...

(5) Manufacturer: ACS CONTROL SYSTEM GmbH

(6) Address: Lauterbachstraße 57
D-84307 Eggenfelden

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

(8) The TÜV NORD CERT GmbH & Co. KG, TÜV CERT-Certification Body, notified body number N° 0032 in accordance with Article 9 of the Council Directive of the EC of March 23, 1994 (94/9/EC), 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 the confidential report N° 02YEX181595.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014:1997

EN 50020:1994

EN 50284:1999

(10) 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.

(11) This EC-type examination certificate relates only to the design, examination and tests of the specified equipment in accordance to the 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.

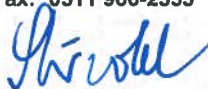
(12) The marking of the equipment or protective system must include the following:



II 1/2 G EEx ia IIC T4 ... T1 oder II 2 G EEx ib IIC T4 ... T1

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TÜV CERT-Certification Body
Am TÜV 1
D-30519 Hannover
Tel.: 0511 986-1470
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Hanover, 2004-06-04


Head of the
Certification Body





(13) **SCHEDULE**

(14) **EC-TYPE EXAMINATION CERTIFICATE N° TÜV 02 ATEX 1989 X**

(15) Description of equipment

The temperature measuring device type Thermocont Ex ST... is used for temperature measurement of gases, vapours and liquids in vessels and pipes. The housing may be installed in explosion hazardous areas that require apparatus of category 2. The Sensor may be installed in explosion hazardous areas that require apparatus of category 1.

The maximum permissible ambient temperature in the area of the sensor is 60°C.
The maximum permissible ambient temperature in the area of the housing is 85°C.
Extension of the temperature range: See (17) "Special conditions for safe use".

Electrical data

Supply and signal circuits in type of protection „Intrinsic safety“ EEx ia IIC
(Cable connection, only for connection to certified intrinsically safe circuits
plug connection or terminals)

Sum of the maximum values of the intrinsically safe circuits:

$$U_i = 27,3 \text{ V}$$
$$I_i = 140 \text{ mA}$$
$$P_i = 0,9 \text{ W}$$

In dependence of the variants for the transmitter electronics the following effective internal capacitances and inductances result:

Variant	Ci [nF]	Li [μ H]
A	22	230
E	28	400

The supply and signal circuits are galvanically connected with each other. The capacitances and inductances of each circuit have to be taken into account for an interconnection.

(17) Special conditions for safe use

1. The sensor of the temperature measuring device type Thermocont Ex ST... is allowed to be operated in an explosion hazardous area, that requires apparatus of the category 1, only if atmospheric conditions exist (Temperature from -20°C to 60°C, pressure from 0.8 bar to 1.1 bar).

In explosion hazardous areas, that require apparatus of category 2, the maximum permissible medium temperature in the area of the sensor in dependence of the temperature class has to be taken from the following table:

Temperature class	Temperature at the sensor
T4	135°C
T3	170°C
T2	265°C
T1	415°C

The maximum permissible ambient temperature in the area of the housing of 85°C has to be ensured.

The permissible operating pressures have to be taken from the manufacturers data (manual) if no explosion hazardous gas mixtures exist.

2. In explosion hazardous areas, that require apparatus of the category 2, the supply and signal circuits may be connected to intrinsically safe circuits of category ib. Then the marking of the apparatus reads II 2 G EEx ib IIC T4 ... T1.

(18) Essential Health and Safety Requirements

no additional ones



Translation

1. SUPPLEMENT to

EC TYPE-EXAMINATION CERTIFICATE No. TÜV 02 ATEX 1989 X

of the company: ACS CONTROL SYSTEM GmbH
Lauterbachstraße 57
D-84307 Eggenfelden

In the future, the temperature measuring device type Thermocont Ex ST... may also be manufactured according to the test documents listed in the test report. The changes refer to the shape of the housing, the use of the temperature measuring device with metal housing in explosion hazardous areas with combustible dust as well as the type designation.

In the future, the type designation of the temperature measuring device for use in explosion hazardous areas with combustible dust reads Thermocont XD ST... .

The marking as well as the permissible medium- and ambient-temperature range have to be taken from the following tables:

Table 1

Explosion hazardous area

- for category 1-apparatus on the sensor and
- for category 2-apparatus on the housing

Marking	Medium-temperature range	Ambient-temperature range
II 1/2 GD EEx ia IIC T4 IP65 T85°C/T102°C (T60°C) resp. II 1/2 G EEx ia IIC T4	-20°C ... 60 [°C]	-20°C ... 85 (40)°C

Table 2

Explosion hazardous area for category 2-apparatus on the sensor and on the housing

Kennzeichnung	Medium-temperature range	Ambient-temperature range
II 2 GD EEx ib IIC T4 IP65 T135°C resp. II 2 G EEx ib IIC T4	-100°C ... 110 °C	-20°C ... 85 °C
II 2 GD EEx ib IIC T3 IP65 T195°C resp. II 2 G EEx ib IIC T3	-100°C ... 170 °C	-20°C ... 85 °C
II 2 GD EEx ib IIC T2 IP65 T290°C resp. II 2 G EEx ia IIC T2	-100°C ... 265 °C	-20°C ... 85 °C
II 2 GD EEx ib IIC T1 IP65 T440°C resp. II 2 G EEx ib IIC T1	-100°C ... 415 °C	-20°C ... 85 °C

A reduction of the maximum permissible ambient temperature according to the characteristic lines for the length of the neck tube in the manual of the manufacturer has to be observed.



1. Supplement to EC Type-Examination Certificate No. TÜV 02 ATEX 1989 X

The temperature measurements were carried out without dust layer (see EN 50 281-1-1, 10.5).

The temperature measuring device type Thermocont Ex ST... and XD ST... incl. of this 1. supplement also meets the requirements of EN 50 014+A1+A2 and EN 50 020:2002 .

The electrical data as well as all other details remain unchanged.

(16) The test documents are listed in the test report no. 04YEX551129.

(17) Special conditions for safe use

The „Special condition for safe use“ no. 1 is supplemented as follows:

The maximum permissible ambient temperature in the area of the housing of 85°C has to be ensured.

(18) Essential Health and Safety Requirements

no additional ones

TÜV NORD CERT GmbH & Co. KG
TÜV CERT-Certification Body
Am TÜV 1
D-30519 Hannover
Tel.: 0511 986-1470
Fax: 0511 986-2555

Hanover, 2004-06-04

A handwritten signature in blue ink, appearing to read 'St. W. W.' or similar, positioned above the title of the signatory.

Head of the
Certification Body

Translation
2. SUPPLEMENT

to Certificate No.	TÜV 02 ATEX 1989 X
Equipment:	Temperature measuring device type Thermocont Ex ST... resp. XDST... with Profibus PA-electronics
Manufacturer:	ACS CONTROL SYSTEM GmbH
Address:	Lauterbachstraße 57 84307 Eggenfelden
Order number:	80005554231
Date of issue:	2008-04-01

In the future, the temperature measuring device type Thermocont may also be manufactured according to the documents listed in the test report.

The changes refer to

- the execution of the devices with electronics for Profibus PA applications
- the electrical data
- the marking of the devices

The 2. supplement to EC Type Examination Certificate TÜV 02 ATEX 1989 X includes the following apparatus types with Profibus PA electronics

Thermocont Ex ST...
Thermocont XD ST...

Electrical data

Input circuit in type of protection Intrinsic Safety Ex ia IIC
(cable connection, Only for connection to a certified intrinsically safe circuit
plug/socket connection or
terminals)

Maximum values:

$$U_i = 24 \text{ V}$$

$$I_i = 380 \text{ mA}$$

$$P_i = 5.32 \text{ W}$$

Effective internal capacitance: 1 nF

Effective internal inductance: 15 µH

In addition of the above stated values also the capacitances and inductances of the connection cable (length L) have to be taken into consideration at devices with prefabricated connection cable.

$$L_i = L \times 0.65 \mu\text{H/m}$$

$$C_i = L \times 120 \text{ pF/m (wire/wire)}$$

$$C_i = L \times 160 \text{ pF/m (wire/screen)}$$

2. Supplement to Certificate No. TÜV02 ATEX 1989 X

The marking as well as the permissible medium and ambient temperature range have to be taken from the following tables:

Table 1

Explosion hazardous area

- for category 1-apparatus on the sensor and
- for category 2-apparatus on the housing

Marking	Medium-temperature range	Ambient temperature range
II 1/2 D Ex iaD 20/21 T85°C/T102°C (T57°C) resp. II 1/2 G Ex ia IIC T4	-20°C ... 60 °C	-20°C ... 85 (40)°C

Tabelle 2

Explosion hazardous area for category 2-apparatus at the sensor and at the housing

Marking	Medium-temperature range	Ambient temperature range
II 2 D Ex ibD 21 T135°C resp. II 2 G Ex ib IIC T4	-100°C ... 110°C	-20°C ... 85°C
II 2 D Ex ibD 21 T195°C resp. II 2 G Ex ib IIC T3	-100°C ... 170°C	-20°C ... 85°C
II 2 D Ex ibD 21 T290°C resp. II 2 G Ex ib IIC T2	-100°C ... 265°C	-20°C ... 85°C
II 2 D Ex ibD 21 T440°C resp. II 2 G Ex ib IIC T1	-100°C ... 415°C	-20°C ... 85°C

A reduction of the maximum permissible ambient temperature according to the characteristic lines for the length of the neck tube in the manual of the manufacturer has to be observed.

All other details remain unchanged for this supplement.

Die equipment according to this supplement meets the requirements of the following standards:

EN 60079-0:2006
EN 61 241-0:2002

EN 60079-11:2007
EN 61 241-11:2001

EN 60079-26:2007

(16) The test documents are listed in the test report No. 08 203 554231.

2. Supplement to Certificate No. TÜV02 ATEX 1989 X

(17) Special condition for safe use

The sensor of the temperature measuring device type Thermocont Ex ST... may be operated in hazardous explosive areas that require apparatus of category 1 only if atmospheric conditions are present (temperature from -20°C to 60°C, pressure from -0.8 bar to 1.1 bar).

In hazardous explosive areas that require apparatus of category 2, the maximum permissible ambient temperature may be taken from table 2.

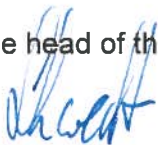
In this case, the input circuit may be connected to an intrinsically safe circuit of protection level "ib". The permissible operation pressures and temperatures for none-explosive gas mixtures have to be taken from the manufacturer specifications (operation instruction)

(18) Essential Health and Safety Requirements

no additional ones

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, accredited by the central office of the countries for safety engineering (ZLS), Ident. Nr. 0044, legal successor of the TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

The head of the certification body



Schwedt

Hanover office, Am TÜV 1, 30519 Hanover, Tel.: +49 (0) 511 986-1455, Fax: +49 (0) 511 986-1590

Translation

3. SUPPLEMENT

to Certificate No. TÜV 02 ATEX 1989X
Equipment: Temperature measuring device
 type Thermocont Ex ST... resp. XDST...
Manufacturer: ACS CONTROL SYSTEM GmbH
Address: Lauterbachstraße 57
 84307 Eggenfelden
Order number: 8000555500
Date of issue: 2009-11-19

In the future, the Temperature measuring device type Thermocont Ex ST... resp. XDST... may also be manufactured according to the documents listed in the test report.

The changes refer to

- the internal construction of the apparatus and
- the electrical data of the apparatus with 4...20mA resp. with 0...10V output.

Electrical data

Supply and signal circuits in type of protection „Intrinsic safety“ Ex ia IIC resp. Ex iaD
 (Cable connection, only for connection to certified intrinsically safe circuits
 plug connection or terminals)

Sum of the maximum values of the intrinsically safe circuits:

$$U_i = 30 \text{ V}$$

$$I_i = 300 \text{ mA}$$

$$P_i = 0.9 \text{ W}$$

In dependence of the variants for the transmitter electronics the following effective internal capacitances and inductances result:

Variant	C _i [nF]	L _i [µH]
A	22	230
B	19	110
E	28	400
F	25	170

In addition to the values mentioned above the capacitances and inductances of the connecting cable (Length L) have to be taken into account for devices with connecting cable installed fixed:

$$L_i = L \times 1.0 \text{ µH/m}$$

$$C_i = L \times 45 \text{ pF/m (wire/wire)}$$

$$C_i = L \times 105 \text{ pF/m (wire/shield)}$$

The supply and signal circuits are galvanically connected with each other. The capacitances and inductances of each circuit have to be taken into account for an interconnection.

3. Supplement to Certificate No. TÜV 02 ATEX 1989 X

The marking as well as the permissible medium and ambient temperature range have to be taken from the following tables:

Table 1

Explosion hazardous area

- for category 1-apparatus on the sensor and

- for category 2-apparatus on the housing

Marking	Medium-temperature range	Ambient temperature range
II 1/2 D Ex iaD 20/21 T85°C/T102°C (T57°C) resp. II 1/2 G Ex ia IIC T4	-20°C ... 60 °C	-20°C ... 85 (40)°C

Tabelle 2

Explosion hazardous area for category 2-apparatus at the sensor and at the housing

Marking	Medium-temperature range	Ambient temperature range
II 2 D Ex ibD 21 T135°C resp. II 2 G Ex ib IIC T4	-100°C ... 110°C	-20°C ... 85°C
II 2 D Ex ibD 21 T195°C resp. II 2 G Ex ib IIC T3	-100°C ... 170°C	-20°C ... 85°C
II 2 D Ex ibD 21 T290°C resp. II 2 G Ex ib IIC T2	-100°C ... 265°C	-20°C ... 85°C
II 2 D Ex ibD 21 T440°C resp. II 2 G Ex ib IIC T1	-100°C ... 415°C	-20°C ... 85°C

A reduction of the maximum permissible ambient temperature according to the characteristic lines for the length of the neck tube in the manual of the manufacturer has to be observed.

Die equipment according to this supplement meets the requirements of the following standards:

EN 60079-0:2006
EN 61241-0:2002

EN 60079-11:2007
EN 61241-11:2001

EN 60079-26:2007

(16) The test documents are listed in the test report No. 09 203 555500.

3. Supplement to Certificate No. TÜV 02 ATEX 1989 X

(17) Special condition for safe use

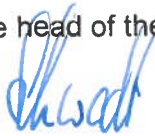
1. The sensor of the temperature measuring device type Thermocont Ex ST... resp. XDST... may be operated in hazardous explosive areas that require apparatus of category 1 only if atmospheric conditions are present (temperature from -20°C to 60°C, pressure from -0.8 bar to 1.1 bar).
In hazardous explosive areas that require apparatus of category 2, the maximum permissible ambient temperature may be taken from table 2.
In this case, the supply and signal circuits may be connected to intrinsically safe circuits of protection level "ib".
The permissible operation pressures and temperatures for none-explosive gas mixtures have to be taken from the manufacturer specifications (operation instruction).
2. At the chargeable plastic parts of the pressure transmitter type Thermocont Ex ST... resp. XDST... there is a danger of ignition by electrostatic discharges. The operator has to ascertain the suitability of this equipment for his use. The manual of the manufacturer has to be observed.

(18) Essential Health and Safety Requirements

no additional ones

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