



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 1939 X

(4) Equipment: Hydrostatic Filling Level Measuring Device type Hydrocont Ex S50...

(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° 02YEX181579.

(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 oder II 2 G EEx ib IIC T4

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TÜV CERT-Certification Body
Am TÜV 1
D-30519 Hannover
Tel.: 0511 986-1470
Fax: 0511 986-2555

Hanover, 2004-07-21

Head of the
Certification Body





SCHEDULE

(13)

(14) **EC-TYPE EXAMINATION CERTIFICATE N° TÜV 02 ATEX 1939 X**

(15) Description of equipment

The hydrostatic filling level measuring device type Hydrocont Ex S50... is used for filling level measurement of pumpable media in basins, deep wells or tanks. The housing may be installed in explosion hazardous areas that require apparatus of category 2. The sensor resp. the sensor with carrying cable 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".

Elektrische Daten

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:

| Variante | Ci [nF] | Li [μ H] |
|----------|---------|---------------|
| A | 22 | 230 |
| B/C/D | 19 | 110 |
| E | 28 | 400 |
| F/G/H | 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:

$$L_i = L \times 0,65 \mu\text{H/m}$$

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

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

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.



(17) Special conditions for safe use

1. At the chargeable plastic parts of the hydrostatic filling level measuring device type Hydrocont Ex S50... (Plastic housing, carrying cable) there is a danger of ignition by electrostatic discharges. The operator has to ascertain the suitability of this equipment for his use.
2. At possible risks by pendulum or vibration the hydrostatic filling level measuring device type Hydrocont Ex S50... in the execution with carrying cable has to be secured effectively against these dangers.
3. The sensor of the hydrostatic filling level measuring device type Hydrocont Ex S50... 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 is 85°C and the maximum permissible medium temperature in the area of the sensor in the execution with carrying cable 70°C.

Then, the supply and signal circuits may be connected to intrinsically safe circuits of category ib and the marking of the apparatus reads II 2 G EEx ib IIC T4.

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

(18) Essential Health and Safety Requirements

no additional ones



Translation

1. SUPPLEMENT to

EC TYPE-EXAMINATION CERTIFICATE No. TÜV 02 ATEX 1939 X

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

In the future, the hydrostatic filling level measuring device type Hydrocont Ex S50... 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 hydrostatic filling level 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 hydrostatic filling level measuring device for use in explosion hazardous areas with combustible dust reads Hydrocont XD S50... .

The marking, the permissible temperature range at the sensor and the permissible 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 | Temperature range at the sensor | Ambient temperature range |
|--|---------------------------------|---------------------------|
| II 1/2 GD EEx ia IIC T4 IP65 T60°C/T102°C (T57°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 at the sensor and at the housing

| Marking | Temperature range at the sensor | Ambient temperature range |
|--|---------------------------------|---------------------------|
| II 2 GD EEx ib IIC T4 IP65 T102°C resp. II 2 G EEx ib IIC T4 | -20°C ... 85 °C | -20°C ... 85 °C |
| II 2 GD EEx ib IIC T4 IP65 T125°C resp. II 2 G EEx ib IIC T4 | *) -20°C ... 125 °C | -20°C ... 50 °C |

* with temperature decoupling unit according to the test documents of the manufacturer.



1. Supplement to EC Type-Examination Certificate No. TÜV 02 ATEX 1939 X

The hydrostatic filling level measuring device type Hydrocont Ex S50... and XD S50... according to this 1. supplement also meets the requirements of
EN 50 014:1997+A1+A2,
EN 50 284:1999,
EN 50 020:2002 and
EN 50 281-1-1:1998

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

(16) The test documents are listed in the test report no. 04YEX551127.

(17) Special conditions for safe use

no additional ones

(18) Essential Health and Safety Requirements

no additional ones

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TÜV CERT-Certification Body
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A handwritten signature in blue ink, appearing to read 'i.v. Schwab', is written over the contact information.

Head of the
Certification Body

Hanover, 2004-07-21

Translation
2. SUPPLEMENT

| | |
|---------------------------|--|
| to Certificate No. | TÜV 02 ATEX 1939X |
| Equipment: | Hydrostatic filling level measuring device type Hydrocont Ex S/D50... resp. XD S/D50... with Profibus PA-electronics |
| Manufacturer: | ACS CONTROL SYSTEM GmbH |
| Address: | Lauterbachstraße 57 84307 Eggenfelden |
| Order number: | 80005554232 |
| Date of issue: | 2008-03-18 |

In the future, the hydrostatic filling level measuring device type Hydrocont 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 new execution Hydrocont D50
- the execution of the inserted measuring cells
- the marking of the devices

The 2. supplement to EC Type Examination Certificate TÜV 02 ATEX 1939 X includes the following apparatus types with Profibus PA electronics

Hydrocont Ex/XD S50
Hydrocont Ex/XD D50

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 1939 X

The marking, the permissible temperature range at the sensor and the permissible 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 | Temperature range at the sensor | Ambient temperature range |
|--|---------------------------------|---------------------------|
| II 1/2 D Ex iaD 20/21 T60°C/T102°C (T57°C) resp. II 1/2 G Ex ia IIC T4 | -20°C ... 60°C | -20°C ... 85°C (40°C) |

Table 2

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

| Marking | Temperature range at the sensor | Ambient temperature range |
|---|---------------------------------|---------------------------|
| II 2 D Ex ibD 21 T102°C resp. II 2 G Ex ib IIC T4 | -20°C ... 85 °C | -20°C ... 85 °C |
| II 2 D Ex ibD 21 T125°C resp. II 2 G Ex ib IIC T4 | *) -20°C ... 125 °C | -20°C ... 50 °C |

* with temperature decoupling unit according to the test documents of the manufacturer

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 554232.

2. Supplement to Certificate No. TÜV02 ATEX 1939 X

(17) Special condition for safe use

1. The sensor of the hydrostatic filling level measuring device type Hydrocont Ex S/D50... 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; the maximum permissible ambient temperature in the area of the sensor in the execution with carrying cable is 70°C.

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).

2. At the chargeable plastic parts of the hydrostatic filling level measuring device type Hydrocont Ex S/D50... resp. XD S/D50... (Plastic housing, carrying cable) there is a danger of ignition by electrostatic discharges. The operator has to ascertain the suitability of this equipment for his use.
3. At possible risks by pendulum or vibration the hydrostatic filling level measuring device type Hydrocont Ex S/D50... resp. XD S/D50... in the execution with carrying cable has to be secured effectively against these dangers.

(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

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Translation

3. SUPPLEMENT

| | |
|---------------------------|--|
| to Certificate No. | TÜV 02 ATEX 1939X |
| Equipment: | Hydrostatic filling level measuring device type Hydrocont Ex S/D 50... resp. XD S/D 50... |
| Manufacturer: | ACS CONTROL SYSTEM GmbH |
| Address: | Lauterbachstraße 57 84307 Eggenfelden |
| Order number: | 8000555498 |
| Date of issue: | 2009-11-19 |

In the future, the hydrostatic filling level measuring device type Hydrocont Ex S/D 50... resp. XD S/D 50... may also be manufactured according to the documents listed in the test report.

The changes refer to

- the series Hydrocont "D" in the execution with 4...20mA resp. with 0... 10V output,
- 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/C/D | 19 | 110 |
| E | 28 | 400 |
| F/G/H | 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 1939 X

The marking, the permissible temperature range at the sensor and the permissible 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 | Temperature range at the sensor | Ambient temperature range |
|--|---------------------------------|---------------------------|
| II 1/2 D Ex iaD 20/21 T60°C/T102°C (T57°C) resp. II 1/2 G Ex ia IIC T4 | -20°C ... 60°C | -20°C ... 85°C (40°C) |

Table 2

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

| Marking | Temperature range at the sensor | Ambient temperature range |
|---|---------------------------------|---------------------------|
| II 2 D Ex ibD 21 T102°C resp. II 2 G Ex ib IIC T4 | -20°C ... 85 °C | -20°C ... 85 °C |
| II 2 D Ex ibD 21 T125°C resp. II 2 G Ex ib IIC T4 | *) -20°C ... 125 °C | -20°C ... 50 °C |

* with temperature decoupling unit according to the test documents of the manufacturer

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 555498.

3. Supplement to Certificate No. TÜV 02 ATEX 1939 X

(17) Special condition for safe use

1. The sensor of the hydrostatic filling level measuring device type Hydrocont Ex S/D 50... resp. XD S/D 50... 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; the maximum permissible ambient temperature in the area of the sensor in the execution with carrying cable is 70°C .

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 hydrostatic filling level measuring device type Hydrocont Ex S/D 50... resp. XD S/D 50... (Plastic housing, carrying cable) 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.
3. At possible risks by pendulum or vibration the hydrostatic filling level measuring device type Hydrocont Ex S/D 50... resp. XD S/D 50... in the execution with carrying cable has to be secured effectively against these dangers.

(18) Essential Health and Safety Requirements

no additional ones

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