IBExU Institut für Sicherheitstechnik GmbH

An-Institut der TU Bergakademie Freiberg

[1] EC-TYPE EXAMINATION CERTIFICATE

according to Directive 94/9/EC, Annex III

(Translation)



- [2] Equipment and Protective Systems intended for use in Potentially Explosive Atmospheres, Directive 94/9/EC
- [3] EC-Type Examination Certificate Number: IBExU09ATEX1158

[4] Equipment:

Moisture probe - Interface

Type FSI400iD

and Moisture probe

Type FMS400iD-*

[5] Manufacturer:

Mütec Instruments GmbH

[6] Address:

Bei den Kämpen 26 21220 Seevetal GERMANY

- [7] The design of the equipment mentioned under [4] and any acceptable variations thereto are specified in the schedule to this EC-Type Examination Certificate.
- [8] IBExU Institut für Sicherheitstechnik GmbH, NOTIFIED BODY number 0637 in accordance with article 9 of the directive 94/9/EC of the European Parliament and the Council of 23 March 1994, certifies that the equipment mentioned under [4] has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive. The test results are recorded in the test reports IB-09-3-319/1 and IB-09-3-319/2 of 16 December 2009.
- [9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with EN 60079-0:2006, EN 60079-11:2007, EN 60079-26:2004, EN 61241-0:2006 and EN 61241-11:2006.
- [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 under [17] in the schedule to this certificate.
- [11] This EC-Type Examination Certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this directive apply to the manufacture and supply of this equipment.
- [12] The marking of the equipment mentioned under [4] shall include the following:

Moisture probe - Interface

(Ex) II (1)G [Ex ia] IIC bzw. -20 °C \leq T_a \leq +60 °C

(x) II (1)D [Ex iaD] -20 °C \leq T_a \leq +60 °C

Moisture probe

E II 1G Ex ia IIC T5 bzw. -10 °C \leq T_a \leq +75 °C (Ex) II 1D Ex iaD 20 T100 °C -10 °C ≤ Ta ≤ +75 °C

IBExU Institut für Sicherheitstechnik GmbH

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Authorised for certifications -Explosion protection-

By order

(Dr. Wagner)

technik GmbH - Seal -(ID no. 0637) Freiberg, 16 December 2009

Certificates without signature and seal are not valid.
Certificates may only be duplicated completely and unchanged. In case of dispute, the German text shall prevail.

Schedule

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[13] Schedule

to the EC-Type Examination Certificate IBExU09ATEX1158 [14]

[15] Description of equipment

The Moisture probes – FMS400iD-* are used for the relative moisture measurement in bulk materials and solids. They work according to the capacitive measuring principle. They consist of a metal enclosure with a measuring diaphragm constructed of plastic or ceramic reinforcement. The enclosure must be connected to the equipotential bonding conductor. The connecting cable to the interface is tightly attached up to 500 m.

The Moisture probe - Interface FSI400iD is placed outside the hazardous area. It consists of an electronic board in a top-hat rail or field housing and serves for the galvanically separated supply and the data transfer.

Technical data

Moisture probe - Interface FSI400iD

Ambient temperature range -20 °C to +60 °C

Supply voltage (Cl. 1/2 and 3/4, B4 and B5) 18 30 V DC

Rated voltage/-current 250 V AC / 1500 A U_{m}

6 V DC; 100 mA RS485 Interface (Cl. 5/6 and 7/8; B1 and B2)

48 V / 50 A Rated voltage/-current U_{m}

Intrinsically safe output circuit: type of protection [Ex ia] IIC or [Ex iaD]

Cl. 11[-] and 12[+]

19.4 V DC Uo 94 mA 10

7.3 V DC

766 mW characteristic linear Po Co Permissible outer capacity 188 nF

Permissible outer inductance 3 mH Lo

Intrinsically safe interface circuit: type of protection [Ex ia] IIC or [Ex iaD]

RS485 Cl. 9[A] and 10[B]

Un 78 mA lo characteristic linear 143 mW Po

5 nF Inner capacity against the enclosure CGND 9 µF Permissible outer capacity Co Permissible outer inductance 4 mH

Moisture probe FMS400iD-* (*) measuring diaphragm of ceramics (c); plastics (k)

Ambient temperature range (enclosure) -10 °C to + 75 °C -10 °C to + 90 °C Process temperature range (measuring diaphragm)

type of protection Ex ia IIC T5 or Ex iaD 20 T100°C Intrinsically safe supply circuit:

Conductor 3[+] and 4[-] 19.4 V DC U

94 mA l_i Pi 766 mW 0.14 nF/m cable C

Effective inner capacity 0.65 µH/m cable Effective inner inductance Li

Intrinsically safe interface circuit: type of protection Ex ia IIC T5 or Ex iaD 20 T100°C RS 485: conductor 1[B] and 2[A]

> U 7.3 V DC 86 mA li Pi 301 mW

0.14 nF/m cable Effective inner capacity Ci Effective inner inductance 0.65 µH/m cable

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[16] Test report

The proof of the explosion protection is explained in detail in the test report IB-09-3-319/1 and IB-09-3--319/2 of 16 December 2009. The test documents are part of the test report and are listed there.

Summary of the test results:

The Moisture probe – Interface and the Moisture probes fulfil the requirements of dust explosion protection for equipment of Group II and Category 1(G) or (1)D as an appertained apparatus and for equipment of Category 1G or 1D as an intrinsically safe apparatus. The maximum surface temperature at the enclosure is maximum 100 °C (T5).

[17] Special conditions for safe use

none

[18] Essential Health and Safety Requirements

Confirmed by compliance with standards (see [9]).

By order

Freiberg, 16 December 2009

(Dr. Wagner)