



[1] **EU-TYPE EXAMINATION CERTIFICATE - Translation**

[2] Equipment or protective systems  
intended for use in potentially explosive atmospheres, Directive 2014/34/EU

[3] EU-type examination certificate number **IBExU18ATEX1064** | Issue 1

[4] Product: **Humidity Probe Interface**      Type FSI410iD  
              **with Humidity Probe**                      Type FMS410iD-\*

[5] Manufacturer: Mütec Instruments GmbH

[6] Address: Bei den Kämpfen 26  
              21220 Seevetal  
              GERMANY

[7] This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

[8] IBExU Institut für Sicherheitstechnik GmbH, notified body number 0637 in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the essential health and safety requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential test reports IB-18-3-0123/1.

[9] Compliance with the essential health and safety requirements has been assured by compliance with:  
EN 60079-0:2012+A11:2013      EN 60079-11:2012  
except in respect of those requirements listed at item [18] of the schedule.

[10] If the sign "X" is placed after the certificate number, it indicates that the product is subject to the specific conditions of use specified in the schedule to this certificate.

[11] This EU-type examination certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

[12] The marking of the product shall include the following:

*Humidity Probe Interface FSI410iD*      II (1)G [Ex ia] IIC Ga

II (1)D [Ex ia] IIIC Da

*Humidity Probe FMS410iD-K*      II 1G Ex ia IIC T6 Ga

II 1D Ex ia IIIC T80 °C Da  
0 °C ≤ T<sub>a</sub> ≤ +70 °C

# IBExU Institut für Sicherheitstechnik GmbH

An-Institut der TU Bergakademie Freiberg

Humidity Probe FMS410iD-C

Ex II 1G Ex ia IIB T6 Ga

Ex II 2G Ex ia IIC T6 Gb

Ex II 1D Ex ia IIIC T80 °C Da

$0^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$

Humidity Probe FMS410iD-T

Ex II 1G Ex ia IIB T4 Ga

Ex II 2G Ex ia IIC T4 Gb

Ex II 1D Ex ia IIIC T135 °C Da

$0^{\circ}\text{C} \leq T_a \leq +80^{\circ}\text{C}$

Humidity Probe FMS410iD-S

Ex II 1G Ex ia IIB T4 Ga

Ex II 2G Ex ia IIC T4 Gb

Ex II 1D Ex ia IIIC T135 °C Da

$0^{\circ}\text{C} \leq T_a \leq +80^{\circ}\text{C}$

IBExU Institut für Sicherheitstechnik GmbH  
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By order

Dipl.-Ing. Willamowski



- Seal -  
(notified body number 0637)

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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.

Freiberg, 2018-12-13

[13] **Schedule**

[14] **Certificate number IBExU18ATEX1064 | Issue 1**

[15] **Description of product**

The Humidity Probes FMS410iD-\* are used for the relative humidity measurement in bulk materials and solids and operate on a capacitive measuring principle. They consist of a metal enclosure with an orifice plate made of plastic or ceramic reinforcement. The enclosure must be connected to the equipotential bonding conductor. The connecting cable to the interface up to 500 m is permanently attached.

The Humidity Probe Interface FSI410iD is installed outside the hazardous area. It consists of an electronic board in a top hat rail enclosure or field enclosure and serves for the galvanically isolated supply and data connection.

**Types**

Humidity Probe FMS410iD-K	Sensor in POM enclosure with orifice plate made of plastic
Humidity Probe FMS410iD-C	Sensor in POM enclosure with orifice plate made of ceramic
Humidity Probe FMS410iD-T	Sensor in Teflon enclosure with orifice plate made of plastic
Humidity Probe FMS410iD-S	Sensor in Teflon enclosure with orifice plate made of ceramic

**Technical parameters**

*Humidity Probe Interface FSI410iD*

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

Supply voltage (Terminal 1/2 + 3/4) 18 - 30 V DC  
Rated voltage  $U_m$  250 V AC

RS485 Interface (Terminal 5/6 + 7/8) 6 V DC; 100 mA  
Rated voltage  $U_m$  48 V

Intrinsically safe output current:  
Terminal 11[-] + 12[+]

Type of protection Ex ia IIC

$U_O$  19.4 V DC  
 $I_O$  81 mA  
 $P_O$  712 mW trapezoidal characteristic curve  
 $C_{GND}$  56 nF  
 $C_O$  84 nF  
 $L_O$  0.26 mH

Inner capacitance to the enclosure  
Perm. external capacitance  
Perm. external inductance

Intrinsically safe interface circuit :  
RS485 Terminal 9[A] + 10[B]

Type of protection Ex ia IIC

$U_O$  7.2 V DC  
 $I_O$  77 mA  
 $P_O$  147 mW trapezoidal characteristic curve  
 $C_O$  84 nF  
 $L_O$  0.3 mH

Perm. external capacitance  
Perm. external inductance

*Humidity Probe FMS410iD-\**

*Probe in POM enclosure (-K and -C)*

Ambient temperature range (enclosure) 0 °C up to + 70 °C  
Process temperature range (orifice plate) 0 °C up to + 70 °C

*Probe in Teflon enclosure (-T and -S)*

Ambient temperature range (enclosure) 0 °C up to + 80 °C  
Process temperature range (orifice plate) 0 °C up to + 90 °C

Intrinsically safe supply circuit:

Cable conductor 3 [+] + 4 [-]

## Type of protection Ex ia IIC

 $U_i$  19.4 V DC $I_i$  81 mA $P_i$  712 mW

Effective internal capacitance

 $C_i$  0.16 nF/m cable

Effective internal inductance

 $L_i$  0.52 µH/m cableIntrinsically safe interface circuit :

RS 485: (cable conductor 1 + 2)

## Type of protection Ex ia IIC

 $U_i$  7.3 V DC $I_i$  86 mA $P_i$  199 mW

Effective internal capacitance

 $C_i$  0.16 nF/m cable

Effective internal inductance

 $L_i$  0.52 µH/m cable**[16] Test report**

The test results are recorded in the confidential test reports IB-18-3-0123/1 of 10 December 2018.  
The test documents are part of the test report and they are listed there.

*Summary of the test results*

The Humidity Probe Interface meets the requirements for explosion protection for equipment of Group II as associated equipment in type of protection intrinsically safety Ex ia and explosion Group IIC.

The Humidity Probes meet the requirements for explosion protection for equipment of Group II and Category 1G, 2G or 1D as intrinsically safe equipment. The surface temperature at the enclosure is max. 80 °C (T6) or 135 °C (T4).

**[17] Specific conditions of use**

None

**[18] Essential health and safety requirements**

In addition to the essential health and safety requirements (EHSRs) covered by the standards listed at item [9], the following are considered relevant to this product, and conformity is demonstrated in the test report:

None

**[19] Drawings and Documents**

The documents are listed in the test report.

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By order

  
Dipl.-Ing. Willamowski

Freiberg, 2018-12-13