

**IBExU Institut für Sicherheitstechnik GmbH**  
An-Institut der TU Bergakademie Freiberg



[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 **IBExU14ATEX1280 X** | Issue 1

[4] Product: **Measuring device**  
Type: FDL400

[5] Manufacturer: E.L.B. Füllstandsgeräte Bundschuh GmbH & Co. KG

[6] Address: An der Hartbrücke 6  
64625 Bensheim  
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 report IB-22-3-0040/3.

[9] Compliance with the essential health and safety requirements has been assured by compliance with: EN IEC 60079-0:2018 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:

**Ex II (2)G [Ex ib Gb] IIB**

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By order

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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, 2022-05-11

[13] **Schedule**

[14] **Certificate number IBExU14ATEX1280 X | Issue 1**

[15] **Description of product**

The measuring device type FDL400 is an associated apparatus for the connection of intrinsically safe flowmeters in hazardous areas where apparatus of category 2G are required. The circuit board is installed in a standard rail enclosure and has connecting terminals and a special bushing for the sensor connection.

**Technical data:**

**Environmental conditions**

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

**Electrical data**

**Power supply circuit**

Terminal X1: +24V, GND:

Rated voltage range  $U_N$  24 V DC  $\pm$  20 %

Maximum direct voltage  $U_m$  375 V DC

Maximum effective value of alternating voltage  $U_m$  265 V AC

Terminal no. 3 [PE]: Potential equalization

**Supply circuit  
(+US, GND)**

In type of protection intrinsic safety Ex ib IIB

Maximum output voltage  $U_o$  13.7 V

Maximum output current  $I_o$  346 mA

Maximum output power  $P_o$  1.59 W

Trapezoidal characteristic:  $R$  53  $\Omega$

**Signal current circuit  
(Terminal X2: V-I, H-I)**

In type of protection intrinsically safe Ex ib IIB

Maximum in-/ output voltage  $U_{i/o}$  16 V

Maximum in-/ output current  $I_{i/o}$  66 mA

Maximum output power  $P_o$  260 mW

Linear characteristic

The circuits are grounded and are potentially bonded with each other.

**Safety instructions**

For circuits including inductances and capacitances the following has to be observed:

The values for  $L_o$  and  $C_o$ , mentioned in the EU-Type Examination Certificate are allowed for:

- distributed inductance and capacitance e.g. as in a cable or
- if the total  $L_i$  of the external circuit (excluding the cable) is  $< 1$  % of the  $L_o$  value or
- if the total  $C_i$  of the external circuit (excluding the cable) is  $< 1$  % of the  $C_o$  value.

	supply circuit	signal circuit
	Ex ib IIB	Ex ib IIB
$C_o$	5.0 $\mu$ F	2.75 $\mu$ F
$L_o$	1.2 mH	41 mH

The values of  $L_o$  and  $C_o$  determined in the EU-Type Examination Certificate shall be reduced to 50 % or taken from the following table if both of the following conditions are met:

- the total  $L_i$  of the external circuit (excluding the cable)  $\geq 1$  % of the  $L_o$  value and
- the total  $C_i$  of the external circuit (excluding the cable)  $\geq 1$  % of the  $C_o$  value.

The reduced capacitance of the external circuit (including cable) shall not be greater than 1  $\mu\text{F}$  for Groups I, IIA, and IIB and 600 nF for Group IIC.

	supply circuit		signal circuit	
	Ex ib IIB		Ex ib IIB	
Co	3.1 $\mu\text{F}$	4.6 $\mu\text{F}$	1.3 $\mu\text{F}$	2.5 $\mu\text{F}$
Lo	500 $\mu\text{H}$	200 $\mu\text{H}$	10 mH	500 $\mu\text{H}$

*Variations compared to issue 0 of this certificate:*

*Variation 1*

The EU Type Examination Certificate is transferred to a new manufacturer.

*Variation 2*

The device meet the requirements of the current standard EN IEC 60079-0:2018.

[16] **Test report**

The test results are recorded in the confidential test report IB-22-3-0040/3 of 2022-04-27.  
The test documents are part of the test report and they are listed there.

*Summary of the test results*

The measuring device still fulfils the requirements of the type of protection intrinsic safety for an associated equipment for group II and category 2G.

[17] **Specific conditions of use**

The associated apparatus measuring device type FDL400 has to be installed outside the hazardous area. At the installation, the device must be connected to the equipotential bonding lengthwise of the conductor track of the supply and data circuit within and outside the hazardous area (see EN 60079-14, sec. 16.2.2/16.2.3).

[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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