

CERTIFICATE OF CONFORMITY



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1. HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS

2. **Certificate No:** FM19US0077X
3. **Equipment:** F2D0-MIO-Ex12*, R8D0-MIO-Ex12*
(Type Reference and Name) Fieldbus Multi-Input/Output (MIO)
4. **Name of Listing Company:** Pepperl+Fuchs SE
5. **Address of Listing Company:** Lilienthalstrasse 200, D-68307 Mannheim
Germany

6. The examination and test results are recorded in confidential report number:

PR453265 dated 24th July 2023

7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

FM 3600:2022, FM 3610:2010, FM 3611:2021, FM 3810:2021, ANSI/UL 60079-0:2013, ANSI/UL 60079-7:2021, ANSI/UL 60079-11:2018, ANSI/UL 60079-31:2015, ANSI/UL 61010-1:2018, ANSI/UL 121201:2017

8. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.

9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.

10. **Equipment Ratings:**

See Annex

11. **The marking of the equipment shall include:**

See Annex

12. **Description of Equipment:**

General – The Pepperl + Fuchs Fieldbus IO (*D0-MIO-Ex*) is a field device for use in Profibus PA or Foundation Fieldbus H1 applications. It provides up to twelve channels. Four of them are configurable as in- or outputs.

Certificate issued by:

J.E. Marquedant
VP, Manager - Electrical Systems

2 November 2023

Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

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FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA
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F 347 (Apr 21)



SCHEDULE

US Certificate Of Conformity No: FM19US0077X



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They can be used for the connection of intrinsically safe valves or for the connection of binary sensors. The remaining eight inputs can be used for the connection of binary sensors. In addition the device features an extension interface for the connection of additional accessories providing more channels or advanced functions.

Construction - The device comes either in the F2 aluminium housing for direct field use or with DIN-rail clamps for the mounting in a control cabinet or in an additional field housing. The field enclosure may be equipped with different types of separately certified cable glands.

Ratings – The Fieldbus IO operates at 9-32 VDC and 23mA. The equipment rated for use in an ambient temperature range of -50°C to +75°C or -40°C to +70°C depending on device.

Fieldbus connection (terminals + and –)

Intrinsically safe in level of protection Class I, II, III Div 1, “ia” or “ib” .

Fieldbus circuit according to the FISCO model or with the following maximum values according to the Entity model:

Ui = 24 V

Ii = 380 mA

Ci negligible

Li negligible

Intrinsically safe in level of protection “ic”.

Fieldbus circuit according to the FISCO ic model or with the following maximum values according to the Entity model:

Ui = 35 V

Ii = 380 mA

Ci negligible

Li negligible

Extension interface (terminals R, T and G)

Intrinsically safe in level of protection “ia”.

Uo = 6.4 V

Io = 9.0 mA

Po = 14.0 mW

Ui = 6.4 V

linear characteristic

Ci negligible

Li negligible

Permissible external reactances:

Group	IIC	IIB / IIIC	IIA
Co	28 µF	650 µF	1000 µF
Lo	300 mH	1000 mH	1000 mH

These values are only applicable, if the internal inductance Li or the internal capacitance Ci of the connected equipment is ≤ 1 % of the above specified values.

If Li as well as Ci of the connected equipment are > 1 % of the above specified values, the specified values for Lo and Co shall be reduced to 50%.The reduced capacitance of the external circuit (capacitance of the cable +

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F 347 (Apr 21)



Page 2 of 6

SCHEDULE

US Certificate Of Conformity No: FM19US0077X



Member of the FM Global Group

internal capacitance of the connected equipment) shall not exceed 1 μ F for groups I, IIA, IIB, and IIIC and 600 nF for group IIC.

I/O channels (Terminals CH1 + and -, CH2 + and -, CH3 + and -, CH4 + and -, CH5 + and -, CH6 + and -, CH7 + and -, CH8 + and -, CH9 + and -, CH10 + and -, CH11 + and -, CH12 + and -)
Intrinsically safe in level of protection "ia".

$U_o = 9$ V

$I_o = 43$ mA

$P_o = 96$ mW

The maximum permissible values for external capacitances and inductances subject to the gas group have to be taken from the following table:

Group	IIC	IIB / IIIC	IIA
Co	4.9 μ F	40 μ F	500 μ F
Lo	20 mH	70 mH	150 mH

With the existence of lumped capacitances and inductances in the intrinsically safe I/O channel circuit, with both values exceeding 1 % of the values given above, the maximum permissible external capacitances and inductances for circuits in level of protection "ia" subject to the gas group have to be taken from the following table:

Group	IIC	IIB / IIIC	IIA
Co	850 nF	790 nF	2.7 μ F
Lo	2 mH	2.5 mH	5 mH

13. Specific Conditions of Use:

See Annex

14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

15. Schedule Drawings

A copy of the technical documentation has been kept by FM Approvals.

16. Certificate History

Details of the supplements to this certificate are described below:

Date	Description
24 July 2023	Original Issue.

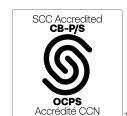
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F 347 (Apr 21)



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US Certificate Of Conformity No: FM19US0077X



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Date	Description
2 November 2023	<u>Supplement 1:</u> Report Reference: RR238710 dated 2 November 2023. Description of the Change(s): Correction to control document number

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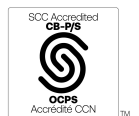
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SCHEDULE

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ANNEX

F2D0-MIO-Ex12.* Fieldbus IO

Equipment Ratings:

Intrinsically safe connections for Class I, II, III Division 1, Groups A, B, C, D, E, F, and G; Non Incendive for Class I, II, III Division 2, Groups A, B, C, D, F, G; Intrinsic Safety for Class I, Zone 1, AEx ib [ia Ga] IIC T4 Gb; Increased Safety for Class I, Zone 2 with Intrinsically Safe connections, AEx ec [ia Ga] IIC T4 Gb; Intrinsic Safety for Class I, Zone 2, AEx ic [ia Ga] IIC T4 Gc; Intrinsic Safety connections to Zone 20 AEx [ia Da] IIIC; Dust Ignition Protection by Enclosure for Zone 21 AEx Tb [ia Da] IIIC T130°C hazardous (classified) locations with an ambient temperature rating of -40°C to +70°C.

Markings:

Provides intrinsically safe circuits for Class I, II, III Division 1, Groups A, B, C, D, E, F, G
Class I, II, III Division 2; Groups A, B, C, D, F, G; T4
Class I, Zone 1 AEx ib [ia Ga] IIC T4 Gb
Class I, Zone 2 AEx ec [ia Ga] IIC T4 Gc
Class I, Zone 2 AEx ic [ia Ga] IIC T4 Gc
Zone 20 AEx [ia Da] IIIC
Zone 21 AEx tb [ia Da] IIIC T130°C
Ta = -40°C to +70°C
FISCO, Entity
Refer to Control DWG 116-0467 for FISCO and Entity parameters.

Specific Conditions of Use:

1. The enclosure has to be installed in such a way, that electrostatic charging as well as impact and friction hazards are excluded.
2. For Zones Installations, the apparatus may only be installed in areas with pollution degree 2.

R8D0-MIO-Ex12.* Fieldbus IO

Equipment Ratings:

Intrinsically safe connections for Class I, II, III Division 1, Groups A, B, C, D, E, F, and G; Non Incendive for Class I Division 2, Groups A, B, C, and D; Intrinsic Safety for Class I, Zone 1, AEx ib [ia Ga] IIC T4 Gb; Increased Safety with Intrinsically Safe connections for Class I, Zone 2, AEx ec [ia Ga] IIC T4 Gc; Intrinsic Safety for Class I, Zone 2, AEx ic [ia Ga] IIC T4 Gc; Intrinsic Safety connections to Zone 20 AEx [ia Da] IIIC; hazardous (classified) locations with an ambient temperature rating of -50°C to +75°C.

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F 347 (Apr 21)



Page 5 of 6

SCHEDULE

US Certificate Of Conformity No: FM19US0077X



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Markings:

Provides Intrinsically Safe Circuits for Class I, II, III Division 1, Groups A, B, C, D, E, F, G

Class I Division 2; Groups A, B, C, D; T4

Class I, Zone 1 AEx ib [ia Ga] IIC T4 Gb

Class I, Zone 2 AEx ec [ia Ga] IIC T4 Gc

Class I, Zone 2 AEx ic [ia Ga] IIC T4 Gc

Zone 20 AEx [ia Da] IIIC

Ta = -50°C to +75°C

FISCO, Entity

Refer to Control DWG 116-0467 for FISCO and Entity parameters.

Specific Conditions of Use:

1. The enclosure has to be installed in such a way, that electrostatic charging as well as impact and friction hazards are excluded.
2. For Division installation, the equipment shall be installed in a tool secure enclosure in compliance with the enclosure, mounting, spacing and segregation requirements of the ultimate application.
3. For Zones installations areas requiring Gc-apparatus (type of protection "ec"), the apparatus has to be installed into an enclosure providing at least degree of protection IP54 in accordance with the ANSI/ISA 60079-0.
4. For Zone Installation, the apparatus may only be installed in areas with pollution degree 2.

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Page 6 of 6