

1 EU-TYPE EXAMINATION CERTIFICATE



2 **Equipment or Protective systems intended for use in Potentially Explosive Atmospheres - Directive 2014/34/EU**

3 **EU-Type Examination Certificate No:** FM18ATEX0077X

4 **Equipment or protective system:** JF-1A and JF-1A-HP, Conductivity Sensors
(Type Reference and Name)

5 **Name of Applicant:** D-2 Inc

6 **Address of Applicant:** 6 Otis Park Dr, Location 1
Bourne, Massachusetts 02532
United States of America

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and documents therein referred to.

8 FM Approvals Europe Ltd, notified body number 2809 in accordance with Article 17 of Directive 2014/34/EU of 26th February 2014, certifies that this equipment 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 examination and test results are recorded in confidential report number:

PR451569 dated 28th February 2019

9 Compliance with the Essential Health and Safety Requirements, with the exception of those identified in item 15 of the schedule to this certificate, has been assessed by compliance with the following documents:

EN 60079-0:2012+A11:2013, EN 60079-1:2014 and EN 60079-11:2012.

10 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.

11 This EU-Type Examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

12 The marking of the equipment or protective system shall include:



II 2 G Ex db ia IIB+H₂ T4 Gb Ta = -20°C to +60°C

Damien McArdle

Damien Mc Ardle
Certification Manager, FM Approvals Europe Ltd.

Issue date: 08th October 2020

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

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SCHEDULE



Member of the FM Global Group

to EU-Type Examination Certificate No. FM18ATEX0077X

13 **Description of Equipment or Protective System:**

The JF-1A and JF-1A-HP Conductivity Meter reads conductivity in Pico Siemens/meter, and fuel temperature in ITS-90 °C per ASTM D 2624. The sensor can be used in a 2 wire 4-20 mA industrial control loop or in conjunction with a serial input device using RS-232 IEEE Standard ASCII Serial Input Data. The difference between the JF-1A and JF-1A-HP is that the HP version has a higher process pressure rating with more robust probe parts for the higher pressure rating.

Construction - The Model JF-1A and JF-1A-HP Conductivity Meter signal electronics and zener barrier board are housed in a certified flame-proof enclosure. The enclosure is an Adalet Model XDHFCX, certified as II 2 G Ex db IIB + H₂ Gb, Certificate Number DEMKO07ATEX0622294U Rev 3, Re-issued 2016-08-11. The enclosure is a two compartment electronics housing with thread-on solid covers and three threaded entries in the base. The enclosure is sealed with a certified Sealing Nipple Cortem S.P.A. Model NPS, certified as II 2 G Ex d IIC Gb, Certificate Number IECEX CES 10.0003U Issue No. 2 (2018-7-25). The Sealing Nipple has the barrier output wiring passing through for connection to the Sensor Tip board at the end of the sensor probe. The probe assembly threads to the sealing nipple and has various flange and fitting options for mounting in the process.

Ratings - The ambient operating temperature range of the JF-1A and JF-1A-HP Conductivity Meter is -20°C to 60°C. Process temperature range is -20°C to 40°C.

Electrical data:

Maximum Voltage (Loop) 38 VDC
Maximum Current (Loop) 23 mA
Maximum (RS-232 Input) (RXD) Maximum +/- 25 VDC +/- 5 mA
Maximum (RS-232 Output) (TXD) Maximum +/- 5VDC +/- 30 mA (Short Circuited)
Um = 250 VAC

JF-1A-a-b-c-d, Conductivity Sensor

a = User Interface Type; H or blank
b = Sensor Reach; 5 digits (numeric)
c = Certification; A or AI
d = 4-20mA Range Relationship; 1 digit (numeric)

JF-1A-a-b-c-d-e-f-g, Conductivity Sensor

a = User Interface Type; H or blank
b = Flange Type; A, D or C
c = Flange Diameter: A, D or C
d = CCPPP Flange Pressure Rating; A, D or C
e = Flange to Sensor Reach; 5 digits (numeric)
f = Certification; A or AI
g = 4-20mA Range Relationship; 1 digit (numeric)

14 **Specific Conditions of Use:**

1. The equipment includes flamepaths, consult with D-2 Inc. if repair of the flamepaths is necessary.

15 **Essential Health and Safety Requirements:**

The relevant EHSRs that have not been addressed by the standards listed in this certificate have been identified and assessed in the confidential report identified in item 8.

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16 Test and Assessment Procedure and Conditions:

This EU-Type Examination Certificate is the result of testing of a sample of the product submitted, in accordance with the provisions of the relevant specific standard(s), and assessment of supporting documentation. It does not imply an assessment of the whole production.

Whilst this certificate may be used in support of a manufacturer's claim for CE Marking, FM Approvals Europe Ltd accepts no responsibility for the compliance of the equipment against all applicable Directives in all applications.

This Certificate has been issued in accordance with FM Approvals Europe Ltd's ATEX Certification Scheme.

17 Schedule Drawings

A list of the significant parts of the technical documentation is annexed to this certificate and a copy has been kept by the Notified Body.

18 Certificate History

Details of the supplements to this certificate are described below:

Date	Description
16 th April 2019	Original Issue.
08 th October 2020	Supplement 1: Report Reference – RR225273 dated 06 th October 2020. Description of the Change: Company address change. ATEX and IECEx marking was on one label, now the marking has been separated on two labels. No changes to the equipment.

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Blueprint Report

D-2 Inc (112319)

Class No 3610

Original Project I.D. 451569

Certificate I.D. FM18ATEX0077X

<u>Drawing No.</u>	<u>Revision Level</u>	<u>Drawing Title</u>	<u>Last Report</u>
440-010	8.0	JET FUEL 1A CONDUCTIVITY SENSOR INSTALLATION & SAFE USE MANUAL	RR225273
440-014	0	WELDMENT MAIN SENSOR SHAFT	451569
440-016	2	SPECIFICATION JF-1A & LF-1A-HP MODEL NUMBERS	451569
440-040	5	ASSY PACKING GLAND & LOCKING MECHANISM	451569
440-042	2	PURCHASED PART EXPLOSIONPROOF HOUSING	451569
440-067	0	BRACKET SENSOR TIP CARD	451569
440-091	3	SENSOR PROBE HOUSING	451569
440-109	5	NOZZLE ISOLATOR BUSHING	451569
440-135	3	PROBE INNER ELECTRODE	451569
440-136	3	PROBE OUTER ELECTRODE	451569
440-137	1	SCHEMATIC TERMINAL CARD ATEX	451569
440-139	1A	ASSY TERMINAL BOARD	451569
440-160	5	SCHEMATIC ATEX INTERCONNECT JF-1A	451569
440-169	5B	TIP BOARD IN-LINE SENSOR	451569
440-170	10/18/18	PCB SENSOR TIP CARD TRACK LAYOUTS	451569
440-171	0	ASSY BOARD SENSOR TIP	451569
440-172	3	ASSY PROBE	451569
440-174	6	ASSY INNER STEM	451569
440-175	2	ASSY PROBE TO HOUSING	451569
440-180	4	ASSY CONNECTOR TO HEADER	451569
440-192	3	ASSY PROBE WIRED	451569
440-206	2	ANALOG INTERFACE CPU CARD	451569
440-208	2	ASSY CPU CARD	451569
440-209	1B	SCHEMATIC ATEX PROT CARD BI-POLAR TVS	451569
440-210	1	BOARD ATEX FM PROTECTION CARD	451569
440-211	1B	ASSY ATEX PROTECTION BOARD	451569
440-216	4A	ASSY HOUSING TO ELECTRONICS	451569
440-217	1	ASSY IS CARD MOLDED	451569
440-218	6	FINAL ASSEMBLY LABEL PLACEMENT	RR225273
440-220	0A	ATEX PWR USER INT	451569
440-222	0A	ASSY PWR USER INT BOARD	451569
440-225	4	PURCHASE CONTROL NPS SEALING NIPPLE	451569
440-228	1	LABEL ESD WARINING	451569
440-229	1	LABEL SAFE USE & INSTALLATION WARNING	451569
440-245	5	LABEL ATEX TOP HALF	RR225273
440-260	0	ANALOG INTERFACE CPU HART	451569
440-270	0	ATEX PWR HART INTERFACE	451569
443-022	2	ASSY SENSOR TIP JF-1A-HP	451569