

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: FM18ATEX0080X

4 Equipment or protective system: E2F, E2S and E2X Series Pressure Transducers
(Type Reference and Name) E2Fabcdefghijk, E2Sabcdefghijk, and E2Xabcdefghijk

5 Name of Applicant: Ashcroft Inc

6 Address of Applicant: 250 E Main St
Stratford CT 06614
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 26 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:

PR451360 dated 4th May 2021

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 IEC 60079-0:2018, EN 60079-1:2014, EN 60079-11:2012,
EN 60079-31:2014 and EN 60529:1991+A1:2000+A2:2013

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 1 G Ex ia IIC T4 Ga -40°C ≤ Ta ≤ 80°C; (E2S, E2X)

II 1 D Ex ia IIIC T135°C Da Ta = -40°C to 40°C; (E2X)

II 2 G Ex db IIC T4 Gb -40°C ≤ Ta ≤ 80°C; (E2F, E2X)

II 2 D Ex tb IIIC T135°C Db -40°C ≤ Ta ≤ 80°C; (E2F, E2X)

Digitally signed
by Richard
Zammit
Foxit
PhantomPDF
Version: 10.0.1

Richard Zammit
Certification Manager, FM Approvals Europe Ltd.

Issue date: 10th May 2021

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F ATEX 020 (Dec/2020)



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13 Description of Equipment or Protective System:

The E2S, E2F and E2X Series Pressure Transducers are used for measuring fluid pressure. The E2 Series Pressure Transducers enclosure mounts to an external pipe or vessel, and the E2 pressure transducers transforms the pressure measurement into an electrical value, ranging from 4-20mA or 0-10V. The transducers are composed of 3 elements, a pressure sensor which consists of a resistive bridge on a diaphragm, a pressure sensor board, and an output board for either 4-20mA or 0-10V. The assembly of the pressure sensor and sensor board are referred to as the ISP.

Construction - These circuits are housed in a welded pipe-like stainless steel single compartment electronics housing. The enclosures are rated IP20 and are constructed from both Stainless Steel and may include plastic in the connector/ cable assembly, the Flameproof versions are constructed from Stainless Steel and use conduit for connection and have an environmental rating of IP67.

The E2S Series Pressure Transducers are Intrinsically Safe electrical apparatus with the level of protection Ex "ia".

The E2F Series Pressure Transducers are Flameproof and Dust-ignition protection by enclosure electrical apparatus.

The E2X Series Pressure Transducers are Flameproof, Dust-ignition protection by enclosure and Intrinsically Safe electrical apparatus.

Equipment enclosure for the E2F and E2X series consists of welded stainless steel construction with a 1/2 inch NPT or M20 x 1.5 Metric supply connection entry. Electrical conductors exit the cemented entry on the equipment for supply connection.

The E2X Series Pressure Transducers are Flameproof and Intrinsically Safe electrical apparatus.

The equipment enclosure has an ingress protection rating of IP67.

Ratings –

The ambient operating temperature range of the E2 Series Pressure Transducers is -40°C to 80°C.*

The Process temperature range is also -40°C to 80°C*.

*(-40°C to 40°C for IIIC, Da)

Electrical: E2S and I.S. installed versions of the E2X Series

Energy limitation parameters are as follows:

$U_i < 30\text{Vdc}$, $I_i < 100\text{mA}$, $P_i < 0.7\text{W}$, $L_i = 32.8\mu\text{H}$, $C_i = 36.2\text{nF}$. [For Output Option type 24, 42, Cx]

or

$U_i < 28\text{Vdc}$, $I_i < 85\text{mA}$, $P_i < 0.7\text{W}$, $L_i = 36\mu\text{H}$, $C_i = 72.9\text{nF}$ [For Output Option type: 05, 10, 11, 12, 13, 15, 16, 45, Vx]

Electrical: E2F and Flameproof installed versions of the E2X Series:

9-36Vdc (4-20ma)

9-36Vdc (0-5V, 1-5V, 1-6V)

14-36Vdc (0-10Vdc)

Outputs

4-20ma (2wire)

1-5Vdc / 1-6Vdc / 0-5Vdc / 0-10Vdc

1-11Vdc / 0.1-5Vdc / 0.1-10Vdc

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E2Sabcdeghijk, Pressure Transmitter

- a = Sensor Material; A, B, C, D
- b = Accuracy: 1, 3, 5, 7, or any one digit or character
- c = Cal. Chart: N, C or any one digit or character
- d = Pressure Fitting: F01, F02, F04, F09, FRW, M01, M02, M04, M76, MEK, MG2, MG4, MGA, MR1, MR2, MR4, FV2, MV2, S15, S20
- e = Output Type: 24, 42, Cx for 2-wire 4-20mA; 05, 10, 11, 12, 13, 15, 16, 45, Vx for 3-wire Voltage Output, with x being any one digit or character representing the output scale
- f = Electrical Termination: Any 2-character code listed, AP, B4, B6, CC, CF, CV, MC, MF, MV, DA, DC, DT, EW, FC, FV, GN, HM
- g = Mating Connector: M, X or any one digit or one character
- h = Cable Length: 00, XX or any 2-digit or 2-character, with a maximum length of 9m for 3-wire Voltage Output and 30m for 2-wire 4-20mA Outputs.
- i = Unit of Length: F, M, N, 0 or any one digit or one character
- j = Pressure Range: 11-digit max alpha/numerical defining the pressure range and units of measure, with max pressure of 20,000psi (or other unit of equivalent measure)
- k = Variations (which do not affect safety): X or # variations. Examples shown, but not limited to: 6B, 6W, UP, TU, NN, NH, MY, CK.

E2Fabcdeghijk, Pressure Transducer

- a = Sensor Material; A, B, C, D
- b = Accuracy: 1, 3, 5, 7, or any one digit or character
- c = Cal. Chart: N, C or any one digit or character
- d = Pressure Fitting: F01, F02, F04, F09, FRW, M01, M02, M04, M76, MEK, MG2, MG4, MGA, MR1, MR2, MR4, FV2, MV2, S15, S20.
- e = Output Type: 24, 42, Cx for 2-wire 4-20mA; 05, 10, 11, 12, 13, 15, 16, 45, Vx for 3-wire Voltage Output, with x being any one digit or character representing the output scale.
- f = Electrical Termination: CF, or MF.
- g = Mating Connector: X
- h = Cable Length: 00, XX or any 2-digit or 2-character
- i = Unit of Length: F, M, N, 0 or any one digit or one character
- j = Pressure Range: 11-digit max alpha/numerical defining the pressure range and units of measure, with max pressure of 20,000psi (or other unit of equivalent measure)
- k = Variations (which do not affect safety): X or # variations.

E2Xabcdeghijk, Pressure Transducer

- a = Sensor Material; A, B, C, D
- b = Accuracy: 1, 3, 5, 7, or any one digit or character
- c = Cal. Chart: N, C or any one digit or character
- d = Pressure Fitting: F01, F02, F04, F09, FRW, M01, M02, M04, M76, MEK, MG2, MG4, MGA, MR1, MR2, MR4, FV2, MV2, S15, S20.
- e = Output Type: 24, 42, Cx for 2-wire 4-20mA; 05, 10, 11, 12, 13, 15, 16, 45, Vx for 3-wire Voltage Output, with x being any one digit or character representing the output scale.
- f = Electrical Termination: CF, or MF
- g = Mating Connector: X
- h = Cable Length: 00, XX or any 2-digit or 2-character
- i = Unit of Length: F, M, N, 0 or any one digit or one character
- j = Pressure Range: 11-digit max alpha/numerical defining the pressure range and units of measure, with max pressure of 20,000psi (or other unit of equivalent measure)
- k = Variations (which do not affect safety): X or # variations.

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14 Specific Conditions of Use:

The following pertain to the E2S versions:

- 1. The Pressure Transmitter does not withstand a 500Vrms dielectric strength test between the circuits and the earth ground. This must be taken into account during installation.*
- 2. Parts of the enclosure are constructed of plastic. The risk of electrostatic discharge shall be minimized at installation, following the direction given in the instruction manual.*

The following pertain to the E2F versions:

- 1. Flamepaths are not for repair.*
- 2. The equipment has flying lead conductors that exit the enclosure. A suitably certified Ex d or Ex e terminal box is required to be connected to equipment enclosure for completing to external supply circuit.*
- 3. Installer must connect the device to appropriate earthing connection. This can be done via metallic plumbing, use of metallic conduit/junction box, and/or earthing clamp/strap.*

The following pertain to the E2X versions:

- 1. Flamepaths are not for repair.*
- 2. The Pressure Transmitter does not withstand a 500Vrms dielectric strength test between the circuits and the earth ground. This must be taken into account during installation.*
- 3. The equipment has flying lead conductors that exit the enclosure. A suitably certified Ex d or Ex e terminal box is required to be connected to equipment enclosure for completing to external supply circuit.*
- 4. Installer must connect the device to appropriate earthing connection. This can be done via metallic plumbing, use of metallic conduit/junction box, and/or earthing clamp/strap.*

15 Essential Health and Safety Requirements:

The relevant EHRS 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.

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.

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18 **Certificate History**

Details of the supplements to this certificate are described below:

Date	Description
10 th May 2021	Original Issue.

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Blueprint Report

Ashcroft Inc (1000001886)

Class No 3610

Original Project I.D. 451360

Certificate I.D. FM18ATEX0080X

<u>Drawing No.</u>	<u>Revision Level</u>	<u>Drawing Title</u>	<u>Last Report</u>
011-10267	B	E2X I&M six panel	451360
011-10268	A	E2S I&M eight panel	451360
011-10271	B	E2X I&M five panel	451360
011-10283	A	E2F I&M six panel	451360
011-10284	A	E2F I&M five-panel	451360
011-10285	A	E2S I&M five panel	451360
036C120	F	Safety feature E2F/E2X/E2S Transducer	451360
064B383	B	Product Code E2F/E2X Transducer	451360
064B384	B	Product Code E2S Transducer	451360
071C356	C	ISP Sensor Board Schematic	451360
071C357	F	4-20mA E2 board (Schematic)	451360
071C358 Sheet1	F	Voltage E2 Output Board Schematic (Sheet 1)	451360
071C358 Sheet2	F	Voltage E2 Output Board Schematic (Sheet 2)	451360
071C361	F	4-20mA E2 Output Board Schematic	451360
238B777	A	Marking, E2F/X/S Transducer	451360
312A239	C	ISP Module Index for E2F/E2X/E2S Transducer	451360
313A804 Gerber	A	Artwork for PCB – E2 CONDUIT	451360
313C776 Gerber	C	Artwork for ISP board	451360
313C776	C	PCB Assembly for ISP board	451360
313C777 Gerber	F	GerberArtwork for E2 4-20mA board PCB Assy	451360
313C777	F	E2 4-20mA board PCB Assy	451360
313C778 Gerber	F	Gerber Artwork for E2 VOLTAGE OUTPUT PCB ASSY	451360
313C778	F	E2 VOLTAGE OUTPUT PCB ASSY	451360
313C789 Gerber	B	GerberArtwork for E2 4-20mA board PCB Assy	451360
313C789	F	PCB Assembly ISP for KP 18 1.5psi	451360
825A030	B	INSTALLATION DIAGRAM, E2 SERIES TRANSDUCER IN HAZARDOUS ARE	451360