

# 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:** FM16ATEX0096X

4 **Equipment or protective system:** Model Logix 3800 Series Digital Positioner  
(Type Reference and Name) Model Logix 3800e Series Digital Positioner

5 **Name of Applicant:** Flowserve US Inc.

6 **Address of Applicant:** 1350 North Mountain Springs Parkway  
Springville, UT 84663  
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<sup>th</sup> 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:

3059398 dated 27<sup>th</sup> April 2017

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 2 G Ex db IIC T6...T4\* Gb;  
II 1 G Ex ia IIC T6...T4\* Ga;  
II 2 G Ex ib IIC T6...T4\* Gb;  
\*T4 Ta = -55°C/-40°C to +85°C; T5 Ta = -55°C/-40°C to +55°C; T6 Ta = -55°C/-40°C to +45°C  
II 2 D Ex tb IIIC T105°C Db; Ta = -55 °C to +85 °C  
II 1 D Ex ia IIIC T<sub>200</sub> 156°C Da; Ta = -55 °C to +85 °C;

\*See description section for temperature codes and ambient ranges

*Damien Mc Ardle*

**Damien Mc Ardle**  
Certification Manager, FM Approvals Europe Ltd.

Issue date: 03<sup>rd</sup> November 2020

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## 13 Description of Equipment or Protective System:

### Functionality

The Logix 3800 and Logix 3800e Series Digital Positioner is an electro-pneumatic positioner designed to control a variety of pneumatic actuators. Positioning is based on a balance of two signals; one proportional to the command input signal and the other proportional to the valve stem position.

### Electrical

The Logix 3800 Positioner operates from a two wire 10V max, 4-20mA source or 9-30V, 18mA foundation fieldbus on terminals 8 and 9. There are also options for two discrete digital outputs, one analog input, and one digital input. These circuits are all isolated from one another and from the main circuitry.

The Logix 3800e Series Digital Positioner operates from a two-wire nominal supply of 10V max, 4-20mA source and has an option for one analog output. The analog output circuit is isolated from the main circuitry.

The Logix 3800 and 3800e Digital positioners both have an option for an LCD display.

### Logix 3800 Series Digital Positioner

In type of protection intrinsic safety, connections can only be made to a certified intrinsically safe associated apparatus. The parameters for connections to the main terminals are shown below.

#### Energy Limitation Parameters:

Terminals	Label	Ui (Vmax)	Ii (Imax)	Pi (Pmax)	Ci	Li
8 & 9	Main Input	≤ 30 V	≤ 380 mA	≤ 5.32 W	0	0
1 & 2	DO1 Input	≤ 30 V	≤ 500 mA	≤ 2.5 W	10.34 nF	0
6 & 7	DI IN 1	≤ 30 V	≤ 380 mA	≤ 5.32 W	0	0
10 & 11	AO IN 1	≤ 30 V	≤ 250 mA	≤ 2 W	0	0
12 & 13	AI IN	≤ 30 V	≤ 250 mA	≤ 3.8 W	0	0
14 & 15	DO2 IN	≤ 30 V	≤ 500 mA	≤ 2.5 W	10.34 nF	0

#### FISCO Parameters:

Terminals	Label	Ui (Vmax)	Ii (Imax)	Pi (Pmax)	Ci	Li
8 & 9	Main Input	≤ 30 V	≤ 380 mA	≤ 5.32 W	0	0

All other protection techniques, the electronic connection has the following values:

#### Analog

Label	Terminals	Vdc	Idc
Main Input	8 & 9	10 V	4 – 20 mA
DO1 Input	1 & 2	6 – 40 V	500 mA
DI IN 1	6 & 7	2.5 – 8 V	10 mA
AO IN 1	10 & 11	10 – 40 V	4 – 20 mA
AI IN	12 & 13	10 V	4 – 20 mA
DO2 IN	14 & 15	6 – 40 V	500 mA

#### Fieldbus

Label	Terminals	Vdc	Idc
Main Input	8 & 9	9 – 30 Vdc	18 mA
DO1 Input	1 & 2	6 – 40 V	500 mA
DI IN 1	6 & 7	2.5 – 8 V	10 mA
AO IN 1	10 & 11	10 – 40 V	4 – 20 mA
AI IN	12 & 13	10 V	4 – 20 mA
DO2 IN	14 & 15	6 – 40 V	500 mA

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## Logix 3800e Series Digital Positioner

In type of protection intrinsic safety, connections can only be made to a certified intrinsically safe associated apparatus. The parameters for connections to the main terminals are shown below.

### Energy Limitation Parameters:

Energy Limitation Parameters:		
Field Connections	4-20mA Terminals 8&9	AO Terminals 10 & 11
Ui (Vmax) =	30Vdc	30Vdc
Ii (Imax) =	380mA	250mA
Pi (Pmax) =	5.32W	2W
Ci =	0	0
Li =	0	0

All other protection techniques, the electronic connection has the following values:

### Analog Communication: Logix 3800e Series Digital Positioner

Label	Terminals	Vdc	Idc
Main Input	8 & 9	10V	4-20mA
AO IN 1	10 & 11	10-40V	4-20mA

### **Mechanical**

The The Logix 3800 and Logix 3800e electronics are housed in a painted aluminium enclosure assembly consisting of the main enclosure containing all electronics, attached to a manifold enclosure containing the process connections. The main enclosure has three access openings to the terminal facility which accommodate suitably certified cable entry devices. The entries can be either M20-1.5 or ½ - 14 NPT entries. In addition to the wiring entries, the enclosure incorporates two flanged joints that are secured by fasteners: one between the enclosure cover and base and one between the enclosure cover and viewing window. The bottom of the main enclosure has means to secure itself to a valve stem and inductively measure its position.

### **Environmental Ratings**

The equipment enclosure has an ingress protection rating of IP66.

### **Operation Temperature Ranges**

The ambient operating temperature ranges of the Model Logix 3800 Series Digital Positioner vary between -55°C to +85°C depending on the type of protection. Refer to the label marking, certificates and manual for the allowed ambient temperature ranges.

The ambient operating temperature ranges of the Model Logix 3800e Series Digital Positioner vary between -40°C to +85°C depending on the type of protection. Refer to the label marking, certificates and manual for the allowed ambient temperature ranges.

### **Temperature Codes:**

Model Logix 3800 Series Digital Positioners

T4 Ta = -55°C to +85°C; T5 Ta = -55°C to +55°C; T6 Ta = -55°C to +45°C

Model Logix 3800e Series Digital Positioners

T4 Ta = -40°C to +85°C; T5 Ta = -40°C to +55°C; T6 Ta = -40°C to +45°C

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## Model Codes

### **38ab-cde-fghi-jklm. Series Digital Positioner.**

a = Communication: 2 or 4.  
b = Housing: 0, 1 or 2.  
c = Certifications: 28, 37 or 43.  
d = Threaded Connections: E, M or G.  
e = Actuation Medium: A or G.  
f = Relay Type: D or L.  
g = Action: 3 or 4.  
h = Pressure Gauges: 0, 1, 2, 3, 4, A or B.  
i = Gauge Orientation: O, R or L.  
j = Diagnostics: 0 or 1.  
k = Display: 0 or 1.  
l = Feedback Shaft: 0, 1, 2, 3 or 4.  
m = Mounting: 0, D, V or R.

### **38ab-cde-fghi-jklm. Series Digital Positioner.**

a = Communication: 1 or 2.  
b = Housing: 0e or 1e.  
c = Certifications: 28 or 37.  
d = Threaded Connections: E, M or G.  
e = Actuation Medium: A or G.  
f = Relay Type: D, L or S.  
g = Action: 3 or 4.  
h = Pressure Gauges: 0, 1, 2, 3, 4, A or B.  
i = Gauge Orientation: R or L.  
j = Diagnostics: 0.  
k = Display: 0 or 1.  
l = Feedback Shaft: 0, 1, 2, 3, 4 or 5.  
m = Mounting: 0, D, or V.

## 14 Specific Conditions of Use:

1. Using the box provided on the nameplate, the User shall permanently mark the type of protection chosen for the specific installation. Once the type of protection has been marked it shall not be changed.
2. For type of protection "db" installations, contact Flowserve for flame path information if necessary.
3. Discontinue use of equipment if the fasteners securing the enclosure cover or the cover window are damaged. Contact Flowserve for repair.
4. The Model 3800 Positioner enclosure contains aluminium and is considered to present a potential risk of ignition by impact or friction. For EPL Ga Installations, care must be taken into account during installation and use to prevent impact or friction.
5. Potential electrostatic charging hazard. Clean only with a damp cloth.

## 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.

## 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

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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
03 <sup>rd</sup> May 2017	Original Issue.
20 <sup>th</sup> October 2017	<u>Supplement 01:</u> Report Reference: – 3061450 dated 17 <sup>th</sup> October 2017. Description of the Change: Documentation updated and evaluation conducted to qualify additional model code options, including a Stainless Steel enclosure, Electronics updates incorporated and ratings pertaining to the “i” protection concepts are removed. Drawings updated accordingly in order to reflect design and construction changes.
12 <sup>th</sup> December 2017	<u>Supplement 02:</u> Report Reference: – 3062606 dated 04 <sup>th</sup> December 2017. Description of the Change: Examination of new electronics for Intrinsically Safe protection concept. Added Intrinsically Safe concept onto the certificate and listings. Clerical changes to the drawings.
14 <sup>th</sup> February 2018	<u>Supplement 03:</u> Report Reference: – RR212588 dated 07 <sup>th</sup> February 2018. Description of the Change: Minor drawing revisions not affecting safety.
14 <sup>th</sup> March 2018	<u>Supplement 04:</u> Report Reference: – RR213080 dated 09 <sup>th</sup> March 2018. Description of the Change: Minor changes to schematics and PCB layouts.
16 <sup>th</sup> August 2018	<u>Supplement 05:</u> Report Reference: – RR214711 dated 07 <sup>th</sup> August 2018. Description of the Change: Minor drawing revisions and minor update to Specific Conditions of Use not affecting safety.
09 <sup>th</sup> May 2019	<u>Supplement 06:</u> Report Reference: – RR218407 dated 07 <sup>th</sup> May 2019. Description of the Change: Minor label drawing revisions. Certificate transferred from FM Approvals Ltd., notified body no. 1725, to FM Approvals Europe Ltd., notified body no. 2809.
06 <sup>th</sup> February 2020	<u>Supplement 07:</u> Report Reference: – PR455147 dated 05 <sup>th</sup> February 2020.

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Date	Description
	Description of the Change: Updated to EN IEC 60079-0:2018 Ed. 7 edition.
03 <sup>rd</sup> November 2020	<u>Supplement 08:</u> Report Reference: – PR455643 dated 02 <sup>nd</sup> November 2020. Description of the Change: Addition of the Model Logix 3800e Series Digital Positioner.



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# Blueprint Report

## Flowsolve US Inc, Springville Operations (1000002350)

Class No 3615

Original Project I.D. 3059398

Certificate I.D. FM16ATEX0096X

<u>Drawing No.</u>	<u>Revision Level</u>	<u>Drawing Title</u>	<u>Last Report</u>
08945	1	O-RING DASH NO 11-011	3059398
325274	4	3800 Schedule	PR455643
338504	2	3800 UI W LCD Schematic	RR213080
338505	5	3800 UI PCB	RR214711
338506	2	3800 UI BOM	RR213080
338829	2	3800 MAIN FF & HART Schematic	RR213080
338830	3	3800 MAIN PCB	RR213080
338831	2	3800 MAIN BOM	RR213080
338833	1	3800 UI W/O LCD	RR213080
338834	1	3800 UI W/O LCD BOM	RR213080
346229	3	GLASS WINDOW MAIN COVER LOGIX 3800	RR212588
346336	2	CAPTIVE SCREW LID M8x1_25MMx28MM STAINLESS STEEL LOGIX 3800	RR212588
349030	2	HOUSING BASE CASTING LOGIX 3800	RR212588
349031	0	HOUSING LID CASTING LOGIX 3800	RR212588
349032	5	HOUSING MASE MACHINING AND PAINTING LOGIX 3800	RR214711
349033	3	HOUSING LID MACHINING AND PAINTING LOGIX 3800	RR212588
349035	2	GASKET MAIN HOUSING TO COVER LOGIX 3800	RR212588
349036	1	GASKET SEAL GLASS COVER MAIN EXP PROOF 6 BOLT LOGIX 3800	RR212588
349041	0	FLAME ARRESTOR	3059398
349042	5	HOUSING EXP PROOF MACHINED PAINTED 6 BOLT M20 LOGIX 3800	RR214711
349317	2	FLAME PATH LOGIX 3800 POSITIONER	RR212588
349456	1	COVER PCB ELECTRONICS HART LOGIX	RR212588
355010	2	M4x10 SCREW LOW PROFILE WINDOW BRACKET SNEAKER	RR212588
355047	4	COVER MACHINING STAINLESS STEEL LOGIX 3800	RR214711
355049	3	HOUSING STAINLESS STEEL, 1/2" NPT, LOGIX 3800	RR214711
355050	3	INTERIM MACHINING HOUSING ALUMINUM LOGIX 3800 6-BOLT	RR212588
355312	0	CONTROL DRAWING LOGIX 3800 DIGITAL POSITIONER	3059398
355359	3	Sticker, 382X-28, ATEX / IECEx Certification Label, Blank, Zebra Printed	PR455643
357906	5	HOUSING BASE IS 1-2 NPT MACHINING AND PAINTING LOGIX 3800	RR214711
357908	0	COVER HOUSING MACHINING PAINTING IS LOGIX 3800	3061450
359520	00	BOM Master Electronics Assembly Report	3059398
359674	1	3800 UI W/ LCD RMO	RR213080
359675	1	3800 UI RMO BOM	RR213080
359695	3	PCBA UI BOARD LOGIX 3800	RR214711
359696	1	PCBA MAIN BOARD LOGIX 3800	3061450
359699	4	ASSEMBLY POTTING MAIN BOARD AND UI BOARD	RR213080
359949	3	Sticker, 384X-28, ATEX / IEC, Certification Label, Blank, Zebra Printed	PR455643
361753	1	COVER REGULATOR MACHINING LOGIX 3800 POSITIONER	RR212588
367520	03	STICKER MODEL CODE LOGIX 3800	3062606
367893	3	Sticker, 3820-37, US, Canada ATEX, IECEx, Certification Label, IS Housing	PR455643
367894	3	Sticker, 384X-37, ATEX / IECEx, Certification Label, Blank, Zebra Printed	PR455643
367895	2	Sticker Logix 380X-43 FM CSA ATEX IECEx Explosion Proof Label Blank Printed	PR455643
369270	2	HOUSING STAINLESS STEEL INTERMEDIATE MACHINING LOGIX 3800	RR212588
369271	1	HOUSING STAINLESS STEEL, M20, LOGIX 3800	RR212588
391122	0	3800e UI W/ LCD Schematic	PR455643
391123	0	3800e UI W/O LCD Schematic	PR455643
391124.000.000	0	3800 UI BOM 3800e UI W/ LCD	PR455643
391125.000.000	0	3800 UI BOM 3800e UI W/O LCD	PR455643
391316	1	3800e UI W/ LCD-Logix 3800 Main Schematic	PR455643
391317.000.000	1	3800 Main BOM, HART 3800e	PR455643
603690	0	Control Drawing-Logix 3800E Digital Positioner	PR455643
611955	0	Sticker, Certification label, 3820e -37 US, Canada, ATEX, IECEx IS Housing	PR455643

611956	0	Sticker, Certification label, 3820e -28 ATEX/ IECEx	PR455643
64023	0	O-RING DASH NO 006	3059398
AIOM000001	0	Logix 3800e Digital Positioner User Instructions	PR455643
LGENIM0112	07	Logix 3800 Digital Positioner User Instructions	PR455643