

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:** FM12ATEX0009X

4 **Equipment or protective system:** Digital Positioner Logix 420, Logix 505+, Logix 510+ and
(Type Reference and Name) Logix 520MD+

5 **Name of Applicant:** Flowserve US Inc. - Springville Operations

6 **Address of Applicant:** 1350 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 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:

3047577 dated 21st November 2012

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 60079-11:2012, EN 60079-26:2015, 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 Ta = -20°C to 85°C, T6 Ta = -52°C to +45°C
II 2 D Ex tb IIIC T100°C Da Ta = -52°C to +85°C

 Digitally signed by
Richard Zammitt
DN: cn=Richard
Zammitt, o=FM
Approvals Europe
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Richard Zammitt
Certification Manager, FM Approvals Europe Ltd.

Issue date: 09th May 2019

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13 Description of Equipment or Protective System:

The Logix 505+, Logix 510+, Logix 520MD+ and Logix 420 Digital Positioners are two-wire 4-20 mA single/double acting analog/digital positioners. They combine piezo-valve technology with inner-loop feedback to provide control. The Positioners are designed to be configured at the valve through the local user interface. Optional colored LED's and/or LCD allow the user to determine the condition of the device.

The Logix 505+ and Logix 510+ are less populated versions of the Logix 520MD+ Digital Positioner. The housing for the Logix 505+, Logix 510+ and Logix 520MD+ Digital Positioners is identical and is constructed of an aluminum alloy and is essentially rectangular in shape with a four bolt cover for the main compartment. The metal enclosure is anodized and coated with a Polyester based paint. The cover for the main compartment has two polycarbonate viewing windows for the LED's, the Optional LCD display. It also has an option for a third polycarbonate indication window that is either flat lens or dome indication. The base of the housing has four 1/2" NPT or M20 conduit openings, a cylindrical rotary shaft and two pneumatic output ports with one pneumatic supply port.

The enclosure for the Logix 505+, Logix 510+ and Logix 520MD+ have an ingress protection rating of IP65/66.

The housing for the Logix 420 Digital Positioner is constructed of an aluminum alloy and is essentially circular in shape with a screw on cover for the main compartment. The Logix 420 contains a depopulated Logix 520MD+ on a different shaped circuit board to fit into the rounded Logix 420 enclosure. The metal enclosure is anodized and coated with a Polyester based paint. The cover for the main compartment has a glass viewing window for the LED's, the Optional LCD display. The base of the housing has a single 1/2" NPT or M20 conduit openings, a cylindrical rotary shaft and a single pneumatic output ports with one pneumatic supply port.

The enclosure for the Model 420 has an ingress protection rating of IP66.

The Logix 505+, Logix 510+, Logix 520MD+ and Logix 420 Digital Positioners comprise the following:

- Main Circuit Board
- Piezo Relay (Optional Single or Double Acting Mechanical Configuration)
- Hall Effect Sensor
- Feedback Potentiometer

Additionally the Logix 505+, Logix 510+ and Logix 520MD+ Digital Positioners comprise the following:

- Optional Field Installable Switches covered under PTB00ATEX2023X and PTB00ATEX2049X

Additionally the Logix 510+ and Logix 520MD+ Digital Positioners comprise the following:

- Internal Pressure board
- Optional Field Installable MFC Auxiliary Card
- Optional Remote Mount Terminal Board

	4-20 Input / V to I	MFC Card	Limit Switch	Limit Switch	Limit Switch	Limit Switch	Remote Mount Terminals	
			-02	-03 <i>5a42 only</i>	-04 <i>5a42 only</i>	-05 <i>5a42 only</i>		
Ui (V)	30	30	10.6	16	16	16	Uo (V)	5
Ii (mA)	100	100	29.7	25	25	25	Io (mA)	79
Pi (mW)	800	800	79	34	34	34	Po (mW)	129
Ci (nF)	0	0	1	40	60	30	Co (µF)	2
Li (µH)	47	0	1	50	100	100	Lo (µH)	100

5a37-bcdefg-hi-jklm. Digital Positioner.

5a42-bcdefg-hi-jklm. Digital Positioner.

Entity Parameters:

- a = Communication and Diagnostics: 05+, 10+, 20MD+, 21MD+ or 22MD+.
- b = Housing: W, Y, B or A.
- c = Threaded Connection: 1, 2 or 3.
- d = Feedback Shaft: D or R.
- e = Action: 1, 2 or 3.

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f = Position Indicator: 0, F or D.
g = Special Option 0 or 1.
h = Manifold: 00 or GM.
i = Pressure Gauge: 0, 1, 2, 3, 4, A or B.
j = LCD: 0 or 1.
k = Auxiliary Card Slot 1: 0, 1 or 2.
l = Auxiliary Card Slot 2: 0 or 1.
m = Limit Switch or Remote Mount: 0, 2, 3, 4, 5 or 7. (3, 4, 5 for 5a42 only)

420-40-abc-de. Digital Positioner.

Entity Parameters:

	4-20 Input
U _i (V)	30
I _i (mA)	100
P _i (mW)	800
C _i (nF)	0
L _i (μH)	47

a = General Options: W or N.
b = Threaded Connection: 1, 2 or 3.
c = Feedback Shaft: D or R.
d = Gauge: 0, 1, 2, 3, 4, A or B.
e = Display: 0, 1 or 2.

14 Specific Conditions of Use:

1. The painted surface of the Digital Positioner may store electrostatic charge and become a source of ignition in applications with a low relative humidity <~30% relative humidity where the painted surface is relatively free of surface contamination such as dirt, dust, or oil. Guidance on protection against the risk of ignition due to electrostatic discharge can be found in EN TS 60079-32-1. Cleaning of the painted surface should only be done with a damp cloth.
2. The Digital Positioner enclosure contains aluminium and is considered to present a potential risk of ignition by impact or friction. Care must be taken into account during installation and use to prevent impact or friction.
3. For type tb installation only air or inert gas may be connected to the air supply line.

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 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.

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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
26 th November 2012	Original Issue.
21 st January 2014 to 23 rd June 2014	<u>Supplement 1 to 3:</u> See certificate dated 23 rd June 2014 for details.
17 th February 2015	<u>Supplement 4:</u> Report Reference: 3044377rev141009 dated 3 rd February 2015 Description of Changes: Adding Auxillary Card V to I and minor drawing changes.
01 st April 2015	<u>Supplement 5:</u> Report Reference: 3050616 dated 30 th March 2015 Description of Changes: Addition of protection level Ex tb IIIC. Change to IP level for Ex tb IIIC rating, addition of special condition if use and update to documentation.
21 st December 2015	<u>Supplement 6:</u> Report Reference: RR201580 dated 13 th December 2015 Description of Changes: Addition of option -03, 04, and 05 Limit Switch PCBs containg P+F ATEX certified Switches SJ2-SN, SJ2-S1N, and NJ2-V3-N.
03 rd March 2016	<u>Supplement 7:</u> Report Reference: RR202984 dated 22 nd February 2016 Description of Changes: Minor changes to drawings
19 th April 2016	<u>Supplement 8:</u> Report Reference: RR204445 dated 17 th April 2016 Description of Changes: Change to Limit Switch -04. Ci value to 60µF. Updated Manual.
10 th February 2017	<u>Supplement 9:</u> Report Reference: RR208089 dated 9 th February 2017 Description of Changes: Minor documentation updates and certificate updated to EU format.
12 th February 2018	<u>Supplement 10:</u> Report Reference: RR211837 dated 31 st January 2018 Description of Changes: Minor documentation updates and update EN 60079-26 standard to 2015 edition following satisfactory gap analysis.
26 th February 2019	<u>Supplement 11:</u> Report Reference: RR217407 dated 19 th February 2019 Description of the Change: Minor documentation updates to parts list and update to referenced EN 60529 standard..
09 th May 2019	<u>Supplement 12:</u> Report Reference: RR218407 dated 07 th May 2019 Description of the Change: Minor Label drawing updates. Certificate transferred from FM Approvals Ltd., notified body no. 1725, to FM Approvals Europe Ltd., notified body no. 2809.

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Blueprint Report

Flowserve US Inc, Springville Operations (1000002350)

Class No 3610

Original Project I.D. 3047577

Certificate I.D. FM12ATEX0009X

<u>Drawing No.</u>	<u>Revision Level</u>	<u>Drawing Title</u>	<u>Last Report</u>
217137	1	Piezo Chip, -40 to 90C, Logix Series Positioner	3047577
218880	3	Indicator Flat Window, Logix 5000Si	3047577
221754	5	Indicator Window, Dome Logix 500si	3050616
269850	1	Casting, Cover, Main Housing, Logix PLUS Positioner	3047577
269865	1	Casting, Housing, Positioner	3047577
269975	2	Window, LCD/LED Main cover Logix Plus	3047577
277175	1	Machine Base Logix Plus	3047577
277266	1	Cover, Machining, Main Housing Logix Plus	3047577
277267	0	Cover, Main Housing, Painted White, Logix Plus Positioner	3047577
277305	0	Gasket, Housing, Logix Plus	3047577
283046	0	Housing, Main, Painted, Logix Plus 500	3047577
283136	6	Hazardous Location Markings	RR218407
283422	2	Sticker, Model Number Logix Plus	3049443
283434	6	Logix 520 Plus Schedule Drawing	RR217407
283467	0	Housing Main, Painted M20, Logix Plus 500	3047577
283468	0	Machining, Base, M20 Option, Logix Plus Positioner	3047577
283499	3	Auxiliary Schedule Drawing	RR208089
291513	1	Cable Pressure Sensor Board Logix Plus	RR208089
291734	1.0	PCBA. Limit Switch Board, SJ2-SN Switches, Logix Plus 500	RR201580
291737	1	PCBA. Limit Switch Board, SJ2-S1N Switches, Logix Plus 500	RR201580
291740	1	PCBA. Limit Switch Board, NJ2-V3-N Switches, Logix Plus 500	RR201580
291968	0	Machining, Base, M20, Metric, Logix Plus 500	3047577
301528	0	Machining, Base, M20 Option, Logix Plus Positioner	3047577
301529	0	Housing, Main, Painted, M20, Logix Plus 500	3047577
301612	0	Indicator, Window, Dome Logix 500SI Masking/Painting	3050616
301993	0	Schematic Reed Switch	3047577
307213	2	Flame Paths of Logix 420 Digital Positioner	3050616
307370	7	Sticker, Certification Label, Black, Zebra Printed	RR218407
314977	1	Casting, Glass Cover, Main Housing, Logix Plus Positioner	3050616
314978	0	Glass, LCD, Logix 500 Plus Positioner	3050616
319707	0	Sticker, Model Number, Logix 505+ Positioner	3049443
319708	0	Sticker, Model Number, Logix 510+ Positioner	3049443
325314	0	Critical Soft Goods, Water & Dust Ingress, Logix 520 Plus Positioner	3050616
331837	1	Threaded Joints & Gaps, Logix 520 Plus Positioner	3050616
338636	1	Sticker, Certification, -42 Logix Plus Positioner	RR218407
LGENIM0105	17	User Instructions	RR218407
LGENIM0106	10	Logix 420 User Instructions	RR218407
LGENIM0109	3	Logix 505+ IOM and Safety Manual FCD	RR218407