

# 1 EC-TYPE EXAMINATION CERTIFICATE



2 Equipment or Protective systems intended for use in Potentially  
Explosive Atmospheres - Directive 94/9/EC

3 EC-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 USA

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 Ltd, notified body number 1725 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, 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 21<sup>st</sup> 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:

EN60079-0:2012, EN60079-11:2012, EN60079-26:2007, EN 60079-31:2014 and EN 60529:1991 + A1:2000

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC-Type Examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 94/9/EC. 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 Ta = -20°C to 85°C, T6 Ta = -52°C to 45°C; IP66

II 2 D Ex tb IIIC T100°C Ta = -52°C to +85°C; IP65, IP66 for Logix 420



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**Mick Gower**  
Certification Manager, FM Approvals Ltd.

Issue date: 21<sup>st</sup> December 2015

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## SCHEDULE

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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 ½" NPT or M20 conduit openings, a cylindrical rotary shaft and two pneumatic output ports with one pneumatic supply port.

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 ½" NPT or M20 conduit openings, a cylindrical rotary shaft and a single pneumatic output ports with one pneumatic supply port.

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

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

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

Entity Parameters:

	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>		
<b>Ui (V)</b>	30	30	10.6	16	16	16	Uo (V)	5
<b>Ii (mA)</b>	100	100	29.7	25	25	25	Io (mA)	79
<b>Pi (mW)</b>	800	800	79	34	34	34	Po (mW)	129
<b>Ci (nF)</b>	0	0	1	40	30	30	Co (µF)	2
<b>Li (µH)</b>	47	0	1	50	100	100	Lo (µH)	100

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- 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.
- 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
Ui (V)	30
Ii (mA)	100
Pi (mW)	800
Ci (nF)	0
Li (μs)	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 TR50404 and IEC TR60079-32 (in preparation). 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.

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**16 Test and Assessment Procedure and Conditions:**

This EC-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 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 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
26 <sup>th</sup> November 2012	Original Issue.
21 <sup>st</sup> January 2014	<p><u>Supplement 1:</u> Report Reference: – 3049443 dated 20<sup>th</sup> January 2014. Description of the Change:</p> <ul style="list-style-type: none"> <li>• T4 lower ambient is now -20°C and IP rating is now IP66.</li> <li>• Addition of Logix 420, Logix 505+ and Logix 510+ Digital Positioners.</li> <li>• Removal of optional DO Card and addition of MFC Card.</li> <li>• Minor changes to circuitry. .</li> <li>• Change to specific conditions to cover all Digital Positioners.</li> <li>• Addition and changes to documentation.</li> </ul>
26 <sup>th</sup> March 2014	<p><u>Supplement 2:</u> Report Reference: 3047577rev140124 dated 12<sup>th</sup> March 2014 Description of Changes: Correct typo to input power should be 800mW not 80mW.</p>
23 <sup>rd</sup> June 2014	<p><u>Supplement 3:</u> Report Reference: 3044377rev140402 dated 13<sup>th</sup> June 2014 Description of Changes: Minor drawing changes not affecting compliance..</p>
17 <sup>th</sup> February 2015	<p><u>Supplement 4:</u> Report Reference: 3044377rev141009 dated 3<sup>rd</sup> February 2015 Description of Changes: Adding Auxillary Card V to I and minor drawing changes.</p>
01 <sup>st</sup> April 2015	<p><u>Supplement 5:</u> Report Reference: 3050616 dated 30<sup>th</sup> 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.</p>

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## SCHEDULE

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Date	Description
21st December 2015	Supplement 6: Report Reference: RR201580 dated 13 <sup>th</sup> December 2015 Description of Changes: Addition of option -03, 04, and 05 Limit Switch PCBs containing P+F ATEX certified Switches SJ2-SN, SJ2-S1N, and NJ2-V3-N.



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