

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

6 Address of Applicant: Springville Operations
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 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:

EN60079-0:2012, EN60079-11:2012, EN60079-26:2007 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

Mick Gower
Certification Manager, FM Approvals Ltd.

Issue date: 26th March 2014

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

FM Approvals Ltd. 1 Windsor Dials, Windsor, Berkshire, UK. SL4 1RS
T: +44 (0) 1753 750 000 F: +44 (0) 1753 868 700 E-mail: atex@fmapprovals.com www.fmapprovals.com

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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 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 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.

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.

Entity Parameters:

	4-20 Input	MFC Card	Limit Switch
Ui (V)	30	30	-02 10.6
Ii (mA)	100	100	29.7
Pi (mW)	800	800	79
Ci (nF)	0	0	1
Li (µH)	47	0	1

Remote Mount Terminals	
Uo (V)	5
Io (mA)	79
Po (mW)	129
Co (µF)	2
Lo (µH)	100

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 or 1.

l = Auxiliary Card Slot 2: 0 or 1.

m = Limit Switch or Remote Mount: 0, 2 or 7.

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T: +44 (0) 1753 750 000 F: +44 (0) 1753 868 700 E-mail: atex@fmapprovals.com www.fmapprovals.com

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420-40-abc-de. Digital Positioner.

Entity Parameters:

	4-20 Input
Ui (V)	30
Ii (mA)	100
Pi (mW)	800
Ci (nF)	0
Li (μ)	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 $< \sim 30\%$ 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.

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 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.

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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	<u>Supplement 1:</u> Report Reference: – 3049443 dated 20 th January 2014. Description of the Change: <ul style="list-style-type: none">• T4 lower ambient is now -20°C and IP rating is now IP66.• Addition of Logix 420, Logix 505+ and Logix 510+ Digital Positioners.• Removal of optional DO Card and addition of MFC Card.• Minor changes to circuitry. .• Change to specific conditions to cover all Digital Positioners.• Addition and changes to documentation.
26 th March 2014	<u>Supplement 2:</u> Report Reference: 3047577rev140124 dated 12 th March 2014 Description of Changes: Correct typo to input power should be 800mW not 80mW.

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Blueprint Report

Flowserve US Inc (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>	<u>Electronic Drawing</u>
217137	1	Piezo Chip, -40 to 90C, Logix Series Positioner	3047577	Yes (pdf)
218880	3	Indicator Flat Window, Logix 5000Si	3047577	Yes (pdf)
221754	4	Indicator Window, Dome Logix 500si	3047577	Yes (pdf)
269850	1	Casting, Cover, Main Housing, Logix PLUS Positioner	3047577	Yes (pdf)
269865	1	Casting, Housing, Positioner	3047577	Yes (pdf)
269975	2	Window, LCD/LED Main cover Logix Plus	3047577	Yes (pdf)
277175	1	Machine Base Logix Plus	3047577	Yes (pdf)
277266	1	Cover, Machining, Main Housing Logix Plus	3047577	Yes (pdf)
277267	0	Cover, Main Housing, Painted White, Logix Plus Positioner	3047577	Yes (pdf)
277305	0	Gasket, Housing, Logix Plus	3047577	Yes (pdf)
283046	0	Housing, Main, Painted, Logix Plus 500	3047577	Yes (pdf)
283136	2	Hazardous Location Markings	3049443	Yes (pdf)
283422	2	Sticker, Model Number Logix Plus	3049443	Yes (pdf)
283434	2	Logix 520 Plus Schedule Drawing	3049443	Yes (pdf)
283467	0	Housing Main, Painted M20, Logix Plus 500	3047577	Yes (pdf)
283468	0	Machining, Base, M20 Option, Logix Plus Positioner	3047577	Yes (pdf)
283499	1	Auxiliary Schedule Drawing	3049443	Yes (pdf)
291513	0	Cable Pressure Sensor Board Logix Plus	3047577	Yes (pdf)
291968	0	Machining, Base, M20, Metric, Logix Plus 500	3047577	Yes (pdf)
301528	0	Machining, Base, M20 Option, Logix Plus Positioner	3047577	Yes (pdf)
301529	0	Housing, Main, Painted, M20, Logix Plus 500	3047577	Yes (pdf)
301993	0	Schematic Reed Switch	3047577	Yes (pdf)
307213	0	Flame Paths of Logix 420 Digital Positioner	3049443	Yes (pdf)
307370	1	Sticker, Certification Label, Black, Zebra Printed	3049443	Yes (pdf)
319707	0	Sticker, Model Number, Logix 505+ Positioner	3049443	Yes (pdf)
319708	0	Sticker, Model Number, Logix 510+ Positioner	3049443	Yes (pdf)
LGENIM0105	10	User Instructions	3049443	Yes (pdf)
LGENIM0106	5	Logix 420 User Instructions	3049443	Yes (pdf)