

CERTIFICATE OF CONFORMITY



- HAZARDOUS LOCATION ELECTRICAL EQUIPMENT PER CANADIAN REQUIREMENTS**
- Certificate No:** FM18CA0156X
- Equipment:** CML Series Linear
(Type Reference and Name) Compact Modulating Actuators (CMA)
- Name of Listing Company:** Rotork Process Controls
- Address of Listing Company:** 5607 W Douglas Ave
Milwaukee, WI 53218
United States
- The examination and test results are recorded in confidential report number:

PR451412 dated 24th February 2019
- FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

CSA-C22.2 No. 0.4:2017, CSA-C22.2 No. 0.5:2016, CSA-C22.2 No. 25:R2014, CSA-C22.2 No. 30:R2016,
CSA-C22.2 No. 94.2:2015, CSA-C22.2 No. 139:2013, CAN/CSA C22.2 No. 60079-0:2015,
CAN/CSA C22.2 No. 60079-1:2016, CAN/CSA C22.2 No. 60079-31:2015,
CAN/CSA-C22.2 No. 60529:R2015, CAN/CSA-C22.2 No. 61010-1:2012
- 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.
- This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.
- Equipment Ratings:**

Explosionproof for Class I, Division 1, Groups C and D; Dust-ignitionproof for Class II, Division 1, Groups E, F and G, Flameproof Ex db IIB T4 Gb, and Dust-protected Ex tb IIIC T85C Db Hazardous Locations, for overall ambient temperature ranges of -20°C to +65°C or -40°C to +60°C depending on the configuration; indoor and outdoor Type 4 and IP66/IP68 (IPX8 at 7 m, 72 hr).

Certificate issued by:



J.E. Marquedant
VP, Manager, Electrical Systems

24 February 2019

Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

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

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SCHEDULE



Canadian Certificate Of Conformity No: FM18CA0156X

11. The marking of the equipment shall include:

CLASS I, DIV 1, GROUPS C & D, CLASS II, DIV 1, GROUPS E, F & G, T4

Ex db IIB T4 Gb, Ex tb IIIC T85C Db

MIN. RATED AMBIENT TEMP (-20°C or -40°C) MAX. RATED AMBIENT TEMP (+60°C or +65°C)

Type 4, IP66/IP68 (7m, 72hr)

12. **Description of Equipment:**

The CML Series Linear Compact Modulating Actuator (CMA) is self contained and used for continuous remote electrical operation of a control valve. The CML Series consists of a main flameproof enclosure containing all of the electrical components and an attached smaller mechanical enclosure containing only gearing and mechanical power transfer devices. The CML Series is for use with control valves that are actuated by linear translational movement, for thrust ratings of 1500 lb-f (6.67 kN) or 3000 lb-f (13.34 kN). The CML Series are separated into "Sizes" by the manufacturer corresponding to the model and ratings as shown in the table below.

The top part of the equipment is the explosionproof "XP" enclosure (the main enclosure), which is cylindrical in shape and includes a base and cover. The main enclosure is constructed out of High Pressure Die Cast (HPDC) Aluminum. The main enclosure includes a hand-knob which creates a cylindrical flamepath joint with the housing. The user may use the hand-knob to switch from manual to remote operation and control of the actuator. The cover forms a cylindrical flamepath joint with the base to which it is attached by fasteners. The joints are provided with suitable seals for environmental protection.

The main enclosure houses all of the electronic components which make up the monitoring and control circuitry. This circuitry consists of power and logic PCBs both mounted on an aluminum bracket. The bracket is fastened to a cast aluminum mount which also acts as a mount for the DC motor. The whole assembly is fastened to the base. The operator uses an LCD display to program the actuator to control the motor and the logic PCB uses a feedback mechanism to sense the position of the output shaft. There are four ¼ NPT or M25 threaded entries to the enclosure for field wiring purposes.

Operation Temperature Ranges:

The ambient operating temperature range of the equipment is -20°C to +65°C or -40°C to +60°C, depending on the configuration.

Electrical Data:

Electrical ratings are either 12 VDC and 50 Watts maximum; or 24 VDC or 110...240VAC, 1Ø, 50/60Hz, and 540 Watts maximum, depending on the configuration.

Model	Size*	Minimum Thrust or Torque	Maximum Thrust or Torque	Speed	Stroke	Shut-off Thrust or Torque
CML-1500	4	2668.8 N	6672 N	4.57 mm/s	114.3 mm	10 kN
CML-3000	5	5337.6 N	13.34 kN	4.57 mm/s	114.3 mm	20 kN

*Note "Size" refers to performance aspects of the equipment; Sizes 4 and 5 are physically the same

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CML-a. Series Linear Compact Modulating Actuators (CMA).

a = Size 1500 or 3000.

Options are identified by wiring diagram number on the nameplate according to the Size of the actuator model and include: M00-00, M00-D0, M00-F0, M00-H0, M00-K0, M00-M0, M00-N0, M00-P0, M01-00, M01-D0, M01-F0, M01-H0, M01-K0, M01-M0, M01-N0, M01-P0, M02-0S, M02-DS, M02-FD, M02-FS, M02-HD, M02-HS, M02-KD, M02-KS, M02-MD, M02-MS, M02-ND, M02-NS, M02-PD, M02-PS, M10-00, M10-D0, M10-F0, M10-H0, M10-K0, M10-M0, M10-N0, M10-P0, M11-00, M11-D0, M11-F0, M11-H0, M11-K0, M11-M0, M11-N0, M11-P0, M12-0S, M12-DS, M12-FD, M12-FS, M12-HD, M12-HS, M12-KD, M12-KS, M12-MD, M12-MS, M12-ND, M12-NS, M12-PD, M12-PS, M32-00, M32-0S, M32-D0, M32-DS, M32-F0, M32-FD, M32-FS, M32-H0, M32-HD, M32-HS, M32-K0, M32-KD, M32-KS, M32-M0, M32-MD, M32-MS, M32-N0, M32-ND, M32-NS, M32-P0, M32-PD, M32-PS, M42-00, M42-0S, M42-D0, M42-DS, M42-F0, M42-FD, M42-FS, M42-H0, M42-HD, M42-HS, M42-K0, M42-KD, M42-KS, M42-M0, M42-MD, M42-MS, M42-N0, M42-ND, M42-NS, M42-P0, M42-PD, M42-PS, M52-00, M52-0S, M52-D0, M52-DS, M52-F0, M52-FD, M52-FS, M52-H0, M52-HD, M52-HS, M52-K0, M52-KD, M52-KS, M52-M0, M52-MD, M52-MS, M52-N0, M52-ND, M52-NS, M52-P0, M52-PD, or M52-PS.

13. Specific Conditions of Use:

1. The critical dimensions of the flamepath joints are as follows:

Flamepath	Maximum Gap (mm)	Minimum Length (mm)
Lid/Base	0.20	26.4
Base/Handknob Shaft	0.20	27.9
Screw Shaft Sleeve	0.361	36.96
Screw Shaft Bore	0.10	68.5

2. Warning – the equipment has a non-metallic coating and has a potential electrostatic charging hazard. Clean only with a damp cloth.

3. The screws securing the outer window frame contribute to the integrity of the flameproof enclosure and must not be removed.

14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals Canadian Certification Scheme.

15. Schedule Drawings

A copy of the technical documentation has been kept by FM Approvals.

16. Certificate History

Details of the supplements to this certificate are described below:

Date	Description
24 th February 2019	Original Issue.

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