

# CERTIFICATE OF CONFORMITY



1. **HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS**

2. **Certificate No:** FM18US0279X

3. **Equipment:** ICON3000 Series Electric Valve Actuators  
(Type Reference and Name) XTE3000 Series Electric Valve Actuators

4. **Name of Listing Company:** Biffi Italia SRL

5. **Address of Listing Company:** Strada Biffi 165  
Fiorenzoula D'Arda Piacenza I-29017  
Italy

6. The examination and test results are recorded in confidential report number:

PR451228 dated 12<sup>th</sup> February 2019

7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

FM Class 3600:2022, FM Class 3615:2022, FM Class 3616:2022, FM Class 3810:2021,  
ANSI/UL 61010-1:2012, ANSI/UL 60079-0:2020; ANSI/UL 60079-1:2015; ANSI/NEMA 250:2008

8. 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.

**Certificate issued by:**

J.E. Marquedant  
VP, Manager - Electrical Systems

21 March 2023

Date

To verify the availability of the Approved product, please refer to [www.approvalguide.com](http://www.approvalguide.com)

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FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA  
T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: [information@fmapprovals.com](mailto:information@fmapprovals.com) [www.fmapprovals.com](http://www.fmapprovals.com)



# SCHEDULE



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9. 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.

10. Equipment Ratings:

Flameproof for use in Zone 1, Group IIB (Group IIC for models 010 & 020 only); Explosionproof for use in Class I, Divisions 1, Groups C and D; Dust-ignitionproof for use in Class II, Division 1, Groups E, F, and G; and Dust-ignitionproof for use in Class III, Division 1, hazardous (classified) locations, indoors and outdoors ratings Type 4, 4X and 6.

The minimum ambient temperature ratings for Divisions for the ICON3000 Series and XTE3000 Series Electric Valve Actuators are -40°C for 010 & 020 models only and -25°C for all ICON3000 Series and XTE3000 Series.

The minimum ambient temperature for Zone ratings for the ICON3000 Series and XTE3000 Series Electric Valve Actuators are -50°C (-20°C models 030, 040 & 050 only, when rated for AEx db IIC) & (-50°C models 030, 040 & 050 only, when rated for AEx db IIB+H<sub>2</sub>). The temperature code for zone rating is T4 at maximum ambient temperature of 70°C (60°C models 030, 040 & 050 when rated for AEx db IIB+H<sub>2</sub> & AEx db IIC).

11. The marking of the equipment shall include:

Zone 1, AEx db IIB T4 Gb Ta= -50°C to 70°C

Zone 1, AEx db IIC T4 Gb Ta= -50°C to 70°C (010 & 020 models)

Zone 1, AEx db IIC T4 Gb Ta = -20°C to 60°C; Type 4, 4X and 6 (030, 040 & 050 models only)

Zone 1, AEx db IIB+H<sub>2</sub> T4 Gb Ta = -50°C to 60°C; Type 4, 4X and 6 (030, 040 & 050 models only)

Class I, Division 1, Groups C, D; T4A Ta = -40°C to 60°C, T4 Ta= -40°C to 70°C (010 & 020 models)

Class I, Division 1, Groups C, D; T4A Ta = -25°C to 60°C, T4 Ta= -25°C to 70°C (All models)

Class II, Division 1, Groups E, F, G; T4A Ta = -40°C to 60°C, T4 Ta= -40°C to 70°C (010 & 020 models)

Class II, Division 1, Groups E, F, G; T4A Ta = -25°C to 60°C, T4 Ta= -25°C to 70°C (All models)

Class III, Division 1; T4A Ta = -40°C to 60°C, T4 Ta= -40°C to 70°C (010 & 020 models)

Class III, Division 1; T4A Ta = -25°C to 60°C, T4 Ta= -25°C to 70°C (All models)

NEMA Type 4, 4X, 6

12. **Description of Equipment:**

The ICON3000 Series Electric Valve Actuators convert the input three phase power of 208 to 600V, 50/60Hz, into a low speed/high torque output power, which is used to operate a valve. The ICON3000 Series Actuators cover 5 models, from Model ICON010 to Model ICON050 with an output torque range from 90Nm to 1440Nm and an output speed range from 12 RPM (@50Hz) or 14RPM (@60Hz) to 144RPM (@50Hz) to 173RPM (@60Hz).

The Actuator is enclosed in an enclosure constructed of EN AC-44300 Aluminum Alloy and alternative low copper material ASTM B108/108M-19 Grade A356.0 Temper T6 (ESMA2116) with a minimum yield strength of 130N/mm<sup>2</sup>. Although the enclosure opens internally, the enclosure is sectioned into the electronics, motor and field terminal compartments. The ICON010LP which is the low voltage version of the ICON010 is rated at 24V dc.

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The electronic compartment contains power and control circuitry for operation of the ICON3000 Actuator. It is characterized by two digital LCD screens that are available for viewing while the actuator is operational. This is accomplished through the use of a tempered glass window mounted in the electronics compartment cover.

The motor compartment contains a three-phase squirrel cage aluminum motor. This motor is protected against over-temperature with a bimetallic thermal probe, embedded on the windings, with a tripping point at  $140^{\circ}\text{C}\pm 5^{\circ}\text{C}$  ( $284^{\circ}\text{F}\pm 41^{\circ}\text{F}$ ). In this manner, the ICON3000 Series Electric Actuator is protected against failure due to over-temperature. The motor compartment is equipped with a 4 mm thick solid cover.

The ICON 3000 contains an absolute encoder that is designed to measure up to 8,000 output turns. This absolute keeps the actuator/valve position without electrical power and battery.

The field terminal compartment is equipped with a 4 mm thick solid cover, conduit entries and feedthrough terminal block. Conduit connection for external field wiring is accomplished through the use of two 1 inch NPT, one 1 1/2 inch NPT and one 3/4 inch conduit entries. Terminal block allows connection of external field wiring on one side of the terminal block and connection of internal actuator wiring on the back side of the terminal block.

The ICON3000 Series Electric Actuators (if required) can be manufactured with SAFT LS 9V lithium battery that is used to update the remote outputs in case of electrical failure and manual override operations.

There are internal heaters assembled inside the actuators' enclosures that operates in extremely cold ambient condition. The heater has a maximum power consumption of 65W and are intended to be turned 'ON' when the internal ambient temperatures is below or equal to  $0^{\circ}\text{C}$  and turned 'OFF' when the internal ambient temperature reaches  $+10^{\circ}\text{C}$ .

The ICON3000 Series Electric Actuators and the Bettis XTE3000 Series Electric Actuators have the same configuration.

The model structure of the ICON3000 Series Electric Valve Actuators is shown below.

### **ICON-a-bc/d-e. ICON3000 Series Electric Valve Actuators.**

a = Gear Reducer BGR-M, SGR-M, WGR-M, ELGA-M or blank (when mounted directly).

b = Model identification 010, 010LP, 020, 030, 040 or 050.

c = Linear actuator L or blank.

d = Torque (in Nm)/Thrust (in KN): four digits up to 1440/six digits up to 334000; two digits up to 30/two digits up to 10 for 010LP.

e = Output speed (in RPM) or Operation time (in secs.) or Linear speed (in MM/secs): three digits to 173 or four digits to 1000; one digit up to 8 or four digits up to 1200 or three digits up to 0.4 for 010LP.

The model structure of the XTE3000 Series Electric Valve Actuators is shown below.

### **XTE-a-bc/d-e. XTE3000 Series Electric Valve Actuators.**

a = Gear Reducer BGR-M, SGR-M, WGR-M, ELGA-M or blank (when mounted directly).

b = Model identification 010, 010LP, 020, 030, 040 or 050.

c = Linear actuator L or blank.

d = Torque (in Nm)/Thrust (in KN): four digits up to 1440/six digits up to 334000; two digits up to 30/two digits up to 10 for 010LP.

e = Output speed (in RPM) or Operation time (in secs.) or Linear speed (in MM/secs): three digits to 173 or four digits to 1000; one digit up to 8 or four digits up to 1200 or three digits up to 0.4 for 010LP.

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### 13. Specific Conditions of Use:

1. Refer to the manufacturer for flamepath dimensions.
2. To reduce the risk of static ignition, only use antistatic cloth for cleaning.
3. The replacement cover screws shall be a SS AISI 316 Class A4 Grade 70, with minimum yield strength of 450 N/mm<sup>2</sup>. The respective screw sizes are shown on the table below.

Model	Screw Sizes		
	Motor Cover	Terminal Enclosure Cover	Local Interface Covers
ICON 010	M8 X 30	M10 X 30	M10 X 35
ICON 020	M8 X 30	M10 X 30	M10 X 35
ICON 030	M10 X 35	M10 X 30	M10 X 35
ICON 040	M10 X 35	M10 X 30	M10 X 35
ICON 050	M12 X 45	M10 X 30	M10 X 35

Model	Screw Sizes		
	Motor Cover	Terminal Enclosure Cover	Local Interface Covers
XTE 010	M8 X 30	M10 X 30	M10 X 35
XTE 020	M8 X 30	M10 X 30	M10 X 35
XTE 030	M10 X 35	M10 X 30	M10 X 35
XTE 040	M10 X 35	M10 X 30	M10 X 35
XTE 050	M12 X 45	M10 X 30	M10 X 35

### 14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

### 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
12 <sup>th</sup> February 2019	Original Issue.

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Date	Description
20 <sup>th</sup> August 2019	<u>Supplement 1:</u> Report Reference: – PR453338 dated 20 <sup>th</sup> August 2019. Description of the Change: <ol style="list-style-type: none"><li>1. Addition of Bettis XTE3000 Series</li><li>2. Control circuit boards update.</li><li>3. CDL update.</li></ol>
10 <sup>th</sup> December 2021	<u>Supplement 2:</u> Report Reference: – PR457933 dated 10 <sup>th</sup> December 2021 Description of the Change: <ol style="list-style-type: none"><li>1. Revision to the equipment description due to the addition of alternative low copper material ASTM B108/108M-19 Grade A356.0 Temper T6 (ESMA2116) for the actuator enclosures.</li><li>2. CDL update.</li></ol>
15 <sup>th</sup> June 2022	<u>Supplement 3:</u> Report Reference: – PR460207 dated 15 <sup>th</sup> June 2022 Description of the Change: <ol style="list-style-type: none"><li>1. Revision to the equipment description due to the introduction of heater kits inside the actuator enclosures.</li><li>2. CDL update.</li></ol>
21 <sup>st</sup> March 2023	<u>Supplement 4:</u> Report Reference: – PR462650 dated 21 <sup>st</sup> March 2023 Description of the Change: <ol style="list-style-type: none"><li>1. Revision to the equipment description due to additional new power &amp; control boards.</li><li>2. Update to the Zone rating for ICON3000/XTE3000 models 030, 040 &amp; 050).</li><li>3. CDL update.</li></ol>

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