

CERTIFICATE OF CONFORMITY



- HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS**
- Certificate No:** FM18US0056X
- Equipment:** Fail Safe Units
(Type Reference and Name) FQMEEx 05.1, FQMEEx 07.1, FQMEEx 10.1, FQMEEx 12.1
- Name of Listing Company:** AUMA Riester GmbH & Co KG
- Address of Listing Company:** Industriegebiet West, Auma Strasse 1
Mullheim D-79379
GERMANY
- The examination and test results are recorded in confidential report number:

3063820 dated 23rd October 2018
- FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

FM Class 3600:2018, FM Class 3615:2018, FM Class 3810:2018, ANSI/NEMA 250:2014
- 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:**

FQMEEx 05.1 and FQMEEx 07.1
Explosionproof for Class I, Division 1, Groups C and D; Class I, Zone 1, Group IIB; with ambient temperature range of $-40^{\circ}\text{C} \leq T_a \leq +80^{\circ}\text{C}$; hazardous locations, indoors and outdoors (Type 4/6).

FQMEEx 10.1 and FQMEEx 12.1
Explosionproof for Class I, Division 1, Groups C and D; Class I, Zone 1, Group IIB; with ambient temperature range of $-25^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$; hazardous locations, indoors and outdoors (Type 4/6).

Certificate issued by:

J. E. Marquedant
VP, Manager, Electrical Systems

23 October 2018

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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11. The marking of the equipment shall include:

FQMEEx 05.1 and FQMEEx 07.1

Class I, Division 1, Groups C, D; T4 Ta = -40°C to +80°C,

Class I, Zone 1, Group IIB; T4 Ta = -40°C to +80°C,

Type 4/6

FQMEEx 10.1 and FQMEEx 12.1

Class I, Division 1, Groups C, D; T4 Ta = -25°C to +60°C,

Class I, Zone 1, Group IIB; T4 Ta = -25°C to +60°C,

Type 4/6

12. **Description of Equipment:**

General - The fail safe units type ranges FQMEEx 05.1, FQMEEx 07.1, FQMEEx 10.1, FQMEEx 12.1 are designed for combination with an electric actuator for the operation of safety related industrial valves for a swing angle of 90° (For example, butterfly -, ball - or plug valves). The fail safe units ensure that the valve is operated to a safe position in the event of power failure or in the case an emergency signal is issued. Fail safe unit selection can be made whether the valve is to be operated into position OPEN or into position CLOSED.

During "normal operation" all actuator functions are available as usual in normal operation. The torque is transmitted directly from the actuator through the fail safe unit to the valve.

The FQMEEx 05.1, FQMEEx 07.1, FQMEEx 10.1, FQMEEx 12.1 Fail Safe Units consist of an explosionproof main compartment and separate terminal compartment. The fail safe operation is completely independent of the actuator or fails safe unit power supplied. The Fail Safe Units operational power is exclusively supplied on a mechanical basis by means of the energy stored in the coiled up constant force spring. A fail safe operation is initiated in case of power failure or if an emergency signal is issued. This is independent of actuator controls. The constant force spring is activated during fail safe operation and transmits the generated torque from the wound spring to the valve by means of planetary gearing to a shaft.

The Terminal Compartment of the Fail Safe Unit consists of a separate explosionproof compartment for connection of electrical field wiring. For insertion of the field wiring, thread holes are provided in the sizes of 1" NPT, 1 1/2" NPT or 1 1/4" NPT.

Optionally, a heating system can be installed within the explosionproof main compartment of the FQMEEx units.

Modular design of the fail safe unit

The FQMEEx 05.1, FQMEEx 07.1, FQMEEx 10.1, FQMEEx 12.1 Fail Safe Units are integrated into the AUMA modular system in the same way as AUMA explosionproof actuators (Refer to FM Approvals US Certificate of Conformity: FM17US0104X).

The fail safe unit can only be combined with the part-turn actuator SQ(R)Ex. The integral controls ACEX 01.2 take over the control between the fail safe unit, the actuator and the distributed control system. The integral controls may optionally be installed on a wall-bracket type WHEX 01.1. The electrical connection of the ACEX 01.2 is done with separate terminal compartments KES-Exd or SE-FM.

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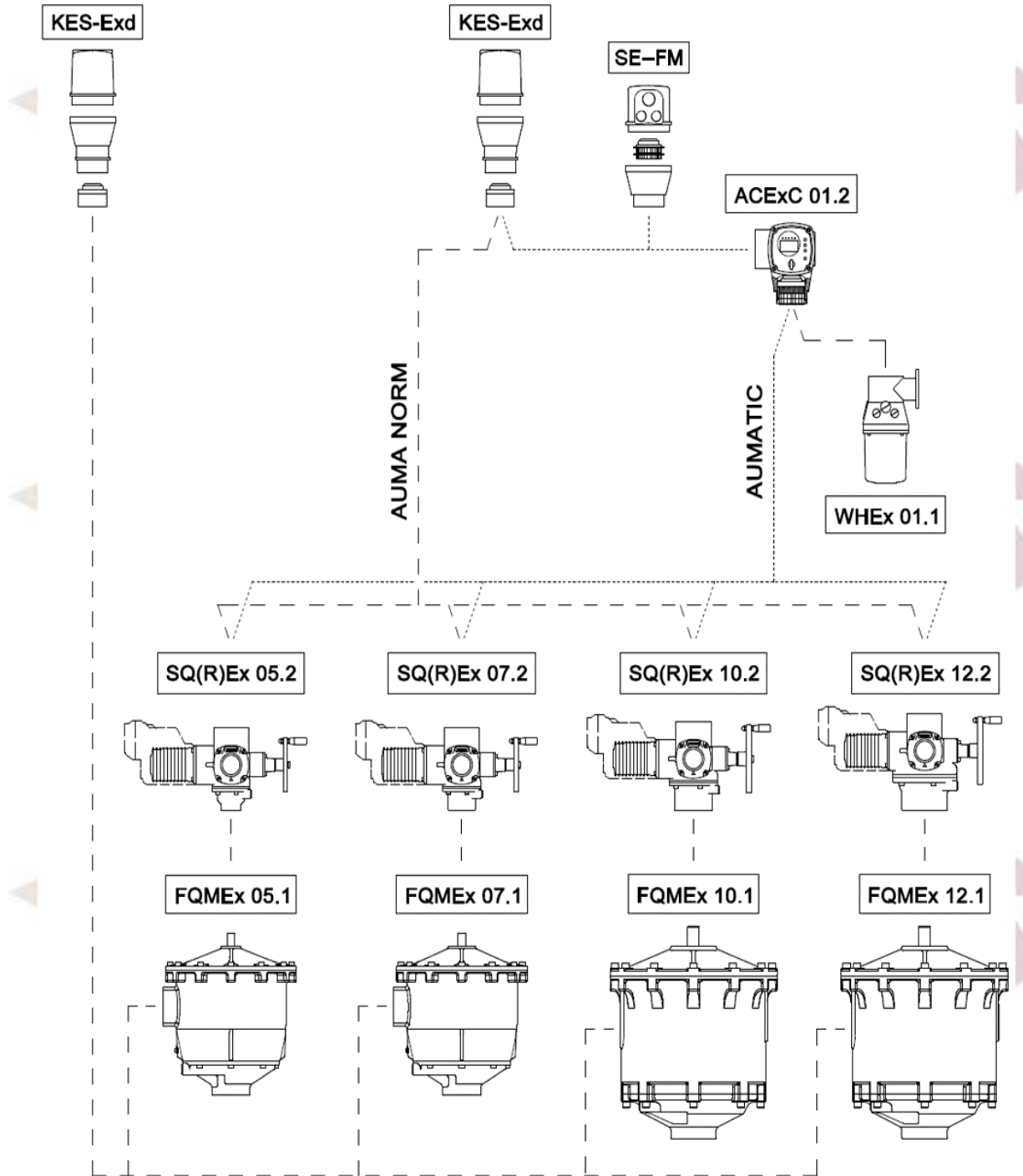
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The electrical connection of the FQMEx 05.1, FQMEx 07.1, FQMEx 10.1, FQMEx 12.1 Fail Safe Units are done with the terminal compartment KES-Exd only.



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Electrical data:

Mains Circuit	Three Phase	Single Phase
Rated Voltage	380-480 V	100-240 V
Frequency	50/60 Hz	50/60 Hz
Max. rated power	360 W	360 W

Mechanical data:

Type	Output torque (Nm)	Operating time for 90° in "normal mode"	Operating time for 90° in "emergency mode" (depends on fail safe unit)	Max. swing angle
FQMEx 05.1	150	Depends on actuator	5 to 40 s	105°
FQMEx 07.1	300		5 to 40 s	105°
FQMEx 10.1	600		10 to 60 s	105°
FQMEx 12.1	1200		10 to 60 s	105°

Equipment Listing -

FQM a b.c-d/ e. Fail Safe Unit

a = Explosionproof version: Ex

b = Unit size: 05, 07, 10, 12

c = Design generation: 1

d = Flange size: F05, F07, F10, F12, FA05, FA07, FA10, FA12

e = Terminal compartment: 4

13. Specific Conditions of Use:

1. Ambient temperature range -40°C to +80°C applies only to FQMEx 05.1 and FQMEx 07.1 Fail Safe Units.
2. FQMEx 05.1, 07.1, 10.1, 12.1 Fail Safe Units can only be combined with FM Approved, FM17US0104X, AUMA part-turn actuators, SQ(R)Ex.
3. Suitably rated and NRTL Listed blanking plugs are required to maintain explosionproof and environmental protection.

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.

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16. Certificate History

Details of the supplements to this certificate are described below:

Date	Description
23 rd October 2018	Original Issue.

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