



EU Type Examination Certificate CML 18ATEX1301X Issue 0

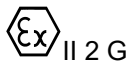
- 1 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU
- 2 Equipment **Intelligent Variable Frequency Actuators**
- 3 Manufacturer **Ontrac Instrument (Shanghai) Co., Ltd**
- 4 Address 3F, North 2 Suite,
#334 Jinhu Road,
Shanghai,
China
- 5 The equipment is specified in the description of this certificate and the documents to which it refers.
- 6 Certification Management Limited, Unit 1 Newport Business Park, New Port Road, Ellesmere Port CH65 4LZ, UK, Notified Body Number 2503, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, 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 the confidential reports listed in Section 12.
- 7 If an 'X' suffix appears after the certificate number, it indicates that the equipment is subject to conditions of safe use (affecting correct installation or safe use). These are specified in Section 14.
- 8 This EU Type Examination certificate relates only to the design and construction of the specified equipment or component. Further requirements of Directive 2014/34/EU Article 13 apply to the manufacture of the equipment or component and are separately certified.
- 9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the confidential report, has been demonstrated through compliance with the following documents:

EN 60079-0:2012+A11:2013

EN 60079-1:2014

- 10 The equipment shall be marked with the following:



II 2 G

Ex db IIC T4 Gb

Ta= -20°C to +60°C

A Snowdon



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11 Description

The Intelligent Variable Frequency Actuators are flameproof enclosures that contain a motor and its control electronics. A driveshaft comes from the flameproof enclosure where it drives the main output shaft via a worm gear. There is a hand crank which can be used to turn the motor driveshaft. The gearbox, bearings and hand crank (worm gear) central section are not located inside any of the flameproof sections; these are non-electrical aspects of the design, which require consideration of the end-user.

The flameproof terminal enclosure is split into two compartments by a nylon bushing through which the supply and communication connections pass.

The enclosure is made up of a central body that is available in three sizes, the electronic unit enclosure (includes a silicone cemented window), the terminal box cover and the motor frame which is also available in various sizes depending on choice of motor.

The F10 (smaller) enclosure has 4 sizes of motor frame and the F14 (larger) enclosure has 2 sizes of motor frame, the F16 (largest) enclosure has 1 size of motor frame. There are also several motors available with different power and voltage ratings.

There are three sizes flameproof enclosures for the actuator: F10, F14, F16.

All fasteners are grade A2-70

According to the motor (power variation) fitted inside the enclosure, the model list is as below:

Model	Enclosure	Rated voltage (1-phase, AC)	Rated voltage (3-phase, AC)	I _{max} (A)	P _{max} (kW)
MME806	F10	110-250 Vac	200-560 Vac	0.9	0.24
MME808	F10	110-250 Vac	200-560 Vac	1.8	0.48
MME812	F10	110-250 Vac	200-560 Vac	2.9	0.85
MME825	F14	110-250 Vac	200-560 Vac	4.75	1.71
MME850	F14	110-250 Vac	200-560 Vac	7.6	2.72
MME890	F16	110-250 Vac	200-560 Vac	10.3	6.7
MME806S	F10	110-250 Vac	200-560 Vac	0.9	0.24
MME808S	F10	110-250 Vac	200-560 Vac	1.8	0.48
MME812S	F10	110-250 Vac	200-560 Vac	2.9	0.85
MME825S	F14	110-250 Vac	200-560 Vac	4.75	1.71
MME850S	F14	110-250 Vac	200-560 Vac	7.6	2.72
MME890S	F16	110-250 Vac	200-560 Vac	10.3	6.7
MOE706S	F10	110-250 Vac	200-560 Vac	1.8	0.5
MOE706R	F10	110-250 Vac	200-560 Vac	1.8	0.5
MOE706M	F10	110-250 Vac	200-560 Vac	0.9	0.24



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Model	Enclosure	Rated voltage (1-phase, AC)	Rated voltage (3-phase, AC)	I _{max} (A)	P _{max} (kW)
MOE708S	F10	110-250 Vac	200-560 Vac	3.5	1
MOE708R	F10	110-250 Vac	200-560 Vac	3.5	1
MOE708M	F10	110-250 Vac	200-560 Vac	1.8	0.48
MOE712S	F10	110-250 Vac	200-560 Vac	4.8	1.76
MOE712R	F10	110-250 Vac	200-560 Vac	4.8	1.76
MOE712M	F10	110-250 Vac	200-560 Vac	2.9	0.85
MOE725S	F14	110-250 Vac	200-560 Vac	8	3.52
MOE725R	F14	110-250 Vac	200-560 Vac	8	3.52
MOE725M	F14	110-250 Vac	200-560 Vac	4.75	1.71
MOE750R	F14	110-250 Vac	200-560 Vac	12	4.1
MOE750P	F14	110-250 Vac	200-560 Vac	12	4.1
MOE790R	F16	110-250 Vac	200-560 Vac	14.5	7.5
MOE790P	F16	110-250 Vac	200-560 Vac	14.5	7.5
MOE790RL	F16	110-250 Vac	200-560 Vac	23	9.5
MOE790PL	F16	110-250 Vac	200-560 Vac	23	9.5



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The actuators have the following flamepaths and fastener requirements:

F10 Flamepath parameters

Ref	Position	Joint surface type	Dimension	Design Value (mm)	Security
1	Terminal cover and box Joint surface flameproof joint	Cylindrical joint	L	25.2	M8 x 25mm, pitch 1.25-6g Grade A2-70
			ic	≤0.15	
2	Motor and box joint surface flameproof joint	Cylindrical joint	L	25.2	M8 x 25mm, pitch 1.25-6g Grade A2-70
			ic	≤0.11	
3	Worm and shaft sleeve joint surface flameproof joint	Rolling bearing / operating rod	L	25.5	Internally secured
			ic	≤0.15	
4	Shaft sleeve and box Joint surface flameproof joint (interference fit)	Cylindrical joint	L	25.5	Internally secured
			ic	≤0	
5	Electronic unit cover and box Joint surface flameproof joint	Cylindrical joint	L	25.5	M8 x 25mm, pitch 1.25-6g Grade A2-70
			ic	≤0.14	
6	Window glass and enclosure	Spigot joint	L	25.2	Internally secured
			ic	≤0.12	
7	Terminal enclosure x 2	Threaded joint	M32X1.5-6H/6g – length ≥20mm, ≥ 13 threads		
8	Terminal enclosure x 1	Threaded joint	M25X1.5-6H/6g – length ≥17.5mm, ≥ 11 threads		



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F14 Flamepath parameters

Ref	Position	Joint surface type	Dimension	Design Value (mm)	Security
1	Terminal cover and box Joint surface flameproof joint	Cylindrical joint	L	25.2	M8 x 25mm, 1.25 pitch-6g Grade A2-70
			ic	≤0.15	
2	Motor and box joint surface flameproof joint	Cylindrical joint	L	25.2	M10 x 25mm, 1.25 pitch-6g Grade A2-70
			ic	≤0.12	
3	Worm and shaft sleeve joint surface flameproof joint	Rolling bearing / operating rod	L	25.5	Internally secured
			ic	≤0.15	
4	Shaft sleeve and box Joint surface flameproof joint (interference fit)	Cylindrical joint	L	25.5	Internally secured
			ic	≤-0.01	
5	Electronic unit cover and box Joint surface flameproof joint	Cylindrical joint	L	25.5	M8 x 25mm, 1.25 pitch-6g Grade A2-70
			ic	≤0.15	
6	Window glass and enclosure	Spigot joint	L	25.2	Internally secured
			ic	≤0.12	
7	Terminal enclosure x 2	Threaded joint	M32X1.5-6H/6g – length ≥20mm, ≥ 13 threads		
8	Terminal enclosure	Threaded joint	M25X1.5-6H/6g – length ≥17.5mm, ≥ 11 threads		



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F16 Flamepath parameters

Ref	Position	Joint surface type	Dimension	Design Value (mm)	Security
1	Terminal cover and box Joint surface flameproof joint	Cylindrical joint	L	25.2	M8 x 30mm, pitch 1.25-6g Grade A2-70
			ic	≤0.15	
2	Motor and box joint surface flameproof joint	Cylindrical joint	L	25.2	M12 x 50mm, pitch 1.75-6g Grade A2-70
			ic	≤0.15	
3	Worm and shaft sleeve joint surface flameproof joint	Rolling bearing / operating rod	L	26	Internally secured
			ic	≤0.15	
4	Shaft sleeve and box Joint surface flameproof joint (interference fit)	Cylindrical joint	L	25.5	Internally secured
			ic	≤-0.001	
5	Electronic unit cover and adapter Joint surface flameproof joint	Cylindrical joint	L	25.5	M8 x 85mm, pitch 1.25-6g Grade A2-70
			ic	≤0.15	
6	Adapter and box Joint surface flameproof joint	Cylindrical joint	L	25.5	Internally secured
			ic	≤0.15	
7	Window glass and enclosure	Spigot joint	L	25.2	Internally secured
			ic	≤0.15	
8	Terminal enclosure x 2	Threaded joint	M32X1.5-6H/6g – length ≥20mm, ≥ 13 threads		
9	Terminal enclosure x 1	Threaded joint	M25X1.5-6H/6g – length ≥17.5mm, ≥ 11 threads		

12 Certificate history and evaluation reports

Issue	Date	Associated report	Notes
0	25 Oct 2018	R11686A/00	Issue of prime certificate

Note: Drawings that describe the equipment or component are listed in the Annex.



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13 Conditions of manufacture

The following conditions are required of the manufacturing process for compliance with the certification.

- 13.1 Where the product incorporates certified parts or safety critical components, the manufacturer shall ensure that any changes to those parts or components do not affect the compliance of the certified product that is the subject of this certificate.
- 13.2 The actuator arrangement shall be constructed in accordance with appropriate industrial and electrical safety standards, as applicable.
- 13.3 All actuator arrangements shall undergo the following minimum routine overpressure tests in accordance with EN 60079-1, clause 16.1 for a Group IIC atmosphere: There shall be no permanent deformation or damage to the enclosures.

- a. Small F10 enclosure.

Compartment	Required minimum pressure
Main Enclosure	15 bar (1.5 MPa)

- b. Medium F14 main enclosure.

Compartment	Required minimum pressure
Main Enclosure	15.45 bar (1.545 MPa)

- c. Large F16 main enclosure

Compartment	Required minimum pressure
Main Enclosure	16.5 bar (1.65 MPa)

14 Special Conditions for Safe Use (Conditions of Certification)

The following conditions relate to safe installation and/or use of the equipment.

- 14.1 Repair of the flameproof joints shall be made in compliance with the structural specifications provided by the manufacturer. Repair and overhaul shall comply with EN 60079-19 and the flamepaths shall be in accordance with the dimensions listed in the description.
- 14.2 The bearing supporting and the gears moving the operating shaft are outside the flameproof enclosure and have not been addressed under this certification (for ignition sources or temperature). The user is required to assess these non-electrical parts as a potential ignition source as part of the installation.

Certificate Annex



Certificate Number CML 18ATEX1301X
Equipment Intelligent Variable Frequency Actuators
Manufacturer **Error! Reference source not found.**

The following documents describe the equipment or component defined in this certificate:

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Drawing No	Sheets	Rev	Approved date	Title
01-00-67400	1 of 1	-	25 Oct 2018	Electric Actuator (F10)
01-01-00301/2	1 of 1	-	25 Oct 2018	Enclosure (F10) Flameproof
00-05-30701/2	1 of 1	-	25 Oct 2018	Electronic Unit cover (Flameproof)
01-12-31501/*	1 of 1	-	25 Oct 2018	Motor Enclosure (F10)
00-06-31101/2	1 of 1	-	25 Oct 2018	Terminal Cover (Explosion Proof)
02-00-67400	1 of 1	-	25 Oct 2018	Electric Actuator (F14)
03-00-67400	1 of 1	-	25 Oct 2018	Electric Actuator (F16)
01-00-86001	1 of 1	-	25 Oct 2018	Nameplate (Flameproof)
00-06-86001	1 of 1	-	25 Oct 2018	Label (Ex Terminal End Cover)
ONT100-202-330	1 of 1	V2.02	25 Oct 2018	Battery and Related Circuit