



EU Type Examination Certificate CML 19ATEX1193X Issue 2

- 1 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU
- 2 Equipment **IQT3 Range of Electric Valve Actuators**
- 3 Manufacturer **Rotork Controls Limited** **Rotork Actuation (Shanghai) Co., Ltd.** **Rotork Controls, Inc.**
- 4 Address **Brassmill Lane, Bath, BA1 3JQ, United Kingdom** **Building G, No.260 Liancao Rd, Minhang District, Shanghai, 201108, China** **675 Mile Crossing Blvd, Rochester, NY 14624, USA**
- 5 The equipment is specified in the description of this certificate and the documents to which it refers.
- 6 CML B.V., Chamber of Commerce No 6738671, Hoogoorddreef 15, Amsterdam, 1101 BA, The Netherlands, Notified Body Number 2776, 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 IEC 60079-0:2018 EN 60079-1:2014 EN IEC 60079-7:2015+A1:2018
EN 60079-31:2014 EN ISO 80079-36:2016
- 10 The equipment shall be marked with the following:



II 2GD

Ex db^① h IIC T4^② Gb IP66/IP68

Ex h tb IIIC T120°C^③ Db

Ta = (-^④°C to +^⑤°C) ^⑥down to -50°C, ^⑦up to +70°C

^①'eb' added on versions with increased safety terminal enclosure.

^②Can be T6 when a duty cycle is specified (See Specific Conditions of Use)

T6 cannot be applied when an Intumescent Coating is specified.

^③Only IP64 is endorsed by CML.

^④Can be T80°C when a duty cycle is specified (See Specific Conditions of Use)

T80°C cannot be applied when an Intumescent Coating is specified.



CML 19ATEX1193X
Issue 2

11 Description

The IQT3 Electric Valve Actuator comprises an oil-filled spur/worm gearbox with handwheel and de-clutch mechanism, to which is attached an electrical enclosure and a terminal enclosure. Both these enclosures form an integral part of the gearcase and are designed to satisfy the requirements for flameproof equipment. In addition, the terminal enclosure is designed to satisfy the requirements for increased safety, providing an alternative method of protection for the field wiring facilities. The IQT3 Electric Valve Actuator comprises a range of electric actuators based upon two gearcase sizes, the flameproof enclosures are constructionally identical on both gearcase sizes.

The IQT3 Electric Valve Actuator is driven by a 24 Vdc, or in the case of the IQT3000 36 Vdc, permanent magnet motor which is controlled by an internal control circuit. The latter can be configured to accept various external power supplies ranging from three phase, single phase to 24 Vdc.

The permanent magnet dc motor is installed in the electrical enclosure by means of a motor cover, which has a spigoted flamepath joint and is secured by three M8 socket cap-head screws. The rotary output from the motor, transfers to the gearbox by means of a shaft supported in a rolling element bearing and a cylindrical brass flamepath bushing.

The dc motor is fitted with two 150°C thermal protective devices. There is a facility to override these devices should the user find it necessary. See Specific Conditions of Use.

An electrical cover connects to the gearcase by means of a spigoted flamepath joint and is secured by four M8 socket cap-head screws. In one end of the electrical cover a window is provided to allow the external observation of an internal LCD display. As well as the motor, the electrical enclosure contains monitoring and control circuitry and a battery. The monitoring and control circuitry controls the output speed and torque of the motor. It also senses and controls the position of the output shaft of the actuator by means of an encoder shaft. This shaft transfers to the gearbox by means of a cylindrical brass flamepath bushing.

The terminal enclosure connects to the electrical enclosure via the gearcase. The terminal enclosure incorporates a terminal bung, which comprises of a moulded main body, through which passes a number of terminals that are moulded in place. Optionally, in all deep cover versions, and compulsory in all increased safety versions; the terminal bung provides separation between the gearcase/electrical enclosure and the terminal enclosure. The joint between the two parts forming a flamepath. The terminal enclosure provides all electrical field-wiring terminations at the terminal bung. Cable entry facilities are provided in the form of two or four threaded entries. The terminal enclosure is closed by means of a terminal cover which connects to the gearcase by means of a tapered spigot flamepath joint and is secured by four M8 socket cap-head screws.

Model Codes

The following gearcase options are covered by the scope of this certificate:

IQT50, IQT100, IQT125, IQT250, IQT500 and IQT1500

Quarter turn and multi-turn output option (designated IQT or IQTF respectively);

Three phase, single phase and dc actuator power supply;

Modulating output duty cycle option (designated IQTM or IQTFM).



CML 19ATEX1193X
Issue 2

IQT1000, IQT2000 and IQT3000

Quarter turn and multi-turn output option (designated IQT or IQTF respectively);
Three phase, single phase and dc actuator power supply;
Modulating output duty cycle option (designated IQTM or IQTFM).

Design Options

Extra Alarm Relays

Fieldbus System Control Options

Network interface cards: Pakscan; Modbus; Profibus; Foundation Fieldbus; Devicenet.

Remote Control

Analogue Control – Folomatic;
Analogue position feedback – CPT;
Analogue torque feedback – CTT.

Deep Terminal Cover Option – All actuator sizes

The deep terminal cover allows the installation of a PCB for Network disconnect applications or a wireless network PCB and associated external aerial enclosure. The deep cover is provided with threaded entry points.

Intumescent Coating Option

The Intumescent coating is a fire-retardant coating which swells as a result of heat exposure increasing in volume and decreasing in density the effect of which is to insulate the actuator from fire allowing it to continue to operate.

Plug & Socket Cover/Plug & Socket Connection/Non-Flameproof Terminal Bung option - Ex db versions Gas Group IIB and Ex tb versions only, all sizes, Tamb -20°C to +70°C.

The flameproof terminal bung is removed and replaced with a non-flameproof Plug & Socket arrangement. To accommodate the plug and socket arrangement, a Plug & Socket Cover has been introduced, manufactured in aluminium alloy to BS1490, Grade: LM25M. The latter includes up to four M25 threaded cable entry points. Additionally, it can optionally accommodate the Network Disconnect PCB.

Optionally in place of the Plug & Socket Connection facility, a non-flameproof Terminal Bung can be installed along with the Plug & Socket Cover, with or without the Network Disconnect PCB.

Shutdown Battery Module Option

The Range of Electric Valve Actuators sizes IQT50, 100, 125, 250, 500, 1000, 1500 and 2000, (IQT, IQTF, IQTM and IQTFM Types as applicable), ambient temperature range -40°C to +70°C may have a long electrical cover to accommodate a lithium-ion battery pack, associated control protective circuitry, and a heater.



**CML 19ATEX1193X
Issue 2**

Notes:

- Sira 15ATEX1012X is superseded by this certificate.
- The product covered by Issue 0 of this certificate remains identical to that previously covered by Sira 15ATEX1012X.
- Where Sira 15ATEX1012X is specified in other product certification, or other technical specifications, this certificate reference for the product shall be used in its place; updating of the other product certificate or technical specification is not required.

Variation 1

This variation introduces the following modifications:

- i. The introduction of a shutdown battery module to the IQT3 Range of Electric Valve Actuators sizes IQT50, 100, 125, 250, 500, 1000 & 2000 (IQT, IQTF, IQTM and IQTFM Types as applicable). The modification includes the introduction of the long electrical cover to allow the accommodation of a lithium-ion battery pack, associated control and protective circuitry, and a heater.
- ii. The introduction of austenitic/ferritic duplex stainless steel type fasteners, grade 1.4462, to EN 10088-3, heat treated to achieve a grade of 12.9 to ISO 898-1:2013E, Table 2, as an alternative to carbon steel, grade 12.9 fasteners.

Variation 1

This variation introduces the following modifications:

- i. Correction of typographical errors in the schedule drawings.
- ii. Addition of a new model; IQT1500.

12 Certificate history and evaluation reports

Issue	Date	Associated report	Notes
0	26 Jul 2019	R12481A/00	Issue of Prime Certificate
1	09 Jan 2020	R12977B/00	Introduction of Variation 1
2	02 Apr 2020	R13111A/00	Introduction of Variation 2

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

13 Conditions of Manufacture

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

- i. 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.
- ii. Each IQT3 Range of Electric Actuators shall be subjected to a routine overpressure test in accordance with EN 60079-1 clause 16 at the following values.

Routine overpressure tests Tamb -20°C



**CML 19ATEX1193X
Issue 2**

Equipment	Test Pressure (bar)
Non-Flameproof Terminal Bung fitted (Normal Terminal Cover)	
Gearcase/Electrical/Terminal Compartment - Aluminium Alloy to BS1490, Grade: LM25M Grade A4-80 fasteners	23.43
Motor Cover - Aluminium Alloy to ASTM B85, Grade: A360 LM20	23.43
Extra-Short Electrical Cover - Aluminium Alloy to BS1490. Grade: LM25M	23.43
Non-Flameproof Terminal Bung fitted (Deep Terminal Cover)	
Gearcase/Electrical/Terminal Compartment - Aluminium Alloy to BS1490, Grade: LM25M Grade A4-80 fasteners	29.32
Gearcase/Electrical/Terminal Compartment - Aluminium Alloy to BS1490, Grade: LM25M Grade 12.9 fasteners	29.32
Motor Cover - Aluminium Alloy to ASTM B85, Grade: A360 LM20	29.32
Extra-Short Electrical Cover - Aluminium Alloy to BS1490, Grade: LM25M	29.32
Deep Terminal Cover - Aluminium Alloy to BS1490, Grade: LM25TF (heat treated)	29.32
Aerial Housing - Dalau Ltd, Grade: Dalcon 001	29.32
Gearcase/Electrical Compartment with flameproof Terminal Bung fitted	
Gearcase/Electrical Compartment – Terminal bung circlip groove Aluminium Alloy to BS1490. Grade: LM25M	20.69
Gearcase/Electrical Compartment - Aluminium Alloy to BS1490, Grade: LM25M Grade A4-80 fasteners	20.69
Extra-Short Electrical Cover - Aluminium Alloy to BS1490, Grade: LM25M	20.69
Terminal Bung - Crastin ST830FRUV/Robnor PX700/BK	20.69

Routine overpressure tests Tamb below -20°C

Equipment	Test Pressure (bar)
Non-Flameproof Terminal Bung fitted (Normal Terminal Cover)	
Gearcase/Electrical/Terminal Compartment - Aluminium Alloy to BS1490, Grade: LM25M Grade A4-80 fasteners	36.35
Gearcase/Electrical/Terminal Compartment - Aluminium Alloy to BS1490, Grade: LM25M Grade 12.9 fasteners	36.35
Terminal Cover - Aluminium Alloy to ASTM B85, Grade: A360	36.35
Motor Cover - Aluminium Alloy to ASTM B85, Grade: A360 LM20	36.35
Extra-Short Electrical Cover - Aluminium Alloy to BS1490, Grade: LM25M	36.35
Terminal Housing with flameproof Terminal Bung fitted (Normal Terminal Cover)	
Gearcase Terminal Compartment - Aluminium Alloy to BS1490. Grade: LM25M Grade A4-80 fasteners	18.09
Terminal Bung - Crastin ST830FRUV/Robnor PX700/BK	18.09
Terminal Housing with flameproof Terminal Bung fitted (Deep Terminal Cover & Network Disconnect PCB)	



**CML 19ATEX1193X
Issue 2**

Equipment	Test Pressure (bar)
Gearcase Terminal Compartment - Aluminium Alloy to BS1490, Grade: LM25M Grade A4-80 fasteners	20.86
Terminal Bung - Crastin ST830FRUV/Robnor PX700/BK	20.86
Deep Terminal Cover - Aluminium Alloy to BS1490, Grade: LM25TF (heat treated)	20.86
Gearcase/Electrical Compartment with flameproof Terminal Bung fitted	
Gearcase/Electrical Compartment - Terminal Bung circlip groove - Aluminium Alloy to BS1490, Grade: LM25M	29.93
Gearcase/Electrical Compartment - Aluminium Alloy to BS1490, Grade: LM25M Grade A4-80 fasteners	29.93
Gearcase/Electrical Compartment - Aluminium Alloy to BS1490, Grade: LM25M Grade 12.9 fasteners	29.93
Motor Cover - Aluminium Alloy to BS1490, Grade: LM25M	29.93
Extra-Short Electrical Cover - Aluminium Alloy to BS1490, Grade: LM25M	29.93
Terminal Bung - Crastin ST830FRUV/Robnor PX700/BK	29.93

Routine overpressure tests when fitted with the shutdown battery module. Non-flameproof terminal bung fitted Tamb -20°C

Equipment	Test Pressure (bar)
Gearcase/Electrical/Terminal Compartment - Aluminium Alloy to BS1490, Grade: LM25M Grade A4-80 fasteners	23.56
Gearcase/Electrical/Terminal Compartment - Aluminium Alloy to BS1490, Grade: LM25M Grade 12.9 fasteners	23.56
Motor cover - Aluminium Alloy to ASTM B85, Grade: A360 LM20	23.56
Long Electrical Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	23.56
Long Electrical Cover - Aluminium Alloy to BS1490, Grade: LM25TF (heat treated) (or equivalent)	23.56

Routine overpressure tests when fitted with the shutdown battery module. Non-flameproof terminal bung fitted Tamb -40°C

Equipment	Test Pressure (bar)
Gearcase/Electrical/Terminal Compartment - Aluminium Alloy to BS1490, Grade: LM25M Grade A4-80 fasteners	36.78
Gearcase/Electrical/Terminal Compartment - Aluminium Alloy to BS1490. Grade: LM25M Grade 12.9 fasteners	36.78
Motor Cover - Aluminium Alloy to ASTM B85, Grade: A360 LM20	36.78
Long Electrical Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	36.78
Long Electrical Cover - Aluminium Alloy to BS1490, Grade: LM25TF (heat treated) (or equivalent)	36.78



**CML 19ATEX1193X
Issue 2**

Terminal Cover - Aluminium Alloy to ASTM B85, Grade: A360	36.78
---	-------

Routine overpressure tests when fitted with the shutdown battery module. Flameproof terminal bung fitted. Routine overpressure tests Tamb -20°C

Equipment	Test Pressure (bar)
Gearcase/Electrical/ Compartment Terminal bung circlip groove - Aluminium Alloy to BS1490, Grade: LM25M	28.97
Gearcase/Electrical/ Compartment - Aluminium Alloy to BS1490. Grade: LM25M Grade A4-80 fasteners	28.97
Gearcase/Electrical/ Compartment - Aluminium Alloy to BS1490, Grade: LM25M Grade 12.9 fasteners	28.97
Motor Cover - Aluminium Alloy to ASTM B85, Grade: A360 LM20	28.97
Long Electrical Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	28.97
Long Electrical Cover - Aluminium Alloy to BS1490, Grade: LM25TF (heat treated) (or equivalent)	28.97
Terminal Bung - Crastin ST830FRUV/Robnor PX700/BK	28.97

- iii. When the terminal enclosure utilises increased safety explosion protection, the following electrical strength tests shall be applied to the termination facilities for at least 60 s in accordance with EN 60079-7 by clause 6.1 at the following values:

Test Voltage Applied Between	Test Voltage
Three phase Terminations/Case	2,500 Vrms
Three phase Terminals/Low Voltage Terminations	2,500 Vrms
Low Voltage Terminations/Case	1,500 Vrms

Alternatively, a test shall be carried out at 1.2 times the test voltage. But maintained for at least 100 ms in accordance with EN 60079-7 clause 7.1.

- iv. The Deep Terminal Cover option shall not be marked for applications below -20°C unless a flameproof Terminal Bung is fitted.
- v. When the Intumescent Coating is applied the equipment shall not be marked T6/T80°C.
- vi. The Shutdown Battery Module combined with the flameproof Terminal Bung shall not be marked for use in IIC applications below -20°C.



**CML 19ATEX1193X
Issue 2**

14 Specific Conditions of Use (Special Conditions)

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

- i. This certificate does not cover the IQT3 Range of Electric Valve Actuators if the motor has been overridden. See manufacturer's instructions.
- ii. The IQT3 Range of Electric Valve Actuators shall be installed such that the risk of impact to the window is low.
- iii. In accordance with EN 60079-1 clause 5.1, the critical dimensions of the flamepaths are as follows:

Flamepath	Max, Gap (mm)	Min. L (mm)
Terminal Cover/Terminal housing	0.15	26.95
Gearcase/Plug and Socket Cover	0.15	27.00
Terminal Bung/Gearcase	0.20	26.0
Electrical Cover/Gearcase	0.15	26.0
Motor Cover/Gearcase	0.15	26.0
Motor Shaft/Motor Shaft Bushing	0.24	25.0
Motor Shaft Bushing/Gearcase	0.00	25.0
Encoder Shaft/Resolver Shaft Bushing	0.08	28.0
Encoder Shaft Bushing/Gearcase	0.07	25.0

- iv. When the IQT3 Range of Electric Valve Actuators are marked with a T6 temperature classification/T80°C maximum surface temperature, the following duty cycle is applicable:

IQT50, IQT100, IQT125, IQT250, IQT500, IQT1000, IQT1500 and IQT2000

Nominal 60 starts at a rate of not exceeding 600 starts per hour, 15 minutes rated based upon a nominal 75% of rated torque.

IQT3000

Nominal 60 starts at a rate of not exceeding 600 starts per hour, 15 minutes rated based upon a nominal 50% of rated torque.

- v. When the actuator has a Shutdown Battery Module installed, the actuator shall only operate a certain number of strokes when the battery is in use or during mains power loss. Below is the number of strokes the battery pack can sustain and the time to recharge in reference to utilized strokes. The Shutdown Battery Pack shall only be used to either open or close the end-application valve once, even during manual adjustment.

Size	IQT - Number of strokes	Discharging duration (mins)	IQT - Time to recharge per stroke (mins)
IQTF 50	80	4	2
IQTF 100	72	4	2
IQT 125*	30	4	5



CML 19ATEX1193X
Issue 2

Size	IQT - Number of strokes	Discharging duration (mins)	IQT - Time to recharge per stroke (mins)
IQT 250*	14	4	11
IQT 500*	8	4	19
IQT 1000*	4	4	38
IQT 2000*	2	4	75

* These models may have the prefix IQT, IQTF, IQTM or IQTFM

When the Shutdown Battery Module is in use, the actuator operates at a nominal 60 starts at a rate not exceeding 600 starts per hour, 15 minutes (25% duty cycle) based on a 60°C ambient temperature and 10 minutes (10% duty cycle) based on a 70°C ambient temperature and with a nominal torque of 75% of rated torque.

Certificate Annex

Certificate Number CML 19ATEX1193X
Equipment IQT3 Range of Electric Valve Actuators
Manufacturer Rotork Controls Limited
Rotork Actuation (Shanghai) Co., Ltd.
Rotork Controls, Inc.



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

Issue 0

Drawing No	Sheets	Rev	Approved date	Title
95-462	1 to 2	8	26 Jul 2019	Low Temperature Battery
95-614	1 to 2	2	26 Jul 2019	High Temperature Battery
44406	1 of 1	1	26 Jul 2019	Label fuse types – CENELEC Battery Loom
AD1408	1 to 7	4	26 Jul 2019	IQT50, 100, 125, 250, 500 & IQT1000, 2000 & 3000 Actuators ATEX & IECEx Certification Group IIB & IIC
AD1414	1 to 2	5	26 Jul 2019	Terminal Bung & Main Labels – IQT ATEX & IECEx IIB & IIC
AD1451	1 to 2	1	26 Jul 2019	IQT3 50-500 Intumescent Coating Certification Drawing
AD1452	1 to 2	2	26 Jul 2019	IQT3 1000-2000 Intumescent Coating Certification Drawing
PLAD1408	1 to 6	5	26 Jul 2019	Parts List for IQT50, 100, 125, 250, 500 & IQT1000, 2000 & 3000 Actuators ATEX & IECEx Certification Group IIB & IIC
RS308	1 to 2	9	26 Jul 2019	Potting Procedure for CENELEC and ATEX Term, Blocks & Mtr, Looms
RS448	1 of 2	1	26 Jul 2019	Window bonding procedure

Issue 1

Drawing No	Sheets	Rev	Approved date	Title
AD1408	1 to 8	5	09 Jan 2020	IQT50, 100, 125 500, 1000, 2000 & 3000 Actuators, ATEX & IECEx Group IIB & IIC
AD1480	1 to 2	1	09 Jan 2020	IQT3 Battery Shutdown (up to 600 V) Electrical Safety Diagram
AD1496	1 to 4	1	09 Jan 2020	Battery Assembly Drawing
PLAD1408	1 to 6	6	09 Jan 2020	Parts List for IQT50, 100, 125, 250, 500 & IQT1000, 2000 & 3000 Actuators ATEX & IECEx Certification Group IIB & IIC

Certificate Annex

Certificate Number CML 19ATEX1193X
Equipment IQT3 Range of Electric Valve Actuators
Manufacturer Rotork Controls Limited
Rotork Actuation (Shanghai) Co., Ltd.
Rotork Controls, Inc.



Issue 2

Drawing No	Sheets	Rev	Approved date	Title
AD1408	1 to 8	5	02 Apr 2020	IQT50, 100, 125, 250, 500 & IQT1000, 2000 & 3000 Actuators ATEX & IECEx Certification Group IIB & IIC
PLAD1408	1 to 6	6	02 Apr 2020	Parts List for IQT50, 100, 125, 250, 500 & IQT1000, 2000 & 3000 Actuators ATEX & IECEx Certification Group IIB & IIC
AD1452	1 to 2	2	02 Apr 2020	IQT3 1000, 2000 & 3000 INTUMESCENT COATING CERTIFICATION DRAWING
AD1414	1 to 2	5	02 Apr 2020	Terminal Bung & Main Labels – IQT ATEX & IECEx IIB & IIC