

# TYPE APPROVAL CERTIFICATE

**This is to certify:**

**That the Electric Actuator**

with type designation(s)

**QT250 1.0/2.0, QT250 2.4 EX, QT250 1.0 Exd, QT800 1.0/2.0, QT800 2.4 EX, QT800 1.0 Exd, QT2500 3.0, QT4000 1.0**

Issued to

**Eltorque AS**  
**TRONDHEIM, Norway**

is found to comply with

**DNV GL rules for classification – Ships, offshore units, and high speed and light craft**

**Application :**

**Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**

**Location classes:**

| Type          | Temperature | Humidity | Vibration | EMC | Enclosure |
|---------------|-------------|----------|-----------|-----|-----------|
| QT250 1.0/2.0 | D           | B        | A         | B   | C/D       |
| QT250 2.4 EX  | D           | B        | A         | B*  | C/D       |
| QT250 1.0 Exd | D           | B        | A         | B   | C/D       |
| QT800 1.0/2.0 | D           | B        | A         | B   | C/D       |
| QT800 2.4 EX  | D           | B        | A         | B*  | C/D       |
| QT800 1.0 Exd | D           | B        | A         | B   | C/D       |
| QT2500 3.0    | C           | B        | A         | A   | D         |
| QT4000 1.0    | C           | B        | A         | A   | D         |

Issued at **Høvik** on **2020-10-07**

This Certificate is valid until **2021-12-01**.

DNV GL local station: **Trondheim**

Approval Engineer: **Jens Erling Bråten**



for **DNV GL**

Digitally Signed By: Sneen, Ståle

Location: DNV GL Høvik, Norway

on behalf of

**Jan Tore Grimsrud**  
**Head of Section**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Job Id: **262.1-004091-11**  
 Certificate No: **TAA000011K**  
 Revision No: **2**

## Place of manufacture

|                 |                                |
|-----------------|--------------------------------|
| Eltorque AS     | Eltorque Automation Xiamen     |
| Verkstedvegen 4 | 2/F, 1#building, No.168        |
| 7125 Vanvikan   | Huizuo Road, Haicang District, |
| Norway          | Xiamen,                        |
|                 | China                          |

## Product description

Electric quarter turn valve actuator

|                   |               |                       |
|-------------------|---------------|-----------------------|
| Power Supply:     | QT250, QT 800 | 230 V AC 50/60 Hz     |
|                   | QT2500        | 110-240 V AC 50/60 Hz |
|                   | QT4000        | 110-240 V AC 50/60 Hz |
| Operating Torque: | QT250         | Max. 250 Nm           |
|                   | QT800         | Max. 800 Nm           |
|                   | QT2500        | Max. 2500 Nm          |
|                   | QT4000        | Max. 4000 Nm          |

Interface options as listed in table below.

| Range  | Actuator          |                         | Description                        | Firm ware |
|--------|-------------------|-------------------------|------------------------------------|-----------|
|        | Basic             | Hybrid Cable Connection |                                    |           |
| QT250  | 250.120.1[.xx]    | 250.120.1H[.xx]         | QT250 1.0 CANopen Actuator         | 1.1.x     |
|        | 250.140.1[.xx]    | 250.140.1H[.xx]         | QT250 1.0 Modbus Actuator          | 1.1.x     |
|        | 250.130.1[.xx]    | N/A                     | QT250 1.0 Analogue Actuator        | 1.1.x     |
|        | 250.110.1[.xx]    | N/A                     | QT250 1.0 Digital Actuator         | 1.1.x     |
|        | 250.121.1[.xx]    | 250.121.1H[.xx]         | QT250 2.0 CANopen Actuator *       | 1.1.x     |
|        | 250.141.1[.xx]    | 250.141.1H[.xx]         | QT250 2.0 Modbus Actuator *        | 1.1.x     |
|        | 250.131.1[.xx]    | N/A                     | QT250 2.0 Analogue Actuator *      | 1.1.x     |
|        | 250.111.1[.xx]    | N/A                     | QT250 2.0 Digital Actuator *       | 1.1.x     |
|        | EXD250.125.1[.xx] | EXD250.125.1H[.xx]      | QT250 1.0 CANopen EXD Actuator     | 1.1.x     |
|        | EXD250.135.1[.xx] | N/A                     | QT250 1.0 Analogue EXD Actuator    | 1.1.x     |
|        | EXD250.115.1[.xx] | N/A                     | QT250 1.0 Digital EXD Actuator     | 1.1.x     |
|        | EX250.125.4[.xx]  | EX250.125.4H[.xx]       | QT250 2.4 CANopen EX Actuator */** | 1.1.x     |
| QT800  | 800.120.1[.xx]    | 800.120.1H[.xx]         | QT800 1.0 CANopen Actuator         | 1.1.x     |
|        | 800.140.1[.xx]    | 800.140.1H[.xx]         | QT800 1.0 Modbus Actuator          | 1.1.x     |
|        | 800.130.1[.xx]    | N/A                     | QT800 1.0 Analogue Actuator        | 1.1.x     |
|        | 800.110.1[.xx]    | N/A                     | QT800 1.0 Digital Actuator         | 1.1.x     |
|        | 800.121.1[.xx]    | 800.121.1H[.xx]         | QT800 2.0 CANopen Actuator *       | 1.1.x     |
|        | 800.141.1[.xx]    | 800.141.1H[.xx]         | QT800 2.0 Modbus Actuator *        | 1.1.x     |
|        | 800.131.1[.xx]    | N/A                     | QT800 2.0 Analogue Actuator *      | 1.1.x     |
|        | 800.111.1[.xx]    | N/A                     | QT800 2.0 Digital Actuator *       | 1.1.x     |
|        | EXD800.125.1[.xx] | EXD800.125.1H[.xx]      | QT800 1.0 CANopen EXD Actuator     | 1.1.x     |
|        | EXD800.135.1[.xx] | N/A                     | QT800 1.0 Analogue EXD Actuator    | 1.1.x     |
|        | EXD800.115.1[.xx] | N/A                     | QT800 1.0 Digital EXD Actuator     | 1.1.x     |
|        | EX800.125.4[.xx]  | EX800.125.4H[.xx]       | QT800 2.4 CANopen EX Actuator */** | 1.1.x     |
| QT2500 | 2500.120.3[.xx]   | 2500.120.3H[.xx]        | QT2500 3.0 CANopen Actuator        | 1.0.x     |
|        | 2500.140.3[.xx]   | 2500.140.3H[.xx]        | QT2500 3.0 Modbus Actuator         | 1.0.x     |
|        | 2500.130.3[.xx]   | N/A                     | QT2500 3.0 Analogue Actuator       | 1.0.x     |
|        | 2500.110.3[.xx]   | N/A                     | QT2500 3.0 Digital Actuator        | 1.0.x     |

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| Range  | Actuator        |                         | Description                  | Firm ware |
|--------|-----------------|-------------------------|------------------------------|-----------|
|        | Basic           | Hybrid Cable Connection |                              |           |
| QT4000 | 4000.120.1[.xx] | 4000.120.1H[.xx]        | QT4000 1.0 CANopen Actuator  | 1.0.x     |
|        | 4000.140.1[.xx] | 4000.140.1H[.xx]        | QT2500 1.0 Modbus Actuator   | 1.0.x     |
|        | 4000.130.1[.xx] | N/A                     | QT2500 1.0 Analogue Actuator | 1.0.x     |
|        | 4000.110.1[.xx] | N/A                     | QT2500 1.0 Digital Actuator  | 1.0.x     |

\* Suitable for use on open deck

\*\* EMC class A is OK without ELTORQUE PSF. Each actuator is to be powered through the ELTORQUE PSF to satisfy the EMC class B requirements.

### Application/Limitation

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV GL, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV GL rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

Ex installations to be approved in each case according to the Rules and Ex-Certification/ Special Condition for Safe Use listed in valid Ex-certificate issued by a notified/recognized Certification Body.

Ex-certification is not covered by this certificate and the following paragraph, which is for information only, is based on information received from the manufacturer, but not verified by DNV GL.

| Information on Ex-Certification received from manufacturer |                         |                                 |  |
|--|-------------------------|---------------------------------|--|
| Basic  | Hybrid Cable Connection | Certified                       | Certificate No.                        |
| EX250.125.4[.xx]   | EX250.125.4H[.xx]       | QT250 2.4 CANopen EX Actuator   | IECEX NEM<br>13.0042<br>(Valid issue)  |
| EX800.125.4[.xx]   | EX800.125.4H[.xx]       | QT800 2.4 CANopen EX Actuator   |  |
| EX110.0066_00[.xx]   | -                       | Eltorque PSF                    |  |
| EXD250.125.1[.xx]  | EXD250.125.1H[.xx]      | QT250 1.0 CANopen EXD Actuator  | IECex PRE<br>14.0056X<br>(Valid issue) |
| EXD800.125.1[.xx]  | EXD800.125.1H[.xx]      | QT800 1.0 CANopen EXD Actuator  |  |
| EXD250.135.1[.xx]  | N/A                     | QT250 1.0 Analogue EXD Actuator |  |
| EXD800.135.1[.xx]  | N/A                     | QT800 1.0 Analogue EXD Actuator |  |

### Type Approval documentation

[I-1] Doc. no. 1000.127.1, dated 08.07.2005, ringbinder containing following documents:

- User manuals
- DNV test report no. 2005-3200, dated 2005-06-06
- DNV test report no. 2005-3296, dated 2005-06-24
- Test report Electromagnetic Compatibility, Nemko 43316, dated 2005-06-30

Documents for renewal/extension 2009, revised 2012:

- [I-2] Firmware release notes
- [I-3] Revised technical manual, dated 2011-03-01
- [I-4] Assembly drawing no. 11.114 rev.1
- [I-5] TAC A-10575: Change from optical to magnetic absolute encoder in Eltorque™ actuators, dated 2009-10-28 (+ referred attachments)
- [I-6] TAC A-10575: Reference between documentation for magnetic absolute encoder in Eltorque™ actuators and DNV test procedure 2.4, dated 2009-11-09
- [I-7] TAC A-10575: Comparison of magnetic and optical encoder, dated 2009-12-08

Documents for QT2500 extension 2010, revised 2012, 2014:

- [I-8] Nemko test report no. 10122.03, dated 2010-11-10
- [I-9] Nemko statement of conformity nos. 149622 and 149623, dated 2010-05-07

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[I-10] Product data sheet: QT2500, No. 900-052, dated 2010-09  
[I-11] User manual: QT2500 Electrical Part-turn Valve Actuator, dated 2014-04-28

Documents for renewal 2012, revised 2014, 2017:

[I-18] User manual: QT250 & QT800 Electrical Part-turn Valve Actuators, dated 2016-12-21  
[I-22] Change descriptions/notifications for electronics, firmware and mechanical parts  
[I-23] User manual, Doc.ID EX150.0001 rev. 5: QT250 2.2/2.3 EX & QT800 2.2/2.3 EX Electrical Part-turn Valve Actuators, dated 2016-04-26

Documents for extension 2014:

[I-25] Nemko test report no. E14019.01 (for PSF, QT250 2.2 EX, QT800 2.2 EX), dated 2014-02-06  
[I-38] Manual PSF, Doc.ID EX150.0003 rev. 3, dated 2014-08-18

Documents for renewal/extension 2014, revised 2017:

[I-42] User manual: QT4000 Electrical Part-turn Valve Actuator, dated 2014-04-28  
[I-43] Technical manual: Control interfaces for Eltorque QT2500 and QT4000..., dated 2014-12-09  
[I-50] Nemko test report no. E14136.01 (for QT 250 2.3 EX), dated 2014-11-21

Documentation for QT250/800 1.0 Exd extension 2015, revised 2017:

[I-52] User manual QT250/800 Exd, Doc.ID EX150.0005 rev.5, dated 2015-12-10  
[I-53] Ex Instructions Manual QT250/800 Exd: Doc.ID EX150.0004 rev.7  
[I-54] Assembly drawing EXD250.800 rev.1: EXD250.800\_01 Main assy. EXD QT 250,800  
[I-55] Assembly drawing EXD800.125 rev.1: EXD 800 with CAN Open interface  
[I-56] Nemko test report no. E14172.02 (for QT 250 EXD), dated 2015-03-24  
[I-66] Nemko Statement of Conformity (IPx8 10m/72h for QT250 1.0 /QT250 2.0), dated 2011-03-28

Documentation for renewal/update (to rev.1) of TAA000011K, November 2019

[I-68] Certificate renewal Notes, dated 2019-09-18  
[I-69] Nemko test report no. E17134.02, dated 2018-05-04  
[I-70] Technical manual – control interfaces for Eltorque QT250 and QT800, dated 2013-01-14  
[I-71] Product Data – QT2500 quarter turn actuator  
[I-72] User Manual – QT4000 electrical part-turn valve actuator  
[I-73] User Manual – QT2500 electrical part-turn valve actuator  
[I-74] User Manual – QT250 and QT800  
[I-75] User Manual – QT250 and QT800 2.4 Ex actuator

DNV GL Trondheim TA renewal assessment report for TAA000011K, dated 2019-09-17.

## Tests carried out

Applicable tests according to Standard for Certification No. 2.4, April 2006 (\*)  
QT2500 3.0 and QT4000 1.0 tested for IP68 down to 10 m for 30 min. according to IEC 60529:2001.  
QT250/800 1.0 EXD tested for IP6x, IPx6 and IPx8 down to 10 m for 72 h according to IEC 60529:2001.  
All other models tested for IP6x, IPx6 and IPx8 down to 10 m for 100 h according to IEC 60529:2001.

*\* EMC in the range 2 GHz to 6 GHz according to DNVGL-CG-0339, December 2019 has not been documented. EMC up to 6 GHz must additionally be documented for installation on ships contracted for construction on or after 2022-01-01.*

## Marking of product

- Actuator model name
- Interface type
- Manufacturer name
- Serial number
- Input power ratings

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### **Periodical assessment**

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE