

# TYPE APPROVAL CERTIFICATE

**This is to certify:**

**That the Electric Actuator**

with type designation(s)  
**QT250 1.0/2.0, QT250 2.2/2.3 EX, QT250 1.0 Exd,  
 QT800 1.0/2.0, QT800 2.2/2.3 EX, QT800 1.0 Exd,  
 QT2500 1.0/3.0, QT4000 1.0**

Issued to

**Eltorque AS**  
**Vanvikan, 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 2.2/2.3 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 2.2/2.3 EX	D	B	A	B*	C/D
QT800 1.0 Exd	D	B	A	B	C/D
QT2500 1.0/3.0	C	B	A	A	D
QT4000 1.0	C	B	A	A	D

\* QT250 EX and QT800 EX require use of power supply filter to fullfil EMC class B requirements. See pages 2 and 3.

Issued at **Høvik** on **2017-05-09**

for **DNV GL**

This Certificate is valid until **2018-12-31**.

DNV GL local station: **Trondheim**

Approval Engineer: **Ståle Sneen**

**Odd Magne Nesvåg**  
**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.



## Place of manufacture

Eltorque AS  
 Verkstedvegen 4  
 7125 Vanvikan  
 Norway

Eltorque Automation (Xiamen) Co., Ltd.  
 5/F, 6# Xinshidai building, No.1 Huli Da Dao, Huli District,  
 Xiamen, Fujian Province, Postcode: 361006  
 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.

Actuator	Interface boards
QT250 1.0*	QT250 Digital 1.0 QT250 CANopen 1.0 QT250 Analogue 1.0 QT250 Modbus 1.0
QT250 2.0*	QT250 Digital 2.0 QT250 CANopen 2.0
QT800 1.0*	QT800 Digital 1.0 QT800 CANopen 1.0 QT800 Analogue 1.0 QT800 Modbus 1.0
QT800 2.0*	QT800 Digital 2.0 QT800 CANopen 2.0
QT2500 1.0	QT2500 Digital 1.0 (Open-Close) QT2500 CANopen 1.0 (Fieldbus) QT2500 Analogue 1.0 (4-20 mA) QT2500 Modbus 1.0 (Fieldbus)
QT2500 3.0	QT2500 Digital 1.0 (Open-Close) QT2500 CANopen 1.0 (Fieldbus) QT2500 Analogue 1.0 (4-20 mA) QT2500 Modbus 1.0 (Fieldbus)
QT4000 1.0	QT4000 Digital 1.0 (Open-Close) QT4000 CANopen 1.0 (Fieldbus) QT4000 Analogue 1.0 (4-20 mA) QT4000 Modbus 1.0 (Fieldbus)
QT250 2.2 EX*/**	QT250 2.2 EX CANopen QT250 2.2 EX Digital
QT800 2.2 EX*/**	QT800 2.2 EX CANopen QT800 2.2 EX Digital
QT250 2.3 EX*/***	QT250 2.3 EX CANopen QT250 2.3 EX Digital
QT800 2.3 EX*/***	QT800 2.3 EX CANopen QT800 2.3 EX Digital
QT250 1.0 Exd*	QT250 Exd Digital 1.0 QT250 Exd CANopen 1.0 QT250 Exd Analogue 1.0 QT250 Exd Modbus 1.0

Job Id: **262.1-004091-9**  
 Certificate No: **TAA000011K**

Actuator	Interface boards
QT800 1.0 Exd*	QT800 Exd Digital 1.0 QT800 Exd CANopen 1.0 QT800 Exd Analogue 1.0 QT800 Exd Modbus 1.0

- \* Suitable for use on open deck
- \*\* Each actuator is to be powered through the ELTORQUE PSF (Power Supply Filter)
- \*\*\* 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.

Firmware versions:

Interface type	QT250, QT800	QT2500, QT4000	QT250 2.2 EX, QT800 2.2 EX	QT250 2.3 EX, QT800 2.3 EX	QT250 1.0 Exd, QT800 1.0 Exd
Analogue (4-20 mA)	1.1.x	1.0.x	-	-	1.1.x
CANopen (Fieldbus)	1.1.x	1.0.x	1.1.x	1.1.x	1.1.x
Digital (Open - Close)	1.1.x	1.0.x	1.1.x	1.1.x	1.1.x
Modbus (Fieldbus)	1.1.x	1.0.x	-	-	1.1.x

### 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.

Actuator models QT250 2.2 EX and QT800 2.2 EX shall be installed with a dedicated ELTORQUE PSF (Power Supply Filter) to satisfy class requirements for EMC.

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		
Equipment	Certified	Certificate No.
QT250 2.2/2.3 EX CanOpen, QT800 2.2/2.3 EX CanOpen, PSF	Ex e ib mb IIC T4 Gb -25°C ≤ Ta ≤ 70°C Ex e mb IIC T4 Gb -25°C ≤ Ta ≤ 70°C	IECEX NEM 13.0042 Issue No.2
QT250 1.0 Exd CanOpen, QT800 1.0 Exd CanOpen	Ex d e IIB T4 Gb T <sub>amb</sub> : -25°C to +70°C	IECex PRE 14.0056X Issue No.1

## 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  
[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

DNV GL Trondheim TA renewal assessment report for A-14143, dated 2016-12-21.

## Tests carried out

Applicable tests according to Standard for Certification No. 2.4, April 2006.

QT2500 (1.0, 3.0), QT4000 1.0 tested for IP68 down to 10 m for 30 min. according to IEC 60529:2001.  
All other models tested for IP6x, IPx6 and IPx8 down to 10 m for 72 h according to IEC 60529:2001.

## 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