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Website : www.enertork.com E-mail : sales@enertork.com
The design of our product is subject to change without notice for improvement. Publication No. CAT-20-007 REV0, 2021.01

- **Main office/Factory** 344, Neungyeo-ro, Neungseo-myeon, Yeoju-si, Gyeonggi-do, 12646 **Tel** : 031-880-2800 **Fax** : 031-881-5860
- **Daegu Factory** 327B 8L, Daegu National Industrial Complex, 1287-7, Eung-am-ri, Guji-myeon, Dalseong-gun, Daegu
- **Seoul Office** Yunik Building 18th Fl., 430, Eonju-ro, Gangnam-gu, Seoul, 06210 **Tel** : 02-555-0883 **Fax** : 02-556-3026
- **UAE branch** Enertork Middle East General Trading L.L.C Makateb Building, Office #508, D89 Al Maktoum Road,
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- **Vietnam branch** No. 1 VSIP II-A, Street 30, Vietnam-Singapore Industrial Pack II-A, Vinh Tan Commune,
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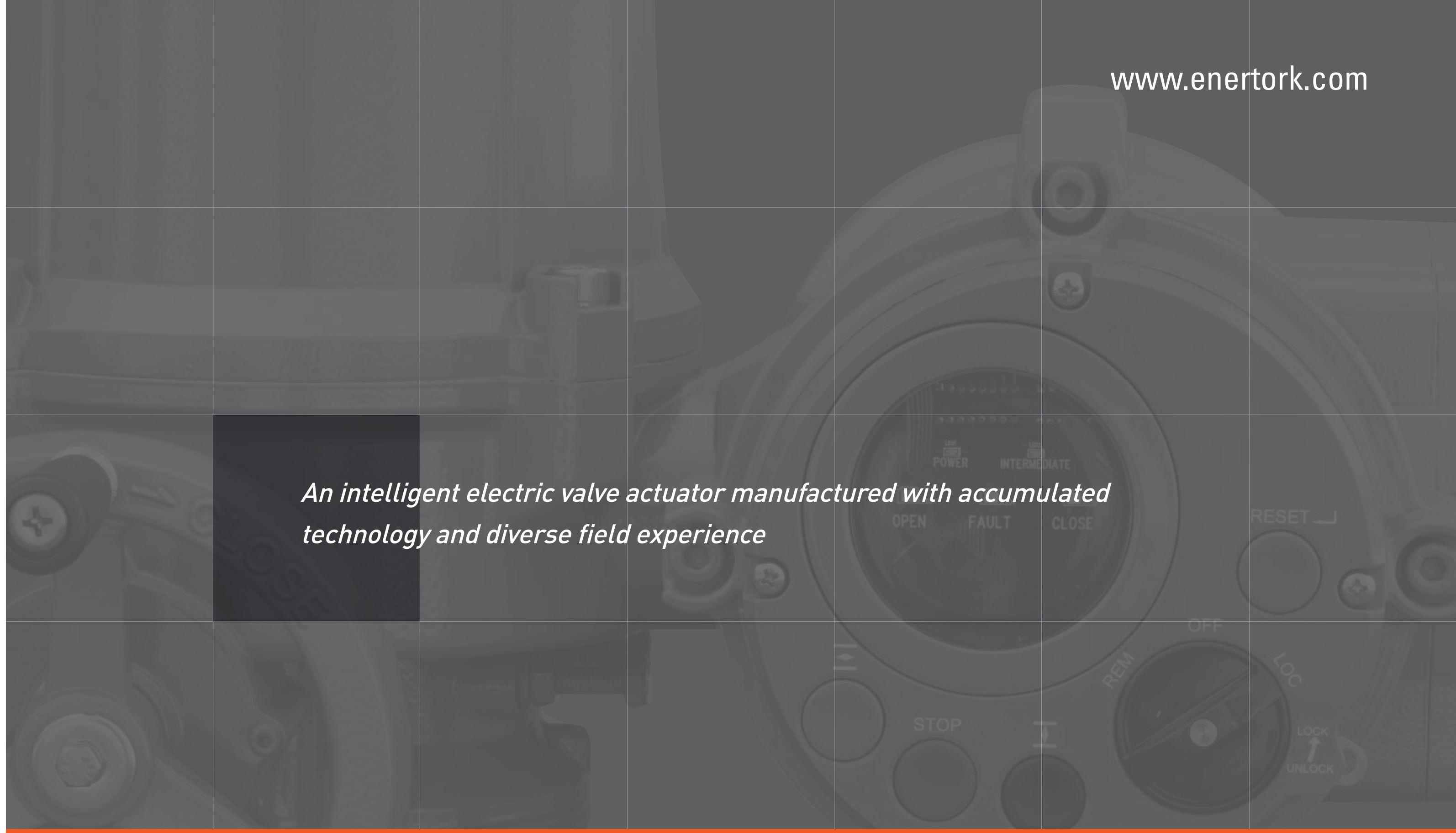
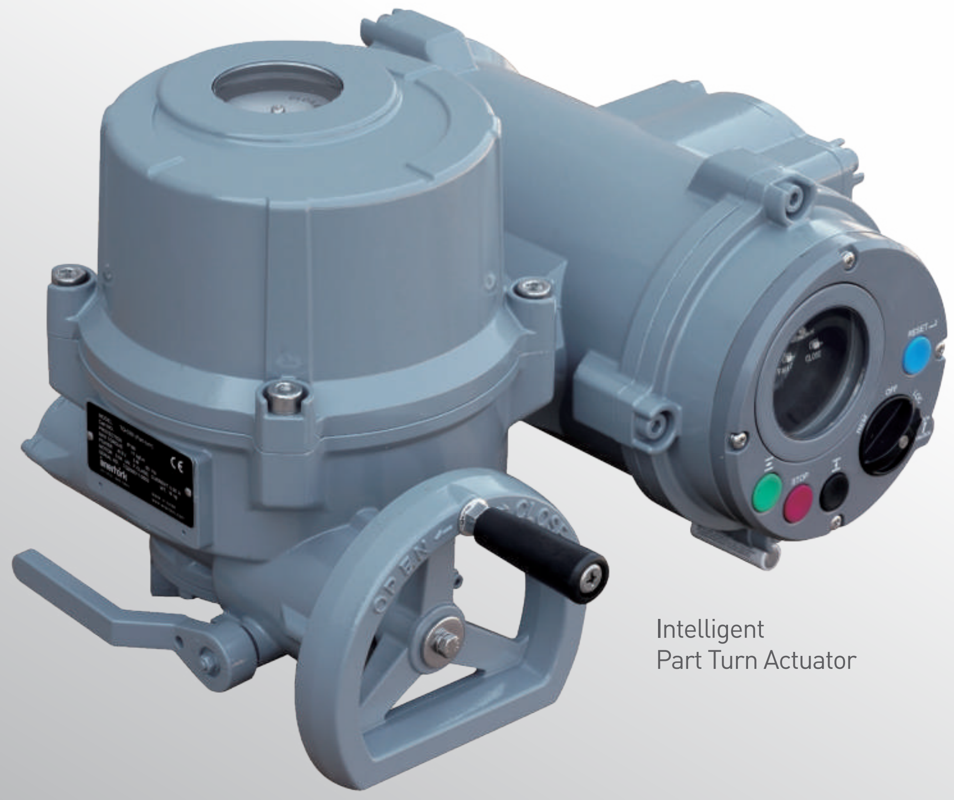
www.enertork.com



An intelligent electric valve actuator manufactured with accumulated technology and diverse field experience

TQ SMART SERIES ACTUATOR



Intelligent
Part Turn Actuator

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Reliable Enertork

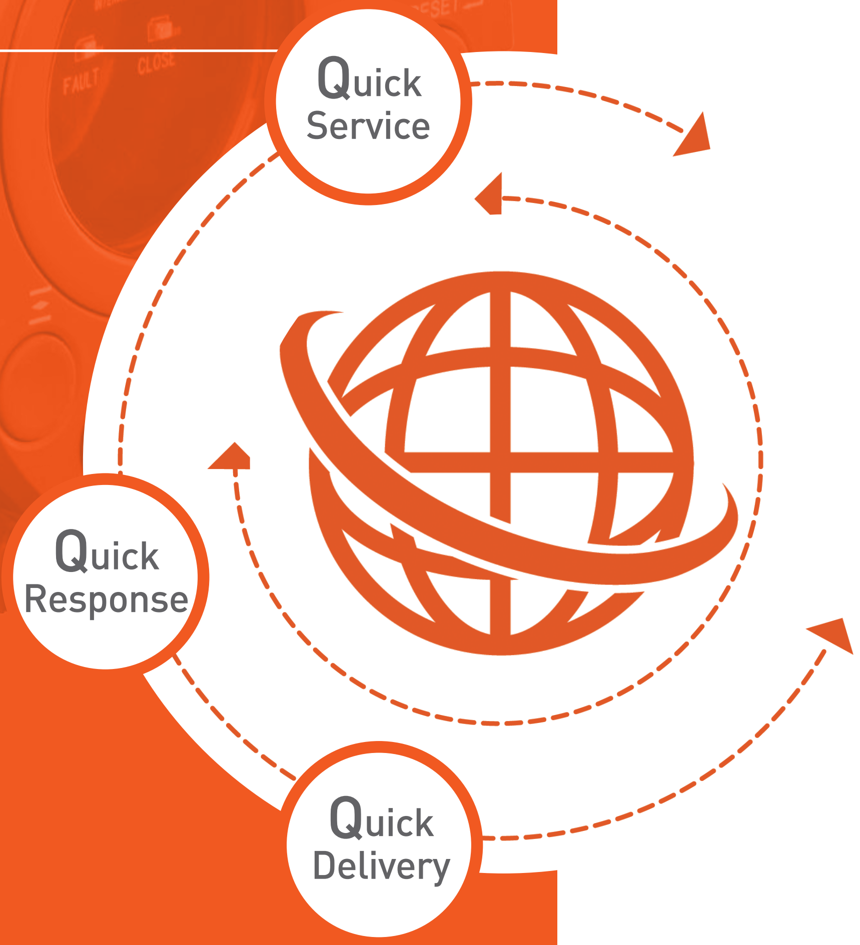
Enertork is a specialized company that has been producing electric actuators and related products that drive industrial valves since 1987.
Enertork produces product lines that can be applied in various fields, ranging from water treatment such as water supply and sewage to power generation and petrochemical fields, and sells them to customers all over the world.

Enertork has a 3Q philosophy to fulfill customer needs.

Quick Delivery
Enertork honors delivery dates and proposes the fastest delivery time possible.

Quick Service
Enertork operates service organizations and systems to take action as quickly as possible if a problem occurs related to our product.

Quick Response
Enertork works to give our customers a sense of trust by responding to customer requests as soon as they are received.



CONTENTS

HISTORY

Acquired ISO 9001, 14001 quality and environment certification / Listed on KOSDAQ / Acquired certification for occupational health and safety management system

1987

Established

- '87 Established Morgan Korea

1991

Secured product technological capability

- '91 Registered as company for localization by KEPCO
- '91 Entered into technical partnership with Seibu in Japan
- '97 Acquired ISO 9001 quality certification (certification agency DNV)
- '98 Announced new actuator (jointly developed by Western Electric)

2006

Established base

- '02 Registered as qualified supplier for power generation facilities by 5 power generation companies in Korea
- '03 Acquired actuator class 1E (Q class) for nuclear power plants (Certification agency: NTS of U.S.)
- '06 Listed on KOSDAQ
- '08 Acquired CE certification

2010

Established base for overseas entry

- '10 Acquired certification for occupational health and safety management system (OSHAS/KOSHA 18001)
- '11 Changed company name to "Enertork"
- '13 Acquired FM/ATEX/CSA explosion-proof certification
- '19 Acquired NEP certification
- '20 Certified for outstanding products by Public Procurement Service

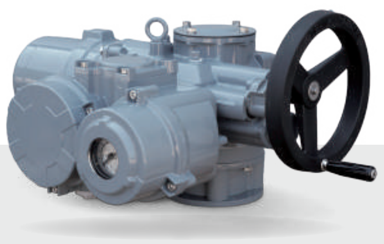
LINE UP

TX Series

A next-generation intelligent product that can be actively applied to evolving control systems.

TM Series

A multi-turn actuator that can be applied to various control solutions required in the fields of power generation, petrochemicals, steel, and water and sewage.

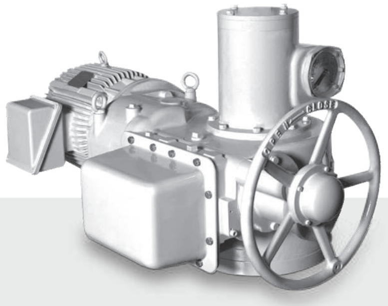


TM Smart Series

The non-intrusive method can be set by applying electronic control components to the mechanical TMi Series.

LTMD-Q Series

A product that can be applied in nuclear power plants and harsh environments.



TQ Series

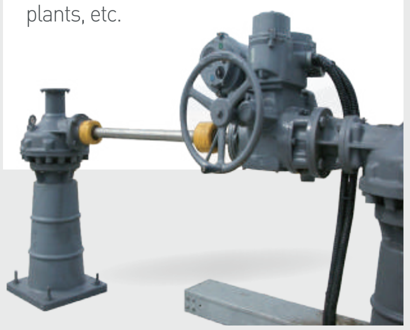
A quarter-turn actuator that can be applied to various control solutions required in the fields of power generation, steelworks, steel, and water and sewage.

WT Series

A quarter-turn actuator with simple specifications. This product can be applied to processes that require high operation speeds.

Water hoist

This product specializes the TM Series for spindle-type floodgate operation, and is supplied to water management facilities such as reservoirs, waterways, water purification plants, sewage treatment plants, etc.

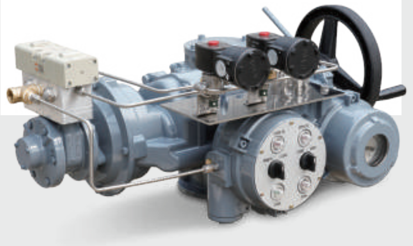


LEC Series

This product is specialized for urgent closing of a floodgate. Fast operation is possible when operated manually.

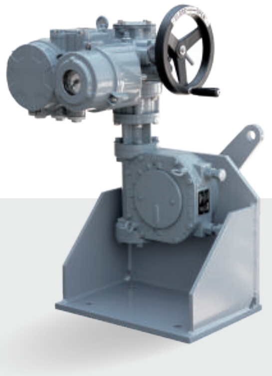
TMA Series

A multi-turn actuator that can be applied to an area where electricity supply is difficult, such as power generation, petrochemicals, steel, and water and sewage facilities, and areas where electricity cannot be supplied in the event of an accident.



MW Series

This product is used to apply a multi-turn actuator to large-size BFV, ball valves, dampers, etc. A product exclusively for manual operation can also be provided.



EPD Series

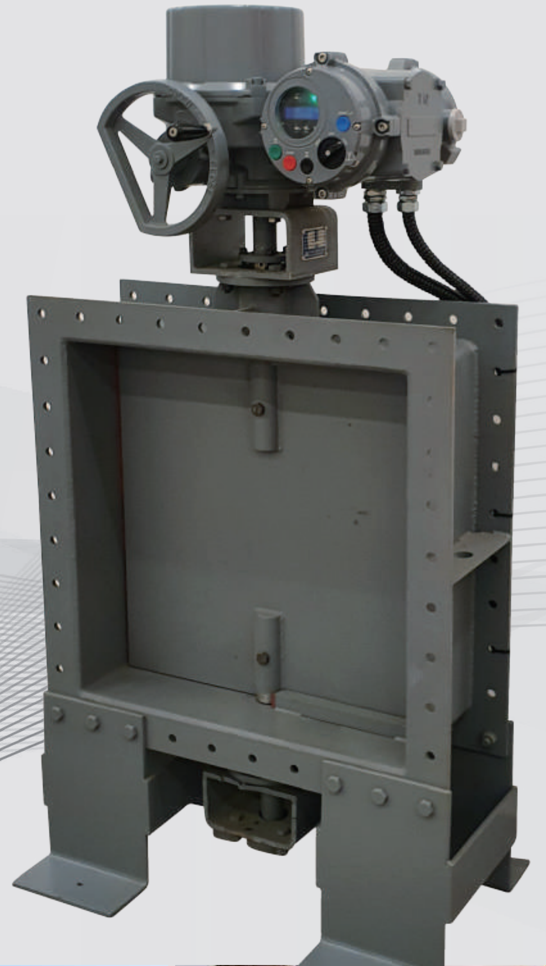
A quarter-turn actuator used to drive industrial dampers.

EA / ER Series

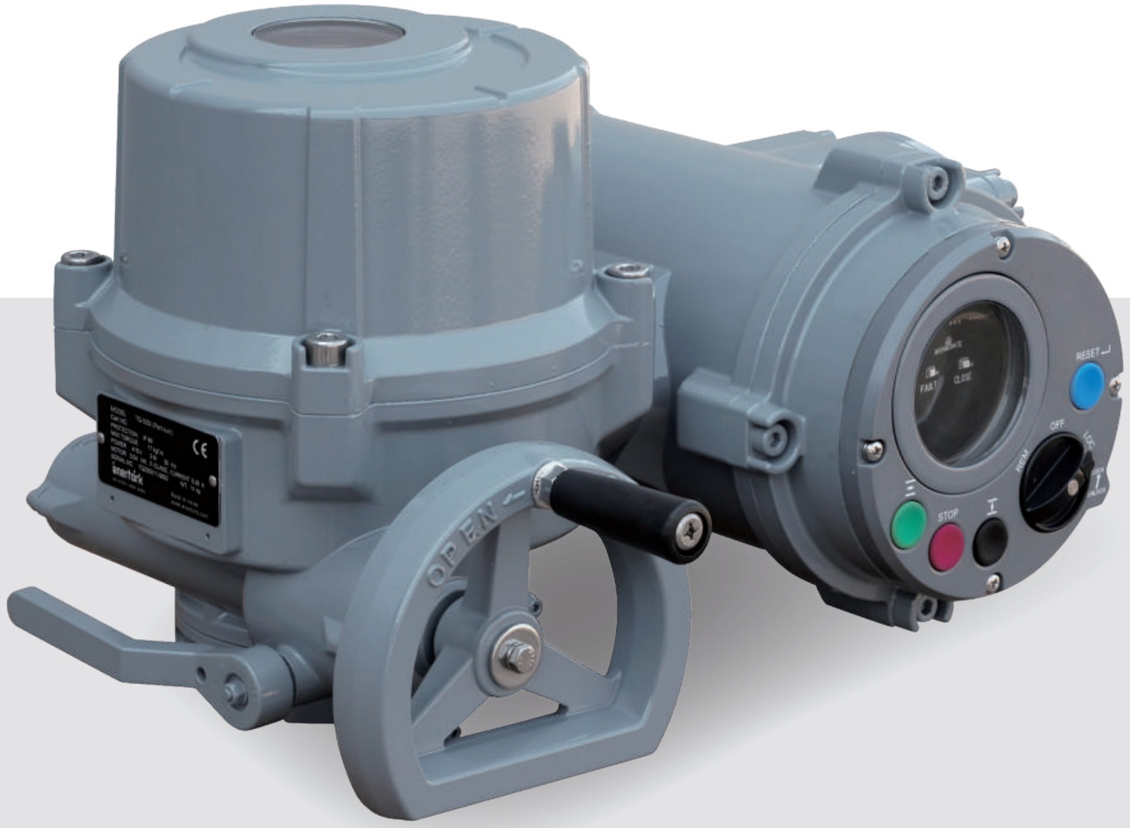
A quarter-turn pneumatic actuator that is used for small and medium sized BFV, balls, dampers, etc.

TQ SMART SERIES

Intelligent quarter-turn electric valve actuator



The TQ Smart series is a next-generation intelligent product that can actively respond to developing control systems. This quarter-turn actuator can be applied to butterflies, ball valves, dampers, etc.

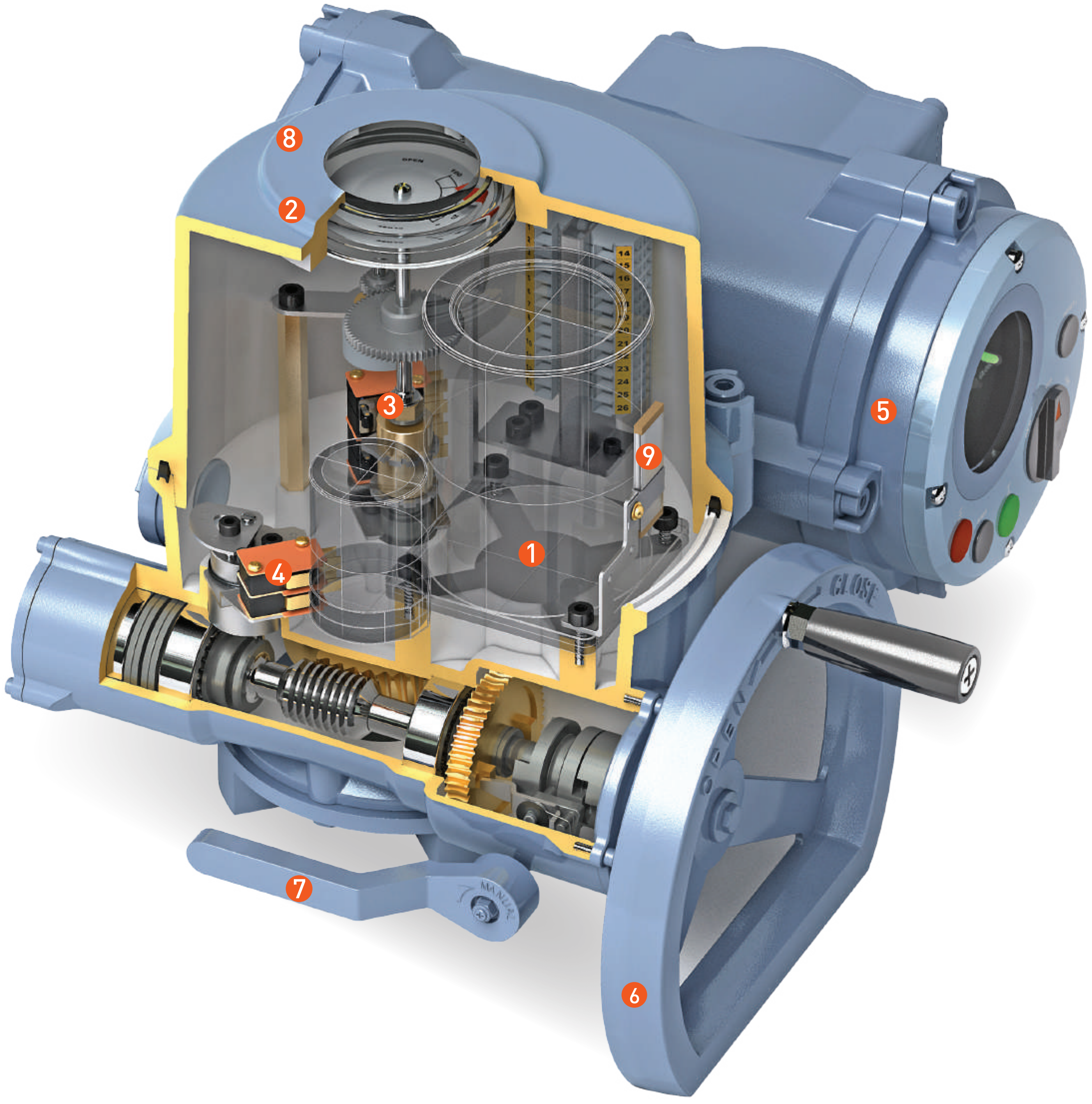


Main specifications of TQ Smart series

- Equipment can be set and operated using a remote control or wireless device without opening the cover
- Completely eliminates possibility of rainwater penetration by adopting non-penetration type switch
- Self-holding function when torque switch is operating
- Waterproof function satisfying IP68 (8m, 72 hours)
- Explosion-proof function satisfying Exd IIB T4 (optional)
- Large LCD display, data logging function
- Supports 2-wire fieldbus communication (Profibus-DP, FF, HART, Modbus etc./optional)
- Fire retarding (optional)
  - FR coating
  - Tested using UL 1709:2005 (certification agency: Lloyd's Register of Shipping)

TQ SMART SERIES

Part Turn Electric Actuator



❶ Motor

The built-in thermostat protects the motor from damage by fire by accurately detecting rising temperatures.

❷ Gate positioner

The exact location is displayed as a percentage. The percentage can be displayed on the LCD (digital) if the operation panel is the integrated type.

❸ Position sensor

The position is sensed using a potentiometer.
Setting range: 40-100%

❹ Torque sensor

Torque is sensed using a potentiometer.
Setting range: 40-100%

❺ Integral unit

A non-penetrating structure where the front control unit is completely separated from the inside, with no need for a separate on-site control panel. The internal circuit is protected from external shock current because it is completely separated by the remote circuit and the insulation element. When the torque switch is operated, motor damage by fire and valve damage due to repeated operation are prevented using a "self-holding function".

❻ Manual handle

The handle is installed at the site for convenience of operation.

❼ Manual switch lever

The motor can be conveniently switched from electric to manual, and the automatic return type is the standard for returning from manual to electric.

❽ Terminal block

A circular terminal block is installed at the rear end of the integral unit. The terminal block is separated using a double-sealing structure using a V ring and O ring to protect the interior from moisture.

❾ Space heater

A thermostat is installed that automatically regulates the temperature.

TQ SMART SERIES

Standard specifications

Output contact (position limit/torque switch)	Power Fail Relay (1 point, Rating : 5A 250VAC / A 30VDC), Configurable latch relay (5 points, Rating : 5A 250VAC/5A 30VDC)
Rotation angle	90˚±10˚
Gate positioner	Mechanical type continuous percentage indication type
Enclosure (waterproof grade)	IP-68 (72 hours duration at depth of 8 meters)
Space heater	Thermostat type (PTC-5) / 5W / 100-240VAC
Manual/electric switch	Automatic return; manually switch from electrical to manual using manual lever
Wiring service entrance	PF 1"(#28) x 3ea
Operating ambient temperature	-25℃~+70℃
Vibration/Shock	Vibration: 1g rms in frequency range of 10-55Hz (0.5g rms for integrated control panel) Shock: Maximum acceleration 5G
Coating	Aluminum: Anodizing + polyester (powder) / Carbon steel: Double-coated epoxy paint Finish color: Munsell No. 2.5PB 5/2

Optional specifications

Temperature range	Low temperature -40˚C - +50˚C
Adding output contacts (position limit/torque switch)	Configurable latch relay (4 points, Rating : 5A 250VAC/5A 30VDC)
Wiring service entrance	NPT, G, etc.
Transmitter (position value)	DC 4-20mA
Transmitter (torque value)	DC 4-20mA
Proportional control	Input : DC 4-20mA / Output : DC 4-20mA
Wide rotation angle	120˚, 180˚, 270˚
Fieldbus control (2-wire control)	Profibus-DP(Single/Redundancy) / Modbus-RTU / Foundation Fieldbus-H1 / HART / Wireless
Motor forward and reverse actuator	SSR (Solid State Relay)
Others	Surge protector, arrester

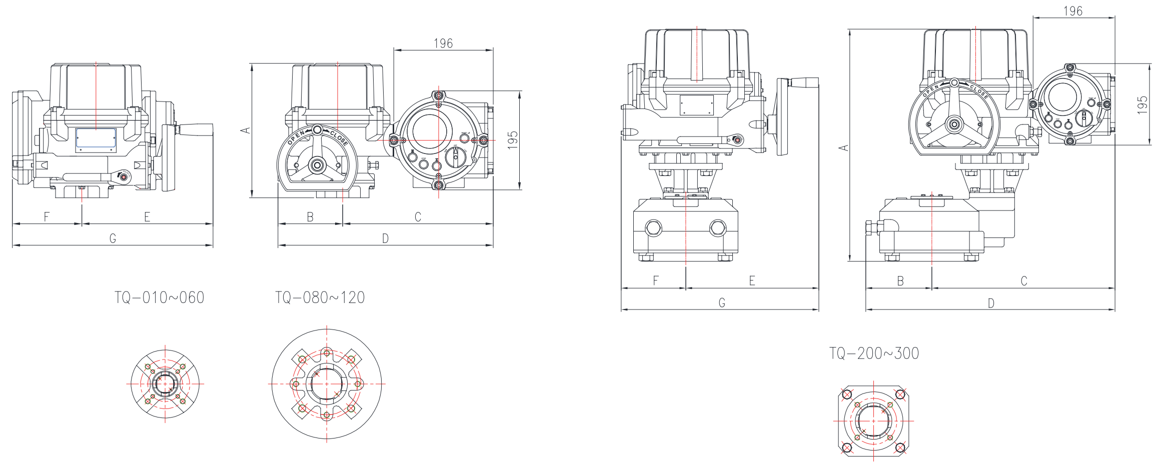
Specifications

Model	Number of sets*	Frequency	Maximum torque	Operating time	Allowable stem diameter		Motor		Rated current					Handle operating RPM	Weight	
							Capacity	Flange	Single phase		Three phase				Basic	Integral
		Hz	kg.m	SEC.	Key type Φmm	Square type □mm	W	F	110V	220V	220V	380V	440V	rev.	kg	kg
TQ-020SM	Set 1	60	20	17	30	22	40	80	1.97	0.95	0.38	0.21	0.28	10	10	19
	Set 2		12	8										5		
TQ-020SM	Set 1	50	20	20					1.71	0.82	0.52	0.27	0.43	10		
	Set 2		12	10										5		
TQ-040SM	Set 1	60	40	25	40	29	40	90	2.86	1.36	0.35	0.23	0.27	12.5	16	25
	Set 2		24	13										6.3		
TQ-040SM	Set 1	50	40	30					2.24	1.00	0.45	0.25	0.32	12.5		
	Set 2		24	15										6.3		
TQ-060SM	Set 1	60	60	25	40	29	90	90	3.89	1.82	0.56	0.35	0.41	12.5	16	25
	Set 2		36	13										6.3		
TQ-060SM	Set 1	50	60	30					3.16	1.42	0.77	0.4	0.56	12.5		
	Set 2		36	15										6.3		
TQ-080SM	Set 1	60	80	34	47	35	90	90	3.89	1.82	0.56	0.35	0.41	14.5	26	35
	Set 2		48	17										7.3		
TQ-080SM	Set 1	50	80	40					3.16	1.42	0.77	0.4	0.56	14.5		
	Set 2		48	20										7.3		
TQ-120SM	Set 1	60	120	34	47	35	180	90	7.1	3.7	3.5	1.7	1.9	14.5	27	36
	Set 2		72	17										7.3		
TQ-120SM	Set 1	50	120	40					3.53	1.76	1.42	0.53	0.77	14.5		
	Set 2		72	20										7.3		
TQ-200SM	Set 1	60	200	100	78	58	90	90	3.89	1.82	0.56	0.35	0.41	43.5	66	75
	Set 2		120	51										21.8		
TQ-200SM	Set 1	50	200	115					3.16	1.42	0.77	0.4	0.56	43.5		
	Set 2		120	60										21.8		
TQ-300SM	Set 1	60	300	100	78	58	180	90	7.1	3.7	3.5	1.7	1.9	43.5	67	76
	Set 2		180	51										21.8		
TQ-300SM	Set 1	50	300	115					3.53	1.76	1.42	0.53	0.77	43.5		
	Set 2		180	60										21.8		

* Set 1 : Standard operating time & standard max. torque output
Set 2 : Faster operating time, but max. torque output is lower than Set 1.

Dimensions

Model	Base ISO 5211	ØP	Thread specification	Tap depth	A	B	C	D	E	F	G
TQ-020SM	F07/F10	Ø70/Ø102	M8/M10	15/18	265	130	296	426	258	137	395
TQ-040SM	F10/F12	Ø102/Ø125	M10/M12	15/18	287	175	288	463	272	136	408
TQ-060SM	F10/F12	Ø102/Ø125	M10/M12	15/18	287	175	288	463	272	136	408
TQ-080SM	F12/F14	Ø125/Ø140	M12/M16	18/24	321	200	293	493	319	155	474
TQ-120SM	F12/F14	Ø125/Ø140	M12/M16	18/24	321	200	293	493	319	155	474
TQ-200SM	F16	Ø165	M20	30	556	159	439	319	319	155	474
TQ-300SM	F16	Ø165	M20	30	556	159	439	319	319	155	474



Special Option

■ Separated Integral Type

- If it is dangerous or uncomfortable for the operator to use the integrated type operation panel, it can be relocated.

- If piping vibrates severely, the integrated operation panel can be relocated to protect electronic devices.

There are two types of the integrated operation panel - the standing type that is secured to the floor, and the wall bracket type that can be attached to the wall.

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Customer service

Model selection : The performance of electric valves, electric flooding gates, and electric dampers depends on the correct selection of the actuator from the aspect of rotation speed and torque. Cost effectiveness is also an important factor when selecting an actuator. Enertork is prepared to assist customers in all processes necessary for actuator selection, such as torque/thrust calculation, installation method, and selection of options.

Spare parts supply : Both individual parts and component assembly parts will be delivered in a timely manner.

Electric valve supply : Enertork supplies actuators. If desired by the customer, Enertork can also supply electric valves, electric flooding gates, and electric dampers with full quality assurance.

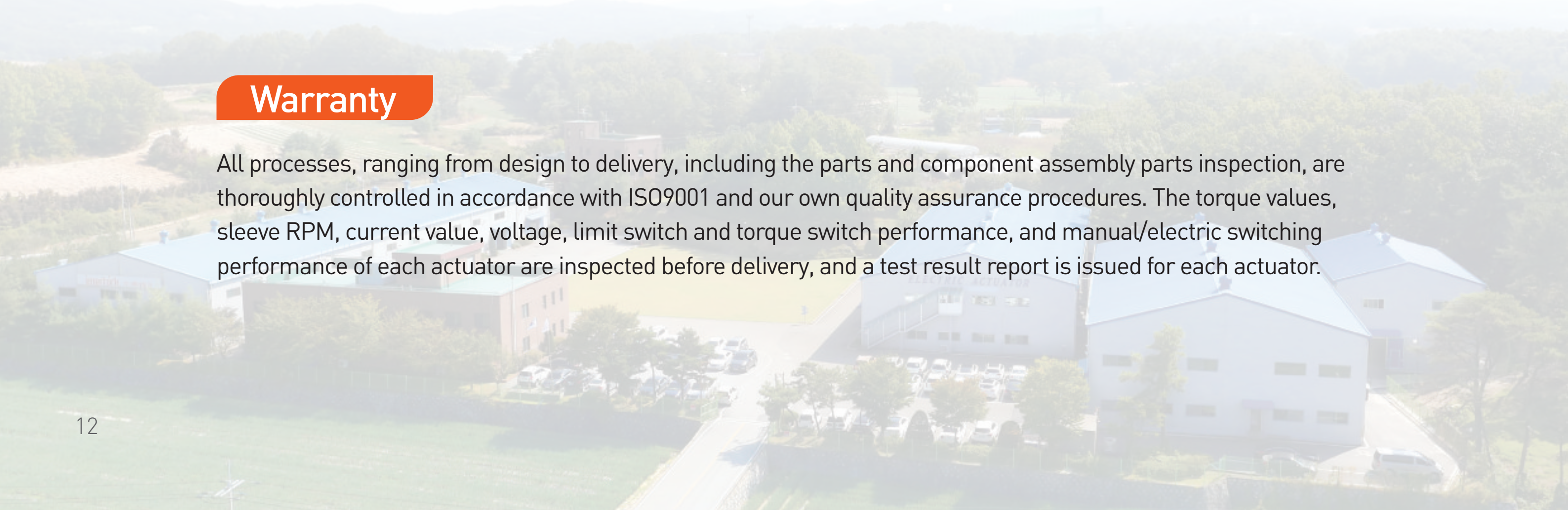
Manual valve motorization/related installation parts supply : When a customer motorizes manual valves or installs an actuator on site, the customer needs various installation parts such as mounting flanges, stands, levers, fittings, etc. Enertork is prepared to assist customers to acquire the proper related installation parts from the design phase to the delivery phase.

Standard materials table

Part		Material	KS/JIS NO.	ASTM NO.
Enclosure	**TQ-010~120**	Alloy die casting(ALDC)	D6006/H5302	B85
	TQ-200/300	Gear case : Cast iron(FCD)	D4301/G5501	A126
Thrust unit		Ductile cast iron(FCD)	D4302/G5502	A536
Worm	**1st**	Carbon steel(SM45C)	D3752/G4051	1050
	2nd	Chromium molybdenum(SCM)	D3711/G4105	A322
Worm heel	**TQ-010~120**	High strength brass casting(HBsC)	D6007/H5102	B584
Spur gear	**TQ-200/300**	Carbon steel(SM45C)	D3752/G4051	1050
Stem bush	**Key**	Carbon steel(SM45C)	D3752/G4051	1050
Grease		Lithium grease(EP 0)	M2130/K2220	-

Warranty

All processes, ranging from design to delivery, including the parts and component assembly parts inspection, are thoroughly controlled in accordance with ISO9001 and our own quality assurance procedures. The torque values, sleeve RPM, current value, voltage, limit switch and torque switch performance, and manual/electric switching performance of each actuator are inspected before delivery, and a test result report is issued for each actuator.



Reliable Enertork


1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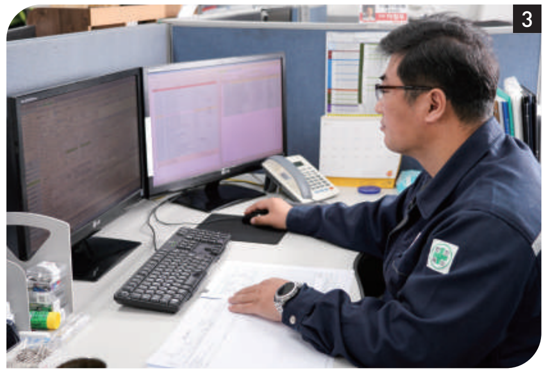
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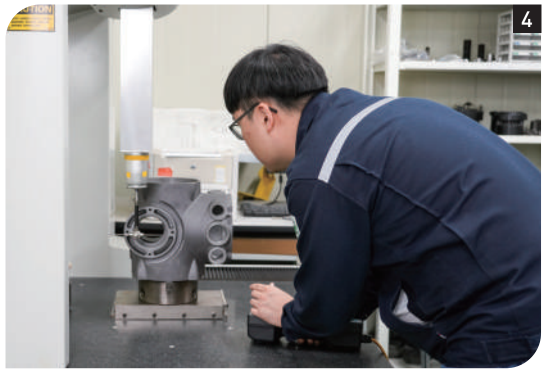
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6


7


8

1 Showroom 2 Training room 3 Product design 4 Quality assurance
5 6 Processing 7 Assembly 8 Testing and inspection

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▪ Status of major certification acquisition


DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

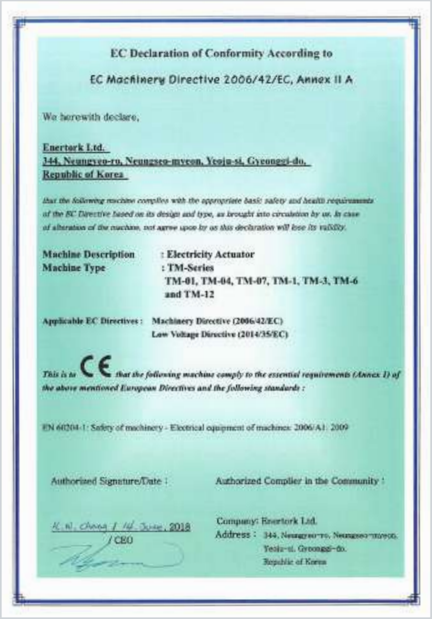
This is to certify that the management system of

Enertork Ltd.
344 Neungyeo-ro, Neungseo-myeon, Yeoju-si, Gyeonggi-do, Korea

has been found to conform to the Quality Management System standard:
ISO 9001:2015, KS Q ISO 9001:2015

This certificate is valid for the following scope:
DESIGN AND MANUFACTURE OF ELECTRIC ACTUATOR

ISO9001 Certified by DNV


EC Declaration of Conformity According to

EC Machinery Directive 2006/42/EC, Annex II A

We herewith declare,

Enertork Ltd.
344, Neungyeo-ro, Neungseo-myeon, Yeoju-si, Gyeonggi-do,
Republic of Korea

that the following machine complies with the appropriate basic safety and health requirements of the EC Directive based on its design and type, as brought into circulation by us. In case of alteration of the machine, not agree upon by us this declaration will lose its validity.

Machine Description : **Electricity Actuator**
Machine Type : **TM-Series**
TM-01, TM-04, TM-07, TM-1, TM-3, TM-6 and TM-12

Applicable EC Directives : Machinery Directive (2006/42/EC)
Low Voltage Directive (2014/35/EC)

This is to CE *that the following machine comply to the essential requirements (Annex I) of the above mentioned European Directives and the following standards :*

EN 60204-1: Safety of machinery - Electrical equipment of machines: 2006/A1: 2009

Authorized Signature/Date :
K. W. Chang / 14. June, 2018
/ CEO

Authorized Compiler in the Community :
Company: Enertork Ltd.
Address : 344, Neungyeo-ro, Neungseo-myeon,
Yeoju-si, Gyeonggi-do,
Republic of Korea

CE Certification


1 EU-TYPE EXAMINATION CERTIFICATE

2 Equipment or Protective systems intended for use in Potentially Explosive Atmospheres - Directive 2014/34/EU
3 EU-Type Examination Certificate No: FM12ATEX0095X
4 Equipment or protective system: (Type Reference and Name) TM-01 and TM-04 Electric Actuator
5 Name of Applicant: Enertork Ltd
6 Address of Applicant: 64-6 Ogye-Ri Neungseo-Myeon Yeoju-Gun, Gyeonggi-Do 469-811 Republic of Korea
7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and documents therein referred to.
8 FM Approvals Ltd, notified body number 1725 in accordance with Article 17 of Directive 2014/34/EU of 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 confidential report number:

3040558 dated 18th February 2013

9 Compliance with the Essential Health and Safety Requirements, with the exception of those identified in item 15 of the schedule to this certificate, has been assessed by compliance with the following documents:

EN 60079-0: 2012/+A11: 2013, EN 60079-1: 2014, and EN 60529:1991 + A1:2000

10 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.
11 This EU-Type Examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.
12 The marking of the equipment or protective system shall include:

II 2 G Ex db IIB T4 Gb Ta = -20°C to +40°C IP68

Mick Gower
Certification Manager, FM Approvals Ltd.

Issue date: 18th January 2017

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

Page 1 of 3

FM/ATEX Certification


FM Approvals
1151 Boston Providence Turnpike
P.O. Box 9102 Norwood, MA 02062 USA

CERTIFICATE OF COMPLIANCE

HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT

This certificate is issued for the following equipment:

Equipment Ratings:

As Explosionproof for Class I, Division 1, Groups C and D T4; and Flameproof for Class I, Zone 1, AEx d IIB T4; for hazardous (classified) locations, indoors and outdoors, Type 6 / IP68, with an ambient temperature range of -20°C to +40°C.

FM Approved for:

Enertork Ltd
Yeoju-Gun, Gyeonggi-Do, Republic of Korea

3040508
Page 1 of 2

FM Certificate


DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

This is to certify that the management system of

Enertork Ltd.
344 Neungyeo-ro, Neungseo-myeon, Yeoju-si, Gyeonggi-do, Korea

has been found to conform to the Environmental Management System standard:
ISO 14001:2015, KS I ISO 14001:2015

This certificate is valid for the following scope:
DESIGN AND MANUFACTURE OF ELECTRIC ACTUATOR

ISO14001 Certified by DNV


제2012-051048-01 호

안 전 인 증 서

㈜ 에너토크
경기도 여주군 능서면 오계리 64-6

위 사업장에서 제조하는 아래의 품목이 「산업안전보건법」 제34조 및 같은 법 시행규칙 제58조의4제4항에 따른 안전인증 심사 결과 안전·보건기준에 적합하므로 안전인증표시의 사용을 인증합니다.

품 목
ELECTRIC ACTUATOR

형식 · 모델(용량 · 등급) / 인증번호
TM-01i (Ex d IIB T4) / 12-KB2BO-0438

인 증 기 준
고용노동부고시 제2010-36호

인 증 조 건

1. 제조공장
2. 제품개요
3. 인증범위 : 본 인증서는 위의 형식번호에 한하여 유효함
4. 안전한 사용을 위한 조건
5. 인증(변경)사항 : 없음
6. 그 밖의 사항 : 사용설명서 참조

2012년 12 월 28 일

한국산업기술시험원장

KCs explosion-proof certification


CERTIFICATE NO FS/71/220/16/0159 PAGE 1/1

LICENCE HOLDER
ENERTORK LTD., HEADQUARTER
#344, NEUNGYEO-RO, NEUNGSEO-MYEON, YEOJU-SI, KYEUNGGI-DO, KOREA

MANUFACTURING PLANT
ENERTORK LTD., FACTORY
#344, NEUNGYEO-RO, NEUNGSEO-MYEON, YEOJU-SI, KYEUNGGI-DO, KOREA

PROJECT NO/-ID: K0FK
LICENSED TEST MARK
CERT. REPORT NO.: K0FK0009

Tested according to: IEC 61508:2010 Ed.2
Certified product(s): TM Electric Actuator
Model(s): TM-01, TM-04, TM-07, TM-1, TM-3, TM-6, TM-12

Certification Body for Functional Safety
SGS-TÜV Saar GmbH

Munich, 2016-10-04

CERTIFICATE

SIL certification


ЕВРАЗИЙСКИЙ ЭКОНОМИЧЕСКИЙ СОЮЗ

СЕРТИФИКАТ СООТВЕТСТВИЯ

№ ЕАЭС RU C-KR.HA65.B.00046/19

Серия RU № 0110879

ОРГАН ПО СЕРТИФИКАЦИИ

ЗАЯВИТЕЛЬ

ИЗГОТОВИТЕЛЬ

ПРОДУКЦИЯ

КОД ТН ВЭД ЕАЭС

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ

СЕРТИФИКАТ СООТВЕТСТВИЯ ВЫДАН НА ОСНОВАНИИ

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ

СРОК ДЕЙСТВИЯ С ПО ВКЛЮЧИТЕЛЬНО

TRCU Certification